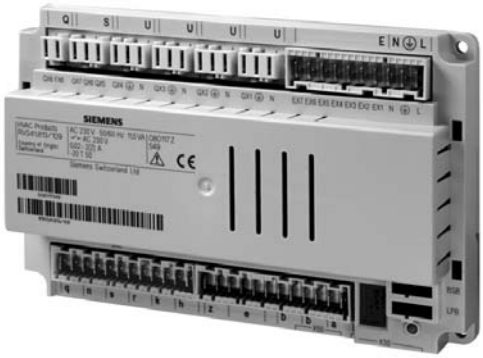
SIEMENS



RVS41.813
RVS61.843
AVS75..
AVS37..
QAA75..
QAA78..
QAA55..

Albatros^2
Heat pump controller
User manual OEM

Edition 2.0
Controller series B
CE1U2355en_02a
13. May 2009

Siemens Switzerland Ltd
HVAC Products

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Contents

1 Overview of settings

The table on the following pages shows all available settings including the OEM level. Certain operating lines may be hidden, depending on the unit version used.

Key

E = End-user
I = Commissioning
F = Heating engineer
O = OEM
ST = Can only be set via ACS700 service tool
OL = Operating line

[1] Only QAA75../78..
Only RVS41..
Only RVS61..

	Operating line	Operating level	Function	Default value	Min	Max	Unit
Time of day and date							
	1	E	Hours/minutes	-	00:00	23:59	hh:mm
	2	E	Day / month	-	01.01	31.12	dd.MM
	3	E	Year	-	2004	2099	yyyy
	5	F	Start of summertime	25.03	01.01	31.12	dd.MM
	6	F	End of summertime	25.10	01.01	31.12	dd.MM
Operator section							
	20	E	Language German ¦ ...	German			-
	22	F	Info Temporarily ¦ Permanently	Temporarily			-
	26	F	Operation lock Off ¦ On	Off			-
	27	F	Programming lock Off ¦ On	Off			-
	28	I	Direct adjustment Automatic storage ¦ Storage with confirmation	Storage with confirmation			
	30	O	Backup basic setting No ¦ Yes	No			-
	31	O	Enable basic setting No ¦ Yes	No			-
[1]	40	I	Used as Room unit 1 ¦ Room unit 2 ¦ Room unit P ¦ Operator unit 1 ¦ Operator unit 2 ¦ Operator unit P ¦ Service unit	Room unit 1			-
	42	I	Assignment device 1 Heating circuit 1 ¦ Heating circuits 1 and 2 ¦ Heating circuits 1 and P ¦ All heating circuits	Heating circuit 1			-
	44	I	Operation HC2 Commonly with HC1 ¦ Independently	Commonly with HC1			-
	46	I	Operation HCP Commonly with HC1 ¦ Independently	Commonly with HC1			-
[1]	48	I	Action occupancy button None ¦ Heating circuit 1 ¦ Heating circuit 2 ¦ Commonly	Heating circuit 1			-
	54	F	Readjustment room sensor	0.0	-3	3	°C
	70	F	Software version	-	0	99.9	-

Operating line	Operating level	Function	Default value	Min	Max	Unit
Radio links						
120	I	Binding No ¦ Yes	No			-
121	I	Test mode Off ¦ On	Off.			-
130	I	Room unit 1 Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
131	I	Room unit 2 Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
132	I	Room unit P Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
133	I	Outside sensor Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
134	I	Repeater Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
135	I	Operator unit P Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
136	I	Operator unit P Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
137	I	Operator unit P Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
138	I	Operator unit 1 Missing ¦ Ready ¦ No recept'n ¦ Change batt	-			-
140	I	Delete all devices No ¦ Yes	No			-
Time prog heating circuit 1						
500	E	Preselection Mo - Su ¦ Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦Su	Mo - Su			-
501	E	1st phase on	06:00	00:00	24:00	hh:mm
502	E	1st phase off	22:00	00:00	24:00	hh:mm
503	E	2nd phase on	24:00	00:00	24:00	hh:mm
504	E	2nd phase off	24:00	00:00	24:00	hh:mm
505	E	3rd phase on	24:00	00:00	24:00	hh:mm
506	E	3rd phase off	24:00	00:00	24:00	hh:mm
516	E	Default values No ¦ Yes	No		1	-
Time prog heating circuit 2						
520	E	Preselection Mo - Su ¦ Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦Su	Mo - Su			-
521	E	1st phase on	06:00	00:00	24:00	hh:mm
522	E	1st phase off	22:00	00:00	24:00	hh:mm
523	E	2nd phase on	24:00	00:00	24:00	hh:mm
524	E	2nd phase off	24:00	00:00	24:00	hh:mm
525	E	3rd phase on	24:00	00:00	24:00	hh:mm
526	E	3rd phase off	24:00	00:00	24:00	hh:mm
536	E	Default values No ¦ Yes	No		1	-
Time program 3 / HCP						
540	E	Preselection Mo - Su ¦ Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦Su	Mo - Su			-
541	E	1st phase on	06:00	00:00	24:00	hh:mm
542	E	1st phase off	22:00	00:00	24:00	hh:mm
543	E	2nd phase on	24:00	00:00	24:00	hh:mm
544	E	2nd phase off	24:00	00:00	24:00	hh:mm

Operating line	Operating level	Function	Default value	Min	Max	Unit
545	E	3rd phase on	24:00	00:00	24:00	hh:mm
546	E	3rd phase off	24:00	00:00	24:00	hh:mm
556	E	Default values No ¦ Yes	No		1	-
Time program 4 / DHW						
560	E	Preselection Mo - Su ¦ Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦Su	Mo - Su			-
561	E	1. phase on	00:00	00:00	24:00	hh:mm
562	E	1. phase off	05:00	00:00	24:00	hh:mm
563	E	2. phase on	24:00	00:00	24:00	hh:mm
564	E	2. phase off	24:00	00:00	24:00	hh:mm
565	E	3. phase on	24:00	00:00	24:00	hh:mm
566	E	3. phase off	24:00	00:00	24:00	hh:mm
576	E	Default values No ¦ Yes	No		1	-
Time program 5 / DHW						
600	E	Preselection Mo - Su ¦ Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦Su	Mo - Su			-
601	E	1. phase on	06:00	00:00	24:00	hh:mm
602	E	1. phase off	22:00	00:00	24:00	hh:mm
603	E	2. phase on	24:00	00:00	24:00	hh:mm
604	E	2. phase off	24:00	00:00	24:00	hh:mm
605	E	3. phase on	24:00	00:00	24:00	hh:mm
606	E	3. phase off	24:00	00:00	24:00	hh:mm
616	E	Default values No ¦ Yes	No			-
Holidays heating circuit 1						
642	E	Start	--.--	01.01	31.12	dd.MM
643	E	End	--.--	01.01	31.12	dd.MM
648	E	Operating level Frost protection ¦ Reduced	Frost protection			-
Holidays heating circuit 2						
652	E	Start	--.--	01.01	31.12	dd.MM
653	E	End	--.--	01.01	31.12	dd.MM
658	E	Operating level Frost protection ¦ Reduced	Frost protection			-
Holidays heating circuit P						
662	E	Start	--.--	01.01	31.12	dd.MM
663	E	End	--.--	01.01	31.12	dd.MM
668	E	Operating level Frost protection ¦ Reduced	Frost protection			-
Heating circuit 1						
710	E	Comfort cooling setpoint	20.0	Operating line 712	Operating line 716	°C
712	E	Reduced setpoint	19	Operating line 714	Operating line 710	°C
714	E	Frost protection setpoint	10.0	4	Operating line 712	°C
716	F	Comfort setpoint max	35.0	Operating line 710	35	°C
720	E	Heating curve slope	0.8	0.10	4.00	-
721	F	Heating curve displacement	0.0	-4.5	4.5	°C

Operating line	Operating level	Function	Default value	Min	Max	Unit
726	F	Heating curve adaption Off ¦ On	Off.			-
730	E	Summer/winter heating limit	18	– – – / 8	30	°C
732	F	24-hour heating limit	-3	– – – / -10	10	°C
740	I	Flow temp setpoint min	8	8	Operating line 741	°C
741	I	Flow temp setpoint max	50	Operating line 740	95	°C
750	F	Room influence	20	– – – / 1	100	%
760	F	Room temperature limitation	1	– – – / 0.5	4	°C
770	F	Boost heating	– – –	– – – / 0	20	°C
780	F	Quick setback Off ¦ Down to reduced setpoint ¦ Down to frost prot setpoint	Down to reduced setpoint			-
790	F	Optimum start control max	0:00:00	00:00:00	00:06:00	h /min / s
791	F	Optimum top control max	0:00:00	00:00:00	00:06:00	h /min / s
800	F	Reduced setpoint increase start	– – –	– – – / -30	10	°C
801	F	Reduced setpoint increase end	-15	-30	Operating line 800	°C
820	F	Overtemp prot pump circuit Off ¦ On	Off.			-
830	F	Mixing valve boost	0	0	50	°C
832	F	Actuator:type 2-position ¦ 3-position	3-position			-
833	F	Switching differential 2-pos	2	0	20	°C
834	F	Actuator running time	120	30	873	s
835	O	Mixing valve Xp	32	1	100	°C
836	O	Mixing valve Tn	120	10	873	s
850	I	Floor curing function Off ¦ Functional heating ¦ Curing heating ¦ Functional/curing heating¦ Manually	Off.			-
851	I	Floor curing setpoint manually	25	0	95	°C
856	I	Floor curing day current	0	0	32	-
857	I	Floor curing days complete	0	0	32	-
861	F	Excess heat draw Off ¦ Heating mode ¦ Always	Always			-
870	F	With buffer No ¦ Yes	Yes			-
872	F	With primary controller / system pump No ¦ Yes	Yes			-
6) 882	O	Pump speed min	100	0	100	-
883	O	Pump speed max	100	0	100	-
900	F	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection			-
Cooling circuit 1						
901	E	Operating mode Off ¦ Automatic*	Automatically			-
902	E	Comfort cooling setpoint	24	15	40	°C
907	E	Release 24h/day ¦ Time progr HC ¦ Time program 5	24h / day			-
908	I	Flow temp setp at OT 25°C	20	6	35	°C
909	I	Flow temp setp at OT 35°C	16	6	35	°C

Operating line	Operating level	Function	Default value	Min	Max	Unit
912	I	Cooling limit at OT	20	– – – / 8	35	°C
913	F	Lock time after end of heating	24	– – – / 8	100	h
918	F	Summer comp start at OT	26	20	50	°C
919	F	Summer comp end at OT	35	20	50	°C
920	F	Summer comp setp increase	4	– – – / 1	10	°C
923	F	Flow temp setp min at OT 25°C	18	6	35	°C
924	F	Flow temp setp min at OT 35°C	18	6	35	°C
928	F	Room influence	80	– – – / 1	100	°C
932	F	Room temperature limitation	0.5	– – – / 0.5	4	°C
938	F	Mixing valve cooling offset	0	0	20	°C
939	F	Actuator:type 2-position ¦ 3-position	3-position			-
940	F	Switching differential 2-pos	2	0	20	°C
941	F	Actuator running time	120	30	875	s
942	O	Mixing valve Xp	12	1	100	°C
943	O	Mixing valve Tn	90	10	873	s
945	F	Mixing valve in heating mode Control ¦ Open	Open.			-
946	F	Lock time dewpoint limiter	60	– – – / 10	600	min
947	F	Flow temp setp incr hygro	10	– – – / 1	20	°C
948	I	Flow setp incr start at r.h.	60	0	100	%
950	I	Flow temp diff dewpoint	2	– – – / 0	5	°C
962	F	With buffer No ¦ Yes	No			-
963	F	With prim contr/system pump No ¦ Yes	No			-
969	F	Optg mode changeover None ¦ Off ¦ Automatic	Off.			-
Heating circuit 2						
1010	E	Comfort cooling setpoint	20.0	Operating line 1012	Operating line 1016	°C
1012	E	Reduced setpoint	19	Operating line 1014	Operating line 1010	°C
1014	E	Frost protection setpoint	10.0	4	Operating line 1012	°C
1016	F	Comfort setpoint max	35.0	Operating line 1010	35	°C
1020	E	Heating curve slope	0.8	0.10	4.00	-
1021	F	Heating curve displacement	0.0	-4.5	4.5	°C
1026	F	Heating curve adaption Off ¦ On	Off.			-
1030	E	Summer/winter heating limit	18	– – – / 8	30	°C
1032	F	24-hour heating limit	-3	– – – / -10	10	°C
1040	I	Flow temp setpoint min	8	8	Operating line 1041	°C
1041	I	Flow temp setpoint max	80	Operating line 1040	95	°C
1050	F	Room influence	20	– – – / 1	100	%
1060	F	Room temperature limitation	1	– – – / 0.5	4	°C

Operating line	Operating level	Function	Default value	Min	Max	Unit
1070	F	Boost heating	5	– – – / 0	20	°C
1080	F	Quick setback Off ¦ Down to reduced setpoint ¦ Down to frost prot setpoint	Down to reduced setpoint			-
1090	F	Optimum start control max	0:00:00	00:00:00	00:06:00	h /min / s
1091	F	Optimum top control max	0:00:00	00:00:00	00:06:00	h /min / s
1100	F	Reduced setpoint increase start	– – –	– – – / -30	10	°C
1101	F	Reduced setpoint increase end	-15	-30	Operating line 1100	°C
1120	F	Overtemp prot pump circuit Off ¦ On	On.			-
1130	F	Mixing valve boost	0	0	50	°C
1132	F	Actuator:type 2-position ¦ 3-position	3-position			-
1133	F	Switching differential 2-pos	2	0	20	°C
1134	F	Actuator running time	120	30	873	s
1135	O	Mixing valve Xp	32	1	100	°C
1136	O	Mixing valve Tn	120	10	873	S
1150	I	Floor curing function Off ¦ Functional heating ¦ Curing heating ¦ Functional/curing heating¦ Curing/functional heating ¦ Manually	Off.			-
1151	E	Floor curing setpoint manually	25	0	95	°C
1156	E	Floor curing day current	– – –	0	32	°C
1157	I	Floor curing days complete	0	0	32	-
1161	F	Excess heat draw Off ¦ Heating mode ¦ Always	Always			
1170	F	With buffer No ¦ Yes	Yes			-
1172	F	With primary controller / system pump No ¦ Yes	Yes			
6) 1182	O	Pump speed min	100	0	100	%
1183	O	Pump speed max	100	0	100	%
1200	I	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection			
Heating circuit P						
1300	E	Operating mode Protection ¦ Automatic ¦ Reduced ¦ Comfort	Automatically			-
1310	E	Comfort cooling setpoint	20.0	Operating line 1312	Operating line 1316	°C
1312	E	Reduced setpoint	19	Operating line 1314	Operating line 1310	°C
1314	E	Frost protection setpoint	10.0	4	Operating line 1312	°C
1316	F	Comfort setpoint max	35.0	Operating line 1310	35	°C
1320	E	Heating curve slope	0.8	0.10	4.00	-
1321	F	Heating curve displacement	0.0	-4.5	4.5	°C
1326	F	Heating curve adaption Off ¦ On	Off.			-
1330	E	Summer/winter heating limit	18	– – – / 8	30	°C
1332	F	24-hour heating limit	-3	– – – / -10	10	°C
1340	I	Flow temp setpoint min	8	8	Operating line	°C

	Operating line	Operating level	Function	Default value	Min	Max	Unit
						1341	
	1341	I	Flow temp setpoint max	50	Operating line 1340	95	°C
	1350	F	Room influence	20	– – – / 1	100	%
	1360	F	Room temperature limitation	1	– – – / 0.5	4	°C
	1370	F	Boost heating	– – –	– – – / 0	20	°C
	1380	F	Quick setback Off ¦ Down to reduced setpoint ¦ Down to frost prot setpoint	Down to reduced setpoint			-
	1390	F	Optimum start control max	0:00:00	00:00:00	00:06:00	h /min / s
	1391	F	Optimum top control max	0:00:00	00:00:00	00:06:00	h /min / s
	1400	F	Reduced setpoint increase start	– – –	– – – / -30	10	°C
	1401	F	Reduced setpoint increase end	-15	-30	Operating line 1400	°C
	1420	F	Overtemp prot pump circuit Off ¦ On	Off.			-
	1450	F	Floor curing function Off ¦ Functional heating ¦ Curing heating ¦ Functional/curing heating¦ Manually	Off.			-
	1451	F	Floor curing setpoint manually	25	0	95	°C
	1455	E	Floor curing setpoint current	0	0	95	°C
	1456	E	Floor curing day current	0	0	32	-
	1457	I	Floor curing days complete	0	0	32	-
	1461	F	Excess heat draw Off ¦ Heating mode ¦ Always	Always			-
	1470	F	With buffer No ¦ Yes	Yes			-
	1472	F	With primary controller / system pump No ¦ Yes	Yes			-
6)	1482	O	Pump speed min	100	0	100	-
	1483	O	Pump speed max	100	0	100	-
	1500	I	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection			-
Domestic hot water							
	1610	E	Nominal setpoint	50	Operating line 1612	TempBwMax	°C
	1612	E	Reduced setpoint	40	8	Operating line 1610	°C
	1614	O	Nominal setpoint maximum	65	8	80	°C
4)	1620	I	Release 24h/day ¦ Time programs HCs ¦ Time program 4 / DHW ¦ Low-tariff ¦ Time prog 4/DHW or LT	Time program 4 / DHW			-
6)	1620	I	Release 24h/day ¦ Time programs HCs ¦ Time program 4 / DHW	Time program 4 / DHW			-
	1630	I	Charging priority Absolute ¦ Shifting ¦ None ¦ MC shifting, PC absolute	Absolute			-
	1640	F	Legionella function Off ¦ Periodically ¦ Fixed weekday	Off.			-
	1641	F	Legionella funct periodically	3	1	7	Days
	1642	F	Legionella funct weekday Monday ¦ Tuesday ¦ Wednesday ¦ Thursday ¦ Friday ¦ Saturday ¦ Sunday				-
	1644	F	Legionella func time	– – –	– – – / 00:00	23:50	hh:mm

Operating line	Operating level	Function	Default value	Min	Max	Unit
1645	F	Legionella func setpoint	65	55	95	°C
1646	F	Legionella funct duration	30	– – – / 10	360	min
1647	F	Legionella funct circ pump Off ¦ On	On.			-
1660	F	Circulating pump release Time program 3 / HCP ¦ DHW release ¦ Time program 4 / DHW ¦ Time program 5	Time program 3 / HCP			-
1661	F	Circulating pump cycling Off ¦ On	Off.			-
1663	F	Circulation setpoint	45	8	80	°C
Pump Hx						
2008	O	H1 DHW charging priority No ¦ Yes*	Yes			-
2010	F	H1 Excess heat draw Off ¦ On*	On.			-
2012	F	H1 with buffer No ¦ Yes*	Yes			-
2014	F	H1 prim contr/system pump No ¦ Yes*	Yes			-
2015	F	H1 Refrigeration request 2-pipe system* ¦ 4-pipe system	2-pipe system			-
2033	O	H2 DHW charging priority No ¦ Yes*	Yes			-
2035	F	H2 Excess heat draw Off ¦ On*	On.			-
2037	F	H2 with buffer No ¦ Yes*	Yes			-
2039	F	H2 prim contr/system pump No ¦ Yes*	Yes			-
2040	F	H2 Refrigeration request 2-pipe system* ¦ 4-pipe system	2-pipe system			-
2044	O	H3 DHW charging priority No ¦ Yes*	Yes			-
2046	F	H3 Excess heat draw Off ¦ On*	On.			-
2048	F	H3 with buffer No ¦ Yes*	Yes			-
2050	F	H3 prim contr/system pump No ¦ Yes*	Yes			-
2051	F	H3 Refrigeration request 2-pipe system ¦ 4-pipe-system	2-pipe system			-
Swimming pool						
2055	E	Setpoint solar heating	26	8	80	°C
2056	E	Setpoint source heating	22	8	80	°C
2065	F	Charging priority solar No ¦ Yes	No			-
2070	O	Swimming pool temp max	35	8	95	°C
2080	F	With solar integration No ¦ Yes	Yes			-
6) **Primary controller / system pump**						
2110	O	Flow temp setpoint min	8	8	95	°C
2111	O	Flow temp setpoint max	80	8	95	°C
2112	O	Flow temp setp cooling min	8	8	20	°C
2130	O	Mixing valve boost	10	0	50	°C

Operating line	Operating level	Function	Default value	Min	Max	Unit
2131	O	Mixing valve cooling offset	0	0	20	°C
2132	O	Actuator:type 2-pos ¦ 3-pos	3-position			-
2133	O	Switching differential 2-pos	2	0	20	°C
2134	O	Actuator running time	120	30	873	s
2135	O	Mixing valve Xp	32	1	100	°C
2136	O	Mixing valve Tn	120	10	873	s
2150	I	Primary controller / system pump Before buffer ¦ After buffer	After buffer			-
Heat pump						
2800	F	Frost protection cond pump Off ¦ On	Off.			-
2801	I	Control condenser pump Automatically ¦ Temp request ¦ Parallel compr operation	Parallel compressor operation			-
2802	I	Prerun time cond pump	5	0	240	s
2803	I	“Overrun time cond pump”	5	0	240	s
2805	O	Req temp diff condenser	– – –	– – – / 1	20	°C
2806	O	Max dev temp diff cond	3	1	10	°C
2812	O	Operation limit OT min air	-20	-50	0	°C
2813	O	Operation limit OT max air	40	0	50	°C
2814	O	Source temp max	40	10	60	°C
2815	F	Source temp min water	2	– – – / -20	30	°C
2816	F	Source temp min brine	-5	– – – / -30	50	°C
2817	F	Switching diff source prot	3	1	10	°C
2818	F	Increase source prot temp	2	0	10	°C
2819	I	Prerun time source	15	0	240	s
2820	I	Overrun time source	5	0	240	s
2821	F	Source startup time max	5	1	10	min
2822	F	Time limit source temp min	4	1	24	h
2823	O	Req temp diff evaporator	– – –	– – – / 1	20	°C
2824	O	Max dev temp diff evap	2	1	10	°C
2840	I	Switching diff return temp	4	1	20	°C
2841	F	Keep compr run time min No ¦ Yes	No			-
2842	I	Compressor run time min	20	0	120	min
2843	I	Compressor off time min	20	0	120	min
2844	F	Switch-off temp max	55	8	100	°C
2845	F	Red switch-off temp max	2	-20	20	°C
2846	O	Hot-gas temp max	125	20	180	°C
2847	O	Swi diff hot-gas temp max	10	1	40	°C
2848	O	Reduction hot-gas temp max	10	0	20	°C
2849	O	Setpoint hot-gas temp	100	20	180	°C
2850	O	SD setp hot-gas temp	5	1	40	°C
2851	O	Cont’type setp hot-gas temp NC ¦ NO	NO			-
2852	F	LP delay on startup	5	0	120	s
2853	O	LP delay during operation	2	0	120	s
2854	O	LP supervision Always ¦ Without defrosting	Without defrosting			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
6)	2860	F	Lock stage 2 with DHW Aus ¦ Ein	Off.			-
	2861	F	Release stage 2 below OT	5	– – – / -30	30	°C
	2862	F	Locking time stage 2	10	0	40	min
	2863	F	Release integral stage 2	250	0	500	°C*min
	2864	F	Reset integral stage 2	10	0	500	°C*min
	2865	F	Compr sequence changeover	100	– – – / 10	1000	h
	2880	I	Use electric flow Substitute ¦ Complementary operation HC¦ Complementary operation DHW ¦ Complementary operation HC +DHW ¦ End DHW charging	Complementary operation HC		5	-
	2881	I	Locking time electric flow	30	0	255	min
	2882	I	Release integr electric flow	250	0	500	°C*min
	2883	I	Reset integr electric flow	10	0	500	°C*min
	2884	I	Release el flow below OT	0	-30	30	°C
	2886	F	compensation heat deficit Off ¦ On ¦ Only with floor curing fct	On.			-
	2889	O	duration:error repetition	24	1	40	h
	2893	F	**Number**: **DHW charging attempts**	1	1	10	-
6)	2894	F	Delay 3-ph current error	3	1	40	S
	2895	F	Delay flow switch	0	0	10	S
	2896	O	Flow switch source active Always ¦ Heating mode only	Always			-
	2910	F	Release above OT	- - -	- - - / -30	30	°C
	2911	F	For forced buffer storage tank charging Locked ¦ Released	Released			-
	2912	F	Full charging of buffer storage tank Off ¦ On	On.			-
	2951	I	Defrost release below OT	7	5	20	°C
	2952	O	Swi diff defrost	3.5	0	15	°C
	2953	O	Temp diff defrost max	20	5	50	°C
	2954	O	Evapor temp defrost end	15	2	40	°C
	2958	I	Numb defrost attempts max	3	0	10	-
	2959	O	Defrost settling time	9	0	20	min
	2962	I	Duration defrost lock	30	0	100	min
	2963	I	Time up to forced defrost	120	60	600	min
	2964	I	Defrost time max	10	1	42	min
	2965	I	Dripping time evapor	2	0	10	min
	2966	O	Cooling down time evapor	5	0	120	s
	2970	O	Switch-off temp min	12	5	40	°C
	2971	O	Defrost fan above	4	1	20	°C
	2972	O	Defrost time fan min	2	1	42	min
	2973	O	Defrost time fan max	10	1	42	min
	2974	O	dT end defrost fan	1	0.5	10	°C
	3000	I	Switch-off temp max cooling	40	20	60	°C
	3002	F	Source temp min cool mode	2	-20	30	°C
	3004	F	SD ch'over cooling pas/act	5	1	10	°C
	3006	F	During compressor operation Passive cooling off ¦ Passive cooling on	Passive cooling on		1	-
	3007	F	In passive cooling mode Condenser pump off ¦ Condenser pump on	Condenser pump off		1	-

Operating line	Operating level	Function	Default value	Min	Max	Unit
3008	F	Temp diff cond cooling mode	5	0	20	°C
3010	O	Speed max fan/source pump	100	0	100	-
3011	O	Speed min fan/source pump	30	0	100	-
3012	O	Source off below temp B83	40	10	60	°C
3014	O	Switching diff source off	5	1	10	°C
3015	O	Start speed control B83	30	20	60	°C
3016	O	End speed control B83	50	20	60	°C
3017	O	Locking time control	50	0	250	s
3019	O	Start speed control Min speed ¦ Max speed	Minimum speed		2	-
3030	F	Auto readj HP cond sensor Off ¦ Now ¦ After pump prerun	Off.			-
3031	F	Readj HP flow sensor	0	-20	20	°C
3032	F	Readj HP return sensor	0	-20	20	°C
3033	F	Readj status Not readjusted ¦ Manually readjusted ¦ Automatically readjusted ¦ Readjustment running				
Energy meter						
3090	F	Pulse count heat None With ¦ Input H1 ¦ With input H3	None			-
3092	F	Pulse unit heat None ¦ kWh ¦ Liter	None			
3093	F	Pulse unit heat numer	1	1	1000	-
3094	F	Pulse unit heat denom	1	1	1000	
3097	F	Flow heating	---	10	60000	l/h
3098	F	Flow DHW	---	10	60000	l/h
3100	F	Pulse count energy None ¦ With input H1 ¦ With input H3	None			
3102	F	Pulse unit energy None ¦ kWh ¦ m3	None			
3103	F1	Pulse value energy numer	1	1	1000	
3104	F1	Pulse value energy denom	1	1	1000	
3106	F2	Mean gas energy content	11.5	1	100	kWh/m3
3108	F1	Electric source output	---	0.1	10	kW
3110	F2	Heat delivered	0	0	9999999	kWh
3113	F2	Energy brought in	0	0	3500000	kWh
3116	F2	Performance factor	---	0	10	
3119	F1	Fixed day yearly perf factor	30.6.	1.01	31.12	dd.MM
3120	E	Yearly perf factor 1	---	0	10	
3120	E	Fixed day 1		1.9.2004	31.12.2099	dd.MM.yyyy
3121	E	Heat delivered heating 1	0	0	9999999	kWh
3122	E	Heat delivered DHW 1	0	0	9999999	kWh
3124	E	Energy brought in heating 1	0	0	3500000	kWh
3125	E	Energy brought in DHW 1	0	0	3500000	kWh
3127	E	Yearly perf factor 2	---	0	10	
3127	E	Fixed day 2		1.9.2004	31.12.2099	dd.MM.yyyy
3128	E	Heat delivered heating 2	0	0	9999999	kWh
3129	E	Heat delivered DHW 2	0	0	9999999	kWh
3131	E	Energy brought in heating 2	0	0	3500000	kWh

Operating line	Operating level	Function	Default value	Min	Max	Unit
3132	E	Energy brought in DHW 2	0	0	3500000	kWh
3134	E	Yearly perf factor 3	---	0	10	
3134	E	Fixed day 3		1.9.2004	31.12.2099	dd.MM.yyyy
3135	E	Heat delivered heating 3	0	0	9999999	kWh
3136	E	Heat delivered DHW 3	0	0	9999999	kWh
3138	E	Energy brought in heating 3	0	0	3500000	kWh
3139	E	Energy brought in DHW 3	0	0	3500000	kWh
3141	E	Yearly perf factor 4	---	0	10	
3141	E	Fixed day 4		1.9.2004	31.12.2099	dd.MM.yyyy
3142	E	Heat delivered heating 4	0	0	9999999	kWh
3143	E	Heat delivered DHW 4	0	0	9999999	kWh
3145	E	Energy brought in heating 4	0	0	3500000	kWh
3146	E	Energy brought in DHW 4	0	0	3500000	kWh
3148	E	Yearly perf factor 5	---	0	10	
3148	E	Fixed day 5		1.9.2004	31.12.2099	dd.MM.yyyy
3149	E	Heat delivered heating 5	0	0	9999999	kWh
3150	E	Heat delivered DHW 5	0	0	9999999	kWh
3152	E	Energy brought in heating 5	0	0	3500000	kWh
3153	E	Energy brought in DHW 5	0	0	3500000	kWh
3155	E	Yearly perf factor 6	---	0	10	
3155	E	Fixed day 6		1.9.2004	31.12.2099	dd.MM.yyyy
3156	E	Heat delivered heating 6	0	0	9999999	kWh
3157	E	Heat delivered DHW 6	0	0	9999999	kWh
3159	E	Energy brought in heating 6	0	0	3500000	kWh
3160	E	Energy brought in DHW 6	0	0	3500000	kWh
3162	E	Yearly perf factor 7	---	0	10	
3162	E	Fixed day 7		1.9.2004	31.12.2099	dd.MM.yyyy
3163	E	Heat delivered heating 7	0	0	9999999	kWh
3164	E	Heat delivered DHW 7	0	0	9999999	kWh
3166	E	Energy brought in heating 7	0	0	3500000	kWh
3167	E	Energy brought in DHW 7	0	0	3500000	kWh
3169	E	Yearly perf factor 8	---	0	10	
3169	E	Fixed day 8		1.9.2004	31.12.2099	dd.MM.yyyy
3170	E	Heat delivered heating 8	0	0	9999999	kWh
3171	E	Heat delivered DHW 8	0	0	9999999	kWh
3173	E	Energy brought in heating 8	0	0	3500000	kWh
3174	E	Energy brought in DHW 8	0	0	3500000	kWh
3176	E	Yearly perf factor 9	---	0	10	
3176	E	Fixed day 9		1.9.2004	31.12.2099	dd.MM.yyyy
3177	E	Heat delivered heating 9	0	0	9999999	kWh
3178	E	Heat delivered DHW 9	0	0	9999999	kWh
3180	E	Energy brought in heating 9	0	0	3500000	kWh

Operating line	Operating level	Function	Default value	Min	Max	Unit
3181	E	Energy brought in DHW 9	0	0	3500000	kWh
3183	E	Yearly perf factor 10	---	0	10	
3183	E	Fixed day 10		1.9.2004	31.12.2099	dd.MM.yyyy
3184	E	Heat delivered heating 10	0	0	9999999	kWh
3185	E	Heat delivered DHW 10	0	0	9999999	kWh
3187	E	Energy brought in heating 10	0	0	3500000	kWh
3188	E	Energy brought in DHW 10	0	0	3500000	kWh
3190	F	Reset fixed day storage No ¦ Yes	No			-
Cascade						
3510	O	Lead strategy None ¦ Late on, early off ¦ Late on, late off ¦ Early on, late off ¦ According to buffer temp	Late on, late off			
3516	O	Max source force charg	4	1	16	
3517	O	Max source force charg OT	– – –	– – – / -20	15	
3530	O	Release integral source seq	100	0	500	°C*min
3531	O	Reset integral source seq	20	0	500	°C*min
3533	F	Switch-on delay	5	0	120	min
3540	F	Auto source seq ch'over	500	– – – / 10	990	h
3541	F	Auto source seq exclusion None ¦ First ¦ Last ¦ First and last	None			
3590	O	Temp differential min	– – –	– – – / 0	20	°C
[4] Supplementary source						
3700	F	Release below outside temp	---	-50	50	°C
3701	F	Release above outside temp	---	-50	50	°C
3705	F	Overrun time	10	0	120	min
3720	F	Switching integral	50	0	500	°C*min
3722	F	Switching differential Off	15	0	20	°C
3723	F	Lock time	30	– – – / 0	120	min
Solar						
3810	F	Temp diff on	8	Operating line 3811	40	°C
3811	F	Temp diff off	4	0	Operating line 3812	°C
3812	F	Charg temp min DHW st tank	– – –	– – – / 8	95	°C
3813	O	Temp diff on buffer	8	– – – / 0	40	°C
3814	O	Temp diff off buffer	4	– – – / 0	40	°C
3815	F	Charging temp min buffer	– – –	– – – / 8	95	°C
3816	O	Temp diff on swi pool	8	– – – / 0	40	°C
3817	O	Temp diff off swi pool	4	– – – / 0	40	°C
3818	F	Charging temp min swi pool	– – –	– – – / 8	95	°C
3822	F	Charging prio storage tank None ¦ DHW storage tank ¦ Buffer	DHW storage tank			-
3825	F	Charging time relative prio	– – –	– – – / 2	60	min
3826	F	Waiting time relative prio	5	1	40	min
3827	F	Waiting time parallel op	– – –	– – – / 0	40	min
3828	F	Delay secondary pump	60	0	600	s
3830	O	Collector start function	30	– – – / 5	60	min
3831	F	Min run time collector pump	20	5	120	s

Operating line	Operating level	Function	Default value	Min	Max	Unit
3832	O	Collector start function on	07:00	00:00	23:50	min
3833	O	Collector start function off	21:00	00:00	23:50	min
3834	F	Collector start funct grad	– – –	– – – / 1	20	Min/°C
3840	F	Collector frost protection	– – –	– – – / -20	5	°C
3850	F	Collector overtemp prot	– – –	– – – / 30	350	°C
3860	F	Evaporation heat carrier	– – –	– – – / 60	350	°C
3870	F	Pump speed min	40	0	100	%
3871	F	Pump speed max	100	0	100	%
3872	O	Speed Xp	32	1	100	°C
3873	O	Speed Tn	120	10	873	s
3880	F	Antifreeze None ¦ Ethylene glycol ¦ Propylene glycol ¦ Ethyl and propyl glycol	None			-
3881	F	Antifreeze concentration	30	1	100	%
3884	F	Pump capacity	200	10	1500	l/h
Buffer storage tank						
4708	F	Forced charging setp cooling	– – –	6	35	°C
4709	I	Forced charg setp heat min	40	20	80	°C
4710	I	Forced charg setp heat max	50	20	80	°C
4711	I	Forced charging time	– – –	– – – / 00:00	23:50	hh:mm
4712	I	Forced charg duration max	4	1	20	h
4720	F	Auto generation lock None ¦ With B4 ¦ With B4 and B42/B41	With B4			-
4721	O	Auto heat generation lock SD	0	0	20	°C
4722	F	Temp diff buffer/HC	0	-20	20	°C
4723	O	Temp diff buffer/CC	0	-20	20	°C
4724	O	Min st tank temp heat mode	– – –	– – – / 8	95	°C
4726	O	Max st tank temp cool mode	25	– – – / 10	40	°C
4739	F	Stratification protection Off ¦ Always	Off.			-
4740	O	Strat prot temp diff max	5	0	20	°C
4743	O	Strat prot anticipation time	60	0	240	S
4744	O	Strat protection Tn	120	10	200	s
4750	F	Charging temp max	80	8	95	°C
4751	O	Storage tank temp max	90	8	95	°C
4755	F	Recooling temp	60	8	95	°C
4756	F	Recooling DHW/HCs Aus ¦ Ein	Off.			-
4757	F	Recooling collector Off ¦ Summer ¦ Always	Off.			-
4760	F	Charg sensor el imm heater With B4 ¦ With B42/B41	With B4			-
4761	F	Forced charging electric No ¦ Yes	No			-
4783	F	With solar integration No ¦ Yes	No			-
DHW storage tank						
5010	O	Charging Once/day ¦ Several times/day	Several times/day			-
5020	F	Flow setpoint boost	0	0	30	°C
5021	F	Increase of transfer boost	8	0	30	°C
5022	F	Type of charging	With B3/B31			

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			With B3 ¦ With B3/B31 ¦ With B3, legio B3/B31				
	5024	F	Switching differential	5	0	20	°C
	5030	F	Charging time limitation	240	– – – / 10	600	min
	5040	O	Discharging protection Off ¦ Always ¦ Automatically	2	0	2	
	5050	F	Charging temp max	80	8	BZ 5051 OEM	°C
	5051	O	Storage tank temp max	90	Operating line 5050	95	°C
	5055	F	Recooling temp	80	8	95	°C
	5056	F	Recooling heat gen/HC Off ¦ On	Off.			-
	5057	F	Recooling collector Off ¦ Summer ¦ Always	Off.			-
	5060	F	El imm heater optg mode Substitute ¦ Summer ¦ Always	Substitute			-
	5061	F	Electric immersion heater:release 24h/day ¦ DHW release¦ Time program4/ DHW	DHW release			-
	5070	O	Automatic push Off ¦ On	Off.			-
	5071	O	Charging prio time push	0	0	120	-
	5085	F	Excess heat draw Off ¦ On	On.			-
	5090	F	With buffer No ¦ Yes	No			-
	5092	F	With primary controller / system pump No ¦ Yes	No			-
	5093	F	With solar integration No ¦ Yes	Yes			-
6)	5101	F	Pump speed min	40	0	100	%
	5102	F	Pump speed max	100	0	100	%
	5103	O	Speed Xp	32	1	100	°C
	5104	O	Speed Tn	120	10	873	s
	5120	O	Mixing valve boost	10	0	50	°C
	5124	O	Actuator running time	120	30	873	S
	5125	O	Mixing valve Xp	32	1	100	°C
	5126	O	Mixing valve Tn	120	10	873	s
	5130	F	Transfer strategy Off ¦ Always ¦ DHW release	Always			-
	5131	O	Comparison temp transfer DHW sensor B3 ¦ DHW sensor B31	DHW sensor B3			-
6)	**Instantaneous DHW heater**						
	5406	F	Min setp diff to tank temp	4	0	20	°C
	5530	F	Pump speed min	20	0	100	%
	5531	O	Pump speed max	80	0	100	%
	5544	F	Actuator running time	60	7.5	480	s
	5545	O	Mixing valve Xp	20	1	200	°C
	5546	O	Mixing valve Tn	150	10	873	s
	5547	O	Mixing valve Tv	4.5	0	30	s
	Configuration						
	5700	I	Preselection	– – –	– – – / 1	24	-
	5710	I	Heating circuit 1 Off ¦ On	On.			-
	5711	I	Cooling circuit 1 Off ¦ 4-pipe system ¦ 2-pipe system	Off.			

	Operating line	Operating level	Function	Default value	Min	Max	Unit
	5712	I	Use of mixing valve 1 None ¦ Heating ¦ Cooling ¦ Heating and Cooling	Heating and cooling			
	5715	I	Heating circuit 2 Off ¦ On	Off.			-
	5731	I	DHW controlling element Q3 None ¦ Charging pump ¦ Diverting valve	Charging pump			-
	5736	I	Separate DHW circuit Off ¦ On	Off.			-
	5800	I	Heat source Brine ¦ Water ¦ Air ¦ External	Brine			-
	5804	O	Source prot sens brine HP Source inlet B91 ¦ Source outlet B92	Source outlet B92			-
	5807	I	Refrigeration Off ¦ 4-pipe system ¦ 2-pipe system	Off.			-
	5810	I	Differential HC at OT -10°C	7	0	20	°C
	5840	I	Solar controlling element Charging pump ¦ Diverting valve	Charging pump			-
	5841	I	External solar exchanger Jointly ¦ DHW storage tank ¦ Buffer	Jointly			-
	5870	I	combi storage tank No ¦ Yes	No			
4)	5890	I	Relay output QX1 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	DHW controlling element Q3			-
6)	5890	I	Relay output QX1 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	5891	I	Relay output QX2 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump	Source pump Q8 / fan K19			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13				
6)	5891	I	Relay output QX2 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	5892	I	Relay output QX3 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	Condenser pump Q9			-
6)	5892	I	Relay output QX3 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	5894	I	Relay output QX4 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time	None			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			program 5 K13				
6)	5894	I	Relay output QX4 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	5895	I	Relay output QX5 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
6)	5895	I	Relay output QX5 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	5896	I	Relay output QX6 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
6)	5896	I	Relay output QX6 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-	None			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13				
4)	5897	I	Relay output QX7 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	5898	I	Relay output QX8 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
6)	5909	I	Function output QX4-Mod None ¦ Source pump Q8/fan K19 ¦ DHW pump Q3 ¦ DHW intern circ pump Q33 ¦ Instant DHW heater Q34 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump buffer K8 ¦ Solar pump ext exch K9 ¦ Solar pump swi pool K18 ¦ Heat circuit pump HC1 Q2 ¦ Heat circuit pump HC2 Q6 ¦ Heat circuit pump HCP Q20	None			-
4)	5930	I	Sensor input BX1 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	DHW sensor B3			-
6)	5930	I	Sensor input BX1 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦	None			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2				
6)	5931	I	Sensor input BX2 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None			-
6)	5932	I	Sensor input BX3 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None			-
4)	5933	I	Sensor input BX4 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	Flow temp HP B21			-
6)	5933	I	Sensor input BX4 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None			-
4)	5934	I	Sensor input BX5 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	HP return sensor B71			-
6)	5934	I	Sensor input BX5 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
4)	5950	I	Function input H1 Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Pulse count	Optg mode changeover HCs+DHW			-
6)	5950	I	Function input H1 Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Swi-on command HP stage 2¦ Pulse count	Optg mode changeover HCs+DHW			-
	5951	I	Contact type H1 NC ¦ NO*				-
	5952	I	Function value, contact type H1	30	0	130	°C
	5953	I	Refrigeration request H1	0	0	10	V
	5954	I	Temp value 10 V H1	0	-100	500	-
	5955	I	Voltage value 2 H1	10	0	10	V
	5956	I	Function value 2 H1	100	-100	500	-
4)	5960	I	Function input H3 Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Pulse count	Optg mode changeover HCs+DHW			-
6)	5960	I	Function input H3 Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Swi-on command HP stage 2¦ Pulse count	Optg mode changeover HCs+DHW			-
	5961	I	Contact type H3 NC ¦ NO	NO			-
	5962	I	Function value contact H3	30	0	130	°C
	5963	I	Voltage value 1 H3	0	0	10	V
	5964	I	Function value 1 H3	0	-100	500	-
	5965	I	Voltage value 2 H3	10	0	10	V
	5966	I	Function value 2 H3	100	-100	500	-
4)	5980	I	Function input EX1 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦	Electrical utility lock E6			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25 E25 ¦ Low-pressure switch E9 ¦ High-pressure switch E10 ¦ Compressor 1 overload E11 ¦ Error/alarm message				
6)	5980	I	Function input EX1 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	Electrical utility lock			-
	5981	O	Cont type input EX1 NC ¦ NO	NO			-
4)	5982	I	Function input EX2 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25 E25 ¦ Low-pressure switch E9 ¦ High-pressure switch E10 ¦ Compressor 1 overload E11 ¦ Error/alarm message	Low tariff E5			-
6)	5982	I	Function input EX2 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	Low tariff E5			-
	5983	O	Cont type input EX2 NC ¦ NO	NO			-
4)	5984	I	Function input EX3 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25 E25 ¦ Low-pressure switch E9 ¦ High-pressure switch E10 ¦ Compressor 1 overload E11 ¦ Error/alarm message	Source overload E14			-
6)	5984	I	Function input EX3 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	Source overload E14			-
	5985	O	Cont type input EX3 NC ¦ NO	NO			-
4)	5986	I	Function input EX4 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25 E25 ¦ Low-pressure switch E9 ¦ High-pressure switch E10 ¦ Compressor 1 overload E11 ¦ Error/alarm message	Low-pressure switch E9			-
6)	5986	I	Function input EX4 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	Pressure switch source E26			-
	5987	O	Cont type input EX4 NC ¦ NO	NO			-
4)	5988	I	Function input EX5 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦	High-pressure switch E10			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25 E25 ¦ Low-pressure switch E9 ¦ High-pressure switch E10 ¦ Compressor 1 overload E11 ¦ Error/alarm message				
6)	5988	I	Function input EX5 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	Flow switch source E15			-
	5989	O	Function input EX5 NC ¦ NO	NO			-
4)	5990	I	Function input EX6 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25 E25 ¦ Low-pressure switch E9 ¦ High-pressure switch E10 ¦ Compressor 1 overload E11 ¦ Error/alarm message	Overload compressor 1 E11			-
6)	5990	I	Function input EX6 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	Flow switch consumers			-
	5991	O	Cont type input EX6 NC ¦ NO	NO			-
4)	5992	I	Function input EX7 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25 E25 ¦ Low-pressure switch E9 ¦ High-pressure switch E10 ¦ Compressor 1 overload E11 ¦ Error/alarm message	None			-
6)	5992	I	Function input EX7 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload E12 ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	None			-
	5993	O	Cont type input EX7 NC ¦ NO	NO			-
6)	5999	O	Cont type LP monitor E9 NC ¦ NO	NO			-
	6000	O	Cont type HP monitor E10 NC ¦ NO	NO			-
	6001	O	Cont type compr1 overl E 11 NC ¦ NO	NO			-
	6014	I	Function mixing group 1 None ¦ Heating circ 1 ¦ Cooling circuit 1 ¦ Heating circ/cooling circ 1 ¦ Prim contr/system pump ¦ DHW primary controller ¦ Instantaneous DHW heater	Heating circuit 1			-
4)	6020	I	Function extension module 1 None ¦ Multifunctional ¦ Cooling circuit 1 ¦ Cooling circuit 2 ¦ Solar DHW ¦ Prim contr/system pump ¦ DHW primary controller ¦ Instantaneous DHW heater	None			-
6)	6020	I	Function extension module 1 None ¦ Multifunctional ¦ Cooling circuit 1 ¦ Cooling circuit 2 ¦ Solar DHW ¦ Prim contr/system pump ¦ DHW primary controller ¦ Instantaneous DHW heater	None			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
4)	6021	I	Function extension module 2 None ¦ Multifunctional ¦ Cooling circuit 1 ¦ Cooling circuit 2 ¦ Solar DHW ¦ Prim contr/system pump ¦ DHW primary controller ¦ Instantaneous DHW heater	None			-
6)	6021	I	Function extension module 2 None ¦ Multifunctional ¦ Cooling circuit 1 ¦ Cooling circuit 2 ¦ Solar DHW ¦ Prim contr/system pump ¦ DHW primary controller ¦ Instantaneous DHW heater	None			-
4)	6030	I	Relay output QX21 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
6)	6030	I	Relay output QX21 None ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	6031	I	Relay output QX22 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
6)	6031	I	Relay output QX22 None ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request	None			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13				
4)	6032	I	Relay output QX23 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
6)	6032	I	Relay output QX23 None ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW intern circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None			-
4)	6040	I	Sensor input BX22 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None			-
6)	6040	I	Sensor input BX22 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None			-
4)	6041	I	Sensor input BX22 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None			-
6)	6041	I	Sensor input BX22 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦	None			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2				
4)	6046	I	Function input H2 None ¦ Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Swi-on command HP stage 2	Optg mode changeover HCs+DHW			-
6)	6046	I	Function input H2 None ¦ Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Swi-on command HP stage 2	Optg mode changeover HCs+DHW			-
	6047	I	Contact type H2 NC ¦ NO	NO			-
	6048	I	Function value contact H2	30	0	130	°C
	6049	I	Voltage value 1 H2	0	0	10	V
	6050	I	Function value 1 H2	0	-100	500	-
	6051	I	Voltage value 2 H2	10	0	10	V
	6052	I	Function value 2 H2	100	-100	500	-
4)	6070	I	Function output UX None ¦ Source pump Q8/fan K19 ¦ Collector pump Q5 ¦ Solar pump buffer K8 ¦ Solar pump ext exch K9 ¦ Solar pump swi pool K18 ¦ HP setpoint ¦ Output request ¦ Heat request ¦ Refrigeration request	None			-
6)	6070	I	Function output UX None ¦ Source pump Q8/fan K19 ¦ DHW pump Q3 ¦ DHW intern circ pump Q33 ¦ Instant DHW heater Q34 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump buffer K8 ¦ Solar pump ext exch K9 ¦ Solar pump swi pool K18 ¦ Heat circ pump HC1 Q2 ¦ Heat circ pump HC2 Q6 ¦ Heat circ pump HCP Q20 ¦ HP setpoint ¦ Output request ¦ Heat request ¦ Refrigeration request	None			-
	6071	I	Signal logic output UX Standard ¦ Inverted	Standard			-
	6072	I	Signal output UX 0..10V ¦ PWM	0..0.10V			-
	6075	I	Temp value 10V UX	100	5	130	°C
	6097	F	Sensor type collector NTC* ¦ Pt 1000	1	1	2	-
	6098	F	Readjustm collector sensor	0	-20	20	°C
6)	6099	F	Readjustm coll sensor 2	0	-20	20	°C
	6100	F	Readjustm outside sensor	0.0	-3.0	3.0	°C
	6110	F	Time constant building	20	0	50	h
	6112	O	Gradient room model	60	0	300	min/°C
	6116	O	Time constant setp compens	1	0	14	
	6117	O	Central setp compensation	20	1	100	°C
	6120	F	Frost protection for the plant Off ¦ On	On.			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
6)	6128	O	Heat request below OT	– – – /	– – – / -50	50	°C
6)	6129	O	Heat request above OT	– – – /	– – – / -50	50	°C
	6135	F	Air dehumidifier Off ¦ On	Off.			-
	6136	F	Release air dehumidifier 24h/day ¦ Time progr HC ¦ Time program 5	24h / day			-
	6137	F	Air dehumidifier r.h. EIN	55	0	100	%
	6138	F	Air dehumidifier r.h. SD	5	2	50	%
	6140	O	Water pressure max	– – –	– – – / 0	10	bar
	6141	O	Water pressure min	– – –	– – – / 0	10	bar
	6142	O	Water pressure critical min	– – –	– – – / 0	10	bar
	6150	O	Water pressure 2 max	– – –	– – – / 0	10	bar
	6151	O	Water pressure 2 min	– – –	– – – / 0	10	bar
	6152	O	Water press 2 critical min	– – –	– – – / 0	10	bar
	6180	O	Water pressure 3 max	– – –	– – – / 0	10	bar
	6181	O	Water pressure 3 min	– – –	– – – / 0	10	bar
	6182	O	Water press 3 critical min	– – –	– – – / 0	10	bar
	6200	F	Save sensors No ¦ Yes	No			-
	6201	F	Reset sensors No ¦ Yes	No			-
	6204	F	Save parameters No ¦ Yes	No			-
	6205	F	Reset to default parameters No ¦ Yes	No			-
	6212	I	Check no. heat source 1	-	0	199999	-
	6213	I	Check no. heat source 2	-	0	199999	-
	6215	I	Check-No. storage tank	-	0	199999	-
	6217	I	Check no. heating circuits	-	0	199999	-
	6220	I	Software version	-	0	99.9	-
	6222	O	Device hours run	0	0	199999	h
LPB system							
	6600	I	Device address	1	0	16	-
	6601	F	Segment address	0	0	14	-
	6604	F	**Bus power supply**:**function** Off ¦ Automatically	Automatic			-
	6605	F	Bus power supply state Aus ¦ Ein	On.			-
	6610	O	Display system messages Nein ¦ Ja	Yes			
	6612	O	Alarm delay	– – –	– – – / 2	60	min
	6620	F	Action changeover functions Segment ¦ System	System			-
	6621	F	Summer changeover Locally¦ Centrally	Locally			-
	6623	F	Optg mode changeover Locally ¦ Centrally	Centrally			-
	6625	F	DHW assignment Local HCs ¦ All HCs in segment ¦ All HCs in system	All HCs in system			-
	6627	F	Refrigeration request Locally ¦ Centrally	Centrally			
	6632	F	Bit Eco from ext source No ¦ Yes	Yes			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
	6640	I	Clock mode Autonomously ¦ Slave without remote setting ¦ Slave with remote setting ¦ Master	Autonomously			-
	6650	F	Outside temp source	0	0	239	-
	Errors						
	6710	I	Reset alarm relay No ¦ Yes	No			-
	6711	I	Reset HP No ¦ Yes	No			-
	6740	F	Flow temp 1 alarm	– – –	– – – / 10	240	min
	6741	F	Flow temp 2 alarm	– – –	– – – / 10	240	min
	6745	F	DHW charging alarm	– – –	– – – / 1	48	h
	6746	F	Flow temp cooling 1 alarm	– – –	– – – / 10	240	min
	6800	F	History 1	-			
	6801	F	Error code 1	-	0	255	-
	6802	F	History 2	-			
	6803	F	Error code 2	-	0	255	-
	6804	F	History 3	-			
	6805	F	Error code 3	-	0	255	-
	6806	F	History 4	-			
	6807	F	Error code 4	-	0	255	-
	6808	F	History 5	-			
	6809	F	Error code 5	-	0	255	-
	6810	F	History 6	-			
	6811	F	Error code 6	-	0	255	-
	6812	F	History 7	-			
	6813	F	Error code 7	-	0	255	-
	6814	F	History 8	-			
	6815	F	Error code 8	-	0	255	-
	6816	F	History 9	-			
	6817	F	Error code 9	-	0	255	-
	6818	F	History 10	-			
	6819	F	Error code 10	-	0	255	-
	6820	O	Reset history No ¦ Yes	No			-
	– – –	ST	Repetition error 107: Hot-gas compressor 1	2			
6)	– – –	ST	Repetition error 108: Hot-gas compressor 2	2			
	– – –	ST	Repetition error 134: 134: Common fault HP	2			
	– – –	ST	Repetition error 204: Fan overload	2			
	– – –	ST	Repetition error 222: High-pressure in HP operation	2			
	– – –	ST	Repetition error 225: Low-pressure	2			
	– – –	ST	Repetition error 226: Compressor 1 overload	2			
6)	– – –	ST	Repetition error 227: Compressor 2 overload	2			
	– – –	ST	Repetition error 228: Flow switch heat source	2			
	– – –	ST	Repetition error 229: Pressure switch heat source	2			
	– – –	ST	Repetition error 230: Source pump overload	2			
	– – –	ST	Repetition error 247: Defrost fault	2			
6)	– – –	ST	Repetition error 355: 3-phase current	2			

Operating line	Operating level	Function	Default value	Min	Max	Unit
		asymetrical				
– – –	ST	Repetition error 356: Flow switch consumers	2			
Service / special operation						
7070	I	HP interval	– – –	– – – / 1	240	months
7071	I	HP time since maint	0	0	240	months
7072	I	Max starts compr1/hrs run	– – –	– – – / 0.1	12.0	-
7073	I	Cur starts compr1/hrs run	0	0	12.0	-
6) 7074	I	Max starts compr2/hrs run	– – –	– – – / 0.1	12.0	-
7075	I	Cur starts compr2/hrs run	0	0	12.0	-
7076	I	Diff condens max/week	– – –	– – – / 1	250	-
7077	I	Cur diff condens max/week	0	0	250	-
7078	I	Diff condens min/week	– – –	– – – / 1	250	-
7079	I	Cur diff condens min/week	0	0	250	-
7080	I	Diff evap max/week	– – –	– – – / 1	250	-
7081	I	Cur diff evap max/week	0	0	250	-
7082	I	Diff evap min/week	– – –	– – – / 1	250	-
7083	I	Cur diff evap min/week	0	0	250	-
7090	I	DHW storage tank interval	– – –	– – – / 1	240	months
7091	I	DHW stor tank since maint	0	0	240	months
7092	I	DHW charg temp HP min	40	8	80	°C
7093	I	Curr DHW charg temp HP	-	8	80	°C
7119	F	Economy function Locked ¦ Released	Locked			-
7120	E	Economy mode Off ¦ On	Off.			-
7141	E	Emergency operation Off ¦ On	Off.			-
7142	F	Type of functioning of emergency operation Manually ¦ Automatically	Manually			-
7150	I	Simulation outside temp	– – –	– – – / -50	50	°C
7152	I	Triggering defrost No ¦ Yes	No			-
7180	O	Text responsibility 1 No display of responsibility ¦ Only display of phone no. ¦ Service ¦ Customer service ¦ Installer ¦ Janitor ¦ Administration ¦ Refrigeration engineer ¦ Hotline	No display of responsibility			-
7181	I	Phone no. responsibility 1		0	16	digits
7182	O	Text responsibility 2 No display of responsibility ¦ Only display of phone no. ¦ Service ¦ Customer service ¦ Installer ¦ Janitor ¦ Administration ¦ Refrigeration engineer ¦ Hotline	No display of responsibility			-
7183	I	Phone no. responsibility 2		0	16	digits
7184	O	Text responsibility 3 No display of responsibility ¦ Only display of phone no. ¦ Service ¦ Customer service ¦ Installer ¦ Janitor ¦ Administration ¦ Refrigeration engineer ¦ Hotline	No display of responsibility			-
7185	O	Phone no. responsibility 3		0	16	digits
7186	O	Text responsibility 4 No display of responsibility ¦ Only display of phone no. ¦ Service ¦ Customer service ¦ Installer ¦ Janitor ¦ Administration ¦ Refrigeration engineer ¦ Hotline	No display of responsibility			-
7187	O	Phone no. responsibility 4		0	16	digits
7188	O	Text responsibility 5	No display of responsibility			-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
			No display of responsibility ¦ Only display of phone no. ¦ Service ¦ Customer service ¦ Installer ¦ Janitor ¦ Administration ¦ Refrigeration engineer ¦ Hotline				
	7189	O	Phone no. responsibility 5		0	16	digits
	Input / output test						
4)	7700	I	Relay test No test ¦ Everything off ¦ Relay output QX23 module 1 ¦ Relay output QX21 module 1 ¦ Relay output QX22 module 1 ¦ Relay output QX1 ¦ Relay output QX2 ¦ Relay output QX3 ¦ Relay output QX4 ¦ Relay output QX5 ¦ Relay output QX6 ¦ Relay output QX23 module 2 ¦ Relay output QX21 module 2 ¦ Relay output QX22 module 2 ¦ Relay output QX7 ¦ Relay output QX8	No test			-
6)	7700	I	Relay test No test ¦ Everything off ¦ Source pump Q8 / Fan K 19 ¦ Compressor 1 K1 (for approx. 1-2 s) No test ¦ Everything off ¦ Source pump Q8/fan K19 ¦ Compressor 1 K1 ¦ Condenser pump Q9 ¦ DHW pump Q3 ¦ Heating circuit pump Q2¦ Heat circ mix valve op Y1¦ Heat circ mix valve cl Y2 ¦ Relay output QX23 module 1 ¦ Relay output QX21 module 1 ¦ Relay output QX22 module 1 ¦ Relay output QX1 ¦ Relay output QX2 ¦ Relay output QX3 ¦ Relay output QX4 ¦ Relay output QX5 ¦ Relay output QX6 ¦ Relay output QX23 module 2 ¦ Relay output QX21 module 2 ¦ Relay output QX22 module 2	No test			-
	7710	I	Output test UX	– – –	– – – / 0	100	%
	7711	I	Voltage signal UX	-	0.0	10.0	Volt
	7714	I	PWM signal P1	-	0	100	%
	7730	I	Outside temp B9	-	-50.0	50.0	°C
6)	7732	I	Flow temp B1	-	0.0	140.0	°C
	7750	I	DHW temp B3	-	0.0	140.0	°C
	7770	I	Flow temp HP B21	-	0.0	140.0	°C
	7771	I	Return temp HP B71	-	0.0	140.0	°C
	7772	I	Hot-gas temp B81	-	0.0	180.0	°C
	7775	I	Source inlet temp B91	-	-50.0	50.0	°C
	7777	I	Sensor temp B92, B84	-	-50.0	50.0	°C
	7820	I	Sensor temp BX1	-	-28	350	°C
6)	7821	I	Sensor temp BX2	-	-28	350	°C
	7822	I	Sensor temp BX3	-	-28	350	°C
	7823	I	Sensor temp BX4	-	-28	350	°C
	7824	I	Sensor temp BX 5	-	-28	350	°C
	7830	I	Sensor temp BX21 module 1	-	-28	350	°C
	7831	I	Sensor temp BX22 module 1	-	-28	350	°C
	7832	I	Sensor temp BX21 module 2	-	-28	350	°C
	7833	I	Sensor temp BX22 module 2	-	-28	350	°C
	7840	I	Voltage signal H1	-	0.0	10.0	Volt
	7841	I	Contact state H1 Open ¦ Closed	-	0	1	-
	7842	I	Pulse counter H1	-	0	66535	-
	7845	I	Voltage signal H2	-	0.0	10.0	Volt
	7846	I	Contact state H2 Open ¦ Closed	-	0	1	-
	7854	I	Voltage signal H3	-	0.0	10.0	Volt
	7855	I	Contact state H3 Open ¦ Closed	-	0	1	-
	7856	I	Pulse counter H3	-	0	66535	-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
6)	7889	I	Low-pressure switch E9 0V ¦ 230V	-	0	1	-
	7890	I	High-pressure switch E10 0V ¦ 230V	-	0	1	-
	7891	I	Compressor 1 overload E11 0V ¦ 230V	-	0	1	-
	7911	I	Input EX 1 0V ¦ 230V	-	0	1	-
	7912	I	Input EX2 0V ¦ 230V	-	0	1	-
	7913	I	Input EX3 0V ¦ 230V	-	0	1	-
	7914	I	Input EX4 0V ¦ 230V	-	0	1	-
	7915	I	Input EX5 0V ¦ 230V	-	0	1	-
	7916	I	Input EX6 0V ¦ 230V	-	0	1	-
	7917	I	Input EX7 0V ¦ 230V	-	0	1	-
	State of plant						
	8000	I	State heating circuit 1	-	0	255	-
	8001	I	State heating circuit 2	-	0	255	-
	8002	I	State heating circuit P	-	0	255	-
	8003	I	State DHW	-	0	255	-
	8004	I	State cooling circuit 1	-	0	255	-
	8006	I	State heat pump	-	0	255	-
	8007	I	State solar	-	0	255	-
	8010	I	State buffer	-	0	255	-
	8011	I	State swimming pool	-	0	255	-
4)	8022	I	State supplementary source	-	0	255	-
	8050	I	History 1	-			
	8051	I	Setpoint code 1	-	0	255	-
	8052	I	History 2	-			
	8053	I	Setpoint code 2	-	0	255	-
	8054	I	History 3	-			
	8055	I	Setpoint code 3	-	0	255	-
	8056	I	History 4	-			
	8057	I	Setpoint code 4	-	0	255	-
	8058	I	History 5	-			
	8059	I	Setpoint code 5	-	0	255	-
	8060	I	History 6	-			
	8061	I	Setpoint code 6	-	0	255	-
	8062	I	History 7	-			
	8063	I	Setpoint code 7	-	0	255	-
	8064	I	History 8	-			
	8065	I	Setpoint code 8	-	0	255	-
	8066	I	History 9	-			
	8067	I	Setpoint code 9	-	0	255	-
	8068	I	History 10	-			
	8069	I	Setpoint code 10	-	0	255	-
	8070	O	Reset history	-	0	1	-

	Operating line	Operating level	Function	Default value	Min	Max	Unit
Diagnostics cascade							
	8100 through 8130	I	Priority source 1…16	-	0	16	
	8101 through 8131	I	State source 1...16 Missing ¦ Faulty ¦ Manual control active ¦ Heat generation lock active ¦ Chimney sweep funct active ¦ Temporarily unavailable ¦ Outside temp limit active ¦ Not released ¦ Released	Fehlt			
	8138	I	Cascade flow temp	-	0.0	140.0	°C
	8139	I	Cascade flow temp setp	-	0.0	140.0	°C
	8140	I	Cascade return temp	-	0.0	140.0	°C
	8141	I	Cascade return temp setp	-	0.0	140.0	°C
	8150	I	Source seq ch'over current	-	0	990	h
Diagnostics heat source							
	8400	I	Compressor 1 Off ¦ On	-	0	1	-
6)	8401	I	Compressor 2 Off ¦ On	-	0	1	-
	8402	I	El imm heater 1 flow Off ¦ On	-	0	1	-
	8403	I	El imm heater 2 flow Off ¦ On	-	0	1	-
	8404	I	Source pump Off ¦ On	-	0	1	-
	8405	I	Speed of source pump Off ¦ On	-	0	100	%
	8406	I	Condenser pump Off ¦ On	-	0	1	-
	8410	E	Return temp HP	-	0.0	140.0	°C
	8411	E	Setpoint HP	-	0.0	140.0	°C
	8412	E	Flow temp HP	-	0.0	140.0	°C
	8415	I	Hot-gas temp 1	-	0.0	180.0	°C
	8416	F	Hot-gas temp max	-	0.0	180.0	°C
6)	8417	I	Hot-gas temp 2	-	0.0	180.0	°C
	8420	I	Refrigerant temperature liquid	-	0.0	140.0	°C
	8425	I	Temp diff condenser	-	-50.0	140.0	°C
	8426	I	Temp diff evaporator	-	-50.0	140.0	°C
	8427	E	Source inlet temp	-	-50.0	50.0	°C
	8428	I	Source inlet temp min	-	-50.0	50.0	°C
	8429	E	Source outlet temp	-	-50.0	50.0	°C
	8430	I	Source outlet temp min	-	-50.0	50.0	°C
	8440	I	Remain stage 1 off time min	---	(0) 1	255	min
6)	8441	I	Remain stage 2 off time min	---	(0) 1	255	min
	8442	I	Remain stage 1 on time min	---	(0) 1	255	min
6)	8443	I	Remain stage 2 on time min	---	(0) 1	255	min
	8444	I	Remain limit source temp min	---	(0) 1	65535	min
6)	8446	I	Compressor sequence 1-2 ¦ 2-1	---	0	1	-
	8450	F	Hours run compressor 1	0	0	199'999	h

	Operating line	Operating level	Function	Default value	Min	Max	Unit
	8451	F	Start counter compressor 1	0	0	199'999	-
6)	8452	F	Hours run compressor 2	0	0	199'999	h
	8453	F	Start counter compressor 2	0	0	199'999	-
	8454	F	Locking time HP	0	0	199'999	h
	8455	F	Counter number of locks HP	0	0	199'999	-
	8456	F	Hours run el flow	0	0	199'999	h
	8457	F	Start counter el flow	0	0	199'999	-
	8469	F	Fan speed	0	0	100	%
	8470	I	Fan Off ¦ On	Off.			-
	8471	I	Process reversing valve Off ¦ On	Off.			-
	8475	I	Evaporator temp	0	-50	50	°C
	8477	I	Temp diff defrost act value	0	-50	50	°C
	8478	I	Temp diff defrost setpoint	0	-50	50	°C
	8480	I	Remain time defrost lock	0	0	255	min
	8481	I	Remain time forced defrost	00:00	00:00	07:00	h/min
	8482	O	Remain time defrost settling	0	0	255	-
	8485	I	Number defrost attempts	0	0	10	-
	8487	O	Defrost state HP off, defr release OT off ¦ Locked ¦ Monitoring ice ¦ Preheating for defrost ¦ Defrost active ¦ Dripping ¦ Cooling down evaporator ¦ Fault ¦ Forced defrost ¦ Defrost settling ¦ Defrost with fan ¦ Defrost with compressor ¦ Forced defrost fan ¦ Forced defrost compressor	HP off, defr release OT off			-
	8505	F	Speed collector pump 1	0	0	100	%
	8506	F	Speed solar pump ext exch	0	0	100	%
	8507	F	Speed solar pump buffer	0	0	100	%
	8508	F	Speed solar pump swi pool	0	0	100	%
	8510	I	Collector temp 1	-	-28	350	°C
	8511	I	Collector temp 1 max	200	-28	350	°C
	8512	I	Collector temp 1 min	-28	-28	350	°C
	8513	I	dT collector 1/DHW	0	-28	350	°C
	8514	I	dT collector 2/buffer	0	-168	350	°C
	8515	I	dt collector 1/swimming pool	0	-168	350	°C
	8519	I	Solar flow temp	0	-28	350	°C
	8520	I	Solar return temp	0	-28	350	°C
	8526	I	24-hour yield solar energy	0	0	999.9	kWh
	8527	I	Total yield solar energy	0	0	9999999.9	kWh
	8530	F	Hours run solar yield	0	0	199'999	h
	8531	F	Hours run collect overtemp	0	0	199'999	h
6)	8543	F	Speed collector pump 2	0	0	100	%
	8547	I	Collector temp 2	0	-28	350	°C
	8548	I	Collector temp 2 max	-28	-28	350	°C
	8549	I	Collector temp 2 min	350	-28	350	°C
	8550	I	dT collector 2/DHW	0	-168	350	°C
	8551	I	dT collector 2/buffer	0	-168	350	°C
	8552	I	dt collector 2/swimming pool	0	-168	350	°C
Diagnostics consumers							
	8700	E	Outside temperature	-	-50.0	50.0	°C
	8701	E	Outside temp min	-	-50.0	50.0	°C

	Operating line	Operating level	Function	Default value	Min	Max	Unit
	8702	E	Outside temp max	-	-50.0	50.0	°C
	8703	I	Outside temp attenuated	-	-50.0	50.0	°C
	8704	I	Outside temperature composite	-	-50.0	50.0	°C
	8720	I	Relative room humidity	-	0	100	%
	8721	I	Room temperature	-	0	50	°C
	8722	I	Dewpoint temp 1	-	0	50	°C
	8730	I	heating circuit pump 1 Off ¦ On	Off.			-
	8731	I	Heating circ mix valve op Y1 Off ¦ On	Off.			-
	8732	I	Heat circ mix valve cl Y2 Off ¦ On	Off.			-
6)	8735	F	Speed heating circuit pump 1	-	0	100	%
	8740	E	Room temp 1	-	0.0	50.0	°C
	8741	E	Room setpoint 1	20	4.0	35.0	°C
	8742	O	Room temp 1 model	-	0.0	50.0	°C
	8743	E	Flow temp 1	-	0.0	140.0	°C
	8744	E	Flow temp setpoint 1	-	0.0	140.0	°C
	8751	I	Cooling circuit pump 1	-	0	1	-
	8752	I	Cool circ mix valve 1 open	-	0	1	-
	8753	I	Cool circ mix valve 1 closed	-	0	1	-
	8754	I	Diverting valve cooling 1	-	0	1	-
	8756	E	Flow temperature cooling 1	-	0	140	°C
	8757	E	Flow temperature setpoint cooling 1	-	0	140	°C
	8760	I	Heating circuit pump 1 Off ¦ On	Off.			-
	8761	I	Heat circ mix valve op Y5 Off ¦ On	Off.			-
	8762	I	Heat circ mix valve cl Y6 Off ¦ On	Off.			-
6)	8765	F	Speed heating circuit pump 2	-	0	100	%
	8770	E	Room temp 2	-	0.0	50.0	°C
	8771	E	Room setpoint 2	20	4.0	35.0	°C
	8772	O	Room temp 2 model	-	0.0	50.0	°C
	8773	E	Flow temp 2	-	0.0	140.0	°C
	8774	E	Flow temp setpoint 2	-	0.0	140.0	°C
6)	8795	F	Speed heating circuit pump P	-	0	100	%
	8800	E	Room temp P	-	0.0	50.0	°C
	8801	E	Room setpoint P	20	4.0	35.0	°C
	8802	O	Room temp P model	-	0.0	50.0	°C
	8803	E	Flow temp setpoint P	-	0.0	140.0	°C
	8820	I	DHW pump Q3 Off ¦ On	Off.			-
	8821	I	Electric immersion heater DHW K6 Off ¦ On	Off.			-
6)	8825	F	Speed DHW pump	-	0	100	%
	8826	F	Speed DHW interm circ pump	-	0	100	%
	8827	F	Speed inst DHW heater pump	-	0	100	%
	8830	E	DHW temp 1	-	0.0	140.0	°C
	8831	E	DHW temp setpoint	55	8.0	80.0	°C
	8832	I	DHW temp 2	-	0.0	140.0	°C

	Operating line	Operating level	Function	Default value	Min	Max	Unit
	8835	I	DHW circulation temp	-	0.0	140.0	°C
6)	8836	I	DHW charging temp	-	0.0	140.0	°C
	8840	F	Hours run DHW pump	0	0	199'999	h
	8841	F	Start counter DHW pump	0	0	199'999	-
	8842	F	Hours run el DHW	0	0	199'999	h
	8843	F	Start counter el DHW	0	0	199'999	-
6)	8850	I	DHW primary controller temp	0	0	140.0	°C
	8851	I	DHW primary controller setp	0	0	140.0	°C
	8852	I	Instant DHW heater temp	0	0	140.0	°C
	8853	I	Instant DHW heater setpoint	0	0	140.0	°C
	8900	I	Swimming pool temp	0	0	140.0	°C
	8901	I	Swimming pool setpoint	24	8	80.0	°C
6)	8930	I	Primary controller temp	0	0	140.0	°C
	8931	I	Primary controller setpoint	0	0	140.0	°C
	8950	I	Common flow temp	0	0	140.0	°C
	8951	I	Common flow temperature setpoint	0	0	140.0	°C
	8957	I	Common flow setp refrig	0	0	140.0	°C
	8970	I	El imm heater buffer Off ¦ On	Off.			-
	8980	E	Buffer temp 1	-	0.0	140.0	°C
	8981	E	Buffer setpoint	-	0.0	140.0	°C
	8982	E	Buffer temp 2	-	0.0	140.0	°C
	8983	I	Buffer temp 3	-	0.0	140.0	°C
	8990	F	Hours run el buffer	0	0	199'999	h
	8991	F	Start counter el buffer	0	0	199'999	-
	9000	I	Flow temperature setpoint H1	5	0.0	140.0	°C
	9001	I	Flow temp setpoint H2	5	0.0	140.0	°C
	9004	I	Flow temp setpoint H3	5	0.0	140.0	°C
	9005	I	Water pressure H1	0	-100	500	bar
	9006	I	Water pressure H2	0	-100	500	bar
	9009	I	Water pressure H3	0	-100	500	bar
	9031	E	Relay output QX1 Off ¦ On	Off			-
	9032	E	Relay output QX2 Off ¦ On	Off			-
	9033	E	Relay output QX3 Off ¦ On	Off			-
	9034	E	Relay output QX4 Off ¦ On	Off			-
	9035	E	Relay output QX5 Off ¦ On	Off			-
	9036	E	Relay output QX6 Off ¦ On	Off			-
4	9037	E	Relay output QX7 Off ¦ On	Off			
4	9038	E	Relay output QX8 Off ¦ On	Off			
	9050	I	Relay output QX21 module 1 Off ¦ On	Off			-
	9051	I	Relay output QX22 module 1 Off ¦ On	Off			-
	9052	I	Relay output QX23 module 1	Off			-

Operating line	Operating level	Function	Default value	Min	Max	Unit
		Off ¦ On				
9053	I	Relay output QX21 module 2 Off ¦ On	Off			-
9054	I	Relay output QX22 module 2 Off ¦ On	Off			-
9055	I	Relay output QX23 module 2 Off ¦ On	Off.			-

2 The settings in detail

2.1 Operator section

Operation and display

Line no.	*Operating line*
30	**Backup basic setting** **No** **Yes**
31	**Enable basic setting** **No** **Yes**

Backup basic setting

The setting data of all operating levels are copied from the controller to the memory of the operator unit. This means that former data in the operator unit will be overwritten.

Enable basic setting

With the exception of the data listed below, the setting data of operating levels E, I and F are transferred from the memory of the operator unit to the connected controller. Former setting data in the controller will be overwritten.

The following data of operating levels E, I and F will not be overwritten:

Line no.	*Operating line*
130	Room unit 1
131	Room unit 2
132	Room unit P
133	Outside sensor
134	Repeater
135	Operator unit P
138	Operator unit 1
140	Delete all devices
516	Default values
536	Default values
556	Default values
576	Default values
6222	Device hours run
6600	Device address
6601	Segment address
6650	Outside temp source

The following data will not be overwritten either:
RF list, hours run / start counter, yield meter, maintenance meter, slave pointer, and error history.

RF must be newly connected.

2.2 Heating circuits / cooling circuit

Mixing valve control

Line no.			*Operating line*
HC1	*HC2*	*CC1*	
835	**1135**	**942**	**Mixing valve Xp**
836	**1136**	**943**	**Mixing valve Tn**

In heating mode, mixing valve 1 uses the P-band and the integral action time according to heating circuit 1 (835 / 836), in cooling mode those of cooling circuit 1 (942 / 943).

Mixing valve Xp

By setting the right proportional band, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Xp influences the controller's P-control action.

Mixing valve Tn

By setting the right integral action time, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Tn influences the controller's I-control action.

Pump speed

Line no.			*Operating line*
HC1	*HC2*	*HC P*	
882	**1182**	**1482**	**Pump speed min**
883	**1183**	**1483**	**Pump speed max**

When using speed-controlled pumps, the pumps' minimum and maximum speeds can be set. The pump speed is then controlled between these 2 limits.

2.3 Domestic hot water

Setpoints

Line no.	*Operating line*
1614	**Nominal setpoint maximum**

This operating line is used to limit the "Nominal setpoint" (1610) at the top.

2.4 Pump Hx

Pump Hx

Line no.			*Operating line*
H1	*H2*	*H3*	
2008	**2033**	**2044**	**H1/H2/H3 DHW charging priority** No ¦ Yes

H1/H2/H3 DHW charging priority

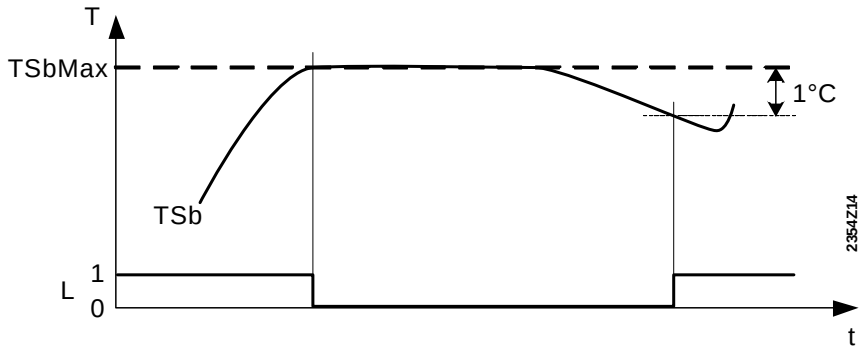
When using this setting, the connected pump H can be excluded from / included in the effect of DHW charging priority.
In the case of a ventilation system, for example, it is thus possible to ensure a constant supply of heat with no impact from the DHW charging priority.

2.5 Swimming pool

Line no.	*Operating line*
2070	**Swimming pool temp max**

Swimming pool temp max

If the swimming pool temperature reaches the maximum limit set here, the collector pump is deactivated. It is released again when the swimming pool temperature drops 1 °C below the maximum temperature limit.



TSbMax Swimming pool temperature max (5051)
TSb Actual value of the swimming pool temperature
L Storage tank charging: 1 = on, 0 = off

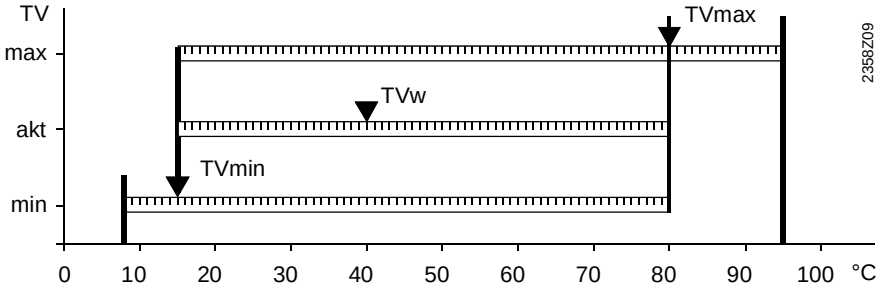
2.6 Primary controller / system pump

Flow temperature setpoint limits

Line no.	*Operating line*
2110	**Flow temp setpoint min**
2111	**Flow temp setpoint max**
2112	**Flow temp setp cooling min**

Flow temp setpoint min / max

Using this limitation, a temperature range for the flow temperature setpoint can be defined. If the requested flow temperature setpoint reaches the relevant limit and the demand for heat increases or decreases, the flow temperature setpoint is maintained at the maximum or minimum limit.



TVw Current flow temperature setpoint
TVmax Flow temperature setpoint maximum
Tvmin Flow temp setpoint minimum

Flow temp setp cooling min

This limit value can be used to define the low limit for the flow temperature setpoint in cooling mode.

Mixing valve control

Line no.	*Operating line*
2130	**Mixing valve boost**
2131	**Mixing valve cooling offset**
2132	**Actuator:type**
2133	**Switching differential 2-pos**
2134	**Actuator running time**
2135	**Mixing valve Xp**
2136	**Mixing valve Tn**

Mixing valve boost

To ensure adequate mixing, the actual value of the boiler flow temperature must be higher than the required setpoint of the mixing valve flow temperature, enabling that temperature to be controlled. The controller generates the boiler temperature setpoint based on the increase set here and the current flow temperature setpoint.

Mixing valve cooling offset

To ensure adequate mixing in cooling mode, the actual value of the cooling flow temperature must be lower than the required temperature setpoint of the mixing valve flow since otherwise that temperature could not be controlled. The controller generates the refrigeration request based on the decrease set here plus the current flow temperature setpoint and sends the request to the refrigeration plant.

Actuator:type

The selection of the type of actuator determines the control behavior for the type of mixing valve actuator used.

Switching differential 2-pos

For a 2-position actuator, the 2-position switching differential must also be adapted. This is not required when using a 3-position actuator.

Actuator running time

Setting the running time of the actuator used with the mixing valve.

Mixing valve Xp

By setting the right proportional band, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Xp influences the controller's P-control action.

Mixing valve Tn

By setting the right integral action time, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Tn influences the controller's I-control action.

2.7 Heat pump

Condenser pump

Line no.	*Operating line*
2805	**Req temp diff condenser**
2806	**Max dev temp diff cond**

Req temp diff condenser

This is the required temperature differential (temperature increase) of the medium on the consumer side between condenser inlet (B71) and condenser outlet (B21).

The function is only active when both sensors are present.

Max dev temp diff cond

This is the maximum deviation from the required temperature differential, either upward or downward. If, for at least 3 minutes, the measured deviation is greater than the set maximum deviation, the relevant status message will appear.
With 2-stage heat pumps, the status message appears only if both stages are in operation.

Parameters 2805 and 2806 are not active in cooling mode and when using an air-to-water heat pump.

Operation limits

Line no.	*Operating line*
2812	**Operation limit OT min air**
2813	**Operation limit OT max air**
2814	**Source temp max**

Operation limit OT min air

When, in the case of an air-to-water heat pump, the outside temperature falls below the level set here, the controller locks the heat pump. It will be enabled again as soon as the outside temperature exceeds the set limit by 2 °C.

Operation limit OT max air

When, in the case of an air-to-water heat pump, the outside temperature exceeds the level set here, the controller locks the heat pump. It will be enabled again as soon as the outside temperature falls 2 °C below the set limit.

Source temp max

When the source inlet temperature (B91) lies above the maximum source temperature (2814), the compressor does not switch on and the source pump continues to run. When the source temperature drops below the maximum source temperature minus 1 °C, the compressor is switched on.

If, on completion of the maximum source startup time (2821), the compressor does not run, the source pump is switched off. When the set minimum off time has elapsed, the controller tries to switch the compressor on again. This means that the pumps are activated and the compressor starts to operate, provided the maximum source temperature is not exceeded.

When the compressor operates and the source temperature exceeds its maximum, the compressor is switched off and, on completion of the minimum off time, the controller tries to switch the heat pump on again.

If the source inlet temperature is not available, the function uses the source outlet temperature.

This parameter is only active in heating mode and only in the case of a brine-to-water or water-to-water heat pump.

Source pump

Line no.	*Operating line*
2823	**Req temp diff evaporator**
2824	**Max dev temp diff evap**

Req temp diff evaporator

This is the required temperature differential (temperature decrease) of the medium (water / brine) between evaporator inlet (B91) and evaporator outlet (B92).

Max dev temp diff evap

This is the maximum deviation from the required temperature differential, either upward or downward.
If the measured deviation is greater than the set maximum deviation, the relevant status message will appear, provided the compressor has been in operation for at least 3 minutes. With 2-stage heat pumps, the status message appears only if both stages are in operation.

Parameters 2823 and 2824 are not active in cooling mode and when using an air-to-water heat pump.

Compressors

Line no.	*Operating line*
2846	**Hot-gas temp max**
2847	**Swi diff hot-gas temp max**
2848	**Reduction hot-gas temp max**

Hot-gas temp max

This is the maximum permissible hot-gas temperature of the refrigerant (B81 / B82). The heat pump is switched off when this temperature is exceeded. The pumps continue to run for the adjusted overrun times.

The heat pump is switched on again when the hot-gas temperature drops below its maximum by the amount of the adjustable switching differential (2847) and the minimum off time (2843) has elapsed.

If, within the adjustable “Duration error repetition” (2889), the fault occurs more often than the permissible maximum number of shutdowns, the heat pump will go to lockout and operation can only be resumed via manual reset.

During DHW or buffer storage tank charging, the heat pump is already switched off when the temperature level of the maximum hot-gas temperature minus the reduction is reached. If there is demand for heat from space heating, the heat pump continues to operate with no interruption, provided the switch-off condition has not yet been satisfied.

Behavior with 2 compressors

If 2 compressors are used, each of them has its own hot-gas sensor. The order the 2 compressors are put into operation can vary due to changeover of sequencing. If one of the hot-gas temperatures approaches the maximum minus the reduction, the controller will always switch off the compressor which, currently, operates as a second stage. There will be no status message.
If one of the compressors must be shut down due to excessive hot-gas temperatures, the status or error message will show which of the compressors has caused the fault. If, in the event of hot-gas problems, only one compressor operates, it will be switched off and the second compressor switched on.

Swi diff hot-gas temp max

For the heat pump to switch on again after reaching “Hot-gas temp max“ (2846), the hot-gas temperature (B81 / B82) must drop below its maximum by at least the switching differential set here.

Reduction hot-gas temp max

DHW charging or forced buffer storage tank charging via the heat pump is aborted prematurely when the hot-gas temperature (B81 / B82) reaches the level of maximum hot-gas temperature (2846) minus the reduction set here.

The controller switches to space heating, if required.
In that case, the heat pump continues to operate with no interruption, provided the switch-off condition has not yet been satisfied.

If there is no demand for heat from space heating, the heat pump is switched off.
It can resume operation only when the minimum off time (2843) has elapsed, provided the hot-gas temperature has dropped below the reduced maximum hot-gas temperature by the amount of the adjustable switching differential of the hot-gas (2847).

If an electric immersion heater is installed, DHW charging can be completed. Otherwise, for DHW charging to be resumed, the DHW storage tank temperature (B3) must drop by the amount of the DHW switching differential (5024).

If a second compressor is running, it is always switched off with “Reduction hot-gas temp max”.

Line no.	*Operating line*
2849	**Setpoint hot-gas temp**
2850	**SD setp hot-gas temp**
2851	**Cont’type setp hot-gas temp**

Setpoint hot-gas temp

If the hot-gas temperature of compressor 1 (B81) or that of compressor 2 (B82) exceeds the "Setpoint hot-gas temp“ set here, relay “Hot-gas temperature K31“ (Qx1..6, 5890 - 5896) will pick up.

SD setp hot-gas temp

If the hot-gas temperatures of compressor 1 **and** compressor 2 drop below the “Setpoint hot-gas temp“ minus the switching differential set here, relay “Hot-gas temperature K31“ will drop off.

Cont’type setp hot-gas temp

The type of contact for relay “Hot-gas temperature K31” can be selected here.

NC
The contact opens when hot-gas temperature K31 is exceeded.

NO (factory setting)
The contact closes when hot-gas temperature K31 is exceeded.

Line no.	*Operating line*
2853	**LP delay during operation**
2854	**LP supervision**

If the low-pressure switch (E9) trips, the heat pump is switched off. On completion of the minimum off time, the heat pump is switched on again.
If, within “Duration error repetition“, the low-pressure switch trips several times, the heat pump initiates lockout as soon as the number of low-pressure shutdowns exceeds the maximum permissible number.
If the heat pump has gone to lockout, it can only be put back into operation via manual reset.

In the case of 2-stage heat pumps, the low-pressure switch acts on both compressors.

LP delay during operation

If the low-pressure switch (E9) trips during operation, the controller waits for the period of time set here before switching the heat pump off. This is to make certain that the heat pump is not switched off each time the low-pressure switch trips for a short moment.

LP supervision

This defines supervision by the low-pressure switch (B9) during the time the defrost function is active.

Always
The low-pressure switch is always taken into consideration.

Without defrosting
The low-pressure switch is not taken into consideration during the time the defrost function is active.

This function only acts on air-to-water heat pumps.

General parameters

Line no.	*Operating line*
2889	**Duration:error repetition**
2896	**Flow switch source active**

duration:error repetition

If, within this period of time, the same fault occurs more often than set under “Number of error repetitions”, lockout is triggered.

For ”Number of error repetitions“, refer to section 2.15.

Flow switch source active

A flow or pressure switch connected to one of the inputs Ex1..7 (5980 – 5992) is monitored. The incoming signal is active only if the source pump runs, the prerun time has elapsed, and the switch shall be monitored as defined below:

Always
The switch is monitored in heating and cooling mode.

Heating mode only
The switch is monitored in heating mode only.

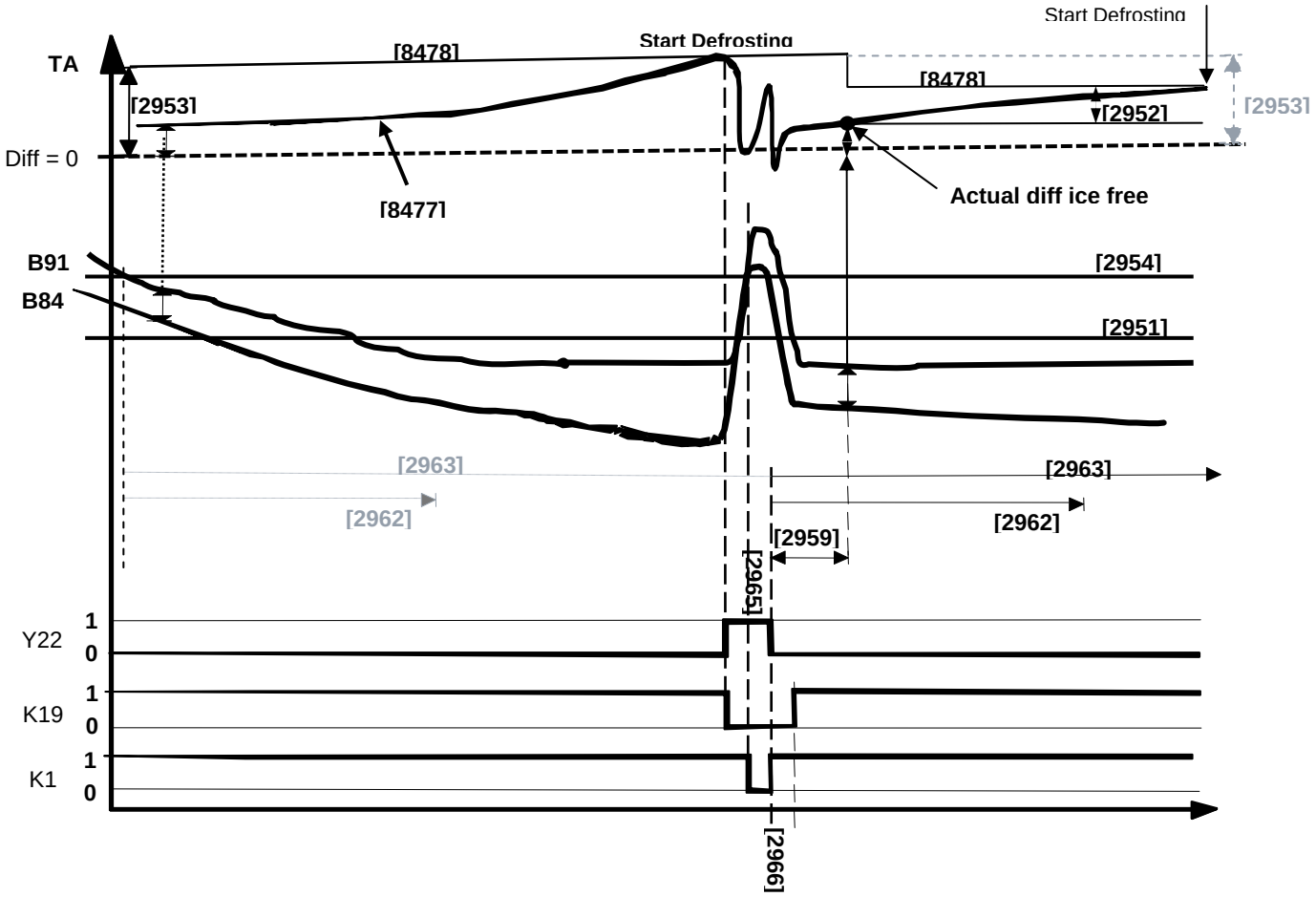
Defrosting

Start of defrosting

When the compressor is in operation, “Duration defrost lock“ (2962) and “Time up to forced defrost“ (2963) elapse. If the source temperature (B91) drops below the defrost release temperature (2951), the defrost release function will be released.
The heat pump can change to defrost operation mode after ”Duration defrost lock” at the earliest, and on completion of “Time up to forced defrost” (2963) at the latest.
If, due to icing during this period of time, the temperature differential defrost max (2953) (initial defrosting) between the incoming outside air (B91) and the evaporator (B84) exceeds the setpoint (8478), the defrost function will be triggered. Defrosting takes place either with the fan or by reversing the process, depending on the outside temperature (2971).

Defrost end when defrosting through process reversal

When defrosting is successful, the evaporator temperature (B84) rises. If the evaporator exceeds “Evapor temp defrost end“ (2954), the defrost process can be successfully completed and the compressor is switched off during the dripping time (2965). Then, heating mode is resumed. Parameter "Cooling down“ (2966) results in a delayed fan start. Thus, the evaporator can be cooled down again before cold outside air is sent to the fan.



B91	Source inlet temp
B84	Evaporator temp
Y22	Process reversing valve
K19	Fan source inlet
K1	Compressor 1

2951	Defrost release below OT
2952 OEM	Swi diff defrost
2953 OEM	Temp diff defrost max
2954 OEM	Evapor temp defrost end
2959 OEM	Defrost settling time
2962	Duration defrost lock
2963	Time up to forced defrost
2965	Dripping time evapor
2966 OEM	Cooling down time
8477	Temp diff defrost act value
8478	Temp diff defrost setpoint

Resuming heating mode and preparing the next defrost process

Heating mode is resumed after successful completion of the defrost process either through process reversal or with the fan. This means that “Duration defrost lock“ (2962), “Time up to forced defrost“ (2963), and “Defrost settling time“ (2959) start to run again. After expiration of "Defrost settling time“ (2959), the present differential is acquired and saved. This differential now serves as starting point for the next differential calculation between B91 and B84. If the differential increases by setting "Swi diff defrost“ (2952), the next defrosting action is triggered. The saved differential plus "Swi diff defrost" together result in "Temp diff defrost setpoint“ (8478).

Defrosting can also be performed manually. Either via one of the inputs EX1 – EX7 or via the operating line (7152). With manual defrosting, no consideration is given to the release temperature (2951) and to “Duration defrost lock“ (2962).

When there is a heat pump lock pending, any active defrost process is completed.

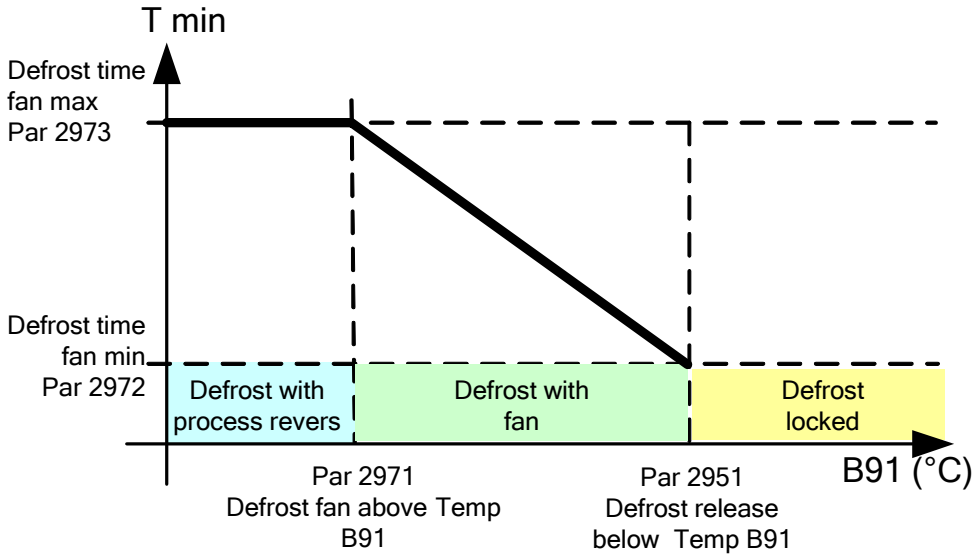
Defrost end when defrosting with the fan

Defrosting is considered completed when one of the 2 following conditions is satisfied:

- The temperature difference (8477) between the incoming outside air (B91) and the evaporator (B84) is smaller than that set on operating line “dT end defrost fan“ (2974)
- The defrost time when defrosting with the fan (2972 and 2973) is reached

Enable passive/
active defrosting

Up to the outside temperature ”Defrost fan above“ (2971) set here, defrosting takes place with the fan. If the outside temperature falls below this level, defrosting is accomplished by reversing the process with the help of the compressor. If the two parameters 2971 "Defrost fan above” and parameter 2951 “Defrost release below OT“ are set to the same value, defrosting starts directly with active defrosting "Defrost with process revers“.



2951: Defrost release below OT
2971 OEM: Defrost fan above
2972 OEM: Defrost time fan min
2973 OEM: Defrost time fan max

Line no.	*Operating line*
2952	**Swi diff defrost**
2953	**Temp diff defrost max**
2954	**Evapor temp defrost end**
2959	**Defrost settling time**
2966	**Cooling down time evapor**
2970	**Switch-off temp min**
2971	**Defrost fan above**
2972	**Defrost time fan min**
2973	**Defrost time fan max**
2974	**dT end defrost fan**

Swi diff defrost

If the acquired and saved differential between B91 and B84 after defrosting (and after stabilization time) is exceeded by the switching difference set here, the controller triggers the next defrosting action.

Temp diff defrost max

This parameter is used only for as long as there is no valid saved temperature differential between source inlet (B91) and evaporator temperature (B84), thus before initial defrosting and as a maximum limit.
If the temperature difference between source inlet (B91) and evaporator temperature (B84) exceeds the maximum value that can be set here, automatic defrost is triggered.

Evapor temp defrost end

Defrosting through process reversal is successfully completed when the evaporator temperature has reached the temperature set here.

Defrost settling time

The settling time is used to define the period of time the heat pump needs – after resuming heating mode – to reach a steady operating state. If, after successful defrosting, the heat pump switches to heating mode, the system waits until the stabilization time has elapsed and then acquires the “Temp diff defrost icefree“ (8476). Prerequisite here is that the temperature has dropped below the defrost release temperature (2951).

“Duration defrost lock“ (2962) and “Time up to forced defrost“ (2963) begin to run only on completion of the settling time.

Cooling down time evapor

Heating mode is resumed on completion of defrost through process reversal and on completion of “Dripping time evapor“ (2965). “Cooling down time evapor“ (2966) is used to define the period of time the fan remains deactivated after the resumption of heating mode.
This function prevents evaporation of the incoming outside air.

Switch-off temp min

In defrost mode:
During every defrost attempt, the controller acquires the temperature in the condenser circuit (B21 or B71).
If, during the defrost process, the temperature in the condenser circuit drops below “Switch-off temp min“, the defrost function is aborted.
At the end of “Duration defrost lock“ (2962), or when exceeding “Temp diff defrost max” (2953), a new attempt is made, provided this is permitted by “Numb defrost attempts max” (2958).

In cooling mode:
If the flow (B21) or the return temperature (B71) falls below the minimum switch-off temperature, the compressor is switched off.
The compressor is switched on again when the temperature acquired by both sensors exceeds the “Min switch-off temperature“ by the “Switching diff return temp” (2840) and when the “Compressor off time min” (2843) has elapsed.

In the case of 2-stage operation, the second compressor stage is already switched off at a level of 1 K before the minimum switch-off temperature.

Defrost fan above

Up to the outside temperature ”Defrost fan above“ (2971) set here, defrosting takes place with the fan. If the outside temperature falls below this level, defrosting is accomplished by reversing the process with the help of the compressor.

Defrost time fan min and Defrost time fan max

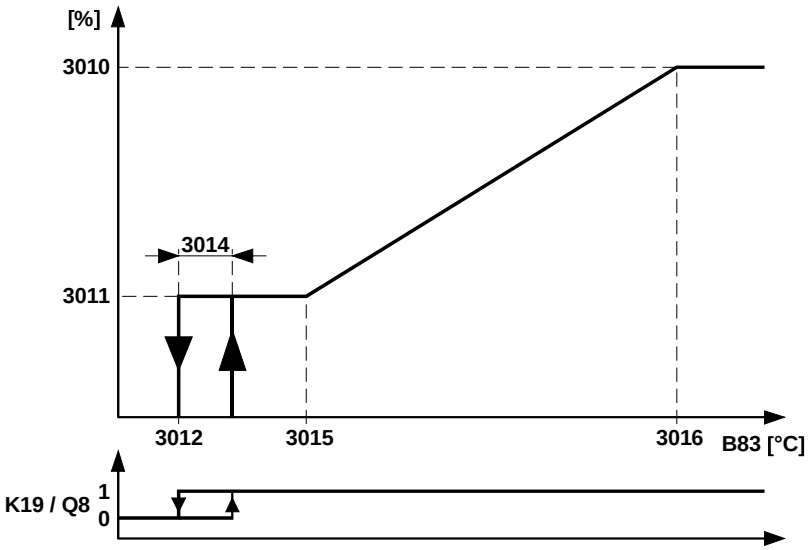
Depending on the source temperature (B91) at the time defrosting is started, the fan defrost time is determined based on “Default time fan min” and “Defrost time fan max” according to the following graph. When, in the case of defrost with the fan, this time is reached, defrosting is considered to be successfully completed.

dT end defrost fan

This is the required temperature difference between incoming outside air (B91) and evaporator (B84) necessary to successfully complete the defrost process with the fan.

Speed control

The fan speed of an air-to-water heat pump, or of the source pump of a brine-to-water or water-to-water heat pump can be controlled based on the refrigerant temperature liquid (B83). Speed control is only active in cooling mode. In heating mode, the fan / source pump operates at the set maximum speed.
When switching on, the fan / source pump operates at the minimum speed (3011) during the set "Locking time control" (3017). Then, the speed changes according to the set straight line (see graph).



B83	Refrigerant temperature liquid	3010	Speed max fan/source pump
K19	Fan air-to-water heat pump	3011	Speed min fan/source pump
Q8	Source pump	3012	Source off below temp B83
		3015	Start speed control B83
		3016	End speed control B83

Line no.	*Operating line*
3010	**Speed max fan/source pump**
3011	**Speed min fan/source pump**
3012	**Source off below temp B83**
3014	**Switching diff source off**
3015	**Start speed control B83**
3016	**End speed control B83**
3017	**Locking time control**
3019	**Start speed control**

Speed max fan/source pump

This limits the control range of the fan / source pump speed at the top.
In heating mode, this setting defines the constant speed.

Speed min fan/source pump

This limits the control range of the fan / source pump speed at the bottom.

Source off below temp B83

If the refrigerant temperature liquid (B83) lies below the switch-off point, the fan / source pump is switched off (or is not put into operation). The compressor continues to operate. The fan is switched on again as soon as B83 exceeds the switch-off point plus the switching differential.
The function can be deactivated (Source off below temp B83 = ---)

Switching diff source off

Setting of switching differential to “Source off below temp B83” (3012).

Start speed control B83 and
End speed control B83

Below the set temperature “Start speed control B83“, the fan / source pump operates at minimum speed (3011).
If the refrigerant temperature liquid (B83) lies between the values of “Start speed control B83“ and “End speed control B83“, the speed is increased in a linear manner until the maximum speed is reached (3010).
If the refrigerant liquid (B83) exceeds the set temperature “End speed control B83“, the fan / source pump continues to operate at the set maximum speed (3010).

Locking time control

During “Locking time control“, the fan operates at minimum speed (setting 3011).

Start speed control

This determines the speed of the speed-controlled pumps at the beginning of speed control.

Minimum speed
When the speed controlled pumps / fans are switched on, they start to operate at minimum speed. Then, speed control increases the speed until the required level is reached.

Maximum speed
When the speed controlled pumps / fans are switched on, they start to operate at maximum speed. Then, speed control reduces the speed until the required level is reached.

2.8 Cascade

Operating mode / strategy

Line no.	*Operating line*
3510	**Lead strategy** Late on, early off Late on, late off Early on, late off According to the buffer storage tank temperature
3516	**Max source force charg**
3517	**Max source force charg OT**

Lead strategy

- **Late on, early off**

Additional heat sources are switched on as late as possible (output band max) and switched off again as early as possible (output band max). This means that the **smallest possible number of heat sources are in operation,** or additional heat sources operate with short on times.

- **Late on, late off**

Additional heat sources are switched on as late as possible (output band max) and switched off again as late as possible (output band min). This leads to the **smallest possible number of switch-on/off actions** for the heat sources.

- **Early on, late off**

Additional heat sources are switched on as early as possible (output band min) and switched off again as late as possible (output band min). This means that the **largest possible number of heat sources are in operation,** or additional heat sources operate with the longest possible on times.

- **According to the buffer storage tank temperature**

The heat sources are switched on and off on the basis of the storage tank temperatures.
If the temperature acquired by all sensors (B4, B41, and B42) lies below the flow temperature, the control system releases the first heat source stage. Additional heat source stages are released each time the set switch-on delay time has elapsed. As soon as the setpoint is reached at the buffer storage tank sensor located at the top, the control system locks the stage released last (provided more than one stage is released). If the temperature acquired by the buffer storage tank sensor in the middle reaches the setpoint, release of the last but one stage will be canceled; if the temperature drops below the setpoint, the stage is released again. The same behavior applies to the buffer storage tank sensor located at the bottom.

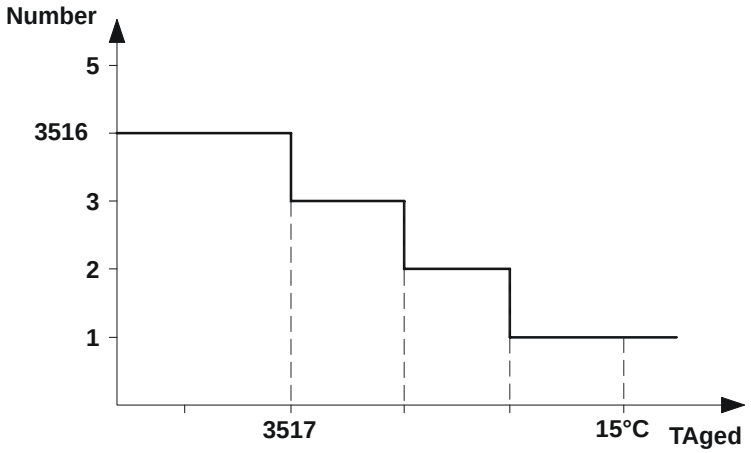
If all buffer storage tank sensors acquire temperatures higher than the required flow temperature setpoint, and the heat generation lock is not yet active, additional stages are switched off, based on the common flow temperature sensor (B10) and the lead strategy “Late on, late off”.

Max source force charg

This defines the maximum permissible number of heat sources used for forced charging.
The number of released heat sources also depends on the attenuated outside temperature (see below).

Max source force charg OT

This defines the attenuated outside temperature at which the maximum number of heat sources are released.
During forced charging, at least one heat source is always released.
Additional heat sources are released in a linear manner based on the temperature differential of 15 °C and “Max source force charg OT“.



When using setting “Max source force charg OT= ---“, dependency on the outside temperature is switched off, which means that the number of heat sources selected with parameter "Max source forced charg“ are released.

The number of heat sources to be released are calculated each time forced charging commences and do not change until forced charging is completed, even if the attenuated outside temperature changes.

To prevent current peaks, the heat sources are released at 1-minute intervals.

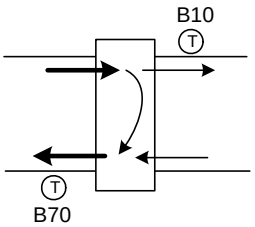
In the case of valid temperature requests from the consumers, the controller can switch heat sources on and off during forced charging also. However, the number of heat sources must not be lower than the number calculated by forced charging.

For the temperature request to the heat sources, the maximum obtained from the forced charging setpoint and the selected required temperature resulting from the consumer requests applies.

Monitoring the temperature differential

Line no.	*Operating line*
3590	**Temp differential min**

This function prevents excessive cascade return temperatures and improves the cascade's switch-off behavior.



If the temperature differential between flow and return sensor (B10, B70) becomes smaller than the set minimum temperature differential (3550), one of the heat sources is switched off as early as possible, independent of the selected lead strategy.
When the temperature differential suffices again, the selected lead strategy is resumed.

Switching off due to the minimum temperature differential does not apply to the last heat source in the cascade.

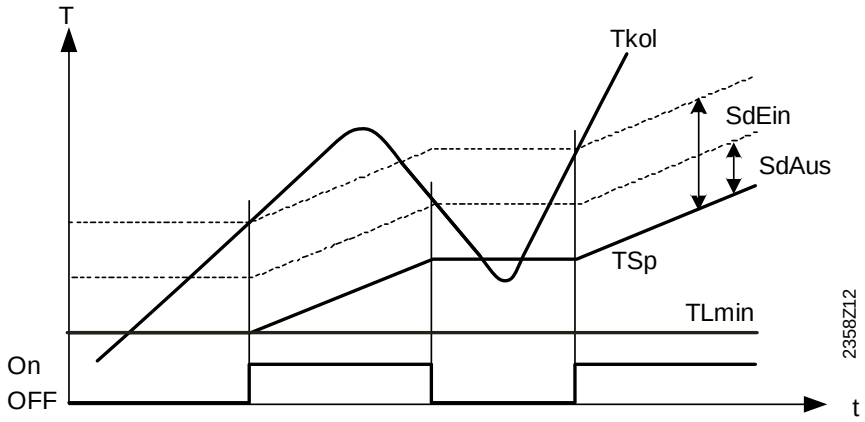
2.9 Solar

Charging controller (dT)

Line no.	*Operating line*
3813	**Temp diff on buffer**
3814	**Temp diff off buffer**
3816	**Temp diff on swi pool**
3817	**Temp diff off swi pool**

Setting - - - adopts the general temperature differential of solar operating lines 3810 and 3811.

To charge the buffer storage tank / swimming pool via the heat exchanger, a certain temperature differential between collector and buffer storage tank, or swimming pool, is required. In addition, the collector temperature must lie above the “Minimum charging temperature” for the buffer storage tank / swimming pool.



Tkol Collector temp
On / Off Collector pump
SdOn Temp differential on buffer / swimming pool
SdOff Temp differential off buffer / swimming pool
TSp Storage tank temperature
TLmin Charging temp min DHW storage tank / buffer / swimming pool (3812, 3818)

Start function

Line no.	*Operating line*
3830	**Collector start function**
3832	**Collector start function on**
3833	**Collector start function off**

Collector start function

If the temperature at the collector (especially in the case of vacuum tubes) cannot be correctly acquired when the pump is deactivated, the pump can be activated from time to time. This setting defines the interval at which the collector pump is put into operation. Then, the pump will operate for the set time “Min run time collector pump” (3831).

Collector start function on

This defines the time of day from which the collector start function is enabled.

Collector start function off

This defines the time of day from which the collector start function is deactivated (e.g. during the night).

Speed control

Line no.	*Operating line*
3872	**Speed Xp**
3873	**Speed Tn**

Speed Xp

The charging setpoint of the storage tank with first-priority charging and the collector temperature are used for speed control. A PI controller calculates the speed required to ensure that the collector temperature is 2 K below the switch-on temperature.
If the collector temperature rises due to increased solar radiation, the speed is increased. If the collector temperature drops below this setpoint, the speed is reduced. Limit parameters can be set to define a maximum and minimum pump speed.
The PI controller can be influenced by parameters Xp and Tn. The controller has a dead band of +/- 1 K.

The resulting speed is delivered at the speed output selected during configuration (QX3 or DC 0…10 V).
If the charging priority is changed, the controller regulates the speed in accordance with the new charging setpoint.

2.10 Buffer storage tank

Release of heat sources

Line no.	*Operating line*
4721	**Auto heat generation lock SD**
4723	**Temp diff buffer/CC**
4724	**Min st tank temp heat mode**
4726	**Max st tank temp cool mode**

Auto generation lock

The heat / refrigeration source is put into operation only if the buffer storage tank is no longer capable of satisfying the current heat / cooling demand.

Auto heat generation lock SD

The switching differential can be adjusted. If there is only a sensor (B4) in the buffer, a min switching differential of 2 K applies to the minimum, even if the value selected at the parameter is less.
If two or more sensors are used, the value actually set at the parameter applies.

Temp diff buffer/CC

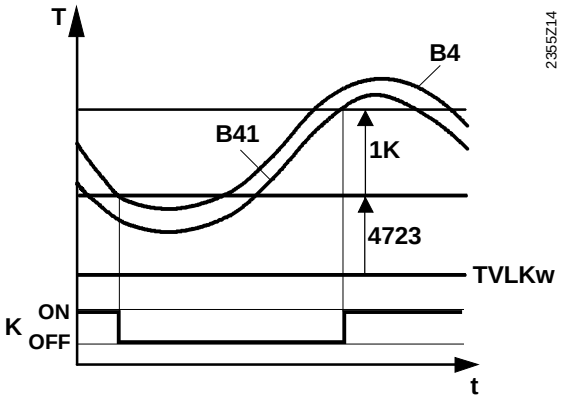
If the temperature differential ΔT between the buffer storage tank and the cooling request from the cooling circuit is sufficiently large, the cooling energy required by the cooling circuit is drawn from the buffer storage tank. The refrigeration source is locked.

Released

The refrigeration source is released as soon as the temperature at both buffer storage tank sensors lies by “Temp diff buffer/CC“ plus 1 K above the required flow temperature.

Locked

The refrigeration source is locked as soon as the temperature at both buffer storage tank sensors lies by less than “Temp diff buffer/CC" above the required flow temperature.



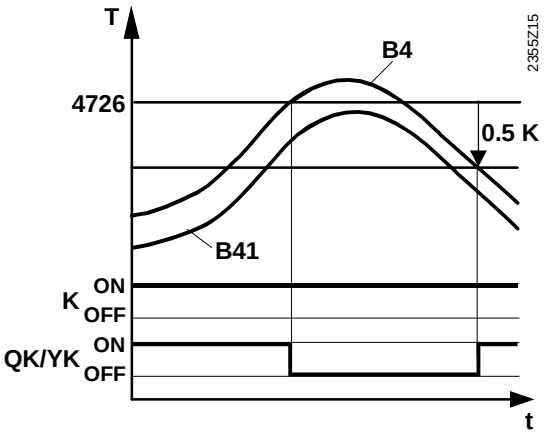
TVLKw Flow temperature setpoint in cooling mode
K Refrigeration source

Min st tank temp heat mode

If the actual temperature of the buffer storage tank falls below the preset value, the heating circuits are shut down, i.e. in fault or switched off, if no heat source is available.

Max st tank temp cool mode

Cooling mode is disabled if the upper storage temperature (B4) lies above the preset maximum storage temperature for cooling mode. The cooling circuit pumps switch off and the mixing valves close. The cooling request to the refrigeration source persists. If the storage temperature falls below the maximum storage temperature minus 0.5 K, cooling will be enabled again.



K Refrigeration source
QK / YK Cooling circuit pumps / cooling circuit mixing valves

Frost protection for the buffer storage tank

Frost protection for the buffer storage tank acts differently in heating and cooling mode.

In heating mode:

If the temperature at the coldest buffer storage tank sensor drops below 5 °C, the frost protection function generates a temperature request to the heat sources and puts the electric immersion heater – if present – into operation, until the storage tank temperature has returned to a level above 10 °C.

In cooling mode:

If, in cooling mode, one of the 2 storage tank temperatures (B4 or B41) drops below 5 °C, the cooling sources are switched off. They will be released again when the temperature at both sensors exceeds 6 °C and the locking time of 15 minutes has elapsed.

Stratification / discharging protection

Line no.	*Operating line*
4740	**Strat prot temp diff max**
4743	**Strat prot anticipation time**
4744	**Strat protection Tn**

The buffer storage tank's stratification protection function provides for hydraulic balancing between the consumers and the heat source without the need for additional shutoff valves for the buffer storage tank.
When the function is active, the volume of water on the consumer side is adjusted so that, where possible, the addition of colder water from the buffer storage tank is avoided.

The function is only active if at least one of the heat sources is delivering heat.

If the temperature acquired by the common flow sensor (B10 downstream from the buffer storage tank) drops below the heat source temperature by more than the parameterized temperature differential, the volume of water on the consumer side is

reduced via locking signals (reduction in the setpoints). If the locking signal reaches 100% for more than 10 minutes, the locking signal is deleted and recalculated after one minute. This ensures that the volume of water on the consumer side is not throttled altogether in which case there would be no flow passing sensor B10.

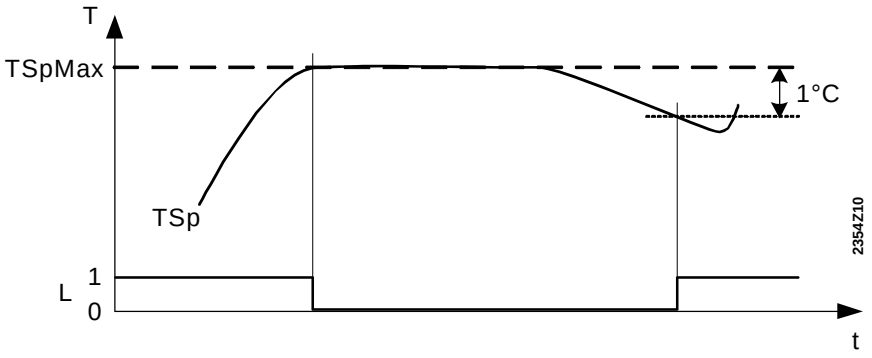
Note: If a primary controller is configured downstream from the buffer storage tank, and if there is no B10 connected, the function is calculated with the connected B15.

Overtemperature protection

Line no.	*Operating line*
4751	**Storage tank temp max**

Storage tank temp max

If the storage tank reaches the maximum storage tank temperature set here, the collector pump is deactivated. It will be released again when the storage tank temperature has dropped 1 °C below the maximum.



TSpMax Storage tank temp max (5051)
TSp Actual value of the storage tank temperature
L Storage tank charging: 1 = on, 0 = off

2.11 DHW storage tank

Release

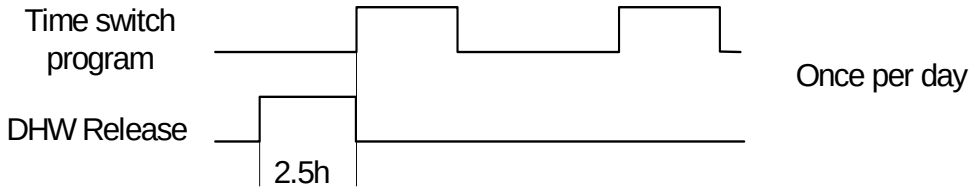
Line no.	*Operating line*
5010	**Charging** **Once/day** **Several times/day**

Charging

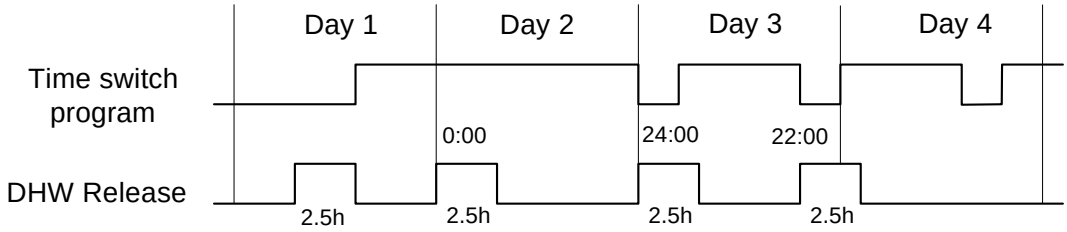
Selection of charging “Once/day“ or “Several times/day” is active only if DHW release is set according to the time programs of the heating circuits

Once/day

Release of DHW charging is given 2.5 hours before the first heat request from the heating circuit is received. Then, the reduced DHW setpoint applies for the whole day.

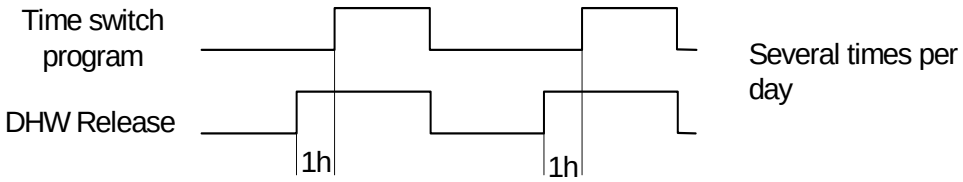


In the case of continuous heating (with no setback periods), release of DHW charging is given at 0:00. The same rule applies if the first request for heat from the heating circuit is received before 02:30. If a heat request is received exactly at midnight, DHW charging is released after the first setback period, but no earlier than 2.5 hours before midnight.



Several times/day

When selecting “Several times/day“, release of DHW charging is put forward in time by 1 hour against the periods of time the heating circuit calls for heat, and is then maintained during those periods of time.



Discharging protection

Line no.	*Operating line*
5040	**Discharging protection**

Discharging protection

This function ensures that the DHW charging pump (Q3) is activated only when the heat source temperature is high enough.

- With sensor
  The charging pump is activated only when the heat source temperature reaches the level of the DHW temperature plus one half the charging boost. If, during charging, the heat source temperature drops to a level below the DHW temperature plus 1/8 the charging boost, the charging pump will be deactivated again. If 2 DHW sensors are parameterized for DHW charging, the lower temperature is used for the discharging protection function (usually sensor B31).

- With thermostat
  The charging pump is activated only when the heat source temperature lies above the nominal DHW setpoint. If, during charging, the heat source temperature drops below the nominal DHW temperature minus the DHW switching differential, the charging pump will be deactivated again.

Off

Function is deactivated.

Always

The function is always active.

Automatic

The function is active only if the heat source is unable to deliver heat, or is not available (fault, heat generation lock).

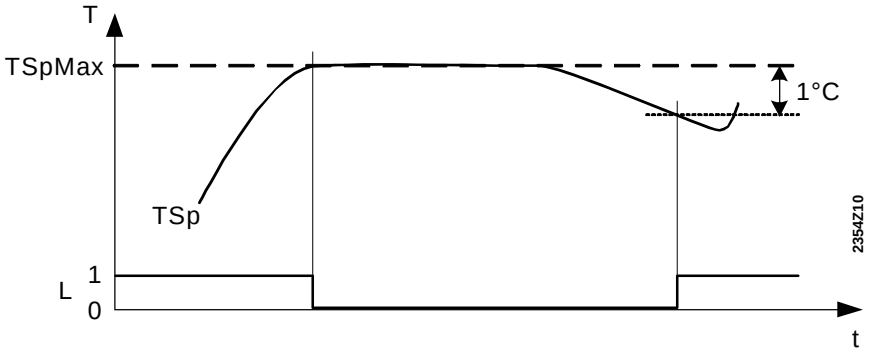
Overtemperature protection

Line no.	*Operating line*
5051	**Storage tank temp max**

Storage tank temp max

If the storage tank reaches the maximum storage tank temperature set here, charging is aborted. It will be released again when the storage tank temperature has dropped 1 °C below the maximum.

The protective collector overtemperature function can reactivate the collector pump until the storage tank's safety temperature is reached.



TSpMax Storage tank temp max (5051)
TSp Actual value of the storage tank temperature
L Storage tank charging: 1 = on, 0 = off

DHW push

Line no.	*Operating line*
5070	**Automatic push** **Off.** **On.**
5071	**Charging prio time push**

Automatic push

The DHW push can be triggered either manually or automatically.
With the DHW push, the DHW is heated up once until the nominal setpoint is reached.

Off.
The DHW push must be triggered manually. To do this, keep the DHW operating mode button on the operator or room unit depressed for at least 3 seconds. The DHW push can also be triggered when:

- The operating mode is “Off“
- Operating mode changeover is effected via H1 or centrally (LPB)
- All heating circuits operate in holiday mode

On.
If the DHW temperature falls by more than 2 switching differentials (5024) below the reduced setpoint (1612), one-time charging to the nominal DHW setpoint (1610) will take place again.

The automatic DHW push only works when the DHW operating mode is activated.

Charging prio time push

In the case of a DHW push, the DHW storage tank is charged with absolute priority for the period of time set here.

Speed-controlled pump

Line no.	*Operating line*
5103	**Speed Xp**
5104	**Speed Tn**

Mixing valve precontrol

Line no.	*Operating line*
5120	**Mixing valve boost**
5124	**Actuator running time**
5125	**Mixing valve Xp**
5126	**Mixing valve Tn**

Mixing valve boost

To ensure proper mixing valve flow temperature control, the flow temperature must be higher than the demanded setpoint of the mixing valve flow temperature. The value set here is added to the request.

Actuator running time

Setting the running time of the actuator used with the mixing valve.

Mixing valve Xp

By setting the right proportional band, the control action of the mixing valve’s actuator is matched to the behavior of the plant (controlled system).

Xp influences the controller’s P-control action.

Mixing valve Tn

By setting the right integral action time, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Tn influences the controller's I-control action.

Transfer

Line no.	*Operating line*
5131	**Comparison temp transfer** DHW sensor B3 ¦ DHW sensor B31

Comparison temp transfer

For the transfer, the respective DHW sensor can be selected to get a comparative temperature.

2.12 Instantaneous DHW heater

Speed-controlled pump

Line no.	*Operating line*
5531	**Pump speed max**

Pump speed max

The maximum speed for the pump of the instantaneous DHW heater can be set. It is thus possible to disable the highest pump speeds, if required.

Mixing valve control

Line no.	*Operating line*
5545	**Mixing valve Xp**
5546	**Mixing valve Tn**
5547	**Mixing valve Tv**

Mixing valve Xp

By setting the right proportional band, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Xp influences the controller's P-control action.

Mixing valve Tn

By setting the right integral action time, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Tn influences the controller's I-control action.

Mixing valve Tv

By setting the right derivative action time, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system).

Tv influences the controller's D-action. With Tv = 0, the D-action is deactivated.

2.13 Configuration

Source protection

Line no.	*Operating line*
5804	**Source prot sens brine HP**

Source protection sensor

This selection defines whether the sensor at the source inlet (B91) or that at the source outlet (B92) is used for the source protection function.

Inputs EX1, EX2, EX3, EX4, EX5, EX6, EX7, E9, E10, E11

Line no.	*Operating line*
5981 **5983** **5985** **5987** **5989** **5991** **5993**	**Cont type input EX1, EX2, EX3, EX4, EX5, EX6, EX7** **NC** **NO**
5999	**Cont type LP monitor E9** **NC** **NO**
6000	**Cont type HP monitor E10** **NC** **NO**
6001	**Cont type compr1 overl E 11** **NC** **NO**

Type of contact

The operating action of the contacts can be selected.

NC
The contact is normally closed and must be opened to activate the selected function.

NO
The contact is normally open and must be closed to activate the selected function.

The descriptions given on the functions of contact EX refer to the setting as NO contact.

Building and room model

Line no.	*Operating line*
6112	**Gradient room model**

Gradient room model

The room model gradient gives the period of time in minutes the room needs to raise its temperature by 1 °C. The setting made applies to all heating circuits.

The parameter is used to calculate a fictive room temperature of all rooms that have no room temperature sensor (8742, 8772, and 8802).

Time constant setp compensation

Line no.	*Operating line*
6116	**Time constant setp compensation**
6117	**Central setp compensation**

Time constant setp compens

If required, the filter time constant (B10) of central setpoint compensation can be adjusted.

Central setp compensation

Central setpoint compensation matches the setpoint of the heat source to the required central flow temperature.
The setting limits the maximum readjustment, even in cases where greater adaptations would be called for.

This function can only be implemented when using the common flow sensor (B10).

External requirements

Line no.	*Operating line*
6128	**Heat request below OT**
6129	**Heat request above OT**

Heat request below OT

The heat source (K27 with QX… or output UX) is put into operation only if the outside temperature lies below / above this threshold.

Together with setting “Release above OT“ (2910), it is thus possible to configure bivalent operation of a heat pump plus another heat source.

Pressure acquisition H1, H2 and H3

Line no.			*Operating line*
H1	*H2*	*H3*	
6140	**6150**	**6180**	**Water pressure max**
6141	**6151**	**6181**	**Water pressure min**
6142	**6152**	**6182**	**Water pressure critical min**

Water pressure max

If the pressure acquired at input Hx exceeds the limit value set here, an appropriate error message will be delivered.

117: Water pressure too high
176: Water pressure 2 too high
322: Water press 3 too high

If the pressure drops by one switching differential below the limit value, the error will be deleted.

Water pressure min

If the pressure acquired at input Hx drops below the set limit value (parameter “Water pressure min“), the respective maintenance alarm will be delivered.

5: Water pressure too low
18: Water pressure 2 too low
22: Water press 3 too low

If the pressure exceeds the limit value by one switching differential, the maintenance alarm will be deleted.

Water pressure critical min

If the pressure acquired at input Hx falls below the limit value set here, the respective error message is delivered and the heat pump switched off.

118: Water pressure too low
177: Water pressure 2 low
323: Water pressure 3 low

If the pressure exceeds the limit value by one switching differential, the error is deleted.

Device data

Line no.	*Operating line*
6222	**Device hours run**

Device hours run

This indicates the total number of operating hours since the controller was first commissioned.

2.14 LPB

Error/maintenance/alarms

Line no.	*Operating line*
6610	**Display system messages**
6612	**Alarm delay**

Display system messages

This setting enables system messages transmitted via LPB to be suppressed at the connected operator unit.

Alarm delay

The delivery of alarm messages to the OCI can be delayed in the basic unit by setting a delay.
This ensures that unnecessary notifications to a service center resulting from short-time errors (e.g. temperature limiter cut out, communication error) can be suppressed.
It is to be noted, however, that errors occurring for a short period of time, and reoccurring constantly and rapidly, will also be filtered.

2.15 Errors

History 1...10

Line no.	*Operating line*
6820	**Reset history** **No** **Yes**
- - -	**Number of error repetitions (only via PC tool)**

Reset history

The error history with the last 10 errors, the associated actual values and setpoints and the relay output states will be deleted.

Number of error repetitions

The number of error repetitions can be set with the PC tool (OEM level) using the following parameters:

Repetition error 107:	Hot-gas compressor 1
Repetition error 108:	Hot-gas compressor 2
Repetition error 134:	134: Common fault HP
Repetition error 204:	Fan overload
Repetition error 222:	High-pressure in HP operation
Repetition error 225:	Low-pressure
Repetition error 226:	Compressor 1 overload
Repetition error 227:	Compressor 2 overload
Repetition error 228:	Flow switch heat source
Repetition error 229:	Pressure switch heat source
Repetition error 230:	Source pump overload
Repetition error 247:	Defrost fault
Repetition error 355:	3-phase current asymetrical
Repetition error 356:	Flow switch consumers

2.16 Maintenance / service

Definition of responsibilities

Line no.	*Operating line*
7180	**Text responsibility 1** **No display of responsibility** **Only display of phone no.** **Service** **Customer service** **Installer** **Janitor** **Administration** **Refrigeration engineer** **Hotline**
7182	**Text responsibility 2**
7184	**Text responsibility 3**
7185	**Phone no. responsibility 3**
7186	**Text responsibility 4**
7187	**Phone no. responsibility 4**
7188	**Text responsibility 5**
7189	**Phone no. responsibility 5**

Text responsibility 1 - 5

These operating lines are used to select the responsibility for text display for the relevant error and service messages.

Phone no. responsibility 3 - 5

These operating lines are used to set the responsibility phone nos. for the relevant error and service messages.

2.17 State of plant

History

Line no.	*Operating line*
8070	**Reset history** **No** **Yes**

Reset history

The status history with the last 10 status messages and the associated status codes, actual values and setpoints plus the relay output states will be deleted.

2.18 Diagnostics heat source

Remain time defrost settling

Line no.	*Operating line*
8482	**Remain time defrost settling**

This shows the period of time to elapse for defrost settling to be completed. For a detailed description of the defrost settling time, refer to operating line 2559.

Defrost state

Line no.	*Operating line*
8487	**Defrost state** **HP off, defr release OT off** **Locked** **Monitoring ice** **Preheating for defrost** **Dripping** **Cooling down evaporator** **Fault** **Defrost settling** **Defrost with fan** **Defrost with compressor** **Forced defrost fan** **Forced defrost compressor**

This shows the current state of the defrost function.

2.19 Diagnostics consumers

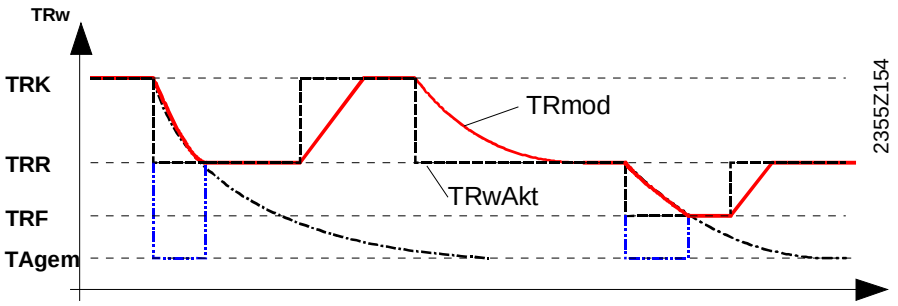
Heating circuit 1, heating circuit 2, heating circuit P

Line no.	*Operating line*
8742	**Room temp 1 model**
8772	**Room temp 2 model**
8802	**Room temp P model**

Room temp 1 / 2 / P model

The room model calculates a fictive room temperature for rooms without room temperature sensor. The value calculated for each heating circuit is indicated on these operating lines.

This allows boost heating, quick setback and optimum start and stop control to be implemented with no need for using a room temperature sensor.
The calculation takes into account the attenuated outside temperature (8703), the room model gradient (6112) for switching to a higher setpoint and the building's time constant (6110) for switching to a lower setpoint.



TRwAkt	Current room temperature setpoint
TRmod	Room temperature model
TRK	Comfort cooling setpoint
TRR	Reduced setpoint
TRF	Frost protection setpoint
TAgem	Composite outside temperature

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