Schnittstellenparameter Standardprotokoll
Parametercodes Standard Protocol

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Parameter (Deutsch)	Parameter (English)	Parameter-Code	Group-Code	Attri-but	R 1140	R 1300	R 2000	R 2100	R 2200	R 2400 2500	R (S) 2200 2400 2500	R 4000
Systemparameter												
Reseviert für Protokollerweiterung	Reseved for further use	0x00										
Gerätetyp	Device Type	0x01		**RO**	●	●	●	●	●	●	●	●
Istwerte:	**Process values:**											
akt. Temperaturistwert	Act. temperature value	0x10	0x01	**RO**	●	●	●	●	●	●	●	●
Stromistwert	Act. heater current value	0x11	0x01	**RO**			●	●	●	●	●	●
Reststromistwert	Act. leakage current value	0x12	0x01	**RO**			●	●	●	●	●	●
Istwertoffset	Temperature offset value	0x18	0x01	RW	●	●	●	●	●	●	●	●
Fühlerkonfiguration	Sensor configuration	0x1a	0x01	RW	●	●	●	●	●	●	●	●
Linearbereichskommastelle	Measuring range, dec. point	0x1d	0x01	RW	●	●	●	●	●			●
Linearbereichsanfang	Linear input; bottom end value	0x1e	0x01	RW	●	●	●	●	●			●
Linearbereichsende	Linear input; top end value	0x1f	0x01		●	●	●	●	●			●
Sollwerte:	**Setpoints:**											
akt. Sollwert	Actual setpoint	0x20	0x02	**RO**	●	●	●	●	●	●	●	●
Sollwert1	Setpoint 1	0x21	0x02	RW	●	●	●	●	●	●	●	●
Sollwert2	Setpoint 2	0x22	0x02	RW	●	●	●	●	●	●	●	●
Skalierung analoger Sollwertausgang Anfang	higher indication range limitation	0x28	0x02	RW		●						
Skalierung analoger Sollwertausgang Ende	lower indication range limitation	0x29	0x02	RW		●						
analoger Sollwert	analog setpoint	0x2a	0x02	**RO**		●						
untere Sollwertbegrenzung	Setpoint limitation, low range	0x2b	0x02	RW	●	●	●	●	●	●	●	●
obere Sollwertbegrenzung	Setpoint limitation, high range	0x2c	0x02	RW	●	●	●	●	●	●	●	●
Sollwertrampe fallend	Setpoint range, falling	0x2d	0x02	RW	●	●	●	●	●	●	●	●
Sollwertrampe steigend	Setpoint ramp, rising	0x2f	0x02	RW	●	●	●	●	●	●	●	●
Alarme:	**Alarms:**											
Strommessung Aus/Ein	Measure current	0x30		RW								●
Stromzykluszeit	Heater current, detect. interval	0x31	0x03	RW			●	●	●	●	●	●
Reststrom-Grenzwert	Min. leakage current value	0x32	0x03	RW			●	●	●	●	●	●
Alarm 1 (3) Konfiguration	Alarm 1(3), Configuration	0x34	0x03	RW	●	●	●	●	●	●	●	
Alarm 1 <Absolut/Relativ>	Alarm 1 <absolute/relativ>	0x34	0x03	RW								●
Alarm 2 Konfiguration	Alarm 2, Configuration	0x35	0x03	RW	●	●	●	●	●	●	●	
Alarm 2 <Absolut/Relativ>	Alarm 2 <absolute/relativ>	0x35	0x03	RW								●
Alarmwert 1 <min>	Alarm value 1(3) <min>	0x38	0x03	RW								●
Alarmwert 2 <min>	Alarm value 2 >min>	0x39	0x03	RW								●
Alarmwert 1 (3) <max>	Alarm value 1(3) <max>	0x38	0x03	RW	●	●	●	●	●	●	●	●
Alarmwert 2 <max>	Alarm value 2 >max>	0x39	0x03	RW	●	●	●	●	●	●	●	●
Übertragungsverh. Stromwandler	Transfer ratio, current tranformer	0x3b	0x03	RW							●	●
Schaltverhalten A1 (A3)	Switching behaviour A1(3)	0x3c	0x03	RW	●		●	●	●	●	●	●
Schaltverhalten A2	Switching behaviour A2	0x3d	0x03	RW	●		●	●	●	●	●	●
(Strom)Alarmdelay A1	(Current alarm)Delay time A1	0x3e	0x03	RW			●	●	●	●	●	●
Alarmdelay A2	Delay time A2	0x3f	0x03	RW			●	●	●	●	●	

Parameter	Parameter Englisch	Parameter-Code	Gruppen-Code	Attri-but	R 1140	R 1300	R 2000	R 2100	R 2200	R 2400 2500	R (S) 2200 2400 2500	R 4000
Regelparameter Heizen:	**PID parameters „heating“:**											
Proportionalbereich	Proportional range (P)	0x40	0x04	RW	●	●	●	●	●	●	●	●
Vorhaltezeit (D-Anteil)	Rate time (D)	0x41	0x04	RW	●	●	●	●	●	●	●	●
Nachhaltezeit (I -Anteil)	Reset time (I)	0x42	0x04	RW	●	●	●	●	●	●	●	●
Schaltzykluszeit	Cycle time	0x43	0x04	RW	●	●	●	●	●	●	●	●
Schaltpunktabstand (Totband)	Dead band / switch-point difference	0x46	0x04	RW	●	●	●	●	●	●	●	●
Schaltdifferenz	Control sensitivity	0x47	0x04	RW	●	●	●	●	●	●	●	●
Regelparameter 3-Punkt-Schritt:	**PID parameters „3-point-step“:**											
Proportionalbereich	Proportional range (P)	0x40	0x04	RW		●						
Motorstellzeit	Rate time (D)	0x41	0x04	RW		●						
Nachhaltezeit	Reset time (I)	0x42	0x04	RW		●						
Schalpunktabstand	Dead band / switch-point difference	0x46	0x04	RW		●						
Schaltdifferenz	Control sensitivity	0x47	0x04	RW		●						
Regelparameter Kühlen:	**PID parameters „cooling“:**											
Proportionalbereich	Proportional range (P)	0x50	0x05	RW	●	●	●	●	●	●	●	●
Vorhaltezeit (D-Anteil)	Rate time (D)	0x51	0x05	RW	●	●	●	●	●	●	●	●
Nachhaltezeit (I -Anteil)	Reset time (I)	0x52	0x05	RW	●	●	●	●	●	●	●	●
Schaltzykluszeit	Cycle time	0x53	0x05	RW	●	●	●	●	●	●	●	●
Schaltdifferenz	Control sensitivity	0x57	0x05	RW	●	●	●	●	●	●	●	●
Stellgrad:	**Output ratio:**											
akt. Stellgrad	Actual output ratio	0x60	0x06	RO	●	●	●	●	●	●	●	●
Handstellgrad	Manual output ratio	0x62	0x06	RW	●	●	●	●	●	●	●	●
Stellgradbegrenzung (Heizen) max	Output ratio limit (heating)	0x64	0x06	RW	●	●	●	●	●	●	●	●
Stellgradbegrenzung (Kühlen) max	Output ratio limit (cooling)	0x69	0x06	RW	●	●	●	●	●	●	●	●
Anfahrstellgrad	Soft start output ratio	0x6a	0x06	RW	●	●	●	●	●	●	●	●
Anfahrsollwert	Soft start setpoint	0x6b	0x06	RW	●	●	●	●	●	●	●	●
Anfahrzeit	Soft start duration time	0x6c	0x06	RW	●	●	●	●	●	●	●	●
Anfahrschaltung aus/ein	Soft start function on/off	0x6d	0x06	RW	●	●	●	●	●	●	●	●
Statuswörter:												
Statuswort 1	Status word 1	0x70	0x07	RO	●	●	●	●	●	●	●	●
Statuswort 2	Status word 2	0x78	0x07	RW	●	●	●	●	●	●	●	

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Reglerkonfiguration:												
Reglerbetriebsart	Controller configuration	0x80	0x08	RW	●	●	●	●	●	●	●	●
Konfiguration Out 1	Configuration Out1	0x81	0x08	RW		●						
Konfiguration Logik-Out	Configuration logic out	0x81	0x08	RW								●
Konfiguration Out 2	Configuration Out2	0x82	0x08	RW		●						
Konfiguration Relais-Out	Configuration relay out	0x82	0x08	RW								●
Konfiguration Out 4	Configuration Out4	0x83	0x08	RW	●	●						
Konfiguration Stetig-Out	Configuration continous out	0x83	0x08	RW								●
Konfiguration Out 5	Configuration Out5	0x84	0x08	RW		●						
Zonennummer (individuell)	Zone number	0x84	0x08	RW								●
Bediensperre	Adjustment lock	0x85	0x08	RW	●	●	●	●	●	●	●	●
Taste F1 - Konfiguration	Configuration of key “F1”	0x86	0x08	RW			●	●				
Stetig Ausgang Min	Continous out min	0x86	0x08	RW								●
Sollwertumschaltung - Konfiguration	Setpoint selection	0x87	0x08	RW		●						
Stetig Ausgang Max	Continous out max	0x87	0x08	RW								●
Regleroptimierung	Self tuning / auto tune	0x88	0x08	RW	●	●	●	●	●	●	●	●
Zonenoffset	Zone offset	0x89	0x08	RW			●	●	●	●	●	●
Verhalten bei Fühlerbruch (DPS)	Sensor break configuration (DPS)	0x8a	0x08	RW		●						
Handstellgradkonfiguration (PID)	Manual mode: Configuration	0x8b	0x08	RW	●	●	●	●	●	●	●	●
Einheiten eine Messzone	Unit of measuring zone	0x8d	0x08	RW			●	●	●			
Sensor-Einheit °C/°F	Sensor unit °C/°F	0x8d	0x08	RW								●
Fühlerkonfiguration	Sensor configuration	0x8e	0x08	RW			●	●	●	●	●	
Zone EIN/AUS	Zone ob/off	0x8f	0x08	RW							●	●
Sonderfunktionen:	**Special functions:**											
Samplezeit für Schreiberfunktion	Recorder function: Sample time	0x90	keine	RW						●	●	●
Logikeingang 1	Logic input 1 configuration	0x91	keine	RW								●
Startverzögerung	Start delay	0x92	keine	RW								●
Verzögerungszeit	Delay time	0x93	keine	RW								●
Konfig Sollwert / Kaskade	Config. Setpoint / cascade	0x94	keine	RW								●
Quelle ext. Sollwert	Source zone ext. setpoint	0x95	keine	RW								●
Führungsregler Zone	Master zone cascade contr.	0x96	keine	RW								●
Kaskade Anfang Sollwertnormierung	Cascade start setpoint scaling	0x97	keine	RW								●
Kaskade Ende Sollwertnormierung	Cascade end setpoint scaling	0x98	keine	RW								●
Sprache	Language	0x9b	0x09	RW						●	●	●
Sollwertumschaltung	Swtpoint switch	0x9c	0x09	RW							●	●
Löschen der Fehlerbits	Reset of error flags	0x9d	-	WO							●	●
Wiedereinschaltsperre	Restart Lock-out	0xB0	-	RW								●
Alarm 1 Bereitschaftsverhalten	Alarm 1 Start Suppression	0xB3	-	RW								●
Alarm 2 Bereitschaftsverhalten	Alarm 2 Start Suppression	0xB4	-	RW								●
Alarm 1 Farbe	Alarm 1 Color	0xB5	-	RW								●
Alarm 2 Farbe	Alarm 2 Color	0xB6	-	RW								●
Alarm 1 Selbsthaltung	Alarm 1 Self retaining	0xB7	-	RW								●
Alarm 2 Selbsthaltung	Alarm 2 Self retaining	0xB8	-	RW								●
Alarm1 Verzögerung	Alarm 1 Delay	0xB9	-	RW								●
Alarm2 Verzögerung	Alarm 2 Delay	0xBA	-	RW								●
Prozessdaten:	**Process data:**											
akt. Istwert	Act. temperature value	0x10	0x0a	**RO**	●	●	●	●	●	●	●	●
akt. Stromistwert	Act. heater current value	0x11	0x0a	**RO**			●	●	●	●	●	●
akt. Sollwert	Actual setpoint	0x20	0x0a	**RO**	●	●	●	●	●	●	●	●
akt. Stellgrad	Actual output ratio	0x60	0x0a	**RO**	●	●	●	●	●	●	●	●
Statuswort 1	Status word 1	0x70	0x0a	**RO**	●	●	●	●	●	●	●	●

Referenzen der Text-Parameter / References of the parameters displayed as text:

Angabe der Zahlenwerte zu den entsprechenden Texten / Numerical values corrosponding to the text displays
Nicht erwähnte Text-Parameter entsprechend Bedienungsanleitung zuordnen: Erster Wert = 0, zweiter Wert = 1 …
Not mentioned text parameters are coded according the operational manual: First value = 0, second value = 1 …

Parameter	**Messbereich / Measuring range**											
Sen (R1140)	Display	Start	End	Value								
	P1°C	-50.0	100.0	0								
	P1°F	-58.0	212.0	1								
	P2°C	-100	200	2								
	P2°F	-148	392	3								
	P4°C	0	400	4								
	P4°F	32	752	5								
	P8°C	0	800	6								
	P8°F	32	1472	7								
	L4°C	0	400	8								
	L4°F	32	752	9								
	L8°C	0	800	10								
	L8°F	32	1472	11								
	J8°C	0	800	12								
	J8°F	32	1472	13								
	n1°C	0	1200	14								
	n1°F	32	2192	15								
	S1°C	0	1600	16								
	S1°F	32	2912	17								
	0-20	variabel	variabel	18								
	4-20	variabel	variabel	19								
Parameter	**Messbereich / Measuring range**											
Sen (R1300)	Display	Start	End	Value								
	P1°C	-50.0	100.0	0								
	P1°F	-58	212	1								
	P2°C	-90.0	205.0	2								
	P2°F	-130	401	3								
	P4°C	0	400	4								
	P4°F	32	752	5								
	P8°C	0	800	6								
	P8°F	32	1472	7								
	L4°C	0	400	8								
	L4°F	32	752	9								
	L8°C	0	800	10								
	L8°F	32	1472	11								
	J8°C	0	800	12								
	J8°F	32	1472	13								
	n1°C	0	1200	14								
	n1°F	32	2192	15								
	S1°C	0	1600	16								
	S1°F	32	2912	17								
	0-20	variabel	variabel	18								
	4-20	variabel	variabel	19								
	10dc	variabel	variabel	20								
Parameter	**Messbereich / Measuring range**											
Sen (R2000/2400/2400S)	Display	Start	Ende	Value								
Pt100 -50,0...100,0°C	P1°C	-50.0	100.0	0								
Pt100 -58...212°F	P1°F	-58	212	1								
PT100 -90,0...205,0°C	P2°C	-90.0	205.0	2								
Pt100 -130...401°F	P2°F	-130	401	3								
Pt100 0...400°C	P4°C	0	400	4								
Pt100 32...752°F	P4°F	32	752	5								
Pt100 0...800°C	P8°C	0	800	6								
Pt100 32...1472°F	P8°F	32	1472	7								
Ni120 0...250°C				8		only 2400S						
Ni120 32...482°F				9		only 2400S						
Fe-CuNi(L) 0...400°C	L4°C	0	400	0								
Fe-CuNi(L) 32..752°F	L4°F	32	752	1								
Fe-CuNi(L) 0...800°C	L8°C	0	800	2								
Fe-CuNi(L) 32..1472°F	L8°F	32	1472	3								
Fe-CuNi(J) 0...800°C	J8°C	0	800	4								
Fe-CuNi(J) 32..1472°F	J8°F	32	1472	5								
NiCr-Ni(K) 0..1200°C	n1°C	0	1200	6								
NiCr-Ni(K) 32..2192°F	n1°F	32	2192	7								
PtRh-Pt(S) 0..1600°C	S1°C	0	1600	8								
PtRh-Pt(S) 32..2912°F	S1°F	32	2912	9								
TE NiCrSi-NiSi (TC)Typ N 0..1200°C				10		only 2400S						
TE NiCrSi-NiSi (TC)Typ N 32..2192°F				11		only 2400S						

Parameter	Messbereich / Measuring range											
Sen (R2100/2200/2500)	Display	Start	End	Value								
	P1°C	0.0	99.9	0								
	P1°F	32	212	1								
	P2°C	-100	200	2								
	P2°F	-148	392	3								
	P4°C	0	400	4								
	P4°F	32	752	5								
	P8°C	0	800	6								
	Ni°C	0	250	7		only 2500S						
	Ni°F	32	482	8		only 2500S						
	L4°C	0	400	0								
	L4°F	32	752	1								
	L8°C	0	800	2								
	J8°C	0	800	3								
	n1°C (R2500S: K1°C)	0	999	4								
	N1°C	0	999	5		only 2500S						
Opt	Display	Value										
	OFF	0										
	on	1										
	Auto	2										
re.A 1/2 (R1140/2000/ 2100/2200/2400/2500/4000)	Display	Value										
	dir	0										
	inv	1										
ZonE (R1140/2000/ 2100/2200/2400/2500/4000)	Display	Value										
	OFF	0										
	on	1										
ConF	**R1140**	**R1300**	**R2000 / R2100 / R2200 / R2400 / R2500**									
			2-P		**3-P**				**Value**			
	2P h	2P h	2P h		2P h				0			
	2P c	2P c	2P c		2P c				1			
	2Pnc	2Pnc	2Pnc		2Pnc				2			
	3P	3P	diSP		3P				3			
	3Pnc	3Pnc			3Pnc				4			
		3PSt			diSP				5			
P/tc(R2000/2100/2200/2400/2500)	Display											
	16-Channel	**8-Channel**	**6-Ch.**	**4-Ch.**			**Value**					
	- 16	- 8	- 6	- 4			0					
	2 14	2 6	2 4	2 2			1					
	4 12	4 4	4 2	4 -			2					
	6 10	6 2	6 -				3					
	8 8	8 -					4					
	10 6						5					
	12 4						6					
	14 2						7					
	16 -						8					
Unit (R2000 / R2100 / R2200)	Display	Value	Display	Value								
	OFF	0	MA	8								
	°C	1	Volt	9								
	°F	2	OHM	10								
	bAr	3	%	11								
	rot	4	%	12								
	rPM	5	SEC	13								
	AMP	6	HZ	14								
	A	7	----	15								
Unit (R4000)	Display	Value										
	°C	0										
	°F	1										
Hand	Display	Value										
	OFF	0										
	Auto	1										
	Man	2										
Co.F1 (R2000 / R2100)	**R2000**	**R2100/R2200**		Value								
	Display	Display										
	OFF	OFF		0								
	SCAn	Opt		1								
	Opt	Y		2								
	Y	Led.t		3								
	Led.t			4								

LOC	Display	Value											
	OFF	0											
	P C	1											
	n.SP1	2											
	ALL	3											
Co.SB (R1300)	Display	Value											
	OFF	0											
	out 2	1											
	out 1	2											
OUT x x=1,2 (R1300)	Display	Value											
	OFF	0											
	rEL	1											
	biSt	2											
OUT4 (R1140)	Display	Value											
	OFF	0											
	bi 1	1											
	bi 2	2											
Config. Relay/Logic out (R4000)	Display	Zahlenwert											
	OFF	0											
	Heating	1											
	Cooling	2											
	Alarm 1	3											
	Alarm 2	4											
OUT x x=4,5 (R1300)	Display	Value											
	OFF	0											
	Coh0	1											
	Coh4	2											
	Coc0	3											
	Coc4	4											
	Pr 0	5											
	Pr 4	6											
	SP 0	7											
	Sp 4	8											
Co.SP (R1300)	Display	Value											
	SP2	0											
	SPA0	1											
	SPA4	2											
	SPAU	3											
Samplezeit (R2400/2500R4000)	Display	Value											
Sample time	2,5s	0											
	5s	1											
	10s	2											
	30s	3											
	1min	4											
	5min	5											
	10min	6											
Sollwertumschaltung (R2X00S/R4000)		Value											
Setpoint switch	Sollwert / Setpoint 1	0											
	Sollwert / Setpoint 2	1											
Löschen der Fehlerbits (R2X00S/R4000)			Bit										
Reset Error Bits	Error 8 Systemfehler / System error		0										
	Error 7 Opt-Fehler / Autotune error		1										
nur/only R4000	Wiedereinschaltsperre / Restart lock-out		2										
nur/only R4000	Alarm1 Selbsthaltung / Self-retaining		8										
nur/only R4000	Alarm2 Selbsthaltung / Self-retaining		9										