MODBUS- Adress-table BR7000-I-TH Version 4.9 (issue 03/21)

Functioncode 3: max. number of read-register 125 (250 Byte) / per request

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	FUNCTION
0	0	*	*	Reactive power - HIGH-WORD
0	1	*	*	Reactive power - LOW-WORD
0	2	*	*	Active power - HIGH-WORD
0	3	*	*	Active power – LOW-WORD
0	4	*	*	Apparent power – HIGH-WORD
0	5	*	*	Apparent power – LOW-WORD
0	6	*	*	Differential reactive power - H
0	7	*	*	Differential reactive power - L
0	8	0	0	Temperature – HIGH-WORD (0)
0	9	*	*	Temperature – LOW-WORD
0	10	*	*	Active energy consumtion - HIGH-WORD
0	11	*	*	Active energy consumtion - LOW-WORD
0	12	*	*	Active energy delivery - HIGH-WORD
0	13	*	*	Active energy delivery - LOW-WORD
0	14	*	*	Reactive energy IND – HIGH-WORD
0	15	*	*	Reactive energy IND – LOW-WORD
0	16	*	*	Reactive energy CAP – HIGH-WORD
0	17	*	*	Reactive energy CAP – LOW-WORD
0	18	-	-	-
0	19	*	*	Cos-Phi (INTEGER) 73 = 0.73IND; 100 = 1.00; 0xFFB7 = -73 = 0.73CAP
0	20	*	*	Voltage (max 65535V)
0	21	*	*	Current
0	22	0	*	Frequency
0	23	*	*.	Cabinet temperature
0	24	*	*	Temperature inside the device
0	25	*	*	OUTPUTS – RELAIS BIT 1 = Output 1; …; BIT 12 = Output 12
0	26	0	*	**ERROR-REGISTER** BIT 0 = Meas. voltage BIT 1 = Overvoltage BIT 2 = Overcompensated BIT 3 = Undercompensated BIT 4 = Harmonics BIT 5 = Overtemperature BIT 6 = Overcurrent BIT 7 = Undervoltage
0	27	0	*	**WARNING-REGISTER** BIT 0 = Number of switchings BIT 1 = Meas. current too low BIT 2 = MODBUS-ERROR BIT 3 = TSM-ERROR BIT 4 = MODBUS-Remote BIT 5 = System current too low BIT 6 = BUS-ERROR-EXTERN BIT 7 = C-DEFECT

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
0	28	0	*	**MESSAGE -REGISTER** BIT 0 = System current > NULL BIT 1 = Overload cabinet BIT 2 = External Error BIT 3 = C-DEFEKT-OFF
0	29	*	*	**OUTPUTS – DYNAMIC 1…16** BIT 0 = Output 1; …; BIT15 = Output 16
0	30	*	*	**OUTPUTS – DYNAMIC 17…32** BIT 0 = Output 17; …; BIT15 = Output 32
0	31	R	T	**SYSTEM-POWER in %** L-BYTE = DYNAMIC-Stages; H-BYTE = RELAY-Stages
0	32	-	*	Total SYSTEM-POWER in %
0	96	Frequency	Identifier	**Frequency / ID-register** 50 / 60Hz 6
				PROGRAMM MEMORY
0	101	0	*	**LANGUAGE** 0 = DEUTSCH 5 = CZECH 1 = ENGLISH 6 = POLSKI 2 = ESPANOL 7 = FRENCH 3 = NEDERLANDS 8 = PORTUGUES 4 = RUSSISCH 9 = TÜRKCE
0	102	0	*	**CONTROL-MODE** 0 = DYNAMIC 1…12 Transistor-Outputs 1 = HYBRID 1…12 Tr. / 1…12 Relais-Out. 2 = TSM-BUS 1…32 TSM-LC-S 3 = TSM-BUS/HYBRID 1…12 TSM-LC-S 1…12 Rel.
0	103	0	*	**Current transformer - primary** 1…..50 = 5…250A (5A steps) 51…175 = 260...1500A (10A steps) 176…185 = 1550....2000A (50A steps) 186…245 = 2100…8000A (100A steps) 246…255 = 8500…13000A (500A steps)
0	104	0	*	**Current transformer - secondary** 0 = 1A 1 = 5A
0	105	0	*	**END-STOPP (Dynamic-Stages)**

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
0	106	0	*	**CONTROL SERIES (Dynamic-Stages)** 1 = ControlSeries 1: 1 , 1 , 1 , 1 , 1 , 1 , 1 , 1 , 1 , 1 , 1 , 1 2 = ControlSeries 2: 1 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 3 = ControlSeries 3: 1 , 2 , 3 , 3 , 3 , 3 , 3 , 3 , 3 , 3 , 3 , 3 4 = ControlSeries 4: 1 , 2 , 3 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 5 = ControlSeries 5: 1 , 2 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 6 = ControlSeries 6: 1 , 2 , 3 , 6 , 6 , 6 , 6 , 6 , 6 , 6 , 6 , 6 7 = ControlSeries 7: 1 , 2 , 4 , 8 , 8 , 8 , 8 , 8 , 8 , 8 , 8 , 8 8 = ControlSeries 8: 1 , 1 , 1 , 1 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 9 = ControlSeries 9: 1 , 1 , 1 , 1 , 1 , 6 , 6 , 6 , 6 , 6 , 6 , 6 10 = ControlSeries 10: 1 , 1 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 11 = ControlSeries 11: 1 , 1 , 2 , 2 , 2 , 4 , 4 , 4 , 4 , 4 , 4 , 4 12 = ControlSeries 12: 1 , 1 , 2 , 2 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 13 = ControlSeries 13: 1 , 1 , 1 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 , 2 14 = ControlSeries 14: 1 , 1 , 2 , 3 , 3 , 3 , 3 , 3 , 3 , 3 , 3 , 3 15 = ControlSeries 15: 1 , 1 , 2 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 16 = ControlSeries 16: 1 , 1 , 2 , 4 , 8 , 8 , 8 , 8 , 8 , 8 , 8 , 8 17 = ControlSeries 17: 1 , 2 , 2 , 3 , 3 , 3 , 3 , 3 , 3 , 3 , 3 , 3 18 = ControlSeries 18: 1 , 2 , 3 , 4 , 4 , 8 , 8 , 8 , 8 , 8 , 8 , 8 19 = ControlSeries 19: 1 , 2 , 2 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 20 = ControlSeries 20: 1 , 2 , 2 , 2 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 21 = ControlSeries 21: CONTROL-SERIES EDITOR
0	107	0	*	**CONTROL PRINCIPLE (Dynamic-Stages)** 0 = Sequential connection 1 = Loop connection 2 = Intelligent loop connection
0	108	0	*	**POWER 1st STEP (pre-decimal point) (Dynamic)** 0…255 = 0….255 kvar / 0….2550 kvar / 0…25500 kvar
0	109	0	*	**POWER 1st STEP (decimal place) (Dynamic-Stages)** 0…99 = 0…0.99 kvar 128 = Bereich 0…..2550kvar 129 = Bereich 0…25500kvar
0	110	0	*	**TARGET cos-phi** 10 = 0.10 CAP 100 = 1.00 190 = 0.10 IND
	111			**TARGET cos-phi 2** 10 = 0.10 CAP 100 = 1.00 190 = 0.10 IND
0	112	0	*	**MEASURING VOLTAGE** 0 = 30V (in steps of 5V) 99 = 525V

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
0	113	0	*	**VOLTAGE CONVERTER** 0 = without V-converter 1…77 = 230… 990V (10V steps) 78…187 = 1000…11000V (100V steps) 188…252 = 12kV…76kV (1000V steps) 253 = 110kV 254 = 220kV 255 = 380kV
	114			**MESSFREQUENCY** 0 = 50 Hz; 1 = 60 Hz
0	115	0	*	**CONNECTING TIME (Dynamic-Stages)** 1…120 = 1…120 s 121…255 = 3…137 min
0	116	0	*	**DISCONNECTING TIME (Dynamic-Stages)** 1…120 = 1…120 s 121…138 = 3…137 min
0	117	0	*	**DISCHARGE TIME (Dynamic-Stages)** 1…120 = 1…120 s 121…138 = 3…137 min
0	118	0	*	**ALARM TEMPERATURE** 40…85 = 40…85°C
0	119	0	*	**ALARM RELAY** 1 = OFF 2 = ERROR 3 = / ERROR (inverse) 4 = FAN OPTION 5 = ENERGY SUPPLY 6 = UNDERCURRENT 7 = HARMONICS 8 = OVER-COMPENSATED 9 = UNDERCOMPENSATED 10 = NUMBER OF SWITCHING 11 = MODBUS-ERROR 12 = / MODBUS-ERROR (invers) 13 = TSM-ERROR 14 = C-DEFECT
0	120	0	*	**FAN TEMPERATURE** 15…70 = 15…70°C
0	121	0	*	**THD-V-THRESHOLD** 1…255 = 0.1….25.5% / 0 = OFF

Adress HIGH-BYTE	**Adress LOW-BYTE**	**Data HIGH-BYTE**	**Data LOW-BYTE**	**DESCRIPTION**
0	122	0	*	**THD-I-THRESHOLD** 1…255 = 0.1…25.5% / 0 = OFF
	123	0	*	**HARMONICS** 0 = 3. 5. 7. …19. Harmonic 1 = 3. 5. 7. ….33. Harmonic 2 = 2. 3. 4. … 17. Harmonic
0	124	0	*	**CONTRAST**
				RELAY-Part (Static-Stages)
0	125	0	*	**END-STOPP (Static-Stages)** Compare table adress 105
0	126	0	*	**CONTROL SERIES (Static-Stages)** Compare table adress 106
0	127	0	*	**CONTROL PRINCIPLE (Static-Stages) (Static-Stages)** Compare table adress 107
0	128	0	*	**POWER 1st STEP (pre decimal point) (Static-Stages)** 0…255 = 0….255 kvar / 0….2550 kvar
0	129	0	*	**POWER 1st STEP (decimal place) (Static-Stages)** 0…99 = 0…0.99 kvar
0	130	0	*	**CONNECTING TIME** 1…120 = 1…120 s 121…138 = 3…137 min
0	131	0	*	**DISCONNECTING TIME** 1…120 = 1…120 s 121…138 = 3…137 min
0	132	0	*	**DISCHARGE TIME** 1…120 = 1…120 s 121…138 = 3…137 min
				EXPERT-MODE 1
0	138	0	*	**max. SWITCH. POWER (dynamic-stages)**
0	139	0	*	**max. SWITCH. POWER (static-stages)**
0	140	0	*	**SWITCH. TRIGGER IND in %**
0	141	0	*	**SWITCH. TRIGGER CAP in %**

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
0	142	0	*	**KEYLOCK** 0 = NON 1 = Key-Lock 2 = Key-Lock after 24 h automatically
0	143	0	*	**SWITCHING OPERATION WARNING**
0	144	0	*	**HYBRID-SYMMETRIE** 50…100 = 50…100%
0	145	0	*	**PHASE SHIFTING Current Transformer** 1…3 = L1…L3
0	146	0	*	**PHASE SHIFTING - VOLTAGE** 0 = 0° 1 = 330° 2 = 300° 3 = 270° 4 = 240° 5 = 210° 6 = 180° 7 = 150° 8 = 120° 9 = 90° 10 = 60° 11 = 30°
0	147	0	*	**Max. Power of the 1st STAGE** 0 = 0……255kvar 1 = 0….2550kvar 2 = 0…25500kavr
0	148	0	*	**CONTROL** 0 = 1phase IND 1 = 3phase IND
0	149	0	*	**ENERGY SUPPLY** 0 = No influence on stages 1 = switch-off 2 = switch off immediately 3 = 2nd target cos phi.
0	150	0	*	**DISPLAY** 0 = cosphi 1 = tanphi
0	156	0	*	**CHANGING PASSWORD** 0 = NO 1 = YES

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
0	157	0	*	**CODE NUMBER 1** 0…35 = 0…9 / A….Z
0	158	0	*	**CODE NUMBER 2** 0…35 = 0…9 / A….Z
0	159	0	*	**CODE NUMBER 3** 0…35 = 0…9 / A….Z
0	160	0	*	**CODE NUMBER 4** 0…35 = 0…9 / A….Z
0	161	0	*	**LCD-BACKLIGHT at ERROR** 0 = OFF 1 = RED 2 = WHITE 3 = PINK

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
				INTERFACE
0	171	0	*	**MESSAGE RELAY** 1 = OFF 2 = ERROR 3 = / ERROR (inverse) 4 = FAN 5 = ENERGY SUPPLY 6 = UNDERCURRENT 7 = HARMONICS 8 = OVER-COMPENSATED 9 = UNDERCOMPENSATED 10 = NUMBER OF SWITCHINGS 11 = MODBUS-ERROR 12 = / MODBUS-ERROR 13 = TSM-ERROR 14 = C-DEFECT (capacitor error)
0	172	0	*	**FAN TEMPERATURE** 15…70 = 15°C….70°C
0	173	0	*	**EXTERNAL INPUT** 0 = NO 1 = 2nd Target cosphi 2 = EXTERNAL ERROR 3 = COUPLING COM1
0	174	0	*	**CLOCK-HOUR**
0	175	0	*	**CLOCK-MINUTE**

Adress HIGH-BYTE	Adress HIGH-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
0	176	0	*	**CLOCK-DAY**
0	177	0	*	**CLOCK-MONTH**
0	178	0	*	**CLOCK-YEAR**
0	179	0	*	**PROTOCOL** 0 = OFF 1 = MODBUS RTU with control KTR 2 = MODBUS RTU 3 = ASCII 4 = TSM-BUSSYSTEM
0	180	0	*	**BAUD RATE** 0 = 9600 / NONE - 7 = ODD – 14 = EVEN 1 = 19200 / NONE - 8 = ODD – 15 = EVEN 2 = 38400 / NONE - 9 = ODD - 16 = EVEN 3 = 57600 / NONE -10 = ODD – 17 = EVEN 4 = 115200 / NONE - 11 = ODD – 18 = EVEN 5 = 250000 / NONE - 12 = ODD – 19 = EVEN 6 = 256000 / NONE - 13 = ODD – 20 = EVEN
0	181	0	*	**ADRESS (MODBUS)**
0	182	0	*	**ACSII-TRANSMITTING INTERVAL** 1…255 = 1…255 s
0	183	0	*	**ASCII-SEPARATOR** 0 = HT 1 = LF/CR 2 = SP 3 = CR/LF 4 = MINUS 5 = CSV
0	184	0	*	**C-FEHLER (+) TSM-BUSSYSTEM**
0	185	0	*	**C-FEHLER (-) TSM.BUSSYSTEM**
0	186	0	*	**FEHLERVERZÖGERUNG TSM-BUSSYSTEM**
0	187	0	*	**SPERRZEIT (Überstrom) TSM-BUSSYSTEM**
0	201	0	*	value step 1 (Dynamic stage 1 … 32)
0	…	0	*	Value = multiple of the 1st step
0	244	0	*	value step 44 (Relay stage 33 … 44 = 1…12)
0	253	0	*	**HARDWARE** 0 = BR7000-I-TH 1 = BR7000-I-TH-S
0	254	0	*	**TESTFLAG (internal register)**
0	255	71	20	**IDENTIFIER / VERSION** HIGH = 71 (BR7000-I) LOW = 24 (Version 2.4)

EXPERT-MODE 2

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
				ERROR STATUS 0 = OFF 1 = ON 2…255 = delay time in seconds
1	5	0	*	0/1/2…255 - MEAS. VOLTAGE
1	6	0	*	0/1/2…255 - OVERVOLTAGE
1	7	0	*	0/1/2…255 - OVERCOMPENSATED
1	8	0	*	0/1/2…255 - UNDERCOMPENSATED
1	9	0	*	0/1/2…255 - HARMONICS
1	10	0	*	0/1/2…255 - OVER TEMPERATURE
1	11	0	*	0/1/2…255 - OVERCURRENT
1	12	0	*	0/1/2…255 - UNDERVOLTAGE
1	13	0	*	0/1/2…255 - NUMBER OF SWITCHINGS
1	14	0	*	0/1/2…255 - UNDERCURRENT
1	15	0	*	0/1/2…255 - MODBUS-ERROR
1	16	0	*	0/1/2…255 - TSM-ERROR
1	17	0	*	0/1/2…255 - MODBUS-REMOTE
1	18	0	*	0/1/2…255 - CURRENT < ? (cap. current monitoring)
1	19	0	*	0/1/2…255 - BUS-ERROR-EXTERN
1	20	0	*	0/1/2…255 - C-DEFECT
1	21	0	*	0/1/2…255 - Current > 0 (capacitor current monitoring)
1	22	0	*	0/1/2…255 - OVERLOAD system (cap.current monitoring
1	23	0	*	0/1/2…255 - EXTERNAL-ERROR
1	24	0	*	0/1/2…255 - C-DEFECT-OFF (cap. current monitoring)
1	25	0	*	**ALARMRELAY – DELAY-TIME** 1…255 = 1…255 minutes
1	26	0	*	**UNDERVOLTAGE (Trigger)** 20…95 = 20…95 %
1	27	0	*	**OVERVOLTAGE (Trigger)** 105…140 = 105…140 %

REMOTE MEASURING:

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
				REMOTE MEASURING - LONG-FORMAT (4 Byte)
14	246	*	*	Reactive power HIGH-WORD
14	247	*	*	Reactive power LOW-WORD
14	248	*	*	Active power HIGH-WORD
14	249	*	*	Active power LOW-WORD
14	250	*	*	Apparent power HIGH-WORD
14	251	*	*	Apparent power LOW-WORD

Special-register range:

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
				SWITCHING OPERATION - LONG-FORMAT (4Byte)
23	7	*	*	Stage 1 HIGH-WORD
23	8	*	*	Stage 1 LOW-WORD
23	9	*	*	Stage 2 HIGH-WORD
23	10	*	*	Stage 2 LOW-WORD
23	11	*	*	Stage 3 HIGH-WORD
23	12	*	*	Stage 3 LOW-WORD
23	13	*	*	Stage 4 HIGH-WORD
23	14	*	*	Stage 4 LOW-WORD
23	15	*	*	Stage 5 HIGH-WORD
23	16	*	*	Stage 5 LOW-WORD
23	17	*	*	Stage 6 HIGH-WORD
23	18	*	*	Stage 6 LOW-WORD
23	19	*	*	Stage 7 HIGH-WORD
23	20	*	*	Stage 7 LOW-WORD
23	21	*	*	Stage 8 HIGH-WORD
23	22	*	*	Stage 8 LOW-WORD
23	23	*	*	Stage 9 HIGH-WORD
23	24	*	*	Stage 9 LOW-WORD
23	25	*	*	Stage 10 HIGH-WORD
23	26	*	*	Stage 10 LOW-WORD
23	27	*	*	Stage 11 HIGH-WORD
23	28	*	*	Stage 11 LOW-WORD
23	29	*	*	Stage 12 HIGH-WORD
23	30	*	*	Stage 12 LOW-WORD

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
				OPERATION TIME CAPACITORS LONG-FORMAT (4Byte)
23	31	*	*	Stage 1 HIGH-WORD
23	32	*	*	Stage 1 LOW-WORD
23	33	*	*	Stage 2 HIGH-WORD
23	34	*	*	Stage 2 LOW-WORD
23	35	*	*	Stage 3 HIGH-WORD
23	36	*	*	Stage 3 LOW-WORD
23	37	*	*	Stage 4 HIGH-WORD
23	38	*	*	Stage 4 LOW-WORD
23	39	*	*	Stage 5 HIGH-WORD
23	40	*	*	Stage 5 LOW-WORD
23	41	*	*	Stage 6 HIGH-WORD
23	42	*	*	Stage 6 LOW-WORD
23	43	*	*	Stage 7 HIGH-WORD
23	44	*	*	Stage 7 LOW-WORD
23	45	*	*	Stage 8 HIGH-WORD
23	46	*	*	Stage 8 LOW-WORD
23	47	*	*	Stage 9 HIGH-WORD
23	48	*	*	Stage 9 LOW-WORD
23	49	*	*	Stage 10 HIGH-WORD
23	50	*	*	Stage 10 LOW-WORD
23	51	*	*	Stage 11 HIGH-WORD
23	52	*	*	Stage 11 LOW-WORD
23	53	*	*	Stage 12 HIGH-WORD
23	54	*	*	Stage 12 LOW-WORD
23	55	*	*	**STAGE STATUS Stage 1…8** BIT 0 = Stage 1.0 BIT 1 = Stage 1.1 . . BIT 14 = Stage 8.0 BIT 15 = Stage 8.1 1 = Fixed stage OFF 2 = Automatic stage 3 = Fixed stage ON
23	56	*	*	**STAGE STATUS Stage 9…16**
23	57	*	*	**STAGE STATUS Stage 17…24**
23	58	*	*	**STAGE STATUS Stage 25…32**
23	59	*	*	**STAGE STATUS Stage 33…40**
23	60	*	*	**STAGE STATUS Stage 41…44**

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
23	61	0	*	**ERROR MEMORY 1 (10. Error)**
23	|	0	*	|
23	70	0	*	**ERROR MEMORY 10 (last Error)**
23	71	*	*	**ERROR MEMORY Time stamp HIGH-WORD (1)**
23	72	*	*	**ERROR MEMORY Time stamp LOW-WORD (1)**

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
23	89	*	*	**ERROR MEMORY Time stamp HIGH-WORD (10)**
23	90	*	*	**ERROR MEMORY Time stamp LOW-WORD (10)**
23	111	71	1	**Identifier Register** HIGH = 71 = BR7000-I LOW = 1 = Power Factor Controller
				Grid-measuring values - floating point format (4 Byte)
23	112	*	*	Voltage
23	113	*	*	Voltage
23	114	*	*	Current
23	115	*	*	Current
23	116	*	*	Reactive power
23	117	*	*	Reactive power
23	118	*	*	Active power
23	119	*	*	Active power
23	120	*	*	Apparent power
23	121	*	*	Apparent power
23	122	*	*	Differential reactive power (to reach target cos-phi)
23	123	*	*	Differential reactive power (to reach target cos-phi)
23	124	*	*	Temperature
23	125	*	*	Temperature
23	126	*	*	THD-V
23	127	*	*	THD-V
23	128	*	*	THD-I
23	129	*	*	THD-I
23	130	*	*	cos-phi
23	131	*	*	cos-phi
23	132	*	*	**RELAY STATUS** BIT 0 = Message relay BIT 1…13 = Output relay BIT 14 = Alarm relay BIT 15 = External input
23	133	0	*	**CONTROL DIRECTION** 1 = Switch OFF 2 = Stopp 3 = Switch ON
23	134	0	*	**ERROR-register**
23	135	0	*	**WARNING-register**
23	136	0	*	**MESSAGE-register**
23	137	0	*	**FREQUENCY**

Adress HIGH-BYTE	Adress LOW-BYTE	Data HIGH-BYTE	Data LOW-BYTE	DESCRIPTION
23	138	0	0	-
23	139	*	*	**HARMONICS voltage 3. (2.) (139….158) x10** e.g.: 56 = 5.6%
23	|	*	*	|
23	158	*	*	**HARMONICS voltage**
23	159	*	*	**HARMONICS current 3. (2.) (159…178) x10** e.g.: 147 = 14.7%
23	|	*	*	|
23	178	*	*	**HARMONICS current**
				MAX. VALUES in floating point format (4 Byte)
23	179	*	*	max. voltage
23	180	*	*	max. voltage
23	181	*	*	max. current
23	182	*	*	max. current
23	183	*	*	max. reactive power
23	184	*	*	max. reactive power
23	185	*	*	max. active power
23	186	*	*	max. active power
23	187	*	*	max. apparent power
23	188	*	*	max. apparent power
23	189	*	*	max. differential reactive power (to reach target cos-phi)
23	190	*	*	max. differential reactive power (to reach target cos-phi)
23	191	*	*	max. temperature
23	192	*	*	max. temperature
23	193	*	*	max. THD-V
23	194	*	*	max. THD-V
23	195	*	*	max. THD-I
23	196	*	*	max. THD-I
23	197	*	*	**min. voltage**
23	198	*	*	**min. voltage**
				MAX. VALUES Time stamp
23	199	*	*	max. voltage
23	200	*	*	max. voltage
23	201	*	*	max. current
23	202	*	*	max. current
23	203	*	*	max. reactive power
23	204	*	*	max. reactive power
23	205	*	*	max. active power
23	206	*	*	max. active power
23	207	*	*	max. apparent power
23	208	*	*	max. apparent power
23	209	*	*	max. differential reactive power (to reach target cos-phi)
23	210	*	*	max. differential reactive power (to reach target cos-phi)
23	211	*	*	max. THD-V
23	212	*	*	max. THD-V
23	213	*	*	max. THD-I
23	214	*	*	max. THD-I
23	215	*	*	max. temperature
23	216	*	*	max. temperature
23	217	*	*	min. voltage
23	218	*	*	min. voltage

Adress HIGH-BYTE	**Adress LOW-BYTE**	**Data HIGH-BYTE**	**Data LOW-BYTE**	**DESCRIPTION**
23	219	*	*	**SYSTEM TIME**
23	220	*	*	**SYSTEM TIME**
23	221	*	*	**Dynamic Outputs 1..15** BIT 0 = Output 1 BIT15 = Output 15
23	222	*	*	**Dynamic Outputs 16..32** BIT 0 = Output 16 BIT15 = Output 32
23	223	R	T	**SYSTEM-POWER in %**
23	224	-	*	L-BYTE = DYNAMIC-Stages; H-BYTE = RELAY-Stages