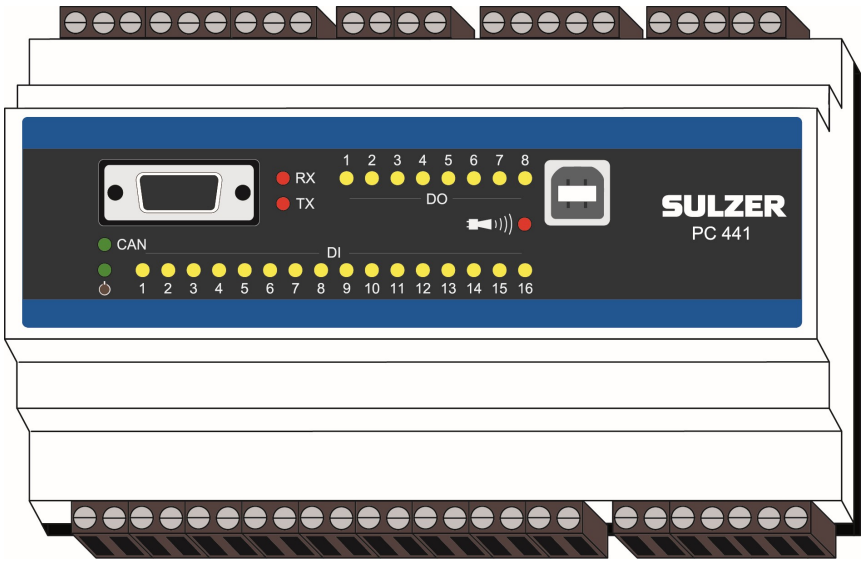
SULZER

Pump Controller Type ABS PC 441
COMLI/Modbus - Version 1.78



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Reference Manual

SULZER CONFIDENTIAL

1 Comli/Modbus IO number layout

1.1 Digital outputs

Main Controller PC 441

DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO8
0	1	2	3	4	5	6	7

Exp. Module CA 781

DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO8
8	9	10	11	12	13	14	15

Type "P1-P4 Control", "Reset M.Prot." ,"Remote Control" , "Mixer" ,"Cleaner" and "Drain pump" allows remote write.

1.2 Pump status (P1-P4)

IO-Bit P1	IO-Bit P2	IO-Bit P3	IO-Bit P4	Function	Note
16	48	80	112	Pump relay	Remote control possible
17	49	81	113	Pump run indication	Run confirm
18	50	82	114	Pump blocked	DI not in auto
19	51	83	115	Pump alarm blocked	Alarm ackn. required
20	52	84	116	Pump fail	DI Pump fail
21	53	85	117	Fallen motor protector	Remote reset possible
22	54	86	118	Fallen temperature protector	DI Temperature protector
23	55	87	119	DI Leakage	DI Leakage
24	56	88	120	Pump blocked Field Bus Error	Communication Failure (CAN)
25	57	89	121	Leakage 1(oil chamber)	CA 441
26	58	90	122	Leakage 2 (connect chamber)	CA 441
27	59	91	123	Leakage 3 (motor housing)	CA 441
28	60	92	124	High temp 1 (stator wiring)	CA 442
29	61	93	125	High temp 2 (upper bearing)	CA 442
30	62	94	126	High temp 3 (lower bearing)	CA 442
31	63	95	127	High vibrations	CA 442
32	64	96	128	Wrong phase order	CA 443
33	65	97	129	Phase missing	CA 443
34	66	98	130	Dry run	CA 443
35	67	99	131	Pump Reversing Cycle Run**	Remote control possible
36	68	100	132	Pump Reversing Relay	
37	69	101	133	High Tariff pump down	
38	70	102	134	Alt. Stop Cycle Run	
39	71	103	135	Pump Exercise Run	
40	72	104	136	Start float On	
41	73	105	137	Stop float On	Same for P1-P4
42	74	106	138	Hand flag	Forced pump run
43	75	107	139	Start flag	Manual start
44	76	108	140	Stop flag	Manual stop
45	77	109	141	Set point	
46	78	110	142	Max runtime reached	
47	79	111	143	Optimal SW pump run	Tariff Control, Backup Run etc.

1.3 Digital inputs

DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	DI9	DI10	DI11	DI12	DI13	DI14	DI15	DI16
160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175

1.4 Pump pit status

IO-Bit	Function	Note
192	Remote block	Write resets timout timer. 0=Deblock, 1=Block
193	Pressure block	
194	Low level float	
195	High level	
196	Low level	
197	High level float	
198	Drain pump float	
199	Mixer pump block	
200	High inflow	
201	Low inflow	
202	Backup start	
203	High pressure	
204	Low pressure	
205	Overflow	
206	Spare=0	
207	Sensor Error	Analogue sensor
208	Mixer Relay	Remote control possible
209	Mixer run indicator	
210	Fallen motor protector mixer	DI motor protector / Remote reset possible
211	Drain pump relay	Remote control possible
212	Drain pump run indicator	
213	Fallen motor prot. drain pump	DI motor protector / Remote reset possible
214	Cleaner relay	Remote control possible
215	Mixer M.prot reset error	
216	Drain Pump M.prot reset error	
217	Emergency Power Mode	Pump power from generator
218	Incoming phase missing block	From power monitor CA443
219	Over voltage block	“
220	Under voltage block	“
221	Unbalanced voltages block	“
222	High freq. block	“
223	Low freq. block	“
224	Mixer blocked	Ext. Blocked from digital input
225	Drain Pump blocked	Ext. Blocked from digital input
226	Hi tariff	Hi tariff active
227	CA 622 Main master **running**	Modbus main power monitor

IO-Bit	Function	Note
248	Spare	
249-253	Spare	
254	CA 622 Connected	**Modbus Master RS485**
255	CA 511 Connected	**Display Unit**
256	CA 441-1 Connected	**Leakage monitor**
257	CA 441-2 Connected	1 = **Connected** to field bus
258	CA 441-3 Connected	
259	CA 441-4 Connected	
260	CA 442-1 Connected	**Temperature monitor**
261	CA 442-2 Connected	
262	CA 442-3 Connected	
263	CA 442-4 Connected	
264	CA 443-0 Connected	**Master power monitor**
265	CA 443-1 Connected	
266	CA 443-2 Connected	
267	CA 443-3 Connected	
268	CA 443-4 Connected	
269	CA 442-5 Connected	**Exp. Temp monitor P1 and P2**
270	CA 442-6 Connected	**Exp. Temp monitor P3 and P4**
271	CA 781 Connected	**Exp. AO/DO module**
272	CA 441-1 DI 1 (P1)	**Leakage monitor 1 P1 or P1-P4**
273	CA 441-1 DI 2 (P1 or P2)	1= Leakage
274	CA 441-1 DI 3 (P1 or P3)	
275	CA 441-1 DI 4 (P1 or not used)	
276	CA 441-1 DI 1 Open circuit failure	1 = Open circuit failure
277	CA 441-1 DI 2 Open circuit failure	
278	CA 441-1 DI 3 Open circuit failure	
279	CA 441-1 DI 4 Open circuit failure	
280	CA 441-2 DI 1 (P2)	**Leakage monitor P2**
281	CA 441-2 DI 2 (P2)	1= Leakage
282	CA 441-2 DI 3 (P2)	
283	CA 441-2 DI 4 (Not used)	
284	CA 441-2 DI 1 Open circuit failure	1= Open circuit failure
285	CA 441-2 DI 2 Open circuit failure	
286	CA 441-2 DI 3 Open circuit failure	
287	CA 441-2 DI 4 Open circuit failure	

IO-Bit	Function	Note
288	CA 441-3 DI 1 (P3)	**Leakage monitor P3**
289	CA 441-3 DI 2 (P3)	1= Leakage
290	CA 441-3 DI 3 (P3)	
291	CA 441-3 DI 4 (Not used)	
292	CA 441-3 DI 1 Open circuit failure	1= Open circuit failure
293	CA 441-3 DI 2 Open circuit failure	
294	CA 441-3 DI 3 Open circuit failure	
295	CA 441-3 DI 4 Open circuit failure	
296	CA 441-4 DI 1 (P4)	**Leakage monitor P4**
297	CA 441-4 DI 2 (P4)	1= Leakage
298	CA 441-4 DI 3 (P4)	
299	CA 441-4 DI 4 (Not used)	
300	CA 441-4 DI 1 Open circuit failure	1= Open circuit failure
301	CA 441-4 DI 2 Open circuit failure	
302	CA 441-4 DI 3 Open circuit failure	
303	CA 441-4 DI 4 Open circuit failure	
304	CA 442-1 T1 High temp 1(P1)	**Temperature monitor 1 P1 or P1-P4**
305	CA 442-1 T2 High temp 2(P1 or P2)	1 = High Temperature
306	CA-442-1 T3 High temp 3(P1 or P3)	
307	CA442-1 T4 High Temp (P1 or P4)	
308	CA-422-1 High Vibration (P1)	1 = High vibration P1
309	CA-442-1 T1 Cable Error	1=Open circuit or short circuit
310	CA-442-1 T2 Cable Error	
311	CA-442-1 T3 Cable Error	
312	CA-442-1 T4 Cable Error	
313-319	Spare = 0	
320	CA 442-2 T1 High temp 1 (P2)	**Temperature monitor 2 P2**
321	CA 442-2 T2 High temp 2 (P2)	1 = High Temperature
322	CA-442-2 T3 High temp 3 (P2)	
323	CA-442-2 T4 High temp 4 (P2)	
324	CA-422-2 High Vibration (P2)	1 = High vibration P2
325	CA-442-2 T1 Cable Error	1=Open circuit or short circuit
326	CA-442-2 T2 Cable Error	
327	CA-442-2 T3 Cable Error	
328	CA-442-2 T4 Cable Error	
329-335	Spare=0	
336	CA 442-3 T1 High temp 1 (P3)	**Temperature monitor 3 P3**
337	CA 442-3 T2 High temp 2 (P3)	1 = High Temperature
338	CA-442-3 T3 High temp 3 (P3)	
339	CA-442-3 T4 High temp 4 (P3)	
340	CA-422-3 High Vibration (P3)	1 = High vibration P3
341	CA-442-3 T1 Cable Error	1=Open circuit or short circuit
342	CA-442-3 T2 Cable Error	
343	CA-442-3 T3 Cable Error	
344	CA-442-3 T4 Cable Error	
345-351	Spare=0	
352	CA 442-4 T1 High temp 1 (P4)	**Temperature monitor 4 P4**
353	CA 442-4 T2 High temp 2 (P4)	1 = High Temperature
354	CA-442-4 T3 High temp 3 (P4)	
355	CA-422-4 T4 High temp 4 (P4)	
356	CA-422-4 High Vibration (P4)	1 = High vibration P4
357	CA-442-4 T1 Cable Error	1=Open circuit or short circuit
358	CA-442-4 T2 Cable Error	
359	CA-442-4 T3 Cable Error	
360	CA-442-4 T4 Cable Error	
361-367	Spare=0	

IO-Bit	Function	Note
368	CA442-5 T1 High temp stator L2 (P1)	**Temp monitor 5 P1/P2**
369	CA442-5 T2 High temp stator L3 (P1)	
370	CA442-5 T3 High temp stator L2 (P2)	
371	CA442-5 T4 High temp stator L3 (P2)	
372	CA442-5 Not Used	
373	CA442-5 T1 Cable Error	
374	CA442-5 T2 Cable Error	
375	CA442-5 T3 Cable Error	
376	CA442-5 T4 Cable Error	
377-383	Spare = 0	
384	CA442-6 T1 High temp stator L2 (P3)	**Temp monitor 6 P3/P4**
385	CA442-6 T2 High temp stator L3 (P3)	
386	CA442-6 T3 High temp stator L2 (P4)	
387	CA442-6 T4 High temp stator L3 (P4)	
388	CA442-6 Not used	
389	CA442-6 T1 Cable Error	
390	CA442-6 T2 Cable Error	
391	CA442-6 T3 Cable Error	
392	CA442-6 T4 Cable Error	
393-399	Spare = 0	

1.5 Comp. Pump Status (P1-P4)

Firmware PC 441 Ver. 1.04 or higher.

IO-Bit P1	IO-Bit P2	IO-Bit P3	IO-Bit P4	Function	Note
400	408	416	424	Pump Blocked	Extern. or Internal
401	409	417	425	Pump Error Blocked	Pump Internal Failure
402	410	418	426	Pump External Blocked	External Reason to Block
403	411	419	427	Leakage	Comb. of all Leakage. Sensors
404	412	420	428	High Temperature*	Comb. of all Temp. Sensors
405	413	421	429	Dry Run Blocked	
406	414	422	430	ITT MinCas Leakage	Simulate ITT MiniCas
407	415	423	431	ITT MiniCas High Temp.	" "

* Remote reset possible (if required)

Firmware PC 441 Ver 1.30 or higher

IO-Bit P1	IO-Bit P2	IO-Bit P3	IO-Bit P4	Function	Note
432	440	448	456	High Temperature stator T1(L1)	CA442
433	441	449	457	High Temperature stator T4(L1)	CA442
434	442	450	458	Internal flag	
435	443	451	459	Internal flag	
436	444	452	460	Internal flag	
437	445	453	461	High Temp latched (man reset)	Require manual reset
439	446	454	462	Internal flag	
439	447	455	463	Start count pump reverse trig	V.1.60
IO-Bit P1	IO-Bit P2	IO-Bit P3	IO-Bit P4	Function	Note
464	472	480	488	High Temperature stator L2	CA442-5 and CA442-6
465	473	481	489	High Temperature stator L3	CA442-5 and CA442-6
466	474	482	490	CA 622 master running	Modbus pump VFD OK
467	475	483	491	Drive NOT enabled	0=OK to start
468	476	484	492	Drive fault	Motor drive trip
469	477	485	493	CA 622 master **running**	Modbus pump power monitor OK
470	478	486	494	Reset Motor Protector	Conventional or motor drive trip
471	479	487	495	Spare=0	

1.6 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=PC 442 disconn/1=System disconn

1.7 System info

IO-Bit	Function	Note
992	Ackn. Personal alarm	
993	Spare = 0	
994	Local mode	
995	Modem error	
996	Line error	
997	Remote writes blocked	Version 1.69

1.8 Alarm status

	IO-Bit	Octal	Hex
Alarm 0 = IO 1024 and so on	1024-1275	2000-2373	400-4FB

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	Low supply voltage
3	1027	NV checksum error
4	1028	Personal alarm
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	Drain pump float
18	1042	Sensor error
19	1043	No run confirm mixer
20	1044	Fallen Motor Protector Mixer
21	1045	No run confirm drain pump
22	1046	Fallen Motor Protector Drain pump
23	1047	To many pumps blocked
24	1048	Motor protector Drain pump/Mixer reset error
25	1049	Emergency Power Mode
26	1050	Gen. alarm incoming phase missing
27	1051	Gen. alarm over voltage
28	1052	Gen. alarm under voltage
29	1053	Gen. alarm unbalanced phase voltages
30	1054	Gen. alarm high frequency
31	1055	Gen, alarm low frequency
		Pump 1
32	1056	P1 : No run confirm
33	1057	P1 : Fallen motor protector
34	1058	P1 : High motor current
35	1059	P1 : Low motor current
36	1060	P1 : D.IN Leakage
37	1061	P1 : D.IN High temperature
38	1062	P1 : Low pump capacity
39	1063	P1 : D.IN Pump Error
40	1064	P1 : Phase missing
41	1065	P1 : Motor protector reset unsuccessful
42	1066	P1 : Max continuous runtime
43	1067	P1 : Alarm blocked
44	1068	P1 : Dry run (low Cos φ)
45	1069	P1 : Not in auto
46	1070	P1 : Motor drive - CA 622 com error (Modbus timeout)
47	1071	P1 : Drive fault (tripped VFD or soft starter)
48	1072	P1 : Leakage 1 (Oil chamber) CA 441 Field Bus (CAN)
49	1073	P1 : Leakage 2 (Connect chamber) “
50	1074	P1 : Leakage 3 (Motor housing) “

51	1075	P1 : Power monitor - CA 622 com error (Modbus timeout)
52	1076	P1 : High temperature 1 (Stator wiring) CA 442 Field Bus (CAN)
53	1077	P1 : High temperature 2 (Upper bearing) "
54	1078	P1 : High temperature 3 (Lower bearing) "
55	1079	P1 : High vibrations CA 442 Field Bus (CAN)
56	1080	Unused
57	1081	P1 : High temperature stator L2 CA442-5 T1 (CAN)
58	1082	P1 : High temperature stator L3 CA442-5 T2 (CAN
59	1083	P1 : CA 442-5 T1 Cable error
60	1084	P1 : CA 442-5 T2 Cable error
61	1085	P1 : Unused
62	1086	P1 : Max reverse attempts
63	1087	P1 : Unused
		Pump 2
64	1088	P2 : No run confirm
65	1089	P2 : Fallen motor protector
66	1090	P2 : High motor current
67	1091	P2 : Low motor current
68	1092	P2 : D.IN Leakage
69	1093	P2 : D.IN High Temperature
70	1094	P2 : Low pump capacity
71	1095	P2 : D.IN Pump Error
72	1096	P2 : Phase Missing
73	1097	P2 : Motor protector reset error
74	1098	P2 : Max continuous runtime
75	1099	P2 : Alarm blocked
76	1100	P2 : Dry run
77	1101	P2 : Not in auto
78	1102	P2 : Motor drive - CA 622 com error (Modbus timeout)
79	1103	P2 : Drive fault (tripped VFD or soft starter)
80	1104	P2 : Leakage 1 (Oil chamber) CA 441 Field Bus (CAN)
81	1105	P2 : Leakage 2 (Connect chamber) "
82	1106	P2 : Leakage 3 (Motor housing) "
83	1107	P2 : Power monitor - CA 622 com error (Modbus timeout)
84	1108	P2 : High temperature 1 (Stator) CA 442 Field Bus (CAN)
85	1109	P2 : High temperature 2 (Upper bearing) "
86	1110	P2 : High temperature 3 (Lower bearing) "
87	1111	P2 : High Vibrations "
88	1112	Unused
89	1113	P2 : High temperature stator L2 CA442-5 T3 (CAN)
90	1114	P2 : High temperature stator L3 CA442-5 T4 (CAN)
91	1115	P2 : CA 442-5 T3 Cable error
92	1116	P2 : CA 442-5 T4 Cable error
93	1117	P2 : Unused
94	1118	P2 : Max reverse attempts
95	1119	P2: Unused
		Pump 3
96	1120	P3 : No run confirm
97	1121	P3 : Fallen motor protector
98	1122	P3 : High motor current
99	1123	P3 : Low motor current
100	1124	P3 : D.IN Leakage
101	1125	P3 : D.IN High temperature
102	1126	P3 : Low pump capacity
103	1127	P3 : D.IN Pump Error
104	1128	P3 : Phase missing
105	1129	P3 : Motor protector reset error
106	1130	P3 : Max Continuous run time
107	1131	P3 : Alarm blocked
108	1132	P3 : Dry run
109	1133	P3 : Not in auto
Alarm no.	IO-Bit	Description

110	1134	P3 : Motor drive - CA 622 com error (Modbus timeout)
111	1135	P3 : Drive fault (tripped VFD or soft starter)
112	1136	P3 : Leakage 1 CA 441 Field Bus (CAN)
113	1137	P3 : Leakage 2 "
114	1138	P3 : Leakage 3 "
115	1139	P3 : Power monitor - CA 622 com error (Modbus timeout)
116	1140	P3 : High temperature 1 CA 442 Field Bus (CAN)
117	1141	P3 : High temperature 2 "
118	1142	P3 : High temperature 3 "
119	1143	P3 : High vibrations "
120	1144	Unused
121	1145	P3 : High temperature stator L2 CA442-6 T1 (CAN)
122	1146	P3 : High temperature stator L3 CA442-6 T2 (CAN)
123	1147	P3 : CA 442-6 T1 Cable error
124	1148	P3 : CA 442-6 T2 Cable error
125	1149	P3 : Unused
126	1150	P3 : Max reverse attempts
127	1151	P3 : Unused
		Pump 4
128	1152	P4 : No run confirm
129	1153	P4 : Fallen motor protector
130	1154	P4 : High motor current
131	1155	P4 : Low motor current
132	1156	P4 : D.IN Leakage
133	1157	P4 : D.IN high temperature
134	1158	P4 : Low pump capacity
135	1159	P4 : D.IN Pump Error
136	1160	P4 : Phase missing
137	1161	P4 : Motor protector reset error
138	1162	P4 : Max continuous runtime
139	1163	P4 : Alarm blocked
140	1164	P4 : Dry run
141	1165	P4 : Not in auto
142	1166	P4 : Motor drive - CA 622 com error (Modbus timeout)
143	1167	P4 : Drive fault (tripped VFD or soft starter)
144	1168	P4 : Leakage 1 CA 441 Field Bus (CAN)
145	1169	P4 : Leakage 2 "
146	1170	P4 : Leakage 3 "
147	1171	P4 : Power monitor - CA 622 com error (Modbus timeout)
148	1172	P4 : High temperature 1 CA 442 Field Bus (CAN)
149	1173	P4 : High temperature 2 "
150	1174	P4 : High temperature 3 "
151	1175	P4 : High vibration "
152	1176	Unused
153	1177	P4 : High temperature stator L2 CA442-6 T3 (CAN)
154	1178	P4 : High temperature stator L3 CA442-6 T4 (CAN)
155	1179	P4 : CA 442-6 T3 Cable error
156	1180	P4 : CA 442-6 T4 Cable error
157	1181	P4 : Unused
158	1182	P4 : Max reverse attempts
159	1183	P4: Unused
		AI User
160	1184	High alarm free choice AI2
161	1185	Low alarm free choice AI2
162	1186	High alarm free choice AI3
163	1187	Low alarm free choice AI3
164	1188	High alarm free choice AI4
Alarm no.	IO-Bit	Description
165	1189	Low alarm free choice AI4
166	1190	High alarm free choice AI5
167	1191	Low alarm free choice AI5
		Pulse channels

168	1192	High precipitation pulse channel 1	
169	1193	High effect pulse channel 1	
170	1194	High flow pulse channel 1	
171	1195	Low flow pulse channel 1	
172	1196	High precipitation pulse channel 2	
173	1197	High effect pulse channel 2	
174	1198	High flow pulse channel 2	
175	1199	Low flow pulse channel 2	
176	1200	High precipitation pulse channel 3	
177	1201	High effect pulse channel 3	
178	1202	High flow pulse channel 3	
179	1203	Low flow pulse channel 3	
180	1204	High precipitation pulse channel 4	
181	1205	High effect pulse channel 4	
182	1206	High flow pulse channel 4	
183	1207	Low flow pulse channel 4	
		Communication failures/ Cable errors	
184	1208	CA 441-1 CAN Communication failure	Field Bus
185	1209	CA 441-2 CAN Communication failure	“
186	1210	CA 441-3 CAN Communication failure	“
187	1211	CA 441-4 CAN Communication failure	“
188	1212	CA 442-1 CAN Communication failure	“
189	1213	CA 442-2 CAN Communication failure	“
190	1214	CA 442-3 CAN Communication failure	“
191	1215	CA 442-4 CAN Communication failure	“
192	1216	CA 443-0 CAN Communication failure	“
193	1217	CA 443-1 CAN Communication failure	“
194	1218	CA 443-2 CAN Communication failure	“
195	1219	CA 443-3 CAN Communication failure	“
196	1220	CA 443-4 CAN Communication failure	“
197	1221	Modem error	
198	1222	Line Error	
199	1223	Comb. Field bus error alarm	
200	1224	CA 441-1 IN 1 Cable/sensor error . Open circuit	
201	1225	CA 441-1 IN 2 Cable/sensor error	
202	1226	CA 441-1 IN 3 Cable/sensor error	
203	1227	CA 441-1 IN 4 Cable/sensor error	
204	1228	CA 441-2 IN 1 Cable/sensor error	
205	1229	CA 441-2 IN 2 Cable/sensor error	
206	1230	CA 441-2 IN 3 Cable/sensor error	
207	1231	CA 441-2 IN 4 Cable/sensor error	
208	1232	CA 441-3 IN 1 Cable/sensor error	
209	1233	CA 441-3 IN 2 Cable/sensor error	
210	1234	CA 441-3 IN 3 Cable/sensor error	
211	1235	CA 441-3 IN 4 Cable/sensor error	
212	1236	CA 441-4 IN 1 Cable/sensor error	
213	1237	CA 441-4 IN 2 Cable/sensor error	
214	1238	CA 441-4 IN 3 Cable/sensor error	
215	1239	CA 441-4 IN 4 Cable /sensor error	

Alarm no.	IO-Bit	Description
216	1240	CA 442-1 IN 1 Cable error. Open circuit or short circuit
217	1241	CA 442-1 IN 2 Cable error
218	1242	CA 442-1 IN 3 Cable error
219	1243	CA 442-1 IN 4 Cable error
220	1244	CA 442-2 IN 1 Cable error
221	1245	CA 442-2 IN 2 Cable error
222	1246	CA 442-2 IN 3 Cable error
223	1247	CA 442-2 IN 4 Cable error
224	1248	CA 442-3 IN 1 Cable error
225	1249	CA 442-3 IN 2 Cable error
226	1250	CA 442-3 IN 3 Cable error
227	1251	CA 442-3 IN 4 Cable error
228	1252	CA 442-4 IN 1 Cable error
229	1253	CA 442-4 IN 2 Cable error
230	1254	CA 442-4 IN 3 Cable error
231	1255	CA 442-4 IN 4 Cable error
232	1256	Alarm digital input 1 Type = Alarm Input
233	1257	Alarm digital input 2
234	1258	Alarm digital input 3
235	1259	Alarm digital input 4
236	1260	Alarm digital input 5
237	1261	Alarm digital input 6
238	1262	Alarm digital input 7
239	1263	Alarm digital input 8
240	1264	Alarm digital input 9
241	1265	Alarm digital input 10
242	1266	Alarm digital input 11
243	1267	Alarm digital input 12
244	1268	Alarm digital input 13
245	1269	Alarm digital input 14
246	1270	Alarm digital input 15
247	1271	Alarm digital input 16
248	1272	CA 442-5 CAN Communication failure. Extra Temp. Monitor P1 and P2
249	1273	CA 442-6 CAN Communication failure. Extra Temp. Monitor P3 and P4
250	1274	CA 781 CAN Communication failure AO/DO Exp. Module
251	1275	CA 622 CAN Communication failure Modbus Master -> VFD
252	1276	Main Power monitor - CA 622 com error (Modbus timeout)

1.9 Latched alarm status

	IO-Bit	Octal	Hex
Alarm 0 = IO 1280 and so on	1280-1531	2400-2773	500-5FB

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.

1.10 Acknowledged alarms

	IO-Bit	Octal	Hex
Alarm 0 = IO 1536 and so on	1536-1787	3000-3373	600-6FB

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 PC 441 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.

1.11 Pending alarms

	IO-Bit	Octal	Hex
Alarm 0 = IO 1792 and so on	1792-2043	3400-3773	700-7FB

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

1.12 Configurations bits

Pit flags 1 : Same as bit mapped register R2010.

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	Start Level Tracking	0=Off/ 1=On
2052	Sensor type connected	0=Analogue sensor/ 1= Start/stop floats
2053	Alternate	0=Every pump stop / 1=Last pump stop
2054	Runtime alternation	0=Off / 1=On
2055	Start pump on level change	0=Off / 1=On
2056	Stop pump on level change	0=Off / 1=On
2057	Alternative stop level	0=Off / 1=On
2058	Inflow calculation	0=Off / 1=On
2059	Calc. pump capacity	0=Off / 1=On
2060	Backup run P1	0=Off / 1= On
2061	Backup run P2	0=Off / 1= On
2062	Backup run P3	0=Off/ 1=On
2063	Backup run P4	0=Off/ 1=On

Pit flags 2 : Same as bit mapped register R2011.

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	P1 in primary pump group	0=No / 1=Yes
2071	P2 in primary pump group	0=No / 1=Yes
2072	P3 in primary pump group	0=No / 1=Yes
2073	P4 in primary pump group	0=No / 1=Yes
2074	Station Application	0=Pump Controller / 1= Pump monitor (v1.14)
2075	Over voltage block	0=Off / 1=On Power monitor CA 443-0
2076	Under voltage block	0=Off / 1=On
2077	Unbalanced voltages block	0=Off / 1=On
2078	High freq. block	0=Off / 1=On
2079	Low freq. block	0=Off / 1=On

Pump 1-4 flags 1 : Same as bit mapped register : R2200/R2250/R2300/R2350

IO-Bit P1	IO-Bit P2	IO-Bit P3	IO-Bit P4	Function	Note
2080	2112	2144	2176	Relay Control pump	0=No / 1= Yes
2081	2113	2145	2177	Auto reset motor protector	0=Off / 1= On
2082	2114	2146	2178	Control run (pump exercise)	0=Off / 1= On
2083	2115	2147	2179	Pump in alternation group	0=No / 1= Yes
2084	2116	2148	2180	Alternative stop level active	0=Off / 1= On
2085	2117	2149	2181	Max Cont. runtime stop pump	1=No/ 1= Yes
2086	2118	2150	2182	Dry run stop pump	1=No/ 1= Yes
2087	2119	2151	2183	Reversing pump	1=No /1 = Yes
2088	2120	2152	2184	Leakage 1 Oil chamber stop pump	1=No /1= Yes
2089	2121	2153	2185	Leakage 2 Con chamber stop pump	1=No /1= Yes
2090	2122	2154	2186	Leakage 3 Mot housing stop pump	1=No /1= Yes
2091	2123	2155	2187	Type of motor protector	0=Conventional, 1=Motor_Drive (VFD)
2092	2124	2156	2188	Hi temp stator wiring stop pump	1=No /1= Yes
2093	2125	2157	2189	Hi temp upper bearing stop pump	1=No /1=Yes
2094	2126	2158	2190	Hi temp lower bearing stop pump	1=No /1=Yes
2095	2127	2159	2191	High vibration stop pump	1=No /1= Yes

Pump 1-4 flags 2 : Same as bit mapped register : R2201/R2252/R2301/R2351

IO-Bit P1	IO-Bit P2	IO-Bit P3	IO-Bit P4	Function	Note
2096	2128	2160	2192	Alarm no run confirm block pump	1=No /1= Yes
2097	2129	2161	2193	Alarm fallen M.prot block pump	1=No /1= Yes
2098	2130	2162	2194	Alarm high curr. block pump	1=No /1= Yes
2099	2131	2163	2195	Alarm low curr. block pump	1=No /1= Yes
2100	2132	2164	2196	Alarm D.IN leakage block pump	1=No /1= Yes
2101	2133	2165	2197	Alarm D.IN high temp. block pump	1=No /1=Yes
2102	2134	2166	2198	Alarm low capacity block pump	1=No /1=Yes
2103	2135	2167	2199	Alarm D.IN pump fail block pump	1=No /1= Yes
2104	2136	2168	2200	Alarm leakage 1 block pump	1=No /1= Yes
2105	2137	2169	2201	Alarm leakage 2 block pump	1=No /1= Yes
2106	2138	2170	2202	Alarm leakage 3 block pump	1=No /1= Yes
2107	2139	2171	2203	Alarm Dry Run block pump	1=No /1= Yes
2108	2140	2172	2204	Alarm high temp 1 block pump	1=No /1= Yes
2109	2141	2173	2205	Alarm high temp 2 block pump	1=No /1= Yes
2110	2142	2174	2206	Alarm high temp 3 block pump	1=No/ 1= Yes
2111	2143	2175	2207	Alarm high vibration block pump	1=No/ 1=Yes

Field Bus Flags (CAN) : Same as bit mapped register : 4170 + 4171

IO-Bit	Function	Note
2208	CA 441-1 Connected to field bus	0=No / 1=Yes Leakage monitor
2209	CA 441-2 Connected to field bus	0=No / 1=Yes
2210	CA 441-3 Connected to field bus	0=No / 1=Yes
2211	CA 441-4 Connected to field bus	0=No / 1=Yes
2212	CA 442-1 Connected to field bus	0=No / 1=Yes Temperature monitor
2213	CA 442-2 Connected to field bus	0=No / 1=Yes
2214	CA 442-3 Connected to field bus	0=No / 1=Yes
2215	CA 442-4 Connected to field bus	0=No / 1=Yes
2216	CA 443-0 Connected to field bus	0=No / 1=Yes Power monitor
2217	CA 443-1 Connected to field bus	0=No / 1=Yes
2218	CA 443-2 Connected to field bus	0=No / 1=Yes
2219	CA 443-3 Connected to field bus	0=No / 1=Yes
2220	CA 443-4 Connected to field bus	0=No / 1=Yes
2221	CA 442-5 Connected to field bus	0=No / 1=Yes Exp. Temp. monitor P1/P2
2222	CA 442-6 Connected to field bus	0=No / 1=Yes Exp. Temp. monitor P3/P4
2223	CA 781 Connected to field bus	0=No / 1=Yes Exp. AO/DO
2224	CA 622 Connected to field bus	0=No / 1=Yes Exp. Modbus Master -> VFD

1.13 Text Addresses

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

Address(Hex)	Description	Scale/Unit/Note
1	Analogue in 2	User text
2	Analogue in 3	User text
3	Analogue in 4	User text
4	Analogue in 5	User text
101	Analogue in 2	User unit
102	Analogue in 3	User unit
103	Analogue in 4	User unit
104	Analogue in 5	User unit

1.14 Digital input alarms

Address(Hex)	Description	
300	Digital in 1	DI alarm text
301	Digital in 2	DI alarm text
302	Digital in 3	DI alarm text
303	Digital in 4	DI alarm text
304	Digital in 5	DI alarm text
305	Digital in 6	DI alarm text
306	Digital in 7	DI alarm text
307	Digital in 8	DI alarm text
308	Digital in 9	DI alarm text
309	Digital in 10	DI alarm text
30A	Digital in 11	DI alarm text
30B	Digital in 12	DI alarm text
30c	Digital in 13	DI alarm text
30D	Digital in 14	DI alarm text
30E	Digital in 15	DI alarm text
30F	Digital in16	DI alarm text

1.15 Pump Tag Name

Address(Hex)	Description	
590	Pump 1	Tag Name (max 11 char)
591	Pump 2	Tag Name
592	Pump 3	Tag Name
593	Pump 4	Tag Name

1.16 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 Fallback SMS 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 User name
0819	GPRS Password
0820	Net operator GSM/GPRS
0830	Station name
0831	Id string to send on connect

1.17 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(yymmddmmss)[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	

2 PC 441 COMLI/Modbus Register

2.1 Remote/Local status

Register no	Description	Scale factor/ unit / note
0	Local Mode	1 = Local, 8 = Digital Input Block remote data

2.2 Analogue inputs/Outputs in engineering units

Register no	Description	Scale factor/ unit / note
1	AIN 1. Pit level	0.01 m (0.01ft)
2	AIN 2. Current P1/User	0.1 A / User defined
3	AIN 3. Current P2/User	0.1 A / User defined
4	AIN 4. Current P3/User	0.1 A / User defined
5	AIN 5. Current P4 /Pressure/User	0.1 A / 0.1 bar / User defined (0.1 PSI)
8	AO 1. mA output	0.001 mA
9	AO 2. mA output	0.001 mA

2.3 Actual values in engineering units

Register no	Description	Scale factor/ unit / note
10	Inflow	0.1 l/s (1 GPM)
11	Outflow	0.1 l/s (1 GPM)
12	Overflow level	1 mm (0.01 Inch)
13	Overflow flow m3/h	0.1 m3/h (1 GPM)
14	Overflow flow l /s	0.1 l/s (1 GPM)
15	Last pump capacity P1	0.1 l/s (1 GPM)
16	Last pump capacity P2	0.1 l/s (1 GPM)
17	Last pump capacity P3	0.1 l/s (1 GPM)
18	Last pump capacity P4	0.1 l/s (1 GPM)
19	Precipitation/Effect/Flow Ch 1	0.1 l/s*ha/ 0.1 kW/m3/h (0.01 inch/h, 1 GPM)
20	Precipitation/Effect/Flow Ch 2	0.1 l/s*ha/ 0.1 kW/m3/h (0.01 inch/h, 1 GPM)
21	Precipitation/Effect/Flow Ch 3	0.1 l/s*ha/ 0.1 kW/m3/h (0.01 inch/h, 1 GPM)
22	Precipitation/Effect/Flow Ch 4	0.1 l/s*ha/ 0.1 kW/m3/h (0.01 inch/h, 1 GPM)
23	Supply voltage	0.1 V
24	AIN 1 mA	0.001 mA
25	AIN 2 mA	0.001 mA
26	AIN 3 mA	0.001 mA
27	AIN 4 mA	0.001 mA
28	AIN 5 mA	0.001 mA
29	Pit level above sea	0.01 m (0.01ft) Reg 1 with sea level offset added
33	Secondary Pit Level	0.01 m (0.01ft) Reg 1 with sea level offset added
35	Pit Level Difference	+-0.01 m (0.01ft)
36	Back Pressure	0.1 bar (0.1 PSI)
37	Measured Pump Head	0.01 m (0.01ft) Back pressure sensor relative pump outlet
38	Actual Pump Head	0.01 m (0.01ft) Measured Pump Head-Pit level. Used in outflow calc. with pump curve align
39	Max no pumps allowed to run	for current power mode (mains or generator)

All temperatures in °F. If US units selected.

40	Temperature 1 P1	0.1 °C Normally stator (°F) CA 442-1 Pt100 Sensor
41	Temperature 2 P1	0.1 °C Normally upper bearing
42	Temperature 3 P1	0.1 °C Normally lower bearing
43	Temperature 4 P1	0.1 °C Normally stator
44	Vibrations P1	0.1 mm/s (0.01 Inch/s)
45	Temperature 1 P2	0.1 °C Normally stator
46	Temperature 2 P2	0.1 °C Normally upper bearing
47	Temperature 3 P2	0.1 °C Normally lower bearing
48	Temperature 4 P2	0.1 °C Normally stator
49	Vibrations P2	0.1 mm/s (0.01 Inch/h)
50	Temperature 1 P3	0.1 °C Normally stator

51	Temperature 2 P3	0.1 °C Normally upper bearing	
52	Temperature 3 P3	0.1 °C Normally lower bearing	
53	Temperature 4 P3	0.1 °C Normally stator	
54	Vibrations P3	0.1 mm/s (0.01 Inch/h)	
55	Temperature 1 P4	0.1 °C Normally stator	
56	Temperature 2 P4	0.1 °C Normally upper bearing	
57	Temperature 3 P4	0.1 °C Normally lower bearing	
58	Temperature 4 P4	0.1 °C Normally stator	
59	Vibrations P4	0.1 mm/s (0.01 Inch/h)	
60	Main Effect	0.1 kW	Power monitor CA 443-0
61	Main voltage L_1	0.1 V	
62	Main voltage L_2	0.1 V	
63	Main voltage L_3	0.1 V	
64	Main frequency	0.01 Hz	
65	Main current L1	0.1 A	
66	Main current L2	0.1 A	
67	Main current L3	0.1 A	
70	P1 Effect	0.1 kW	Power monitor CA 443-1
71	P1 Cos φ	0.01	
72	P1 Current	0.1 A Max of L1,L2 and L3	
73	P1 Current L1	0.1 A	
74	P1 Current L2	0.1 A	
75	P1 Current L3	0.1 A	
76	P1 L1-L2 voltage	0.1 V	
77	P1 L2-L3 voltage	0.1 V	
78	P1 L3-L1 voltage	0.1 V	
79	P1 Average LL voltage	0.1 V	
80	P2 Effect	0.1 kW	Power monitor CA 443-2
81	P2 Cos φ	0.01	
82	P2 Current	0.1 A Max of L1,L2 and L3	
83	P2 Current L1	0.1 A	
84	P2 Current L2	0.1 A	
85	P2 Current L3	0.1 A	
86	P2 L1-L2 voltage	0.1 V	
87	P2 L2-L3 voltage	0.1 V	
88	P2 L3-L1 voltage	0.1 V	
89	P2 Average LL voltage	0.1 V	
90	P3 Effect	0.1 kW	Power monitor CA 443-3
91	P3 Cos φ	0.01	
92	P3 Current	0.1 A Max of L1,L2 and L3	
93	P3 Current L1	0.1 A	
94	P3 Current L2	0.1 A	
95	P3 Current L3	0.1 A	
96	P3 L1-L2 voltage	0.1 V	
97	P3 L2-L3 voltage	0.1 V	
98	P3 L3-L1 voltage	0.1 V	
99	P3 Average LL voltage	0.1 V	
100	P4 Effect	0.1 kW	Power monitor CA 443-4
101	P4 Cos φ	0.01	
102	P3 Current	0.1 A Max of L1,L2 and L3	
103	P4 Current L1	0.1 A	
104	P4 Current L2	0.1 A	
105	P4 Current L3	0.1 A	
106	P4 L1-L2 voltage	0.1 V	
107	P4 L2-L3 voltage	0.1 V	
108	P4 L3-L1 voltage	0.1 V	
109	P4 Average LL voltage	0.1 V	

Register no	Description	Scale factor/ unit / note	
110	Prog. Version	100 = Prog Ver 1.00	Master power monitor CA443-0
111	Main Phase L1	+/- 90 °	
112	Main Phase L2	+/- 90 °	
113	Main Phase L3	+/- 90 °	
114	Main Phase L1-L2	+/-359°	
115	Main Phase L1-L3	+/-359°	
116	Main Cos φ	0.01	
117	Main L1-L2 voltage	0.1 V	
118	Main L2-L3 voltage	0.1 V	
119	Main L3-L1 voltage	0.1 V	
120	Prog Version	100 = Prog Ver 1.00	Power monitor CA443-1
121	P1 Phase L1	+/- 90 °	
122	P1 Phase L2	+/- 90 °	
123	P1 Phase L3	+/- 90 °	
124	P1 Phase L1-L2	+/-359°	
125	P1 Phase L1-L3	+/-359°	
126	P1 Voltage L1	0.1 V	
127	P1 Voltage L2	0.1 V	
128	P1 Voltage L3	0.1 V	
129	P1 Frequency	0.01 Hz	
130	Prog Version	100 = Prog Ver 1.00	Power monitor CA443-2
131	P2 Phase L1	+/- 90 °	
132	P2 Phase L2	+/- 90 °	
133	P2 Phase L3	+/- 90 °	
134	P2 Phase L1-L2	+/-359°	
135	P2 Phase L1-L3	+/-359°	
136	P2 Voltage L1	0.1 V	
137	P2 Voltage L2	0.1 V	
138	P2 Voltage L3	0.1 V	
139	P2 Frequency	0.01 Hz	
140	Prog Version	100 = Prog Ver 1.00	Power monitor CA443-3
141	P3 Phase L1	+/- 90 °	
142	P3 Phase L2	+/- 90 °	
143	P3 Phase L3	+/- 90 °	
144	P3 Phase L1-L2	+/-359°	
145	P3 Phase L1-L3	+/-359°	
146	P3 Voltage L1	0.1 V	
147	P3 Voltage L2	0.1 V	
148	P3 Voltage L3	0.1 V	
149	P3 Frequency	0.01 Hz	
150	Prog Version	100 = Prog Ver 1.00	Power monitor CA443-4
151	P4 Phase L1	+/- 90 °	
152	P4 Phase L2	+/- 90 °	
153	P4 Phase L3	+/- 90 °	
154	P4 Phase L1-L2	+/-359°	
155	P4 Phase L1-L3	+/-359°	
156	P4 Voltage L1	0.1 V	
157	P4 Voltage L2	0.1 V	
158	P4 Voltage L3	0.1 V	
159	P4 Frequency	0.01 Hz	

Register no	Description	Scale factor/ unit / note	
160	Prog Version	100 = Prog Ver 1.00	Leakage monitor CA441-1
161	DI1 AD Value	0-100.00%	
162	DI2 AD Value	0-100.00%	
163	DI3 AD Value	0-100.00%	
164	DI4 AD Value	0-100.00%	
165	Prog Version		Leakage monitor CA441-2
166	DI1 AD Value	0-100.00%	
167	DI2 AD Value	0-100.00%	
168	DI3 AD Value	0-100.00%	
169	DI4 AD Value	0-100.00%	
170	Prog Version		Leakage monitor CA441-3
171	DI1 AD Value	0-100.00%	
172	DI2 AD Value	0-100.00%	
173	DI3 AD Value	0-100.00%	
174	DI4 AD Value	0-100.00%	
175	Prog Version		Leakage monitor CA441-4
176	DI1 AD Value	0-100.00%	
177	DI2 AD Value	0-100.00%	
178	DI3 AD Value	0-100.00%	
179	DI4 AD Value	0-100.00%	
180	Prog Version		Temp. monitor CA442-1
181	mA-In Vibrations	0.001 mA	
182	T1 AD Value	-20.00-80.00 Pt100 / 0-100.00% Klixon/PTC	
183	T2		
184	T3		
185	T4		
186	T1 Limit		
187	T2		
188	T3		
189	T4		
190	Prog Version		Temp. monitor CA442-2
191	mA-In Vibrations	0.001 mA	
192	T1 AD Value	-20.00-80.00 Pt100 / 0-100.00% Klixon/PTC	
193	T2		
194	T3		
195	T4		
196	T1 Limit		
197	T2		
198	T3		
199	T4		
200	Prog Version		Temp. monitor CA442-3
201	mA-In Vibrations	0.001 mA	
202	T1 AD Value	-20.00-80.00 Pt100 / 0-100.00% Klixon/PTC	
203	T2		
204	T3		
205	T4		
206	T1 Limit		
207	T2		
208	T3		
209	T4		

Register no	Description	Scale factor/ unit / note
210	Prog Version	Temp. monitor CA442-4
211	mA-In Vibrations	0.001 mA
212	T1 AD Value	-20.00-80.00 Pt100 / 0-100.00% Klixon/PTC
213	T2	
214	T3	
215	T4	
216	T1 Limit	
217	T2	
218	T3	
219	T4	
220	PID Current set-point	0.01m (0.01ft)
221	PID Process value	0.01m (0.01f)t
222	PID Output signal	0.1%
223	PID Set-point flags	0=Intern set-point, 1 = Extern set-point (AI)
224	PID Output flags	0=Auto, 1=Manuel, 2=Blocked
240	Prog Version	Temp. monitor CA442-5
241	mA-In	0.001 mA
242	T1 AD Value	-20.00-80.00 Pt100 / 0-100.00% Klixon/PTC
243	T2	
244	T3	
245	T4	
246	T1 Limit	
247	T2	
248	T3	
249	T4	
250	Prog Version	Temp. monitor CA442-6
251	mA-In	0.001 mA
252	T1 AD Value	-20.00-80.00 Pt100 / 0-100.00% Klixon/PTC
253	T2	
254	T3	
255	T4	
256	T1 Limit	
257	T2	
258	T3	
259	T4	

CA 781 Exp. AO/DO module

260	Prog Version	Exp. AO/DO CA 781
261	AO 1. mA output	0.001 mA
262	AO 2. mA output	0.001 mA

CA 622 Exp. AO/DO module

264	Prog Version	Exp. AO/DO CA 781

CA 442-5 Exp. temp. module P1 nd P2

270	Temperature P1 stator L2	0.1 °C	(°F)	CA 442-5 T1	Pt100 Sensor
271	Temperature P1 stator L3	0.1 °C	(°F)	CA 442-5 T2	Pt100 Sensor
272	Temperature P2 stator L2	0.1 °C	(°F)	CA 442-5 T3	Pt100 Sensor
273	Temperature P2 stator L3	0.1 °C	(°F)	CA 442-5 T4	Pt100 Sensor

CA 442-5 Exp. temp. module P3 and P4

275	Temperature P3 stator L2	0.1 °C	(°F)	CA 442-6 T1	Pt100 Sensor
276	Temperature P3 stator L3	0.1 °C	(°F)	CA 442-6 T2	Pt100 Sensor
277	Temperature P4 stator L2	0.1 °C	(°F)	CA 442-6 T3	Pt100 Sensor
278	Temperature P4 stator L3	0.1 °C	(°F)	CA 442-6 T4	Pt100 Sensor

2.4 IO-bits 0-255

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

2.5 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	“ “ “ “ “	

2.6 GPRS status

Register no	Description	Scale factor/ unit / note
334	GPRS CSQ	Signal strength 0-31
335	GPRS connect count	
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

2.7 Can module HW version

Register no	Description	Scale factor/ unit / note
344	CA 511 HW version	0=not connected, 2=new NV chip
345	CA 781 HW version	0=not connected, 2=new NV chip
346	CA 622 HW version	0=not connected, 2=new NV chip
348	CA 441 - 1 HW version	0=not connected, 2=new NV chip
349	CA 441 - 2 HW version	0=not connected, 2=new NV chip
350	CA 441 - 3 HW version	0=not connected, 2=new NV chip
351	CA 441 - 4 HW version	0=not connected, 2=new NV chip
352	CA 442 - 1 HW version	0=not connected, 2=new NV chip
353	CA 442 - 2 HW version	0=not connected, 2=new NV chip
354	CA 442 - 3 HW version	0=not connected, 2=new NV chip
355	CA 442 - 4 HW version	0=not connected, 2=new NV chip
356	CA 442 - 5 HW version	0=not connected, 2=new NV chip
357	CA 442 - 6 HW version	0=not connected, 2=new NV chip
360	CA 442 - 0 HW version	0=not connected, 2=new NV chip
361	CA 442 - 1 HW version	0=not connected, 2=new NV chip
362	CA 442 - 2 HW version	0=not connected, 2=new NV chip
363	CA 442 - 3 HW version	0=not connected, 2=new NV chip
364	CA 442 - 4 HW version	0=not connected, 2=new NV chip

2.8 Raw AD values

Register no	Description	Scale factor/ unit / note
399	Factory reserved	
400	Factory reserved	
401	Factory reserved	
402-403	AI 1	Level
404-405	AI 2	Current P1/User
406-407	AI 3	Current P2/User
408-409	AI 4	Current P3/User
410-411	AI 5	Current P3/Back-Pressure/User

2.9 Unfiltered AI values

414	AI 1	Level	0.01%
415	AI 2	Current P1/User	0.01%
416	AI 3	Current P2/User	0.01%
417	AI 4	Current P3/User	0.01%
418	AI 5	Current P4/Backpressure/User	0.01%

2.10 Communication status

Register no	Description	Scale factor/ unit / note
Service port		
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	
Com port		
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	
Field bus (CAN)		
440	Error messages counter	
441	Ok messages counter	
USB Port		
460	Overflow counter	
461	Parity error counter	
462	Framing error counter	
463	Break counter	
464	Error messages counter	
465	Ok Messages counter	
466	Checksum error counter	

2.11 General info

Register no	Description	Scale factor/ unit / note
443	Program version	100 = 1.00
444	Special version	0 = Standard version
445	Station type	60=PC 441
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 (also in Reg 34)
451	CA 511 Firmware version	V.1.24 = current CA 511 version
583-584	Station number	Station identification for monitoring systems (32 bits fromV.1.44)
31-32	“ “	“ “ “ “

2.12 Modbus Drive status

Register no	Description	Scale factor/ unit / note	
480	P1 Set frequency	0.01 Hz	
481	P1 Actual frequency	0.01 Hz	
482	P1 Actual speed	1 RPM	
483	P1 Torque	0.1 %	
484	P1 Torque	0.1 Nm	
485	P1 Volt	0.1 V	
487	P1 Power	0.01 KW	
488	P1 Horse Power	0.01 hp	from ABB PSTx only
490	P2 Set frequency	0.01 Hz	
491	P2 Actual frequency	0.01 Hz	
492	P2 Actual speed	1 RPM	
493	P2 Torque	0.1 %	
494	P2 Torque	0.1 Nm	
495	P2 Volt	0.1 V	
497	P2 Power	0.01 KW	
498	P2 Horse Power	0.01 hp	from ABB PSTx only
500	P3 Set frequency	0.01 Hz	
501	P3 Actual frequency	0.01 Hz	
502	P3 Actual speed	1 RPM	
503	P3 Torque	0.1 %	
504	P3 Torque	0.1 Nm	
505	P3 Volt	0.1 V	
507	P3 Power	0.01 KW	
508	P3 Horse Power	0.01 hp	from ABB PSTx only
510	P4 Set frequency	0.01 Hz	
511	P4 Actual frequency	0.01 Hz	
512	P4 Actual speed	1 RPM	
513	P4 Torque	0.1 %	
514	P4 Torque	0.1 Nm	
515	P4 Volt	0.1 V	
517	P4 Power	0.01 KW	
818	P4 Horse Power	0.01 hp	from ABB PSTx only

2.13 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/P3/P4	0-4
993	Overflow flow	0-4
994	Pulse flow channel 1-4	0-4

2.14 Accumulated total values

Register no	Description	Scale factor/ unit / note	
1000-1001	Overflow count	times	
1002-1003	Overflow time	sec	
1004-1005	Overflow volume	0.1 m3	(1 gal)
1006-1007	Pumped volume	0.1 m3	(1 gal)
1008-1009	P1 runtime	sec	
1010-1011	P1 start count	times	
1012	P1 nominal cap.	0.1 l/s	(1 GPM)
1013	P2 nominal cap.	0.1 l/s	(1 GPM)
1014-1015	P2 runtime	sec	
1016-1017	P2 start count	times	
1018-1019	P3 runtime	sec	
1020-1021	P3 start count	times	
1022	P3 nominal cap.	0.1 l/s	(1 GPM)
1023	P4 nominal cap.	0.1 l/s	(1 GPM)
1024-1025	P4 runtime	sec	
1026-1027	P4 start count	times	
1028-1029	Pulse Ch 1	0.1 kWh/ mm/m3	(0.01 inch)
1030-1031	Pulse Ch 2	0.1 kWh/ mm/m3	(0.01 inch)
1032-1033	Pulse Ch 3	0.1 kWh/ mm/m3	(0.01 inch)
1034-1035	Pulse Ch 4	0.1 kWh/ mm/m3	(0.01 inch)
1036-1037	Energy P1	0.1 kWh	
1038-1039	Energy P2	0.1 kWh	
1040-1041	Energy P3	0.1 kWh	
1042-1043	Energy P4	0.1 kWh	
1044-1045	Total Energy	0.1 kWh	
1046-1047	Energy efficiency	0.001 kWh/m3	(1 kWh/Mgal)
1048-1049	Mixer runtime	sec	
1050-1051	Mixer start count	times	
1052-1053	Drain pump runtime	sec	
1054-1055	Drain pump start count	times	

2.15 Accumulated values today

Register no	Description	Scale factor/ unit / note	
1100-1101	Overflow count	times	
1102-1103	Overflow time	sec	
1104-1105	Overflow volume	0.1 m3	(1 gal)
1106-1107	Pumped volume	1 m3	(1 gal)
1108-1109	P1 runtime	sec	
1110-1111	P1 start count	times	
1112	P1 avg. cap.	0.1 l/s	(1 GPM)
1113	P2 avg. cap.	0.1 l/s	(1 GPM)
1114-1115	P2 runtime	sec	
1116-1117	P2 start count	times	
1118-1119	P3 runtime	sec	
1120-1121	P3 start count	times	
1122	P3 avg. cap.	0.1 l/s	(1 GPM)
1123	P4 avg. cap.	0.1 l/s	(1 GPM)
1124-1125	P4 runtime	sec	
1126-1127	P4 start count	times	
1128-1129	Pulse Ch 1	0.1 kWh/ mm/m3	(0.01 inch)
1130-1131	Pulse Ch 2	0.1 kWh/ mm/m3	(0.01 inch)
1132-1133	Pulse Ch 3	0.1 kWh/ mm/m3	(0.01 inch)
1134-1135	Pulse Ch 4	0.1 kWh/ mm/m3	(0.01 inch)
1136-1137	Energy P1	0.1 kWh	
1138-1139	Energy P2	0.1 kWh	
1140-1141	Energy P3	0.1 kWh	
1142-1143	Energy P4	0.1 kWh	
1144-1145	Total Energy	0.1 kWh	
1146-1147	Energy efficiency	0.001 kWh/m3	(1 kWh/Mgal)
1148-1149	Mixer runtime	sec	
1150-1151	Mixer start count	times	
1152-1153	Drain pump runtime	sec	
1154-1155	Drain pump start count	times	

2.16 Accumulated values yesterday

Register no	Description	Scale factor/ unit / note
1200-1201	Overflow count	times
1202-1203	Overflow time	sec
1204-1205	Overflow volume	0.1 m3 (1 gal)
1206-1207	Pumped volume	1 m3 (1 gal)
1208-1209	P1 runtime	sec
1210-1211	P1 start count	times
1212	P1 avg. cap.	0.1 l/s (1 GPM)
1213	P2 avg. cap.	0.1 l/s (1 GPM)
1214-1215	P2 runtime	sec
1216-1217	P2 start count	times
1218-1219	P3 runtime	sec
1220-1221	P3 start count	times
1222	P3 avg. cap.	0.1 l/s (1 GPM)
1223	P4 avg. cap.	0.1 l/s (1 GPM)
1224-1225	P4 runtime	sec
1226-1227	P4 start count	times
1228-1229	Pulse Ch 1	0.1 kWh/ mm/m3 (0.01 inch)
1230-1231	Pulse Ch 2	0.1 kWh/ mm/m3 (0.01 inch)
1232-1233	Pulse Ch 3	0.1 kWh/ mm/m3 (0.01 inch)
1234-1235	Pulse Ch 4	0.1 kWh/ mm/m3 (0.01 inch)
1236-1237	Energy P1	0.1 kWh
1238-1239	Energy P2	0.1 kWh
1240-1241	Energy P3	0.1 kWh
1242-1243	Energy P4	0.1 kWh
1244-1245	Total Energy	0.1 kWh
1246-1247	Energy efficiency	0.001 kWh/m3 (1 kWh/Mgal)
1248-1249	Mixer runtime	sec
1250-1251	Mixer start count	times
1252-1253	Drain pump runtime	sec
1254-1255	Drain pump start count	times

2.17 Accumulated values 2 days ago

Register no	Description	Scale factor/ unit / note	
1300-1301	Overflow count	times	
1302-1303	Overflow time	sec	
1304-1305	Overflow volume	0.1 m3	(1 gal)
1306-1307	Pumped volume	1 m3	(1 gal)
1308-1309	P1 runtime	sec	
1310-1311	P1 start count	times	
1312	P1 avg. cap.	0.1 l/s	(1 GPM)
1313	P2 avg. cap.	0.1 l/s	(1 GPM)
1314-1315	P2 runtime	sec	
1316-1317	P2 start count	times	
1318-1319	P3 runtime	sec	
1320-1321	P3 start count	times	
1322	P3 avg. cap.	0.1 l/s	(1 GPM)
1323	P4 avg. cap.	0.1 l/s	(1 GPM)
1324-1325	P4 runtime	sec	
1326-1327	P4 start count	times	
1328-1329	Pulse Ch 1	0.1 kWh/ mm/m3	(0.01 inch)
1330-1331	Pulse Ch 2	0.1 kWh/ mm/m3	(0.01 inch)
1332-1333	Pulse Ch 3	0.1 kWh/ mm/m3	(0.01 inch)
1334-1335	Pulse Ch 4	0.1 kWh/ mm/m3	(0.01 inch)
1336-1337	Energy P1	0.1 kWh	
1338-1339	Energy P2	0.1 kWh	
1340-1341	Energy P3	0.1 kWh	
1342-1343	Energy P4	0.1 kWh	
1344-1345	Total Energy	0.1 kWh	
1346-1347	Energy efficiency	0.001 kWh/m3	(1 kWh/Mgal)
1348-1349	Mixer runtime	sec	
1350-1351	Mixer start count	times	
1352-1353	Drain pump runtime	sec	
1354-1355	Drain pump start count	times	

2.18 Accumulated values 3 days ago

Register no	Description	Scale factor/ unit / note	
1400-1401	Overflow count	times	
1402-1403	Overflow time	sec	
1404-1405	Overflow volume	0.1 m3	(1 gal)
1406-1407	Pumped volume	1 m3	(1 gal)
1408-1409	P1 runtime	sec	
1410-1411	P1 start count	times	
1412	P1 avg. cap.	0.1 l/s	(1 GPM)
1413	P2 avg. cap.	0.1 l/s	(1 GPM)
1414-1415	P2 runtime	sec	
1416-1417	P2 start count	times	
1418-1419	P3 runtime	sec	
1420-1421	P3 start count	times	
1422	P3 avg. cap.	0.1 l/s	(1 GPM)
1423	P4 avg. cap.	0.1 l/s	(1 GPM)
1424-1425	P4 runtime	sec	
1426-1427	P4 start count	times	
1428-1429	Pulse Ch 1	0.1 kWh/ mm/m3	(0.01 inch)
1430-1431	Pulse Ch 2	0.1 kWh/ mm/m3	(0.01 inch)
1432-1433	Pulse Ch 3	0.1 kWh/ mm/m3	(0.01 inch)
1434-1435	Pulse Ch 4	0.1 kWh/ mm/m3	(0.01 inch)
1436-1437	Energy P1	0.1 kWh	
1438-1439	Energy P2	0.1 kWh	
1440-1441	Energy P3	0.1 kWh	
1442-1443	Energy P4	0.1 kWh	
1444-1445	Total Energy	0.1 kWh	
1446-1447	Energy efficiency	0.001 kWh/m3	(1 kWh/Mgal)
1448-1449	Mixer runtime	sec	
1450-1451	Mixer start count	times	
1452-1453	Drain pump runtime	sec	
1454-1455	Drain pump start count	times	

2.19 Accumulated values 4 days ago

Register no	Description	Scale factor/ unit / note	
1500-1501	Overflow count	times	
1502-1503	Overflow time	sec	
1504-1505	Overflow volume	0.1 m3	(1 gal)
1506-1507	Pumped volume	1 m3	(1 gal)
1508-1509	P1 runtime	sec	
1510-1511	P1 start count	times	
1512	P1 avg. cap.	0.1 l/s	(1 GPM)
1513	P2 avg. cap.	0.1 l/s	(1 GPM)
1514-1515	P2 runtime	sec	
1516-1517	P2 start count	times	
1518-1519	P3 runtime	sec	
1520-1521	P3 start count	times	
1522	P3 avg. cap.	0.1 l/s	(1 GPM)
1523	P4 avg. cap.	0.1 l/s	(1 GPM)
1524-1525	P4 runtime	sec	
1526-1527	P4 start count	times	
1528-1529	Pulse Ch 1	0.1 kWh/ mm/m3	(0.01 inch)
1530-1531	Pulse Ch 2	0.1 kWh/ mm/m3	(0.01 inch)
1532-1533	Pulse Ch 3	0.1 kWh/ mm/m3	(0.01 inch)
1534-1535	Pulse Ch 4	0.1 kWh/ mm/m3	(0.01 inch)
1536-1537	Energy P1	0.1 kWh	
1538-1539	Energy P2	0.1 kWh	
1540-1541	Energy P3	0.1 kWh	
1542-1543	Energy P4	0.1 kWh	
1544-1545	Total Energy	0.1 kWh	
1546-1547	Energy efficiency	0.001 kWh/m3	(1 kWh/Mgal)
1548-1549	Mixer runtime	sec	
1550-1551	Mixer start count	times	
1552-1553	Drain pump runtime	sec	
1554-1555	Drain pump start count	times	

2.20 Accumulated values 5 days ago

Register no	Description	Scale factor/ unit / note
1600-1601	Overflow count	times
1602-1603	Overflow time	sec
1604-1605	Overflow volume	0.1 m3 (1 gal)
1606-1607	Pumped volume	1 m3 (1 gal)
1608-1609	P1 runtime	sec
1610-1611	P1 start count	times
1612	P1 avg. cap.	0.1 l/s (1 GPM)
1613	P2 avg. cap.	0.1 l/s (1 GPM)
1614-1615	P2 runtime	sec
1616-1617	P2 start count	times
1618-1619	P3 runtime	sec
1620-1621	P3 start count	times
1662	P3 avg. cap.	0.1 l/s (1 GPM)
1663	P4 avg. cap.	0.1 l/s (1 GPM)
1624-1625	P4 runtime	sec
1626-1627	P4 start count	times
1628-1629	Pulse Ch 1	0.1 kWh/ mm/m3 (0.01 inch)
1630-1631	Pulse Ch 2	0.1 kWh/ mm/m3 (0.01 inch)
1632-1633	Pulse Ch 3	0.1 kWh/ mm/m3 (0.01 inch)
1634-1635	Pulse Ch 4	0.1 kWh/ mm/m3 (0.01 inch)
1636-1637	Energy P1	0.1 kWh
1638-1639	Energy P2	0.1 kWh
1640-1641	Energy P3	0.1 kWh
1642-1643	Energy P4	0.1 kWh
1644-1645	Total Energy	0.1 kWh
1646-1647	Energy efficiency	0.001 kWh/m3 (1 kWh/Mgal)
1648-1649	Mixer runtime	sec
1650-1651	Mixer start count	times
1652-1653	Drain pump runtime	sec
1654-1655	Drain pump start count	times

2.21 Accumulated values 6 days ago

Register no	Description	Scale factor/ unit / note	
1700-1701	Overflow count	times	
1702-1703	Overflow time	sec	
1704-1705	Overflow volume	0.1 m3	(1 gal)
1706-1707	Pumped volume	1 m3	(1 gal)
1708-1709	P1 runtime	sec	
1710-1711	P1 start count	times	
1712	P1 avg. cap.	0.1 l/s	(1 GPM)
1713	P2 avg. cap.	0.1 l/s	(1 GPM)
1714-1715	P2 runtime	sec	
1716-1717	P2 start count	times	
1718-1719	P3 runtime	sec	
1720-1721	P3 start count	times	
1762	P3 avg. cap.	0.1 l/s	(1 GPM)
1763	P4 avg. cap.	0.1 l/s	(1 GPM)
1724-1725	P4 runtime	sec	
1726-1727	P4 start count	times	
1728-1729	Pulse Ch 1	0.1 kWh/ mm/m3	(0.01 inch)
1730-1731	Pulse Ch 2	0.1 kWh/ mm/m3	(0.01 inch)
1732-1733	Pulse Ch 3	0.1 kWh/ mm/m3	(0.01 inch)
1734-1735	Pulse Ch 4	0.1 kWh/ mm/m3	(0.01 inch)
1736-1737	Energy P1	0.1 kWh	
1738-1739	Energy P2	0.1 kWh	
1740-1741	Energy P3	0.1 kWh	
1742-1743	Energy P4	0.1 kWh	
1744-1745	Total Energy	0.1 kWh	
1746-1747	Energy efficiency	0.001 kWh/m3	(1 kWh/Mgal)
1748-1749	Mixer runtime	sec	
1750-1751	Mixer start count	times	
1752-1753	Drain pump runtime	sec	
1754-1755	Drain pump start count	times	

2.22 Accumulated values 7 days ago

Register no	Description	Scale factor/ unit / note
1800-1801	Overflow count	times
1802-1803	Overflow time	sec
1804-1805	Overflow volume	0.1 m3 (1 gal)
1806-1807	Pumped volume	1 m3 (1 gal)
1808-1809	P1 runtime	sec
1810-1811	P1 start count	times
1812	P1 avg. cap.	0.1 l/s (1 GPM)
1813	P2 avg. cap.	0.1 l/s (1 GPM)
1814-1815	P2 runtime	sec
1816-1817	P2 start count	times
1818-1819	P3 runtime	sec
1820-1821	P3 start count	times
1822	P3 avg. cap.	0.1 l/s (1 GPM)
1823	P4 avg. cap.	0.1 l/s (1 GPM)
1824-1825	P4 runtime	sec
1826-1827	P4 start count	times
1828-1829	Pulse Ch 1	0.1 kWh/ mm/m3 (0.01 inch)
1830-1831	Pulse Ch 2	0.1 kWh/ mm/m3 (0.01 inch)
1832-1833	Pulse Ch 3	0.1 kWh/ mm/m3 (0.01 inch)
1834-1835	Pulse Ch 4	0.1 kWh/ mm/m3 (0.01 inch)
1836-1837	Energy P1	0.1 kWh
1838-1839	Energy P2	0.1 kWh
1840-1841	Energy P3	0.1 kWh
1842-1843	Energy P4	0.1 kWh
1844-1845	Total Energy	0.1 kWh
1846-1847	Energy efficiency	0.001 kWh/m3 (1 kWh/Mgal)
1848-1849	Mixer runtime	sec
1850-1851	Mixer start count	times
1852-1853	Drain pump runtime	sec
1854-1855	Drain pump start count	times

2.23 System configuration

Register no	Description	Scale factor/ unit / note
2000	Menu language	0=Swe/1=Eng/2=Ger/3=Fre ……..
2001	Date format	0=YY:MM:DD / 1=DD:MM/YY/ 2=MM:DD:YY
2002	Units	0=Metric / 1= Us Units (Only metric support in V.1.xx
2003	LCD Back light time	min 0= always On
2004	Pit fill graphics range	centimetre (0.01 ft)
2005	Alarm alert on time	min, 0=No limit, Do function = Alarm alert
2006	Alarm alert pause time	min
2007	Main voltage	1 V (type 400V)
2008	Main frequency	1 Hz (type 50Hz)
2009	Hide Start-Stop levels	0=NO, 1=YES
2012	CA 511 Main graphics	0=Pit, 1=P1, 2=P2…

2.24 Pit configuration

Register no	Description	Scale factor/ unit / note		
2010	Pit flags 1	Bit mapped register, See IO-bits.		
2011	Pit flags 2	" " " " "		
2013	Min time between relay changes	s		
2014	Max No. pumps running	0-3 0=1 pump		
2015	Pump alternation	0=Off/1=Normal/2=Asymmetrical		
2016	No. Starts to Alt	Asymmetrical alternation		
2017	Runtime to alternation	min. Runtime alternation		
2018	Min no. pumps running	0-4	Level change start	
2019	Max no. pumps running	0-4		
2020	Level change to start	0.01 m	(0.01 ft)	
2021	/ time unit	min		
2022	Min no. pumps running	0-4	Level change stop	
2023	Max no. pumps running	0-4		
2024	Level change to stop	0.01 m	(0.01 ft)	
2025	/ time unit	min		
2026	Emgcy pwr mode, Max pumps running		0-3 0=1 pump	
2027	Calculation interval inflow	s	Inflow	
2028	Static head	0.01 mH2O (0.01ft)	System curve at duty point	
2029	Total head (hf)	0.01 mH2O (0.01ft)		
2030	Flow at duty point	0.1 l/s (GPM)		
2031	Flow compensation 2 pumps	1 %	Alternative to system curve	
2032	Flow compensation 3 pumps	1 %		
2033	Flow compensation 4 pumps	1 %		
2036	Pit level 0	0.01 m	(0.01 ft)	Pit area
2037	Pit area 0	0.1 m2	(0.1 ft2)	
2038	Pit level 1	0.01 m	(0.01 ft)	
2039	Pit area 1	0.1 m2	(0.1 ft2)	
2040	Pit level 2	0.01m	(0.01 ft)	
2041	Pit area 2	0.1 m2	(0.1 ft2)	
2042	Pit level 3	0.01 m	(0.01 ft)	
2043	Pit area 3	0.1 m2	(0.1 ft2)	
2044	Pit level 4	0.01 m	(0.01 ft)	
2045	Pit area 4	0.1 m2	(0.1 ft2)	
2046	Pit level 5	0.01m	(0.01 ft)	
2047	Pit area 5	0.1 m2	(0.1 ft2)	
2048	Pit level 6	0.01 m	(0.01 ft)	
2049	Pit area 6	0.1 m2	(0.1 ft2)	
2050	Pit level 7	0.01 m	(0.01 ft)	
2051	Pit area 7	0.1 m2	(0.1 ft2)	
2052	Pit level 8	0.01m	(0.01 ft)	
2053	Pit area 8	0.1 m2	(0.1 ft2)	
2054	Pit level 9	0.01m	(0.01 ft)	
2055	Pit area 9	0.1 m2	(0.1 ft2)	
2060	Min level calc. pump capacity	0.01 m	(0.01 ft)	Pump capacity
2061	Max level calc. pump capacity	0.01 m	(0.01 ft)	
2062	Start delay	s		
2063	Calculation time	s		
2064	Stop delay	s		

Register no	Description	Scale factor/ unit / note		
2066	Remote block timeout	s	0 = No timeout	
2067	Pressure block set-point	0.1 bar	(0.1 PSI)	
2068	Pressure block timeout	s	0 = No timeout	
2069	Pressure block delay	s		
2070	Backup runtime	s	High float run on time	
2072	Sensor level at high float	0.01 m	(0.01 ft)	Sensor check
2073	Max difference at high float	+/-0.01 m	(0.01 ft)	
2074	Sensor level at low float	0.01 m	(0.01 ft)	
2075	Max difference at low float	+/-0.01 m	(0.01 ft)	
2076	Sensor control time	s		
2077	Min level change	0.01m	(0.01 ft)	
2080	Hi tariff pump pre-start	min	Tariff control	
2081	Pump down level	0.01 m	(0.01 ft)	
2082	Monday peak 1 On	min	0-1440 min	
2083	Monday peak 1 Off	min		
2084	Monday peak 2 On	min		
2085	Monday peak 2 Off	min		
2086	Tuesday peak 1 On	min		
2087	Tuesday peak 1 Off	min		
2088	Tuesday peak 2 On	min		
2089	Tuesday peak 2 Off	min		
2090	Wednesday peak 1 On	min		
2091	Wednesday peak 1 Off	min		
2092	Wednesday peak 2 On	min		
2093	Wednesday peak 2 Off	min		
2094	Thursday peak 1 On	min		
2095	Thursday peak 1 Off	min		
2096	Thursday peak 2 On	min		
2097	Thursday peak 2 Off	min		
2098	Friday peak 1 On	min		
2099	Friday peak 1 Off	min		
2100	Friday peak 2 On	min		
2101	Friday peak 2 Off	min		
2102	Saturday peak 1 On	min		
2105	Saturday peak 2 Off	min		
2106	Sunday peak 1 On	min		
2107	Sunday peak 1 Off	min		
2108	Sunday peak 2 On	min		
2109	Sunday peak 2 Off	min		
2112	Relative level m.a.s	0.01 m	(0.01 ft)	
2113	Back press. sensor position	0.01 m	(0.01 ft) distance above pump outlet (pump head offset)	
2115	No starts to alt. stop level	times		
2116	Alternative stop level	0.01 m	(0.01 ft)	
2117	Stop delay	s		
2120	Power monitor block delay	s	0 = No timeout	
2121	Power monitor block off delay	s	CA 443 Over/under voltage ……	
2122	Over voltage block set-point	0.1 %	% of main voltage register 2007	
2123	Under voltage block set-point	0.1 %	"	
2124	Diff L1,L2,L3 block set-point	0.1 %	"	
2125	High freq. block set-point	0.1 %	% of main freq. register 2008	
2126	Low freq. block set-point	0.1 %		

2.25 Extra temp. monitor modules CA442-5 & CA442-6

CA 442-5 Extra Temperature monitor P1/P2

2140	Sensor 1 type	0=Off/1=Klixon/2=PTC/3=Pt100
2141	Temperature offset	0.1 °C (Pt100)
2142	Filter constant	s (Pt100)
2145	Sensor 2 type	0=Off/1=Klixon/2=PTC/3=Pt100
2146	Temperature offset	0.1 °C (Pt100)
2147	Filter constant	s (Pt100)
2150	Sensor 3 type	0=Off/1=Klixon/2=PTC/3=Pt100
2151	Temperature offset	0.1 °C (Pt100)
2152	Filter constant	s (Pt100)
2155	Sensor 4 type	0=Off/1=Klixon/2=PTC/3=Pt100/4=Vibrations
2156	Temperature offset	0.1 °C (Pt100)
2157	Filter constant	s (Pt100)

CA 442-6 Extra Temperature monitor P3/P4

2170	Sensor 1 type	0=Off/1=Klixon/2=PTC/3=Pt100
2171	Temperature offset	0.1 °C (Pt100)
2172	Filter constant	s (Pt100)
2175	Sensor 2 type	0=Off/1=Klixon/2=PTC/3=Pt100
2176	Temperature offset	0.1 °C (Pt100)
2177	Filter constant	s (Pt100)
2180	Sensor 3 type	0=Off/1=Klixon/2=PTC/3=Pt100
2181	Temperature offset	0.1 °C (Pt100)
2182	Filter constant	s (Pt100)
2185	Sensor 4 type	0=Off/1=Klixon/2=PTC/3=Pt100/4=Vibrations
2186	Temperature offset	0.1 °C (Pt100)
2187	Filter constant	s (Pt100)

2.26 Pump 1 configuration

Register no	Description	Scale factor/ unit / note		
2200	Pump flags 1	Bit mapped register, See IO-bits.		
2201	Pump flags 2	"	"	
2202	Normal start level	0.01 m	(0.01 ft)	Start/Stop levels
2203	Normal stop level	0.01 m	(0.01 ft)	
2204	High tariff start level	0.01 m	(0.01 ft)	
2205	High tariff stop level	0.01 m	(0.01 ft)	
2206	Random start range	+/- 0.01m	(0.01 ft)	
2208	Start delay	s		
2209	Stop delay	s		
2212	Running indicator	0=Off/1=Digtal input/2=Motor Current, 3=CA622		
2213	Min run current	0.1 A		
2215	Max continuous runtime	min		
2216	Nominal Motor Current	0.1A		
2217	Nominal Cos φ	0.01	Power Factor	
2218	Pcap Comp (VFD)	0.1%	Pump cap factor at min Freq (VFD)	
2219	Pump Type	0/1	0=Fixed, 1=Speed controlled (VFD).	
2220	Point 1 Total head (Hmax)	0.01 mH20	(0.01ft)	QH curve (at pump outlet)
2221	Point 1 Flow	0.1 l/s	(0.1 GPM)	Taken from QH curve
2222	Point 2 Total head	0.01 mH2O	(0.01ft)	
2223	Point 2 Flow	0.1 l/s	(0.1 GPM)	
2224	Point 3 Total head (Hmin)	0.01 mH2O	(0.01 ft)	At pit max level
2225	Point 3 Flow	0.1 l/s	(0.1 GPM)	
2226	Total Head from sensor zero	0.01 mH20	(0.01 ft)	At level sensor zero level)
2227	No of starts, low pump cap.	Re-calculations before low pump capacity alarm is activated		
2228	No of starts, pump reverse	If rev. on pump starts is activated		
2230	Dry run Cos φ set-point	0.01	CA 443 Connected	
2231	Dry run block timeout	s		
2232	Dry run block delay	s		
2235	Leakage block delay	s		
2236	High temperature block delay	s		
2237	High vibrations block delay	s		
2239	Demand Manual Reset	0=No, 1=Only Stator Alarms, 2=All Temp. alarms (v1.16)		
2240	Manual frequency	0.1 Hz (CA 622 VFD Control)		
2241	Min. frequency	0.1 Hz (CA 622 VFD Control)		
2242	Max. frequency	0.1 Hz (CA 622 VFD Control)		
2243	Stop on emergency power mode			0=no, 1= yes
2244	Lo pump cap. Auto-set	0 = inactive, 1 = start auto-set, 2 = auto-set running		
2245	Auto-set calc. counter	Auto-set status. 4 - 8 calculations required.		
2246	Pump reverse start counter	Status indication. Counts to threshold in R.2228		
2247	Pump curve Q-H exponent	0.0001 Status indication. 0.0 = invalid or no data		
2248	Lo pump cap. Auto-set options	0 = none, 1 = detect pump ramp-up time, 2 = forced seq., 3 = both		
2249	Detected start ramp	Seconds	Added to R.2062 start delay during cap. calculation	

2.27 Pump 2 configuration

Register no	Description	Scale factor/ unit / note
2250	Pump flags 1	Bit mapped register, See IO-bits.
2251	Pump flags 2	" "
2252	Normal start level	0.01 m (0.01 ft) Start/Stop levels
2253	Normal stop level	0.01 m (0.01 ft)
2254	High tariff start level	0.01 m (0.01 ft)
2255	High tariff stop level	0.01 m (0.01 ft)
2256	Random start range	+/- 0.01m (0.01 ft)
2258	Start delay	s
2259	Stop delay	s
2262	Running indicator	0=Off/1=Digtal input/2=Motor Current, 3=CA622
2263	Min run current	0.1 A
2265	Max continuous runtime	min
2266	Nominal Motor Current	0.1A
2267	Nominal Cos φ	0.01 Power Factor
2268	Pcap Comp (VFD)	0.1% Pump cap factor at min Freq (VFD)
2269	Pump Type	0/1 0=Fixed, 1=Speed controlled (VFD).
2270	Point 1 Total head (Hmax)	0.01 mH20 (0.01ft) QH curve (at pump outlet)
2271	Point 1 Flow	0.1 l/s (0.1 GPM) Taken from QH curve
2272	Point 2 Total head	0.01 mH2O (0.01 ft)
2273	Point 2 Flow	0.1 l/s (0.1 GPM)
2274	Point 3 Total head (Hmin)	0.01 mH2O (0.01 ft) (at pit max level)
2275	Point 3 Flow	0.1 l/s (0.1 GPM)
2276	Total Head from sensor zero	0.01 mH20 (0.01 ft) (at level sensor zero level)
2277	No of starts, low pump cap.	Re-calculations before low pump capacity alarm is activated
2278	No of starts, pump reverse	If rev. on pump starts is activated
2280	Dry run current set-point	0.1 A
2281	Dry run block timeout	s
2282	Dry run block delay	s
2285	Leakage block delay	s
2286	High temperature block delay	s
2287	High vibrations block delay	s
2289	Demand Manual Reset	0=No, 1=Only Stator Alarms, 2=All Temp. alarms (v1.16)
2290	Manual frequency	0.1 Hz (CA 622 VFD Control)
2291	Min. frequency	0.1 Hz (CA 622 VFD Control)
2292	Max. frequency	0.1 Hz (CA 622 VFD Control)
2293	Stop on emergency power mode	0=no, 1= yes
2294	Lo pump cap. Auto-set	0 = inactive, 1 = start auto-set, 2 = auto-set running
2295	Auto-set calc. counter	Auto-set status. 4 - 8 calculations required.
2296	Pump reverse start counter	Status indication. Counts to threshold in R.2278
2297	Pump curve Q-H exponent	0.0001 Status indication. 0.0 = invalid or no data
2298	Lo pump cap. Auto-set options	0 = none, 1 = detect pump ramp-up time, 2 = forced seq., 3 = both
2299	Detected start ramp	Seconds Added to R.2062 start delay during cap. calculation

2.28 Pump 3 configuration

Register no	Description	Scale factor/ unit / note
2300	Pump flags 1	Bit mapped register, See IO-bits.
2301	Pump flags 2	" "
2302	Normal start level	0.01 m (0.01 ft) Start/Stop levels
2303	Normal stop level	0.01 m (0.01 ft)
2304	High tariff start level	0.01 m (0.01 ft)
2305	High tariff stop level	0.01 m (0.01 ft)
2306	Random start range	+/- 0.01m (0.01 ft)
2308	Start delay	s
2309	Stop delay	s
2312	Running indicator	0=Off/1=Digtal input/2=Motor Current, 3=CA622
2313	Min run current	0.1 A
2315	Max continuous runtime	min
2316	Nominal Motor Current	0.1A
2317	Nominal Cos φ	0.01 Power Factor
2318	Pcap Comp (VFD)	0.1% Pump cap factor at min Freq (VFD)
2319	Pump Type	0/1 0=Fixed, 1=Speed controlled (VFD).
2320	Point 1 Total head (Hmax)	0.01 mH20 (0.01 ft) QH curve (at pump outlet)
2321	Point 1 Flow	0.1 l/s (0.1 GPM) Taken from QH curve
2322	Point 2 Total head	0.01 mH2O (0.01 ft)
2323	Point 2 Flow	0.1 l/s (0.1 GPM)
2324	Point 3 Total head (Hmin)	0.01 mH2O (0.01 ft) (at pit max level)
2325	Point 3 Flow	0.1 l/s (0.1 GPM)
2326	Total Head from sensor zero	0.01 mH20 (0.01 ft) (at level sensor zero level)
2327	No of starts, low pump cap.	Re-calculations before low pump capacity alarm is activated
2328	No of starts, pump reverse	If rev. on pump starts is activated
2330	Dry run Cos φ set-point	0.01 CA 443 Connected
2331	Dry run block timeout	s
2332	Dry run block delay	s
2335	Leakage block delay	s
2336	High temperature block delay	s
2337	High vibrations block delay	s
2339	Demand Manual Reset	0=No, 1=Only Stator Alarms, 2=All Temp. alarms (v1.16)
2340	Manual frequency	0.1 Hz (CA 622 VFD Control)
2341	Min. frequency	0.1 Hz (CA 622 VFD Control)
2342	Max. frequency	0.1 Hz (CA 622 VFD Control)
2343	Stop on emergency power mode	0=no, 1= yes
2344	Lo pump cap. Auto-set	0 = inactive, 1 = start auto-set, 2 = auto-set running
2345	Auto-set calc. counter	Auto-set status. 4 - 8 calculations required.
2346	Pump reverse start counter	Status indication. Counts to threshold in R.2328
2347	Pump curve Q-H exponent	0.0001 Status indication. 0.0 = invalid or no data
2348	Lo pump cap. Auto-set options	0 = none, 1 = detect pump ramp-up time, 2 = forced seq., 3 = both
2449	Detected start ramp	Seconds Added to R.2062 start delay during cap. calculation

2.29 Pump 4 configuration

Register no	Description	Scale factor/ unit / note
2350	Pump flags 1	Bit mapped register, See IO-bits.
2351	Pump flags 2	" "
2352	Normal start level	0.01 m (0.01 ft) Start/Stop levels
2353	Normal stop level	0.01 m (0.01 ft)
2354	High tariff start level	0.01 m (0.01 ft)
2355	High tariff stop level	0.01 m (0.01 ft)
2356	Random start range	+/- 0.01m (0.01 ft)
2358	Start delay	s
2359	Stop delay	s
2362	Running indicator	0=Off/1=Digital input/2=Motor Current, 3=CA622
2363	Min run current	0.1 A
2365	Max continuous runtime	min
2366	Nominal Motor Current	0.1A
2367	Nominal Cos φ	0.01 Power Factor
2368	Pcap Comp (VFD)	0.1% Pump cap factor at min Freq (VFD)
2369	Pump Type	0/1 0=Fixed, 1=Speed controlled (VFD).
2370	Point 1 Total head (Hmax)	0.01 mH20 (0.01ft) QH curve (at pump outlet)
2371	Point 1 Flow	0.1 l/s (0.1 GPM) Taken from QH curve
2372	Point 2 Total head	0.01 mH2O (0.01 ft)
2373	Point 2 Flow	0.1 l/s (0.1 GPM)
2374	Point 3 Total head (Hmin)	0.01 mH2O (0.01 ft) (at pit max level)
2375	Point 3 Flow	0.1 l/s (0.1 GPM)
2376	Total Head from sensor zero	0.01 mH20 (0.01 ft) (at sensor zero level)
2377	No of starts, low pump cap.	Re-calculations before low pump capacity alarm is activated
2378	No of starts, pump reverse	If rev. on pump starts is activated
2380	Dry run Cos φ set-point	0.01
2381	Dry run block timeout	s
2382	Dry run block delay	s
2385	Leakage block delay	s
2386	High temperature block delay	s
2387	High vibrations block delay	s
2389	Demand Manual Reset	0=No, 1=Only Stator Alarms, 2=All Temp. alarms (v1.16)
2390	Manual frequency	0.1 Hz (CA 622 VFD Control)
2391	Min. frequency	0.1 Hz (CA 622 VFD Control)
2392	Max. frequency	0.1 Hz (CA 622 VFD Control)
2393	Stop on emergency power mode	0=no, 1= yes
2394	Lo pump cap. Auto-set	0 = inactive, 1 = start auto-set, 2 = auto-set running
2395	Auto-set calc. counter	Auto-set status. 4 - 8 calculations required.
2396	Pump reverse start counter	Status indication. Counts to threshold in R.2378
2397	Pump curve Q-H exponent	0.0001 Status indication. 0.0 = invalid or no data
2398	Lo pump cap. Auto-set options	0 = none, 1 = detect pump ramp-up time, 2 = forced seq., 3 = both
2399	Detected start ramp	Seconds Added to R.2062 start delay during cap. calculation

2.30 Pump 1-4 common configuration

Register no	Description	Scale factor/ unit / note	
2400	Log pump events	0=Timestamp off, 1=on.	
2402	Pulse time	s	Reset motor protector
2403	Pause time	s	
2404	Max no attempts	Max 3	
2410	Max stand still time	min	Control run
2411	Control runtime	s	
2412	Start if level >	0.01 m	(0.01 ft)
2413	Start if level <	0.01 m	(0.01 ft)
2414	Reversing delay time	min	Reversing pumps
2415	Reversing run time	s	
2416	Max no attempts	Max 3	
2417	Pump relay when rev	0=Off / 1=On	
2418	Stop pumps before reversing	0=Off / 1= On	
2419	Rev. when fallen M-prot	0=No / 1=Yes	
2420	Rev. when D.in pump fail	0=No / 1= Yes	
2421	Rev. when low pump capacity	0=No / 1= Yes	
2422	Rev. when overcurrent	0=No / 1= Yes	
2423	Rev. on start count	0=No / 1= Yes	
2424	Max attempts reset time	minutes	nn attempts/xx minutes
2425	Reverse block time	hours	if max attempts/max minutes
2426	Manual reverse reset	0=No / 1= Yes	Require alarm ackn?

2.31 Overflow configuration

Register no	Description	Scale factor/ unit / note	
2430	Overflow measuring	0=Off /1=Sensor (KV) /2=Level	
2431	Overflow calculation	0=Exp+Const / 1=Lock on inflow	
2432-2433	Exponent 1	0.0001	
2434-2435	Constant 1	0.0001	
2436-2437	Exponent 2	0.0001	
2438-3439	Constant 2	0.0001	
2440	Level at overflow	0.001 m	(0.001ft)

2.32 CA 781 AO/DO Exp. module

Exp. DO

2450	DO 1. Function	0=Off/ 1=Pump Control/2= Reset motor protector *
2451	DO 1. Pump no.	0=P1/1=P2/2=P3/3=P4 For some functions
2452	DO 1. NO/NC	0=NO / 1=NC
2453	DO 2. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2454	DO 2. Pump no.	0=P1/1=P2/2=P3/3=P4
2455	DO 2. NO/NC	0=NO / 1=NC
2456	DO 3. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2457	DO 3. Pump	0=P1/1=P2/2=P3/3=P4
2458	DO 3. NO/NC	0=NO / 1=NC
2459	DO 4. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2460	DO 4. Pump	0=P1/1=P2/2=P3/3=P4
2461	DO 4. NO/NC	0=NO / 1=NC
2462	DO 5. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2463	DO 5. Pump	0=P1/1=P2/2=P3/3=P4
2464	DO 5. NO/NC	0=NO / 1=NC
2465	DO 6. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2466	DO 6. Pump	0=P1/1=P2/2=P3/3=P4
2467	DO 6. NO/NC	0=NO / 1=NC
2468	DO 7. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2469	DO 7. Pump	0=P1/1=P2/2=P3/3=P4
2470	DO 7. NO/NC	0=NO / 1=NC
2471	DO 8. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2472	DO 8. Pump	0=P1/1=P2/2=P3/3=P4
2473	DO 8. NO/NC	0=NO / 1=NC

Exp. AO

2480	AO 1. Function	0=Off/1=Pit level/ 2=Inflow *
2481	AO 1. Signal range	0=0-20mA / 1=0-20mA
2482	AO 1. Scale 0%=	
2483	AO 1. Scale 100%=	
2484	AO 1. Filter constant	s
2485	AO 1. Data Register	Only for output type “Data Register”
2490	AO 2. Function	0=Off/1=Pit level/ 2=Inflow *
2491	AO 2. Signal range	0=0-20mA / 1=0-20mA
2492	AO 2. Scale 0%=	
2493	AO 2. Scale 100%=	
2494	AO 2. Filter constant	s
2495	AO 2. Data Register	Only for output type “Data Register”

2.33 Digital inputs configuration

Register no	Description	Scale factor/ unit / note
2500	DI 1. Function	See section 3.1 Digital input types
2501	DI 1. Option.	See section 3.1 Digital input types
2502	DI 1. NO/NC	0=NO / 1=NC
2503	DI 2. Function	See section 3.1 Digital input types
2504	DI 2. Option	See section 3.1 Digital input types
2505	DI 2. NO/NC	0=NO / 1=NC
2506	DI 3. Function	See section 3.1 Digital input types
2507	DI 3. Option	See section 3.1 Digital input types
2508	DI 3. NO/NC	0=NO / 1=NC
2509	DI 4. Function	See section 3.1 Digital input types
2510	DI 4. Option	See section 3.1 Digital input types
2511	DI 4. NO/NC	0=NO / 1=NC
2512	DI 5. Function	See section 3.1 Digital input types
2513	DI 5. Option	See section 3.1 Digital input types
2514	DI 5. NO/NC	0=NO / 1=NC
2515	DI 6. Function	See section 3.1 Digital input types
2516	DI 6. Option	See section 3.1 Digital input types
2517	DI 6. NO/NC	0=NO / 1=NC
2518	DI 7. Function	See section 3.1 Digital input types
2519	DI 7. Option	See section 3.1 Digital input types
2520	DI 7. NO/NC	0=NO / 1=NC
2521	DI 8. Function	See section 3.1 Digital input types
2522	DI 8. Option	See section 3.1 Digital input types
2523	DI 8. NO/NC	0=NO / 1=NC
2524	DI 9. Function	See section 3.1 Digital input types
2525	DI 9. Option	See section 3.1 Digital input types
2526	DI 9. NO/NC	0=NO / 1=NC
2527	DI 10. Function	See section 3.1 Digital input types
2528	DI 10 Option	See section 3.1 Digital input types
2529	DI 10 NO/NC	0=NO / 1=NC
2530	DI 11. Function	See section 3.1 Digital input types
2531	DI 11. Option	See section 3.1 Digital input types
2532	DI 11. NO/NC	0=NO / 1=NC
2533	DI 12. Function	See section 3.1 Digital input types
2534	DI 12. Option	See section 3.1 Digital input types
2535	DI 12. NO/NC	0=NO / 1=NC
2536	DI 13. Function	See section 3.1 Digital input types
2537	DI 13. Option	See section 3.1 Digital input types
2538	DI 13. NO/NC	0=NO / 1=NC
2539	DI 14. Function	See section 3.1 Digital input types
2540	DI 14. Option	See section 3.1 Digital input types
2541	DI 14. NO/NC	0=NO / 1=NC
2542	DI 15. Function	See section 3.1 Digital input types
2543	DI 15. Option	See section 3.1 Digital input types
2544	DI 15. NO/NC	0=NO / 1=NC
2545	DI 16. Function	See section 3.1 Digital input types
2546	DI 16. Option	See section 3.1 Digital input types
2547	DI 16 NO/NC	0=NO / 1=NC

2.34 Digital outputs configuration

Register no	Description	Scale factor/ unit / note
Main controller PC441		
2550	DO 1. Function	0=Off/ 1=Pump Control/2= Reset motor protector *
2551	DO 1. Pump no.	0=P1/1=P2/2=P3/3=P4 For some functions
2552	DO 1. NO/NC	0=NO / 1=NC
2553	DO 2. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2554	DO 2. Pump no.	0=P1/1=P2/2=P3/3=P4
2555	DO 2. NO/NC	0=NO / 1=NC
2556	DO 3. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2557	DO 3. Pump	0=P1/1=P2/2=P3/3=P4
2558	DO 3. NO/NC	0=NO / 1=NC
2559	DO 4. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2560	DO 4. Pump	0=P1/1=P2/2=P3/3=P4
2561	DO 4. NO/NC	0=NO / 1=NC
2562	DO 5. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2563	DO 5. Pump	0=P1/1=P2/2=P3/3=P4
2564	DO 5. NO/NC	0=NO / 1=NC
2565	DO 6. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2566	DO 6. Pump	0=P1/1=P2/2=P3/3=P4
2567	DO 6. NO/NC	0=NO / 1=NC
2568	DO 7. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2569	DO 7. Pump	0=P1/1=P2/2=P3/3=P4
2570	DO 7. NO/NC	0=NO / 1=NC
2571	DO 8. Function	0=Off/ 1=Pump Control/2= Reset motor protector
2572	DO 8. Pump	0=P1/1=P2/2=P3/3=P4
2573	DO 8. NO/NC	0=NO / 1=NC

H. See appendices 3.2 Digital output types

2.35 Mixer configuration

Register no	Description	Scale factor/ unit / note	
2580	Stop pump when mixer run	0=No / 1= Yes	
2581	Mixer runtime	s	
2582	Start count interval	times	0=disabled
2583	Timer interval	min	0=disabled
2584	Max level for start	0.01 m	(0.01 ft)
2585	Min level for start	0.01 m	(0.01 ft)
2586	Run indicator	0=Off / 1= Digital input	
2587	Auto reset motor protector	0=No / 1=Yes	
2588	Pulse time	s	
2589	Pause time	s	
2590	Max no attempts	Max 3	

2.36 Cleaner configuration

Register no	Description	Scale factor/ unit / note
2595	Spool on pump start/stop	0=Start / 1=Stop
2596	Spool time	s
2597	No start/stop to spool	time

2.37 Drain pump configuration

Register no	Description	Scale factor/ unit / note
2600	Start delay	s
2601	Stop delay	s
2602	Run indicator	0=Off / 1=Digital input
2603	Auto reset motor protector	0=No / 1=Yes
2604	Pulse time	s
2605	Pause time	s
2606	Max no attempts	Max 3

2.38 Analogue inputs configuration

Register no	Description	Scale factor/ unit / note
2620	AI 1. Function	Always level sensor input (1) *
2621	AI 1. Signal range	0=4-20mA / 1=0-20mA
2622	AI 1. Scale 0%=	0.01 m (0.01 ft)
2623	AI 1. Scale 100%=	0.01 m (0.01 ft)
2624	AI 1. Zero offset	0.01 m (0.01 ft)
2625	AI 1. Filter constant	s
2630	AI 2. Function	2=Current P1 /3=Current P2 ..*
2631	AI 2. Signal range	0=4-20mA / 1=0-20mA
2632	AI 2. Scale 0%=	0.1 A/0.1 bar/0.1mm/s/User unit (0.1 PSI/0.01 Inch/h)
2633	AI 2. Scale 100%=	0.1 A/…
2634	AI 2. Dead band	0.1 %
2635	AI 2. Filter constant	s
2636	AI 2. No decimals	If free choice
2640	AI 3. Function	2=Current P2 / 3=Current P2….*
2641	AI 3. Signal range	0=4-20mA / 1=0-20mA
2642	AI 3. Scale 0%=	0.1 A/0.1 bar/0.1mm/s/User unit (0.1 PSI/0.01 Inch/h)
2643	AI 3. Scale 100%=	0.1 A/ …
2644	AI 3. Dead band	0.1 %
2645	AI 3. Filter constant	s
2646	AI 3. No decimals	If free choice
2650	AI 4. Function	2=Current P2 / 3= Current P2 …*
2651	AI 4. Signal range	0=4-20mA / 1=0-20mA
2652	AI 4. Scale 0%=	0.1 A / …
2653	AI 4. Scale 100%=	0.1 A / …
2654	AI 4. Dead band	0.1 %
2655	AI 4. Filter constant	s
2656	AI 4. No decimals	If free choice
2660	AI 5. Function	2=Current P2---*
2661	AI 5. Signal range	0=4-20mA / 1=0-20mA
2662	AI 5. Scale 0%=	0.1 A / …..
2663	AI 5. Scale 100%=	0.1 A / …..
2664	Not Used	
2665	AI 5. Filter constant	s
2666	AI 5. No decimals	If free choice

H.□ See ppendices 3.3 Analogue inputs types

2.39 Analogue outputs configuration

Register no	Description	Scale factor/ unit / note
PC 441		
2700	AO 1. Function	0=Off/1=Pit level/ 2=Inflow *
2701	AO 1. Signal range	0=0-20mA / 1=0-20mA
2702	AO 1. Scale 0%=	
2703	AO 1. Scale 100%=	
2704	AO 1. Filter constant	s
2705	AO 1. Data Register	Only for output type “Data Register”
2710	AO 2. Function	0=Off/1=Pit level/ 2=Inflow *
2711	AO 2. Signal range	0=0-20mA / 1=0-20mA
2712	AO 2. Scale 0%=	
2713	AO 2. Scale 100%=	
2714	AO 2. Filter constant	s
2715	AO 2. Data Register	Only for output type “Data Register”

H.□ See ppendices 3.4 Analogue output types

2.40 Pulse channels configuration

Register no	Description	Scale factor/ unit / note
2721	Ch 1. Function	0=Precipitation/ 1= Energy / 2= Flow
2722-2723	Ch 1. Scale 1 pulse =	0.0001 mm / 0.0001 kW/ 0.001m3 (Inch/kW/gal)
2725	Ch 2. Function	0=Precipitation/ 1= Energy / 2= Flow
2726-2727	Ch 2. Scale 1 pulse =	0.0001 mm / 0.0001 kW/ 0.001m3 (Inch/kW/gal)
2729	Ch 3. Function	0=Precipitation/ 1= Energy / 2= Flow
2730-2731	Ch 3. Scale 1 pulse =	0.0001 mm / 0.0001 kW/ 0.001m3 (Inch/kW/gal)
2733	Ch 4. Function	0=Precipitation/ 1= Energy / 2= Flow
2734-2735	Ch 4. Scale 1 pulse =	0.0001 mm / 0.0001 kW/ 0.001m3(Inch/kW/gal)

2.41 Log channels configuration

Register no	Description	Scale factor/ unit / note
2740	Ch 1. Log signal	0= Closed/1=Level / 2=Inflow /3=Outflow ……*
2741	Ch 1. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2742	Ch 1. Log interval	min
2743	Ch 1. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2745	Ch 2. Log signal	0=Closed/ 1=Level / 2=Inflow /3=Outflow ……
2746	Ch 2. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2747	Ch 2. Log interval	min
2748	Ch 2. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2750	Ch 3. Log signal	0=Closed/ 1=Level / 2=Inflow /2=Outflow ……
2751	Ch 3. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2752	Ch 3. Log interval	min
2753	Ch 3. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2755	Ch 4. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2756	Ch 4. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2757	Ch 4. Log interval	min
2758	Ch 4. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2760	Ch 5. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2761	Ch 5. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2762	Ch 5. Log interval	min
2763	Ch 5. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2765	Ch 6. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2766	Ch 6. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2767	Ch 6. Log interval	min
2768	Ch 6. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2770	Ch 7. Log signal	0=Closed /1=Level / 2=Inflow /3=Outflow ……
2771	Ch 7. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2772	Ch 7. Log interval	min
2773	Ch 7. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2775	Ch 8. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2776	Ch 8. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2777	Ch 8. Log interval	min
2778	Ch 8. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2780	Ch 9. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2781	Ch 9. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2782	Ch 9. Log interval	min
2783	Ch 9. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2785	Ch 10. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2786	Ch 10. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2787	Ch 10. Log interval	min
2788	Ch 10. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2790	Ch 11. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2791	Ch 11. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2792	Ch 11. Log interval	min
2793	Ch 11. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max

Register no	Description	Scale factor/ unit / note
2795	Ch 12. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……*
2796	Ch 12. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2797	Ch 12. Log interval	min
2798	Ch 12. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2800	Ch 13. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2801	Ch 13. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2802	Ch 13. Log interval	min
2803	Ch 13. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2805	Ch 14. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2806	Ch 14. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2807	Ch 14. Log interval	min
2808	Ch 14. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2810	Ch 15. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2811	Ch 15. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2812	Ch 15. Log interval	min
2813	Ch 15. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max
2815	Ch 16. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow ……
2816	Ch 16. Pump no.	0=P1/1=P2/2=P3/3=P4 For some signals types
2817	Ch 16. Log interval	min
2818	Ch 16. Function	0=Closed/1=Act. Value/2=Average val/3=Min/4=Max

H. See ppendices 3.5 Log and Trend signals

2.42 Trend curves configuration

Register no	Description	Scale factor/ unit / note
2830	Sample time	s
2831	Tr. 1 Signal	0=Off/1=Level/2=Inflow/3=Outflow ……*
2832-2833	Tr. 1 Signal max value	0.0001
2834-2835	Tr. 1 Signal min value	0.0001
2836	Tr. 1 Pump no.	0-3 For some signal types
2841	Tr. 2 Signal	0=Off/1=Level/2=Inflow/3=Outflow ……
2842-2843	Tr. 2 Signal max value	0.0001
2844-2845	Tr. 2 Signal min value	0.0001
2846	Tr. 2 Pump no.	0-3
2851	Tr. 3 Signal	0=Off/1=Level/2=Inflow/3=Outflow ……
2852-2853	Tr. 3 Signal max value	0.0001
2854-2855	Tr. 3 Signal min value	0.0001
2856	Tr. 3 Pump no.	0-3
2861	Tr. 4 Signal	0=Off/1=Level/2=Inflow/3=Outflow ……
2862-2863	Tr. 4 Signal max value	0.0001
2864-2865	Tr. 4 Signal min value	0.0001
2866	Tr. 4 Pump no.	0-3

See appendices 3.5 Log and Trend signals

2.43 Overlayed Digital out parameters PC 441

Digital output type PC441: Logic IO configuration

Register no	Description	Scale factor/ unit / note
2880	DO 1. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2881	DO 1. Sign.1 IO no	Modbus / Comli IO
2882	DO 1. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2883	DO 1. Sign.2 IO no	Modbus / Comli IO
2884	DO 1. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2885	DO 1. Sign.3 IO no	Modbus / Comli IO
2886	DO 1. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2887	DO 1. Sign.4 IO no	Modbus / Comli IO
2888	DO 2. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2889	DO 2. Sign.1 IO no	Modbus / Comli IO
2890	DO 2. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2891	DO 2. Sign.2 IO no	Modbus / Comli IO
2892	DO 2. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2893	DO 2. Sign.3 IO no	Modbus / Comli IO
2894	DO 2. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2895	DO 2. Sign.4 IO no	Modbus / Comli IO
2896	DO 3. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2897	DO 3. Sign.1 IO no	Modbus / Comli IO
2898	DO 3. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2899	DO 3. Sign.2 IO no	Modbus / Comli IO
2900	DO 3. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2901	DO 3. Sign.3 IO no	Modbus / Comli IO
2902	DO 3. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2903	DO 3. Sign.4 IO no	Modbus / Comli IO
2904	DO 4. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2905	DO 4. Sign.1 IO no	Modbus / Comli IO
2906	DO 4. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2907	DO 4. Sign.2 IO no	Modbus / Comli IO
2908	DO 4. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2909	DO 4. Sign.3 IO no	Modbus / Comli IO
2910	DO 4. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2911	DO 4. Sign.4 IO no	Modbus / Comli IO
2912	DO 5. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2913	DO 5. Sign.1 IO no	Modbus / Comli IO
2914	DO 5. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2915	DO 5. Sign.2 IO no	Modbus / Comli IO
2916	DO 5. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2917	DO 5. Sign.3 IO no	Modbus / Comli IO
2918	DO 5. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2919	DO 5. Sign.4 IO no	Modbus / Comli IO
2920	DO 6. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2921	DO 6. Sign.1 IO no	Modbus / Comli IO
2922	DO 6. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2923	DO 6. Sign.2 IO no	Modbus / Comli IO
2924	DO 6. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2925	DO 6. Sign.3 IO no	Modbus / Comli IO
2926	DO 6. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2927	DO 6. Sign.4 IO no	Modbus / Comli IO

Register no	Description	Scale factor/ unit / note
2928	DO 7. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2929	DO 7. Sign.1 IO no	Modbus / Comli IO
2930	DO 7. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2931	DO 7. Sign.2 IO no	Modbus / Comli IO
2932	DO 7. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2933	DO 7. Sign.3 IO no	Modbus / Comli IO
2934	DO 7. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2935	DO 7. Sign.4 IO no	Modbus / Comli IO
2936	DO 8. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2937	DO 8. Sign.1 IO no	Modbus / Comli IO
2938	DO 8. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2939	DO 8. Sign.2 IO no	Modbus / Comli IO
2940	DO 8. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2941	DO 8. Sign.3 IO no	Modbus / Comli IO
2942	DO 8. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
2943	DO 8. Sign.4 IO no	Modbus / Comli IO

Digital output type PC441: Data Register Setpoint

Register no	Description	Scale factor/ unit / note
2880	DO 1. Data Register	Source value register number 0-4529
2881	DO 1. Set-point on	0-65535
2882	DO 1. Set-point off	0-65535
2883	DO 1. Set-point delay	seconds
2888	DO 2. Data Register	Source value register number 0-4529
2889	DO 2. Set-point on	0-65535
2890	DO 2. Set-point off	0-65535
2891	DO 2. Set-point delay	seconds
2896	DO 3. Data Register	Source value register number 0-4529
2897	DO 3. Set-point on	0-65535
2898	DO 3. Set-point off	0-65535
2899	DO 3. Set-point delay	seconds
2904	DO 4. Data Register	Source value register number 0-4529
2905	DO 4. Set-point on	0-65535
2906	DO 4. Set-point off	0-65535
2907	DO 4. Set-point delay	seconds
2912	DO 5. Data Register	Source value register number 0-4529
2913	DO 5. Set-point on	0-65535
2914	DO 5. Set-point off	0-65535
2915	DO 5. Set-point delay	seconds
2920	DO 6. Data Register	Source value register number 0-4529
2921	DO 6. Set-point on	0-65535
2922	DO 6. Set-point off	0-65535
2923	DO 6. Set-point delay	seconds
2928	DO 7. Data Register	Source value register number 0-4529
2929	DO 7. Set-point on	0-65535
2930	DO 7. Set-point off	0-65535
2931	DO 7. Set-point delay	seconds
2936	DO 8. Data Register	Source value register number 0-4529
2937	DO 8. Set-point on	0-65535
2938	DO 8. Set-point off	0-65535
2939	DO 8. Set-point delay	seconds

Digital output type PC 441: External reset alert

Register no	Description	Scale factor/ unit / note
2880	DO 1.	Pre-alert time in seconds
2888	DO 2.	Pre-alert time in seconds
2896	DO 3.	Pre-alert time in seconds
2904	DO 4.	Pre-alert time in seconds
2912	DO 5.	Pre-alert time in seconds
2920	DO 6.	Pre-alert time in seconds
2928	DO 7.	Pre-alert time in seconds
2936	DO 8.	Pre-alert time in seconds

2.44 DI 1- DI 16 user text alarms configuration (AL No 232-247)

Register no	Description	Scale factor/ unit / note
DI 1 user text alarm :		Alarm 232
2960	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2961	Delay	s
DI 2 user text alarm :		Alarm 233
2962	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2963	Delay	s
DI 3 user text alarm :		Alarm 234
2964	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2965	Delay	s
DI 4 user text alarm :		Alarm 235
2966	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2967	Delay	s
DI 5 user text alarm :		Alarm 236
2968	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2969	Delay	s
DI 6 user text alarm :		Alarm 237
2970	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2971	Delay	s
DI 7 user text alarm :		Alarm 238
2972	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2973	Delay	s
DI 8 user text alarm :		Alarm 239
2974	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2975	Delay	s
DI 9 user text alarm :		Alarm 240
2976	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2977	Delay	s
DI 10 user text alarm :		Alarm 241
2978	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2979	Delay	s
DI 11 user text alarm :		Alarm 242
2980	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2981	Delay	s
DI 12 user text alarm :		Alarm 243
2982	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2983	Delay	s
DI 13 user text alarm :		Alarm 244
2984	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2985	Delay	s
DI 14 user text alarm :		Alarm 245
2986	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2987	Delay	s
DI 15 user text alarm :		Alarm 246
2988	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2989	Delay	s
DI 16 user text alarm :		Alarm 247

2990	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2991	Delay	s

2.45 Field bus alarms exp. modules (AL 248-252)

Register no	Description	Scale factor/ unit / note
	CA 442-5 Communication failure :	Alarm 248
2992	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2993	Delay	s
	CA 442-6 Communication failure :	Alarm 249
2994	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2995	Delay	s
	CA 781 Communication failure:	Alarm 250
2996	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2997	Delay	s
	CA 622 Communication failure:	Alarm 251
2998	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2999	Delay	s
	Main PM - CA 622 Modbus timeout:	Alarm 252
2958	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
2959	Delay	s

2.46 System alarms configuration

Register no	Description	Scale factor/ unit / note
	Power fail :	Alarm 1
3000	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3001	Delay	s
	Low supply voltage :	Alarm 2
3005	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3006	Delay	s
3007	Limit	0.1 V
3008	Hysteresis	0.1 V
	NV Checksum error :	Alarm 3
3010	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3011	Delay	s
	Personal alarm	Alarm 4
3015	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3016	Delay	s
3017	Max time to reset	min

2.47 Pit alarms configuration

Register no	Description	Scale factor/ unit / note	
Pit Level Diff (relative secondary pit level) :			**Alarm 253**
2953	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
2954	Delay	s	
2955	Limit	0.01 m	(0.01 ft)
2956	Hysteresis	0.01 m	(0.01 ft)
High level :			**Alarm 5**
3020	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3021	Delay	s	
3022	Limit	0.01 m	(0.01 ft)
3023	Hysteresis	0.01 m	(0.01 ft)
Low level :			**Alarm 6**
3025	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3026	Delay	s	
3027	Limit	0.01 m	(0.01 ft)
3028	Hysteresis	0.01 m	(0.01 ft)
High level float :			
3030	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3031	Delay	s	
Low level float :			
3035	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3036	Delay	s	
High inflow :			
3040	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3041	Delay	s	
3042	Limit	0.1 l/s	(1 GPM)
3043	Hysteresis	0.1 l/s	(1 GPM)
Low inflow :			
3045	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3046	Delay	s	
3047	Limit	0.1 l/s	(1 GPM)
3048	Hysteresis	0.1 l/s	(1 GPM)
Backup running :			
3050	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3051	Delay	s	
Remote block :			
3055	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3056	Delay	s	
High pressure :			
3060	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3061	Delay	s	
3062	Limit	0.1 bar	(0.1 PSI)
3063	Hysteresis	0.1 bar	(0.1 PSI)
Low pressure :			
3065	Priority	0=Inactive, 1=B-alarm, 2=A-alarm	
3066	Delay	s	
3067	Limit	0.1 bar	(0.1 PSI)
3068	Hysteresis	0.1 bar	(0.1 PSI)

Register no	Description	Scale factor/ unit / note
Overflow float :		
3070	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3071	Delay	s
High Back-Presure block:		
3075	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3076	Delay	s
Drain pump float:		
3080	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3081	Delay	s
Sensor error :		
3085	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3086	Delay	s
No run confirm mixer :		
3090	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3091	Delay	
Motor protector mixer :		
3095	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3096	Delay	s
No run confirm drain pump :		
3100	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3101	Delay	
Motor protector drain pump :		
3105	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3106	Delay	
To many pump blocked :		
3110	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3111	Delay	s
3112	Limit	Min no pumps available (0-4)
Motor protector reset error Mixer/Drain pump :		
3115	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3116	Delay	s
Emergency Power Mode :		
3120	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3121	Delay	s

2.48 Power monitor alarms

Register no	Description	Scale factor/ unit / note
Incoming phase missing :		
3125	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3126	Delay	s
Over voltage :		
3130	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3131	Delay	s
3132	Limit	0.1 %
3133	Hysteresis	0.1 %
Under voltage :		
3135	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3136	Delay	s
3137	Limit	0.1 %
3138	Hysteresis	0.1 %
Unbalanced voltage :		
3140	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3141	Delay	s
3142	Limit	0.1 %
3143	Hysteresis	0.1 %
High frequency :		
3145	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3146	Delay	s
3147	Limit	0.1 %
3148	Hysteresis	0.1 %
Low frequency :		
3150	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3151	Delay	s
3152	Limit	0.1 %
3153	Hysteresis	0.1 %

2.49 Pump 1-4 alarms configuration

Alarm Parameters	**Register P1**	**Register P2**	**Register P3**	**Register P4**	**Scale factor/ unit / note**
No run confirm	3155	3315	3475	3635	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3156	3316	3476	3636	S
Fallen motor protect.	3160	3320	3480	3640	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3161	3321	3481	3641	S
High motor current	3165	3325	3485	3645	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3166	3326	3486	3646	S
Limit	3167	3327	3487	3647	0.1 A
Hysteresis	3168	3328	3488	3648	0.1 A
Low motor current	3170	3330	3490	3650	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3171	3331	3491	3651	S
Limit	3172	3332	3492	3652	0.1 A
Hysteresis	3173	3333	3493	3653	0.1 A
DIN leakage	3175	3335	3495	3655	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3176	3336	3496	3656	S
DIN High temperat.	3180	3340	3500	3660	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3181	3341	3501	3661	S
Low pump capacity	3185	3345	3505	3665	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3186	3346	3506	3666	S
Limit	3187	3347	3507	3667	0.1 l/s (GPM)
Hysteresis	3188	3348	3508	3668	0.1 l/s (GPM)
DIN Pump error	3190	3350	3510	3670	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3191	3351	3511	3671	S
Phase missing	3195	3355	3515	3675	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3196	3356	3516	3676	S
M.prot reset error	3200	3360	3520	3680	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3201	3361	3521	3681	S
Max contin. Runtime	3205	3365	3525	3685	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3206	3366	3526	3686	S
Pump alarm blocked	3210	3370	3530	3690	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3211	3371	3531	3691	S
Dry run	3215	3375	3535	3695	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3216	3376	3536	3696	S
Pump not in auto	3220	3380	3540	3700	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3221	3381	3541	3701	S
CA 622 com error	3225	3385	3545	3705	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3226	3386	3546	3706	S
Drive fault	3230	3390	3550	3710	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3231	3391	3551	3711	S
Al.Ack Resets Drive	3232	3392	3552	3712	0=No, 1=Yes
Leakage oil chamber	3235	3395	3555	3715	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3236	3396	3556	3716	S
Leakage con. Chamb	3240	3400	3560	3720	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3241	3401	3561	3721	S
Leakage motor hous.	3245	3405	3565	3725	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3246	3406	3566	3726	S
CA622-PM com error	3250	3410	3570	3730	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3251	3411	3571	3731	S
High temp. wirings	3255	3415	3575	3735	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3256	3416	3576	3736	S
Limit	3257	3417	3577	3737	0.1 °C (°F)
Hysteresis	3258	3418	3578	3738	0.1 °C (°F)

H.temp up. Bearing	3260	3420	3580	3740	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3261	3421	3581	3741	S
Limit	3262	3422	3582	3742	0.1 °C (°F)
Hysteresis	3263	3423	3583	3743	0.1 °C (°F)
H.temp lo. Bearing	3265	3425	3585	3745	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3266	3426	3586	3746	S
Limit	3267	3427	3587	3747	0.1 °C (°F)
Hysteresis	3268	3428	3588	3748	0.1 °C (°F)
High vibrations	3270	3430	3590	3750	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3271	3431	3591	3751	S
Limit	3272	3432	3592	3752	0.1 mm/s (0.01 Inch/s)
Hysteresis	3273	3433	3593	3753	0.1 mm/s (0.01 Inch/s)
Wrong phase order	3274	3435	3595	3755	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3275	3436	3596	3756	S
H.temp stator L2	3280	3440	3600	3760	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3281	3441	3601	3761	s (using H.temp wirings limit)
H.temp stator L3	3285	3445	3605	3765	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3286	3446	3606	3766	s (using H.temp wirings limit)
CA 442-5/6 L2 Error	3290	3450	3610	3770	Cable Error
Delay	3291	3451	3611	3771	Extra temp. monitors
CA 442-5/6 L3 Error	3295	3455	3615	3775	Cable Error
Delay	3296	3456	3616	3776	Extra temp. monitors
Pump reverse error	3305	3465	3625	3785	0=Inactive, 1=B-alarm, 2=A-alarm
Delay	3066	3466	3626	3786	Seconds

2.50 AI2 – AI5 user alarms configuration

Register no	Description	Scale factor/ unit / note
AI 2 High alarm :		
3795	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3796	Delay	s
3797	Limit	User unit and decimals
3798	Hysteresis	
AI 2 Low alarm :		
3800	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3801	Delay	s
3802	Limit	User unit and decimals
3803	Hysteresis	
AI 3 High alarm :		
3805	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3806	Delay	s
3807	Limit	User unit and decimals
3808	Hysteresis	
AI 3 Low alarm :		
3810	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3811	Delay	s
3812	Limit	User unit and decimals
3813	Hysteresis	
AI 4 High alarm :		
3815	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3816	Delay	s
3817	Limit	User unit and decimals
3818	Hysteresis	
AI 4 Low alarm :		
3820	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3821	Delay	s
3822	Limit	User unit and decimals
3823	Hysteresis	

AI 5 High alarm :

3825	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3826	Delay	s
3827	Limit	User unit and decimals
3828	Hysteresis	

AI 5 Low alarm :

3830	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3831	Delay	s
3832	Limit	User unit and decimals
3833	Hysteresis	

2.51 Pulse channels 1-4 alarms configuration

Register no	Description	Scale factor/ unit / note
Ch 1 if precipitation selected :		
3835	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3836	Delay	s
3837	Limit	0.1 l/s*ha (0.01 inch/h)
3838	Hysteresis	0.1 l/s*ha (0.01 inch/h)
Ch 1 if energy selected :		
3840	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3841	Delay	s
3842	Limit	0.1 kW
3843	Hysteresis	0.1 kW
Ch1 if flow selected : High flow		
3845	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3846	Delay	s
3847	Limit	0.1 m3/h (GPM)
3848	Hysteresis	0.1 m3/h (GPM)
Ch1 if flow selected : Low flow		
3850	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3851	Delay	s
3852	Limit	0.1 m3/h (GPM)
3853	Hysteresis	0.1 m3/h (GPM)
Ch 2 if precipitation selected :		
3855	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3856	Delay	s
3857	Limit	0.1 l/s*ha (0.01 inch/h)
3858	Hysteresis	0.1 l/s*ha (0.01 inch/h)
Ch 2 if energy selected :		
3860	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3861	Delay	s
3862	Limit	0.1 kW
3863	Hysteresis	0.1 kW
Ch 2 if flow selected : High flow		
3865	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3866	Delay	s
3867	Limit	0.1 m3/h (GPM)
3868	Hysteresis	0.1 m3/h (GPM)
Ch 2 if flow selected : Low flow		
3870	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3871	Delay	s
3872	Limit	0.1 m3/h (GPM)
3873	Hysteresis	0.1 m3/h (GPM)
Ch 3 if precipitation selected :		
3875	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3876	Delay	s
3877	Limit	0.1 l/s*ha (0.01 inch/h)
3878	Hysteresis	0.1 l/s*ha (0.01 inch/h)

Register no	Description	Scale factor/ unit / note
Ch 3 if energy selected :		
3880	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3881	Delay	s
3882	Limit	0.1 kW
3883	Hysteresis	0.1 kW
Ch 3 if flow selected : High flow		
3885	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3886	Delay	s
3887	Limit	0.1 m3/h (GPM)
3888	Hysteresis	0.1 m3/h (GPM)
Ch 3 if flow selected : Low flow		
3890	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3891	Delay	s
3892	Limit	0.1 m3/h (GPM)
3893	Hysteresis	0.1 m3/h (GPM)
Ch 4 if precipitation selected :		
3895	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3896	Delay	s
3897	Limit	0.1 l/s*ha (0.01 inch/h)
3898	Hysteresis	0.1 l/s*ha (0.01 inch/h)
Ch 4 if energy selected :		
3900	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3901	Delay	s
3902	Limit	0.1 kW
3903	Hysteresis	0.1 kW
Ch 4 if flow selected : High flow		
3905	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3906	Delay	s
3907	Limit	0.1 m3/h (GPM)
3908	Hysteresis	0.1 m3/h (GPM)
Ch 4 if flow selected : Low flow		
3910	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3911	Delay	s
3912	Limit	0.1 m3/h (GPM)
3913	Hysteresis	0.1 m3/h (GPM)

2.52 Communication alarms configuration

Register no	Description	Scale factor/ unit / note
	CA 441-1 Communication failure	**Leakage monitor**
3915	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3916	Delay	s
	CA 441-2 Communication failure	
3920	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3921	Delay	s
	CA 441-3 Communication failure	
3925	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3926	Delay	s
	CA 441-4 Communication failure	
3930	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3931	Delay	s
	CA 442-1 Communication failure	**Temperature monitor**
3935	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3936	Delay	s
	CA 442-2 Communication failure	
3940	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3941	Delay	s
	CA 442-3 Communication failure	
3945	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3946	Delay	s
	CA 442-4 Communication failure	
3950	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3951	Delay	s
	CA 443-0 Communication failure	
3955	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3956	Delay	s
	CA 443-1 Communication failure	**Power monitor**
3960	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3961	Delay	s
	CA 443-2 Communication failure	
3965	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3966	Delay	s
	CA 443-3 Communication failure	
3970	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3971	Delay	s
	CA 443-4 Communication failure	
3975	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3976	Delay	s

Register no	Description	Scale factor/ unit / note
	Modem error :	
3980	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3981	Delay	s
	Line error :	
3985	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3986	Delay	s
	Combined field bus error :	
3990	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3991	Delay	s

2.53 Sensor errors alarms

Register no	Description	Scale factor/ unit / note
	CA 441-1 Sensor 1 error :	**Leakage monitor 1**
3995	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
3996	Delay	s
	CA 441-1 Sensor 2 error :	
4000	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4001	Delay	
	CA 441-1 Sensor 3 error :	
4005	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4006	Delay	
	CA 441-1 Sensor 4 error :	
4010	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4011	Delay	
	CA 441-2 Sensor 1 error :	**Leakage monitor 2**
4015	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4016	Delay	s
	CA 441-2 Sensor 2 error :	
4020	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4021	Delay	
	CA 441-2 Sensor 3 error :	
4025	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4026	Delay	
	CA 441-2 Sensor 4 error :	
4030	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4031	Delay	
	CA 441-3 Sensor 1 error :	**Leakage monitor 3**
4035	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4036	Delay	s
	CA 441-3 Sensor 2 error :	
4040	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4041	Delay	

Register no	Description	Scale factor/ unit / note
	CA 441-3 Sensor 3 error :	
4045	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4046	Delay	
	CA 441-3 Sensor 4 error :	
4050	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4051	Delay	
	CA 441-4 Sensor 1 error :	**Leakage monitor 4**
4055	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4056	Delay	s
	CA 441-4 Sensor 2 error :	
4060	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4061	Delay	
	CA 441-4 Sensor 3 error :	
4065	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4066	Delay	
	CA 441-4 Sensor 4 error :	
4070	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4071	Delay	
	CA 442-1 Sensor 1 error :	**Temperature monitor 1**
4075	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4076	Delay	s
	CA 442-1 Sensor 2 error :	
4080	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4081	Delay	s
	CA 442-1 Sensor 3 error :	
4085	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4086	Delay	s
	CA 442-1 Sensor 4 error :	
4090	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4091	Delay	s
	CA 442-2 Sensor 1 error :	**Temperature monitor 2**
4095	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4096	Delay	s
	CA 442-2 Sensor 2 error :	
4100	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4101	Delay	s
	CA 442-2 Sensor 3 error :	
4105	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4106	Delay	s
	CA 442-2 Sensor 4 error :	
4110	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4111	Delay	

Register no	Description	Scale factor/ unit / note
	CA 442-3 Sensor 1 error :	**Temperature monitor 3**
4115	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4116	Delay	s
	CA 442-3 Sensor 2 error :	
4120	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4121	Delay	s
	CA 442-3 Sensor 3 error :	
4125	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4126	Delay	s
	CA 442-3 Sensor 4 error :	
4130	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4131	Delay	s
	CA 442-4 Sensor 1 error :	**Temperature monitor 4**
4135	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4136	Delay	s
	CA 442-4 Sensor 2 error :	
4140	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4141	Delay	s
	CA 442-4 Sensor 3 error :	
4145	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4146	Delay	s
	CA 442-4 Sensor 4 error :	Alarm 231
4150	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
4151	Delay	s

2.54 Field bus modules configuration

Register no	Description	Scale factor/ unit / note
4170	Field bus flags	Modules connected. Bit mapped register, See IO-bits.
4172	CA 441-1 Connections	0=4 pumps / P1 Leakage monitor
4174	CA 442-1 Connections	0=4 pumps / P1 Temperature monitor
CA 441-1 Leakage monitor P1 or P1-P4		
4180	Sensor 1 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4181	Sensor 2 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4182	Sensor 3 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4183	Sensor 4 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
CA 441-2 Leakage monitor P2		
4185	Sensor 1 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4186	Sensor 2 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4187	Sensor 3 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4188	Sensor 4 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
CA 441-3 Leakage monitor P3		
4190	Sensor 1 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4191	Sensor 2 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4192	Sensor 3 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4193	Sensor 4 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
CA 441-4 Leakage monitor P4		
4195	Sensor 1 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4196	Sensor 2 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4197	Sensor 3 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
4198	Sensor 4 type	0=Off/1=ABS-Standard/2=ABS extended/3=ITT Flygt
CA 442-1 Temperature monitor P1 or P1-P4		
4210	Sensor 1 type	0=Off/1=Klixon/2=PTC/3=Pt100
4211	Temperature offset	0.1 °C (°F) (Pt100)
4213	Filter constant	s (Pt100)
4215	Sensor 2 type	0=Off/1=Klixon/2=PTC/3=Pt100
4216	Temperature offset	0.1 °C (Pt100)
4217	Filter constant	s (Pt100)
4220	Sensor 3 type	0=Off/1=Klixon/2=PTC/3=Pt100
4221	Temperature offset	0.1 °C (Pt100)
4222	Filter constant	s (Pt100)
4225	Sensor 4 type	0=Off/1=Klixon/2=PTC/3=Pt100/4=Vibrations
4226	Temperature offset	0.1 °C (Pt100)
4227	Filter constant	s (Pt100)
4230	Sensor 5 type	mA Input. 0=Off/4=Vibrations
4231	Not used	
4232	Filter constant	s
4233	Scale 0%=	0.1 mm/s (0.01 Inch/s) (Vibrations)
4234	Scale 100%=	0.1 mm/s (001 Inch/s) (Vibrations)
4235	Nominal Vibration	0.1 mm/s (0.01 Inch/s)

CA 442-2 Temperature monitor P2

4240	Sensor 1 type	0=Off/1=Klixon/2=PTC/3=Pt100
4241	Temperature offset	0.1 °C (Pt100)
4242	Filter constant	s (Pt100)
4245	Sensor 2 type	0=Off/1=Klixon/2=PTC/3=Pt100
4246	Temperature offset	0.1 °C (Pt100)
4247	Filter constant	s (Pt100)
4250	Sensor 3 type	0=Off/1=Klixon/2=PTC/3=Pt100
4251	Temperature offset	0.1 °C (Pt100)
4252	Filter constant	s (Pt100)
4255	Sensor 4 type	0=Off/1=Klixon/2=PTC/3=Pt100
4256	Temperature offset	0.1 °C (Pt100)
4257	Filter constant	s
4260	Sensor 5 type	mA Input. 0=Off/4=Vibrations
4261	Not used	
4262	Filter constant	s
4263	Scale 0%=	0.1 mm/s (0.01 Inch/s)
4264	Scale 100%=	0.1 mm/s (0.01 Inch/s)
4265	Nominal vibrations	0.1 mm/s (0.01 Inch/s)

CA 442-3 Temperature monitor P3

4270	Sensor 1 type	0=Off/1=Klixon/2=PTC/3=Pt100
4271	Temperature offset	0.1 °C (Pt100)
4272	Filter constant	s (Pt100)
4275	Sensor 2 type	0=Off/1=Klixon/2=PTC/3=Pt100
4276	Temperature offset	0.1 °C (Pt100)
4277	Filter constant	s (Pt100)
4280	Sensor 3 type	0=Off/1=Klixon/2=PTC/3=Pt100
4281	Temperature offset	0.1 °C (Pt100)
4282	Filter constant	s (Pt100)
4285	Sensor 4 type	0=Off/1=Klixon/2=PTC/3=Pt100/4=Vibrations
4286	Temperature offset	0.1 °C (Pt100)
4287	Filter constant	s (Pt100)
4290	Senor 5 type	mA Input. 0=Off/4=Vibrations
4291	Not used	
4292	Filter constant	s
4293	Scale 0%=	0.1 mm/s (0.01 Inch/s) (Vibrations)
4294	Scale 100%=	0.1 mm/s (0.01 Inch/s) (Vibrations)
4295	Nominal vibrations	0.1 mm/s (0.01 Inch/s)

CA 442-4 Temperature monitor P4

4300	Sensor 1 type	0=Off/1=Klixon/2=PTC/3=Pt100
4301	Temperature offset	0.1 °C (Pt100)
4302	Filter constant	s (Pt100)
4305	Sensor 2 type	0=Off/1=Klixon/2=PTC/3=Pt100
4306	Temperature offset	0.1 °C (Pt100)
4307	Filter constant	s (Pt100)
4310	Sensor 3 type	0=Off/1=Klixon/2=PTC/3=Pt100
4311	Temperature offset	0.1 °C (Pt100)
4312	Filter constant	s (Pt100)
4315	Sensor 4 type	0=Off/1=Klixon/2=PTC/3=Pt100/4=Vibrations
4316	Temperature offset	0.1 °C (Pt100)
4317	Filter constant	s (Pt100)
4320	Sensor 5 type	mA Input. 0=Off/4=Vibrations
4321	Not used	
4322	Filter constant	s
4323	Scale 0%=	0.1 mm/s (0.01 Inch/s)
4324	Scale 100%=	0.1 mm/s (0.01 Inch/s)
4325	Nominal vibrations	0.1 mm/s (0.01 Inch/s)

CA 443-0 Main Power Monitor

4330	Current transformers connected to	0=None,1=L1, 2=L1,L2, 3=L1,L2, L3
4331	Current transformers secondary current	0.1 A
4332	Current transformers nominal current	0.1 A
4333	Current offset	0.1 A
4334	Current Dead band	0.1%
4335	Filter constant	1 s
4336	Phase angle compensation	0.1°
4340	Phase voltages connected	0=None, 1=L1, 2=L1,L2, 3=L1,L2,L3
4341	Ext. voltages transformers connected	0=None, 1=Yes
4342	Primary voltage	1V
4343	Secondary voltage	1V
4344	Offset Voltage	0.1V
4345	Filter Constant	1 s

CA 443-1 Power Monitor P1

4350	Current transformers connected to	0=None,1=L1, 2= L1,L2, 3=L1,L2, L3
4351	Current transformers secondary current	0.1 A
4352	Current transformers nominal current	0.1 A
4353	Current offset	0.1 A
4354	Current Dead band	0.1%
4355	Filter constant	1 s
4356	Phase angle compensation	0.1°
4360	Phase voltages connected	0=None, 1=L1, 2=L1,L2 3= L1,L2,L3
4361	Ext. voltages transformers connected	0=None, 1=Yes
4362	Primary voltage	1V
4363	Secondary voltage	1V
4364	Offset Voltage	0.1V
4365	Filter Constant	1 s

CA 443-2 Power Monitor P2

4370	Currents transformers connected to	0=None,1=L1, 2=L1,L2 3=L1,L2, L3
4371	Current transformers secondary current	0.1A
4372	Current transformers nominal current	0.1 A
4373	Current offset	0.1 A
4374	Current Dead band	0.1%
4375	Filter constant	1 s
4376	Phase angle compensation	0.1°
4380	Phase voltages connected	0=None, 1=L1, 2=L1,L2, 3=L1,L2,L3
4381	Ext. voltages transformers connected	0=None, 1=Yes
4382	Primary voltage	1V
4383	Secondary voltage	1V
4384	Offset Voltage	0.1V
4385	Filter Constant	1 s

CA 443-3 Power Monitor P3

4390	Currents transformers connected to	0=None,1=L1, 2=L1,L2, 3=L1,L2,L3
4391	Current transformers secondary current	0.1 A
4392	Current transformers nominal current	0.1 A
4393	Current offset	0.1 A
4394	Current Dead band	0.1%
4395	Filter constant	1 s
4396	Phase angle compensation	0.1°
4400	Phase voltages connected	0=None, 1=L1, 2=L1,L2 3=L1,L2,L3
4401	Ext. voltages transformers connected	0=None, 1=Yes
4402	Primary voltage	1V
4403	Secondary voltage	1V
4404	Offset Voltage	0.1V
4405	Filter Constant	1 s

CA 443-4 Power Monitor P4

4410	Currents transformers connected to	0=None,1=L1, 2=L1,L2, 3= L1,L2, L3
4411	Current transformers secondary current	0.1A
4412	Current transformers nominal current	0.1 A
4413	Current offset	0.1 A
4414	Current Dead band	0.1%
4415	Filter constant	1 s
4416	Phase angle compensation	0.1°
4420	Phase voltages connected	0=None, 1=L1, 2=L1,L2, 3=L1,L2,L3
4421	Ext. voltages transformers connected	0=None, 1=Yes
4422	Primary voltage	1V
4423	Secondary voltage	1V
4424	Offset Voltage	0.1V
4425	Filter Constant	1 s

2.55 Com port configuration

Register no	Description	Scale factor/ unit / note
Service port:		
4430	Baudrate	0=Off/ 1= 300/2=600 ….10=115200
Com port:		
4432	Baudrate	0=Off/ 1= 300/2=600 ….10=115200
4433	Parity	0=None/1=Odd/2=Even
4434	Protocol	0=Modbus/ 1=Comli/ 2=Modbus TCP
4435	Handshake	0=Off/1=On
4436	Protocol id	
4437	Message timeout	s
4438	Cross reference	0=Off, 1=Enabled
4439	Com port echo	0=Off, 1=On

2.56 Modem configuration

Register no	Description	Scale factor/ unit / note
4440	Modem connected to port	0=None /1=Dial up/2=GPRS CA521/3=GPRS TCP-IP LISTEN
4441	No signal to answer	
4442	GPRS TCP/IP port	
4443	GPRS Heart Beat	min
4444	GPRS SMS Fallback	0=Off / 1=On
4445	Heart Beat Operator scan	0=Off / 1=On
4446	Trig modem init	Write 1 to trig hayes init script for analogue and GSM modems

2.57 Alarm call configuration

Register no	Description	Scale factor/ unit / note
4450	No call attempts/alarm	
4451	Ackn. call function	0=No ackn./1=Ring sign/2=Write to R333/3=All com
4452	Ackn. alarm R333	0=No / 1=Yes
4453	Interval between call attempts	s
4454	Local mode dial out	0=Only personal alarm / 1=All alarms

2.58 Call attempts configuration

Register no	Description	Scale factor/ unit / note
Call attempts 1 :		
4460	Alarm receiver	0=Off /1=Central System/2=SMS GSM
4461	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
4462	Send ID-String on connect	0=No / 1=Yes
4463	Timeout alarm ackn.	s
4464	ID–String transmit delay	s
4465	Call order	0=Backup number, 1=Parallel call
Call attempts 2 :		
4470	Alarm receiver	0=Off /1=Central System/2=SMS GSM
4471	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
4472	Send ID-String on connect	0=No / 1=Yes
4473	Timeout alarm ackn.	s
4474	ID–String transmit delay	s
4475	Call order	0=Backup number, 1=Parallel call
Call attempts 3 :		
4480	Alarm receiver	0=Off /1=Central System/2=SMS GSM
4481	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
4482	Send ID-String on connect	0=No / 1=Yes
4483	Timeout alarm ackn.	s
4484	ID–String transmit delay	s
4485	Call order	0=Backup number, 1=Parallel call

Call attempts 4 :

4490	Alarm receiver	0=Off /1=Central System/2=SMS GSM
4491	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
4492	Send ID-String on connect	0=No / 1=Yes
4493	Timeout alarm ackn.	s
4494	ID–String transmit delay	s
4495	Call order	0=Backup number, 1=Parallel call

2.59 Regulator

Register no	Description	Scale factor/ unit / note
Runtime Settings PID		
220	Current set-point	0.01m (0.01ft)
221	Process value	0.01m (0.01f)t
222	Output signal	0.1%
223	Set-point flags	0=Intern set-point, 1 = Extern set-point (AI)
224	Output flags	0=Auto, 1=Manuel, 2=Blocked
Settings		
4503	Extern set-point input	0=Off, 1=AI2, 2=AI3, 3=AI4, 4=AI5
4504	Max set-point	0.01m (0.01ft)
4505	Min set-point	0.01m (0.01ft)
4506	Start set-Point	0.01m (0.01ft)
4507	Max output	0.1%
4508	Min output	0.1%
4509	Block output	0.1%
4510	Zero dev. output	0.1%
4511	Start output	0.1%
4512	Max output change	0.1% / s
4513	Direct/Reverse effect	0=Reverse, 1=Direct
4514	Set-point tracking	0=No, 1=Yes
4515	Output when blocked	0=Freeze output, 1=Setup block signal
4516	Set-point when start	0=Last set-point, 1=Setup start set-point, 2= Extern set-point
4517	Output state when start	0=Last state, 1=Auto, 2=Man , 3=Internal blocked
4520-4521	P-Band	0- 99.999
4522-4523	I-Time	0- 9999.99 s
4524-4525	D-Time	0- 9999.99 s
4531	Last internal set-point	0.01m (0.01ft)
4532	Last output state	0=Auto, 1=MAN , 2=Internal Blocked
4533	Last set-point state	0=Internal set-point, 1=RSP
VFD		
4527	Min speed	0.1%
4528	Locked speed pumping out	0.1%
4529	Lock speed delay	s
4530	Locked speed reversing	0.1% (v1.35)

CA 622 Modbus Master RS 485 unit

4608	Modbus RS 485 baudrate	
4609	Modbus RS 485 parity	0=None, 1=Odd, 2=Even, 3=Mark
4610	Poll interval	
4611	Message timeout	

Main Power Monitor :

4612	Slave Brand	
4613	Slave Model	
4614	Slave ID	Default 5

P1 Drive:

4616	Slave Brand	
4617	Slave Model	
4618	Slave ID	Default 1
4619	Control mode	0=monitor, 1=&control ON/OFF, 2=&manual Speed, 3=&PID

P2 Drive:

4620	Slave Brand	
4621	Slave Model	
4622	Slave ID	Default 2
4623	Control mode	0=monitor, 1=&control ON/OFF, 2=&manual Speed, 3=&PID

P3 Drive :

4624	Slave Brand	
4625	Slave Model	
4626	Slave ID	Default 3
4627	Control mode	0=monitor, 1=&control ON/OFF, 2=&manual Speed, 3=&PID

P4 Drive :

4628	Slave Brand	
4629	Slave Model	
4630	Slave ID	Default 4
4631	Control mode	0=monitor, 1=&control ON/OFF, 2=&manual Speed, 3=&PID

P1 Power Monitor :

4632	Slave Brand	
4633	Slave Model	
4634	Slave ID	Default 6

P2 Power Monitor :

4636	Slave Brand	
4637	Slave Model	
4638	Slave ID	Default 7

P3 Power Monitor :

4640	Slave Brand	
4641	Slave Model	
4642	Slave ID	Default 8

P4 Power Monitor :

4644	Slave Brand	
4645	Slave Model	
4646	Slave ID	Default 9

2.60 Overlayed Digital out parameters CA 781

Digital output type CA 781: Logic IO configuration

Register no	Description	Scale factor/ unit / note
4540	DO 1. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4541	DO 1. Sign.1 IO no	Modbus / Comli IO
4542	DO 1. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4543	DO 1. Sign.2 IO no	Modbus / Comli IO
4544	DO 1. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4545	DO 1. Sign.3 IO no	Modbus / Comli IO
4546	DO 1. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4547	DO 1. Sign.4 IO no	Modbus / Comli IO
4548	DO 2. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4549	DO 2. Sign.1 IO no	Modbus / Comli IO
4550	DO 2. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4551	DO 2. Sign.2 IO no	Modbus / Comli IO
4552	DO 2. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4553	DO 2. Sign.3 IO no	Modbus / Comli IO
4554	DO 2. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4555	DO 2. Sign.4 IO no	Modbus / Comli IO
4556	DO 3. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4557	DO 3. Sign.1 IO no	Modbus / Comli IO
4558	DO 3. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4559	DO 3. Sign.2 IO no	Modbus / Comli IO
4560	DO 3. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4561	DO 3. Sign.3 IO no	Modbus / Comli IO
4562	DO 3. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4563	DO 3. Sign.4 IO no	Modbus / Comli IO
4564	DO 4. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4565	DO 4. Sign.1 IO no	Modbus / Comli IO
4566	DO 4. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4567	DO 4. Sign.2 IO no	Modbus / Comli IO
4568	DO 4. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4569	DO 4. Sign.3 IO no	Modbus / Comli IO
4570	DO 4. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4571	DO 4. Sign.4 IO no	Modbus / Comli IO
4572	DO 5. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4573	DO 5. Sign.1 IO no	Modbus / Comli IO
4574	DO 5. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4575	DO 5. Sign.2 IO no	Modbus / Comli IO
4576	DO 5. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4577	DO 5. Sign.3 IO no	Modbus / Comli IO
4578	DO 5. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4579	DO 5. Sign.4 IO no	Modbus / Comli IO
4580	DO 6. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4581	DO 6. Sign.1 IO no	Modbus / Comli IO
4582	DO 6. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4583	DO 6. Sign.2 IO no	Modbus / Comli IO
4584	DO 6. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4585	DO 6. Sign.3 IO no	Modbus / Comli IO
4586	DO 6. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4587	DO 6. Sign.4 IO no	Modbus / Comli IO

Register no	Description	Scale factor/ unit / note
4588	DO 7. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4589	DO 7. Sign.1 IO no	Modbus / Comli IO
4590	DO 7. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4591	DO 7. Sign.2 IO no	Modbus / Comli IO
4592	DO 7. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4593	DO 7. Sign.3 IO no	Modbus / Comli IO
4594	DO 7. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4595	DO 7. Sign.4 IO no	Modbus / Comli IO
4596	DO 8. Sign.1 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4597	DO 8. Sign.1 IO no	Modbus / Comli IO
4598	DO 8. Sign.2 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4599	DO 8. Sign.2 IO no	Modbus / Comli IO
4600	DO 8. Sign.3 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4601	DO 8. Sign.3 IO no	Modbus / Comli IO
4602	DO 8. Sign.4 type	0=Off/ 1=True OR 2=Inv OR 3=True AND 4=Inv AND
4603	DO 8. Sign.4 IO no	Modbus / Comli IO

Digital output type CA 781: Data Register Setpoint

Register no	Description	Scale factor/ unit / note
4540	DO 1. Data Register	Source value register number 0-4529
4541	DO 1. Set-point on	0-65535
4542	DO 1. Set-point off	0-65535
4543	DO 1. Set-point delay	seconds
4548	DO 2. Data Register	Source value register number 0-4529
4549	DO 2. Set-point on	0-65535
4550	DO 2. Set-point off	0-65535
4551	DO 2. Set-point delay	seconds
4556	DO 3. Data Register	Source value register number 0-4529
4557	DO 3. Set-point on	0-65535
4558	DO 3. Set-point off	0-65535
4559	DO 3. Set-point delay	seconds
4560	DO 4. Data Register	Source value register number 0-4529
4561	DO 4. Set-point on	0-65535
4562	DO 4. Set-point off	0-65535
4563	DO 4. Set-point delay	seconds
4572	DO 5. Data Register	Source value register number 0-4529
4573	DO 5. Set-point on	0-65535
4574	DO 5. Set-point off	0-65535
4575	DO 5. Set-point delay	seconds
4580	DO 6. Data Register	Source value register number 0-4529
4581	DO 6. Set-point on	0-65535
4582	DO 6. Set-point off	0-65535
4583	DO 6. Set-point delay	seconds
4588	DO 7. Data Register	Source value register number 0-4529
4589	DO 7. Set-point on	0-65535
4590	DO 7. Set-point off	0-65535
4591	DO 7. Set-point delay	seconds
4596	DO 8. Data Register	Source value register number 0-4529
4597	DO 8. Set-point on	0-65535
4598	DO 8. Set-point off	0-65535
4599	DO 8. Set-point delay	seconds

Digital output type CA 781: External reset alert

Register no	Description	Scale factor/ unit / note
4540	DO 1.	Pre-alert time in seconds
4548	DO 2.	Pre-alert time in seconds
4556	DO 3.	Pre-alert time in seconds
4564	DO 4.	Pre-alert time in seconds
4572	DO 5.	Pre-alert time in seconds
4580	DO 6.	Pre-alert time in seconds
4588	DO 7.	Pre-alert time in seconds
4596	DO 8.	Pre-alert time in seconds

2.61 Register Cross Reference Config

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

2.62 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

2.63 Get log data ch1-ch16

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)
Ch9 start at base address R32768 (8000H)
Ch10 start at base address R34816 (8800H)
Ch11 start at base address R36864 (9000H)
Ch12 start at base address R38912 (9800H)
Ch13 start at base address R40960 (A000H)
Ch14 start at base address R43008 (A800H)
Ch15 start at base address R45056 (B000H)
Ch16 start at base address R47104 (B800H)

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	Log object no	** 0-3
Base + 5	No decimals	0 - 4
Base + 6	Log interval in block	min
Base + 7	Log function in block	0=Closed/1=Act. value/2=Average val/3=Min/4=Max
Base + 8	Year in block	
Base + 9	Month in block	1-12
Base +10	Date in block	1-32
Base +11	Time for activate block	0 = 00:00/1=00:01/2=00:02…1439=23:59 (Interval=1min)
Base +12	First logged value	00:00-00:01 (1 min interval)
Base +13	Second logged value	00:01-00:02
.		
.		
Base + 1451	Last logged value	23:59-24:00 (1 min interval)

* See appendics 3.5 Log and trend signals

** Log object no :
Signal type : 7,8,9,10,11,12,13,19,20 Select logged pump P1–P4 , P1=0… P4=3
Signal type : 16 Free choice, Select logged signal AI2-AI5, AI2=0
Signal type : 18 Pulse channel., Select channel CH1-CH4, CH1=0

3 Appendics

3.1 Digital input types

Type no.	Function		Option register
0	DI Off		
1	Run indication (P1-P4)		Pump object 0-3
2	Manuel start (P1-P4)		Pump object 0-3
3	Pump not in auto (P1-P4)		Pump object 0-3
4	Start float (P1-P4)		Pump object 0-3
5	Pump failure (P1-P4)		Pump object 0-3
6	Motor protector (P1-P4)		Pump object 0-3
7	High temperature (P1-P4)		Pump object 0-3
8	Leakage (P1-P4)		Pump object 0-3
9	Stop float, common for P1,P2,P3 and P4		
10	Low level float		
11	Overflow float		
12	High level float		
13	Start float drain pump		
14	Run indicator drain pump		
15	Motor protector drain pump		
16	Run indicator mixer		
17	Motor protector mixer		
18	Local mode		
19	Alarm reset		Delay in seconds
20	Power fail		
21	DI pulse channel 1	**Only DI 13/14/15/16**	
22	DI pulse channel 2	**Only DI 13/14/15/16**	
23	DI pulse channel 3	**Only DI 13/14/15/16**	
24	DI pulse channel 4	**Only DI 13/14/15/16**	
25	Block PID Controller		
26	Alarm input (free alarm text)		
27	Mixer block (free alarm text)		
28	Drain Pump block (free alarm text)		
29	Block remote data		Allow set clock
30	Emergency Power Mode		
31	Pump alarm acknowledge		P1 – P4 or All

3.2 Digital output types

Type no.	Function	Option register
0	DO Off	
1	Pump control (P1-P4) Register setup choose between P1,P2,P3 or P4	
2	Reset motor protector (P1-P4)	
3	Pump fail (P1-P4)	
4	Not enough pumps available	
5	One pump fail P1,P2,P3 or P4	
6	Master reset motor protectors	
7	Mixer control	
8	Reset motor protector mixer	
9	Drain pump control	
10	Reset motor protector drain pump	
11	Cleaner control	
12	Modem control	
13	Remote control	
14	Personal alarm	
15	High level	
16	Alarm alert	
17	Not ackn. A-alarm	
18	Not ackn. A/B-alarm	
19	Active A-alarm	
20	Active A/B-alarm	
21	Pump Reversing (P1-P4)	
22	Not Ackn. B-alarm	
23	Active B-alarm	
24	Logic IO	
25	Data Register Setpoint	
26	External reset alert	Opt 0 = Pre-alert time seconds

3.3 Analogue inputs types

Type no.	Function	
0	AI Off	
1	Pit level	0.01m (AI 1)
2	Current P1	0.1A (AI 2-5)
3	Current P2	0.1A (AI 2-5)
4	Current P3	0.1A (AI 2-5)
5	Current P4	0.1A (AI 2-5)
6	Back-Pressure	0.1 bar (AI 2-5)
7	Free Choice	User (AI 2-5)
8	Vibrations P1	0.1 mm/s (AI 2-5)
9	Vibrations P2	0.1 mm/s (AI 2-5)
10	Vibrations P3	0.1 mm/s (AI 2-5)
11	Vibrations P4	0.1 mm/s (AI2-5)
12	ITT MiniCas Sim. P1 (AI 2-5)	
13	ITT MiniCas Sim. P2 (AI 2-5)	
14	ITT MiniCas Sim. P3 (AI 2-5)	
15	ITT MiniCas Sim. P4 (AI 2-5)	
16	Outflow meter (AI 2-5)	
17	Secondary Pit Level (AI 2-5)	

3.4 Analogue outputs types

Type no.	Function
0	AO Off
1	Pit level
2	Inflow
3	Outflow
4	Overflow
5	Pulse channel 1
6	Pulse channel 2
7	Pulse channel 3
8	Pulse channel 4
9	PID Controller output
10	Data Register

3.5 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	Overflow level	0.001 m	
5	Overflow flow	0.1 l/s	
6	Back-Pressure	0.1 bar	
7	Motor current P1-P4	0.1 A Register choose between P1,P2,P3 or P4	
8	Pump capacity P1-P4	0.1 l/s	“
9	Power factor P1-P4	0.01	“
10	Temp. stator wiring P1-P4	0.1 °C	2-complement
11	Temp. upper bearing P1-P4	0.1 °C	“
12	Temp. lower bearing P1-P4	0.1 °C	“
13	Vibration P1-P4	0.1 mm/s	
14	Main voltage	0.1 V	
15	Main frequency	0. 1Hz	
16	Free choice AI2-AI5	User choice 2-complement	
17	Power supply	0.1 V	
18	Pulse channel 1-4	0.1 l/s*ha / 0. 1kW	
19	Temp. stator wiring L2 P1-P4	0.1 °C	2-complement
20	Temp. stator wiring L3 P1-P4	0.1 °C	2-complement
21	PID regulator out		0.1 %
22	Data register		
23	Data register		2-complement
24	Actual VFD frequency P1-P4	0.01 Hz	
25	Total head	0.01 m at pump outlet, measured reading	
26	Actual head	0.01 m used in pump flow calc.	
27	Motor Power P1-P4	0.01 kW.	
28	Mains Power	0.01 kW.	
29	Secondary Pit Level	0.01 m	2-complement
30	Pit Level Diff	0.01 m	2-complement