Operation level parameters (0 - 3999)

BEGIN

Prm	Name	#	RangeLO	RangeHI	Default	R/W	Eepr	Description	Remarks	Type
1	Password	1	-	-	-	W		Set parameter level to access various parameter ranges. The password determines which sections are enabled.		
5	HandShakeWrite	1				W		Host toggles the parameter and may be read from parameter 6		
6	HandShakeRead	1				R		This parameter ia a copy of parameter #5		
7	RunCount	1	-	-		R/W	*	Count Starts	Increments every time the unit starts, will overflow to 0 after 65535, sending a password will clear the counter.	
	Identification									
10	SupplyIdentifier	1	-	-	259	R		A unique number which tells us which supply we have.	Number has NO relation to any output current!	c
15	BuildNumber	1	-	-	3300	R		A unique number which tells us the compiler build count	Number has NO relation to any output current!	
20	Software Version	20	-	-	SAC10P0 102 *180615	R		Returns 10 words, each containing two ASCII characters, giving a 20 chars string. This string is NOT zero terminated.	Example: ** SAC08P0105 **	c
30	Software Information	10	-	-	G3 ARM Version	R		Returns 10 words, each containing two ASCII characters, giving a 20 chars string. This string is NOT zero terminated.	Example: MetalFin. 12 segments	c
40	PLD Version	10	-	-		R		Returns 10 words, each containing two ASCII characters, giving a 20 chars string. This string is NOT zero terminated.	Example: ** SAC01L0205 **	i
50	DSP Version	10	-	-		R		Returns 10 words, each containing two ASCII characters, giving a 20 chars string. This string is NOT zero terminated.		i
60	PLD2 Version	10	-	-		R		Returns 10 words, each containing two ASCII characters, giving a 20 chars string. This string is NOT zero terminated.	Example: ** SAC01L0205 **	i
	Supply Table									
100	TableMaxCurrentFwd	1	-	-		R		Max allowed forward current		
101	TableMaxCurrentRev	1	-	-		R		Max allowed reverse current		
102	TableMaxRMSCurrent	1	-	-		R		Max allowed IRMS current		
103	TableMaxVoltageFwd	1	-	-		R		Max allowed forward voltage		
104	TableMaxVoltageRev	1	-	-		R		Max allowed reverse voltage		
105	TableDCLinkVoltage1	1	-	-		R		Primary DC-link Voltage		
106	TableNrOfOutputs	1	-	-		R		Nr of outputs		
107	TableMaxFwdTime	1	-	-		R		Max Forward Time [ms]		
108	TableMaxRevTime	1	-	-		R		Max Reverse Time [ms]		
109	TableMaxDeadTime	1	-	-		R		Max Dead Time [ms]		
110	TableMaxHIZTime	1	-	-		R		Max HIZ Time [ms]		
111	TableMaxLevels	1	-	-		R		Maximum allowed current levels		
112	TableDCLinkVoltage2	1	-	-		R		Secondary DC-link Voltage		
113	TableSpare13	1	-	-		R				
114	TableSpare14	1	-	-		R				
115	TableSpare15	1	-	-		R				
	Other parameters									
200	OperationMode	1	-	-	65280	R/W		The LSbyte puts supply in stop(0), run(1), batch(2), pause(3) or Off(4) mode. (Note: in pause mode, send another pause(3) to continue Micro Batch) The MSbyte enablesRun for 8 outputs bitwise. E.g. 01000000 enables the Run command of output #7, 10000001 enables Run for outputs #8 and #1	Altering an enable bit in the MSbyte while in running mode will Run/Stop that output instantaneously. Off mode must be enabled in parameter 9300 bit#1. If enabled than the unit's main contactor will be de-energized immedialtely. If the unit resides in stop(0) mode the mains contactor will de-energize after a time in minutes set by parameter 9301.	
201	Reset faults	1	0	1	-	W		Reset supply (and fault registers). Status registers are NOT cleared!	Write a '1' to reset. Writing a '0' will be ignored.	
202	Clear status	1	0	1	-	W		Clears status registers. Fault registers are NOT cleared!	Write a '1' to clear registers. Writing a '0' will be ignored.	
210	BatchActiveLine	1	0	16		R		Shows which batch line is active. When this value is 0, the batch is not active.		
211	BatchActiveRunTimeH	1				R		Shows batch actual running time		
212	BatchActiveRunTimeL	1				R		Shows batch actual running time		
213	BatchActiveRunType	1				R		Shows batch actual running type		
220	BatchActiveCycle	1	-	-		R		Shows batch actual cycle (repeat function)	Repeat endless (0), one time (1), two times (2), etc	
250	ActivePatFilename	10	-	-	Empty	R		Actual selected Pattern Filename [text string] Returns 10 words, each containing two ASCII characters, giving a 20 chars string. This string is NOT zero terminated	Example: "Pat 1.pat"	
260	RAMsegmentTimes	16				R		Actual Segmenttimes		
	Fault&Status registers									
300	FaultReg1	1	-	-	0	R		Reading this registers gives the fault states of the supply. This is a bit-oriented register where each bit represents an error.	A fault will cause the supply to stop	s
301	FaultReg2	1	-	-	0	R		Reading this registers gives the fault states of the supply. This is a bit-oriented register where each bit represents an error.	A fault will cause the supply to stop	s
302	FaultReg3	1	-	-	0	R		Reading this registers gives the fault states of the supply. This is a bit-oriented register where each bit represents an error.	A fault will cause the supply to stop	s
310	StatusReg1	1	-	-	0	R		Reading these register give the status of the supply. This is a bit-oriented register where each bit represents a status. See datails at end of this document.	No stop	s
311	StatusReg2	1	-	-	0	R		Reading these register give the status of the supply. This is a bit-oriented register where each bit represents a status. See datails at end of this document.	No stop	s
312	StatusReg3	1	-	-	0	R		Reading these register give the status of the supply. This is a bit-oriented register where each bit represents a status. See datails at end of this document.	No stop	s
320	DetailedFaults1	1	-	-	0	R		Hardware Current Trips		s
321	DetailedFaults2	1	-	-	0	R		Software Current Trips		s
322	DetailedFaults3	1	-	-	0	R		Software Voltage Trips		s
330	ActivePatternProtection	1	-	-	0	R		Pattern Protection State, 1= protected		s
	Measured values - 1									
480	IDClinkMeas1	1	0	IDCL	-	R		Measured primary DC link	x A	
481	VDClinkMeas1	1	0	VDCL	-	R		Measured primary DC link Voltage	x.xx V	
483	IDClinkMeas2	1	0	IDCL	-	R		Measured secundary DC link Current	x A	
484	VDClinkMeas2	1	0	VDCL	-	R		Measured secundary DC link Voltage	x.xx V	
486	Dclinks	1	1	2	-	R		Amount of DC links		
490	ControlVoltageMeasPos	1	-	-	-	R		Measured unstabilized positive control voltage supply	xx.xx V	
491	ControlVoltageMeasNeg	1	-	-	-	R		Measured unstabilized negative control voltage supply	xx.xx V	
	Output values - 1									
550	LoopModesFwd	8	-	-	-	R		8bit register (b7..b0) for each output indicating the LoopMode for the corresponding Forward segment (1=current, 0=voltage)		s
560	LoopModesRev	8	-	-	-	R		8bit register (b7..b0) for each output indicating the LoopMode for the corresponding Reverse segment (1=current, 0=voltage)		s
	Logging parameters							Special for fast datalogging		
600	LogBatchActiveLine	1				R		See parameter 210		
650	LogOperationMode	1				R		See parameter 200		
651	LogFaultReg1	1				R		See parameter 300		
652	LogFaultReg2	1				R		See parameter 301		
653	LogFaultReg3	1				R		See parameter 302		
654	LogStatusReg1	1				R		See parameter 310		
655	LogStatusReg2	1				R		See parameter 311		
656	LogStatusReg3	1				R		See parameter 312		
660	LogAhFwd.H	1				R		See parameter 2500 LogAhFwd_x.H, x=1, output 1	x=1..8,depending on prm 700 LogSegmentOutputSel	
661	LogAhFwd.L	1				R		See parameter 2501 LogAhFwd_x.L, x=1, output 1	x=1..8,depending on prm 700 LogSegmentOutputSel	
662	LogAhRev.H	1				R		See parameter 2502 LogAhRev_x.H, x=1, output 1	x=1..8,depending on prm 700 LogSegmentOutputSel	
663	LogAhRev.L	1				R		See parameter 2503 LogAhRev_x.L, x=1, output 1	x=1..8,depending on prm 700 LogSegmentOutputSel	
680	LogActivePatternProtection	1				R		See parameter 330		
700	LogSegmentOutputSel	1	1	8	1	R/W		Selection for the output that must be logged	note: only 1 output can be logged	
710	LogSegmentMeasValue	48	0		-	R		To retrieve segments, select output (e.g. 3): 710 LogSegment1MeasCurOut3 711 LogSegment1MeasVolOut3 712 LogSegment1MeasPwmOut3 713 LogSegment2MeasCurOut3 714 LogSegment2MeasVolOut3 715 LogSegment2MeasPwmOut3 (…) 745 LogSegment16MeasCurOut3 746 LogSegment16MeasVolOut3		

								747 LogSegment16MeasPwmOut3		
	TemperatureBoards									
800	TBselect	1			1	R/W		Select Temperature Board 1..63	Temperature Board may be a power board or a Safe Guard PCB	
801	TBcount	1				R		Amount of installed temperature boards		
809	TBidentifier	1				R		Temperature Board Identifier		
810	TBstatus	1				R		Temperature Board Status		
811	TBtemperature	6				R		Measured temperature 1 in centigrade of selected temperature board x10	Accuracy 1 decimal e.g. read 500= 50.0 centigrade	
820	TBdigitalin	1				R		Bitwise status of digital inputs of Safe Guard Board		
821	TBsensorType	6				R		Choose sensor type	0=NTC, 1=PT100, 2=Raw AD value	
830	TBsoftwareVersion	10				R		Software version of selected temperature board	Example SAX02Pxxyy *ddmmyy	
	Measured values - 2									
1000	CurrentMeasFwd1	8	0	Imax	-	R		Measured Current forward of output 1, level 1 to 8	Measured Current indexed by level	f
1020	CurrentMeasRev1	8	0	Imax	-	R		Measured Current reverse of output 1, level 1 to 8		f
1040	CurrentMeasFwd2	8	0	Imax	-	R		Measured Current forward of output 2, level 1 to 8	Curent value [A] or Current Density value [A/dm^2]	f
1060	CurrentMeasRev2	8	0	Imax	-	R		Measured Current reverse of output 2, level 1 to 8	depending on setting: **MeasuredCurrentOutputMode**	f
1080	CurrentMeasFwd3	8	0	Imax	-	R		Measured Current forward of output 3, level 1 to 8	(prm 4450)	f
1100	CurrentMeasRev3	8	0	Imax	-	R		Measured Current reverse of output 3, level 1 to 8		f
1120	CurrentMeasFwd4	8	0	Imax	-	R		Measured Current forward of output 4, level 1 to 8	Formatted parameter, see for detailed informaton notes	f
1140	CurrentMeasRev4	8	0	Imax	-	R		Measured Current reverse of output 4, level 1 to 8	[4]), [5]), [6]) and [7]) on 'Manager' Worksheet	f
1160	CurrentMeasFwd5	8	0	Imax	-	R		Measured Current forward of output 5, level 1 to 8		f
1180	CurrentMeasRev5	8	0	Imax	-	R		Measured Current reverse of output 5, level 1 to 8		f
1200	CurrentMeasFwd6	8	0	Imax	-	R		Measured Current forward of output 6, level 1 to 8		f
1220	CurrentMeasRev6	8	0	Imax	-	R		Measured Current reverse of output 6, level 1 to 8		f
1240	CurrentMeasFwd7	8	0	Imax	-	R		Measured Current forward of output 7, level 1 to 8		f
1260	CurrentMeasRev7	8	0	Imax	-	R		Measured Current reverse of output 7, level 1 to 8		f
1280	CurrentMeasFwd8	8	0	Imax	-	R		Measured Current forward of output 8, level 1 to 8		f
1300	CurrentMeasRev8	8	0	Imax	-	R		Measured Current reverse of output 8, level 1 to 8		f
1500	VoltageMeasFwd1	8	0	Vmax	-	R		Measured Voltage forward of output 1, level 1 to 8	Voltages indexed by level	f
1520	VoltageMeasRev1	8	0	Vmax	-	R		Measured Voltage reverse of output 1, level 1 to 8		f
1540	VoltageMeasFwd2	8	0	Vmax	-	R		Measured Voltage forward of output 2, level 1 to 8	e.g.: value 0..3000 means 0..30.00V	f
1560	VoltageMeasRev2	8	0	Vmax	-	R		Measured Voltage reverse of output 2, level 1 to 8		f
1580	VoltageMeasFwd3	8	0	Vmax	-	R		Measured Voltage forward of output 3, level 1 to 8		f
1600	VoltageMeasRev3	8	0	Vmax	-	R		Measured Voltage reverse of output 3, level 1 to 8		f
1620	VoltageMeasFwd4	8	0	Vmax	-	R		Measured Voltage forward of output 4, level 1 to 8		f
1640	VoltageMeasRev4	8	0	Vmax	-	R		Measured Voltage reverse of output 4, level 1 to 8		f
1660	VoltageMeasFwd5	8	0	Vmax	-	R		Measured Voltage forward of output 5, level 1 to 8		f
1680	VoltageMeasRev5	8	0	Vmax	-	R		Measured Voltage reverse of output 5, level 1 to 8		f
1700	VoltageMeasFwd6	8	0	Vmax	-	R		Measured Voltage forward of output 6, level 1 to 8		f
1720	VoltageMeasRev6	8	0	Vmax	-	R		Measured Voltage reverse of output 6, level 1 to 8		f
1740	VoltageMeasFwd7	8	0	Vmax	-	R		Measured Voltage forward of output 7, level 1 to 8		f
1760	VoltageMeasRev7	8	0	Vmax	-	R		Measured Voltage reverse of output 7, level 1 to 8		f
1780	VoltageMeasFwd8	8	0	Vmax	-	R		Measured Voltage forward of output 8, level 1 to 8		f
1800	VoltageMeasRev8	8	0	Vmax	-	R		Measured Voltage reverse of output 8, level 1 to 8		f
	Output values - 2									
2000	PwmFwd1	8	0	MaxPwm	-	R/W		Pwm Value forward of output 1, level 1 to 8	Pwm values indexed by level	f
2020	PwmRev1	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 1, level 1 to 8		f
2040	PwmFwd2	8	0	MaxPwm	-	R/W		Pwm Value forward of output 2, level 1 to 8		f
2060	PwmRev2	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 2, level 1 to 8		f
2080	PwmFwd3	8	0	MaxPwm	-	R/W		Pwm Value forward of output 3, level 1 to 8		f
2100	PwmRev3	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 3, level 1 to 8		f
2120	PwmFwd4	8	0	MaxPwm	-	R/W		Pwm Value forward of output 4, level 1 to 8		f
2140	PwmRev4	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 4, level 1 to 8		f
2160	PwmFwd5	8	0	MaxPwm	-	R/W		Pwm Value forward of output 5, level 1 to 8		f
2180	PwmRev5	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 5, level 1 to 8		f
2200	PwmFwd6	8	0	MaxPwm	-	R/W		Pwm Value forward of output 6, level 1 to 8		f
2220	PwmRev6	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 6, level 1 to 8		f
2240	PwmFwd7	8	0	MaxPwm	-	R/W		Pwm Value forward of output 7, level 1 to 8		f
2260	PwmRev7	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 7, level 1 to 8		f
2280	PwmFwd8	8	0	MaxPwm	-	R/W		Pwm Value forward of output 8, level 1 to 8		f
2300	PwmRev8	8	0	MaxPwm	-	R/W		Pwm Value reverse of output 8, level 1 to 8		f
	Ampere Hour Parameters									
2500	AhFwd1.H	1	-	-	-	R		AmpHour forward (high word) of output 1		
2501	AhFwd1.L	1	-	-	-	R		AmpHour forward (low word) of output 1		
2502	AhRev1.H	1	-	-	-	R		AmpHour reverse (high word) of output 1		
2503	AhRev1.L	1	-	-	-	R		AmpHour reverse (low word) of output 1		
2510	AhFwd2.H	1	-	-	-	R		AmpHour forward (high word) of output 2		
2511	AhFwd2.L	1	-	-	-	R		AmpHour forward (low word) of output 2		
2512	AhRev2.H	1	-	-	-	R		AmpHour reverse (high word) of output 2		
2513	AhRev2.L	1	-	-	-	R		AmpHour reverse (low word) of output 2		
2520	AhFwd3.H	1	-	-	-	R		AmpHour forward (high word) of output 3		
2521	AhFwd3.L	1	-	-	-	R		AmpHour forward (low word) of output 3		
2522	AhRev3.H	1	-	-	-	R		AmpHour reverse (high word) of output 3		
2523	AhRev3.L	1	-	-	-	R		AmpHour reverse (low word) of output 3		
2530	AhFwd4.H	1	-	-	-	R		AmpHour forward (high word) of output 4		
2531	AhFwd4.L	1	-	-	-	R		AmpHour forward (low word) of output 4		
2532	AhRev4.H	1	-	-	-	R		AmpHour reverse (high word) of output 4		
2533	AhRev4.L	1	-	-	-	R		AmpHour reverse (low word) of output 4		
2540	AhFwd5.H	1	-	-	-	R		AmpHour forward (high word) of output 5		
2541	AhFwd5.L	1	-	-	-	R		AmpHour forward (low word) of output 5		
2542	AhRev5.H	1	-	-	-	R		AmpHour reverse (high word) of output 5		
2543	AhRev5.L	1	-	-	-	R		AmpHour reverse (low word) of output 5		
2550	AhFwd6.H	1	-	-	-	R		AmpHour forward (high word) of output 6		
2551	AhFwd6.L	1	-	-	-	R		AmpHour forward (low word) of output 6		
2552	AhRev6.H	1	-	-	-	R		AmpHour reverse (high word) of output 6		
2553	AhRev6.L	1	-	-	-	R		AmpHour reverse (low word) of output 6		
2560	AhFwd7.H	1	-	-	-	R		AmpHour forward (high word) of output 7		
2561	AhFwd7.L	1	-	-	-	R		AmpHour forward (low word) of output 7		
2562	AhRev7.H	1	-	-	-	R		AmpHour reverse (high word) of output 7		
2563	AhRev7.L	1	-	-	-	R		AmpHour reverse (low word) of output 7		
2570	AhFwd8.H	1	-	-	-	R		AmpHour forward (high word) of output 8		
2571	AhFwd8.L	1	-	-	-	R		AmpHour forward (low word) of output 8		
2572	AhRev8.H	1	-	-	-	R		AmpHour reverse (high word) of output 8		
2573	AhRev8.L	1	-	-	-	R		AmpHour reverse (low word) of output 8		
2590	AhActual.H	1	-	-	-	R		Amp Hour counter actual running value MSword	Actual Amp Hour value of the counter HI word	
2591	AhActual.L	1	-	-	-	R		Amp Hour counter actual running value LSword	Actual Amp Hour value of the counter LO word	
2595	AhRelayActive	1	-	-	-	R		Amp Hour counter actual running time, when the AuxRelay is active	Value > 0 means relay is energized, value of this parameter is the stroke timer value.	
2600	AhActual2.H	1	-	-	-	R		Amp Hour counter 2 actual running value MSword	Actual Amp Hour 2 value of the counter HI word	
2601	AhActual2.L	1	-	-	-	R		Amp Hour counter 2 actual running value LSword	Actual Amp Hour 2 value of the counter LO word	
2605	AhRelay2Active	1	-	-	-	R		Amp Hour counter 2 actual running time, when the AuxRelay is active	Value > 0 means relay is energized, value of this parameter is the stroke timer value.	
	Debug parameters									
3900	DebugArray	8	-	-	-	R/W		Debug parameters. For DEBUGGING purpose only, and not to be used by customers.		
3930	Vsstate	1	-	-	-	R/W		Debug parameter. For DEBUGGING purpose only, and not to be used by customers.	VisualState actual state, writing can force an event	

END

Eepr field: An * indicates that this parameter is stored in the external eeprom

IF Max forward current
IR Max reverse current
VF Max forward voltage
VR Max reverse voltage
MaxPwm See service prms

Type: i: means initialized RAM array variable
c: means array initialized in code space
f means: far variable
r means: variable in normal RAM
s means: variable is of special type

Manager level parameters (4000 - 7999)

BEGIN

Prm	Name	#	RangeLO	RangeHI	Default	R/W	Eepr	Description	Remarks	Type	DSP
4000	Address	1	1	247	1	R/W	*	Communication address			
4001	Baudrate1	1	0	4	1	R/W	*	Communication baudrate of PORT1 0=9600,1=19200,2=38400,3=57600,4=115200			
4002	Baudrate2	1	0	4	1	R/W	*	Communication baudrate of PORT2 0=9600,1=19200,2=38400,3=57600,4=115200			
4010	Post Silent Interval Factor1	1	0	250	0	R/W	*	Modbus specifies a 3.5 x character time delay before starting to send after the end of the message. The UART of the supply will make this silent interval 3.5--4.5 times the character time. This time may be increased to make the RS485 communication work with a PC which is not guaranteed to meet the specified time. each unit means 1ms extension. This is for PORT1			
4011	Post Silent Interval Factor2	1	0	250	0	R/W	*	Modbus specifies a 3.5 x character time delay before starting to send after the end of the message. The UART of the supply will make this silent interval 3.5--4.5 times the character time. This time may be increased to make the RS485 communication work with a PC which is not guaranteed to meet the specified time. each unit means 1ms extension. This is for PORT2			
	PatternData - 1										
4050	ForwardTime	1	0	56000	0	R/W		0..56000us	Set forward time directly of a simple Fwd/Rev pattern		
4051	ReverseTime	1	0	56000	0	R/W		0..56000us	Set reverse time directly of a simple Fwd/Rev pattern		
4055	ForwardCurrent	4	0	IF	0	R/W		0..Allowed maximum forward current of unit [A], index is output	Set forward current directly of a simple Fwd/Rev pattern resolution 1A		
4060	ReverseCurrent	4	0	IR	0	R/W		0..Allowed maximum reverse current of unit [A], index is output	Set reverse current directly of a simple Fwd/Rev pattern resolution 1A		
4070	PatternProtection	1			0	R/W	*	0= Allow pattern info to be read, 1= Disable reading of pattern		e	
4075	AhTimer1Prescaler	1	0	256	256	R/W	*	8 bits pre-scaler for the first Ah timer	Set value prescaler for AhTimer1, Ah is scaled by X/256, X ranges from 1..255 and is this parameter, 0 is no scaling	e	
4076	AhTimer2Prescaler	1	0	256	256	R/W	*	8 bits pre-scaler for the second Ah timer	Set value prescaler for AhTimer1, Ah is scaled by X/256, X ranges from 1..255 and is this parameter, 0 is no scaling	e	
4077	PseudoSyncDelay	1	-	-	0	R/W	*	Pseudo-Synchronization Delay in micro seconds	Value > 0 activates pseudo plating mode.		
4080	PatFilename	10			0x3232	R/W	*	Pulse Pattern Filename			
4170	SegmentTimes	16	0	MaxSeg	-	R/W	*	Segments 1..16 (time and polarity)	See explanation below	f	
4190	PatReadCommand	1	0	MaxBatchLines	0	W		Select which PatternSet to read from eeprom	0 = Memory, 1..BatchLineCount is eeprom. The BatchSelect parameter must be set first to select the pattern set		
4191	PatWriteCommand	1	0	MaxBatchLines	0	W		Select place to store pattern set	The BatchSelect parameter must be set first to select the pattern set		
4192	PatCount	1	0	MaxBatchLines	0	R/W		Number of stored patterns			
4195	PatSelect	1	0	MaxBatchLines	0	R/W	*	Pattern Selection, the selection of a preloaded pattern.	This command activates the selected pattern. The BatchSelect parameter must be set first to select the pattern set		
	MicroBatch										
4200	BatchPatternNo	1	1	MaxBatchLines	-	R/W	*	Select PatternSet to use for batch line			
4201	BatchRunTime.H	1			-	R/W	*	Running time H word			
4202	BatchRunTime.L	1			-	R/W	*	Running time L word			
4203	BatchRunningType	1	0	5	-	R/W	*	Running type, batch will go to next batch line after time (0), external input change (1,2), amp. hours (3,4)	0=Time, 1=StepRisingEdge, 2=StepFallingEdge, 3=AhFwd, 4=AhRev, 5=PatternCycles		
4204	BatchRampTime	1	0	1000	-	R/W	*	Ramptime in percentage of set-current per second	0 = disabled 0..100.0%/s is percentage of current parms 6000..6300. e.g. let CurrentSetFwd1=750A (parm6000) then if this parm is set at 50.0%/s (500) the current will be ramped with 375A/s		
4205	BatchPercentage	1	0	1000	1000	R/W	*	Adjusts percentage of output currents for all outputs	0..1000 means 0..100.0% (one decimal accuracy)		
4210	BatchLineRead	1	1	BatchLineCount	1	W		Select which batch line to read/write			
4211	BatchLineWrite	1	1	BatchLineCount	1	W		Select place to store Batch Line			
4212	BatchLineCount	1	1	MaxBatchLines	0	R/W		Set number of used batch rows			
4220	BatchCycles	1	-	-	1	R/W	*	The batch set will be repeated n times after processing the last batch line. (n=1..65535 times)	Repeat endless (0), one time (1), two times (2), etc		
4250	MaxBatchSets	1	1	50	3	R/W	*	Read or Write maximum amount of Batch Sets	MaxBatchSets * MaxBatchLines may not exceed 50		
4251	MaxBatchLines	1	1	50	16	R/W	*	Read or Write maximum amount of lines in a Batch Set	MaxBatchSets * MaxBatchLines may not exceed 50		
4252	BatchSelect	1	1	MaxBatchSets	1	R/W	*	Batch Selection, the selection of a preloaded Batch Set.	This command activates the selected Batch Set.		
4260	BatchFilename	10				R/W		Filename of the Batch Set selected by BatchSelect			
	LoopSpeeds										
4330	PwmLoopStepClip	1	1	500	20	R/W	*	Pwm control step increment max clip level			A055
4360	IshiftStepMul	1	0	10	0	R/W	*	Pwm multiplier (shift left) factor Current Control loop			A070
4361	IshiftStepDiv	1	0	10	4	R/W	*	Pwm division (shift right) factor Current Control loop			A071
4370	VshiftStepMul	1	0	10	0	R/W	*	Pwm multiplier (shift left) factor Voltage Control loop			A072
4371	VshiftStepDiv	1	0	10	4	R/W	*	Pwm division (shift right) factor Voltage Control loop			A073
4380	MeasFiltFact	1	0	3	3	R/W	*	Measured Current/Voltage moving filter shift value			A074
	Other parameters										
4400	LoadDefaults	1	-		-	W		Load default values into memory	A status bit will show if loading defaults is active		
4401	ClearAmphour	1	-	-	-	W		Clear AmpHour counters	Mask: bit0=Fwd1, bit1=Rev1 etc.		
4402	ClearAmphourScaled	1	-	-	-	W		Clear Scaled AmpHour counters	Mask: bit0=Fwd1, bit1=Rev1 etc.upto output 2 (total 4 bits)		
4410	AuxRelay21	1	0	10	3	R/W	*	Auxiliary relay #2.1 (customer redefinable relay) on second communication board	0=Off, 1=On, 2=FaultRelay, 3=RunRelay, 4=StopRelay, 5=Threshold Current warning active, 6=AhStrokeTimer, 7=SupplyReady, 8=BatchStep Out, 9=AhStrokeTimer2, 10=Fan		
4411	AuxRelay22	1	0	10	4	R/W	*	Auxiliary relay #2.2 (customer redefinable relay) on second communication board	0=Off, 1=On, 2=FaultRelay, 3=RunRelay, 4=StopRelay, 5=Threshold Current warning active, 6=AhStrokeTimer, 7=SupplyReady, 8=BatchStep Out, 9=AhStrokeTimer2, 10=Fan		
4412	AuxRelay23	1	0	10	2	R/W	*	Auxiliary relay #2.3 (customer redefinable relay) on second communication board	0=Off, 1=On, 2=FaultRelay, 3=RunRelay, 4=StopRelay, 5=Threshold Current warning active, 6=AhStrokeTimer, 7=SupplyReady, 8=BatchStep Out, 9=AhStrokeTimer2, 10=Fan		
4415	AuxRelay11	1	0	10	3	R/W	*	Auxiliary relay #1.1 (customer redefinable relay) on first communication board	0=Off, 1=On, 2=FaultRelay, 3=RunRelay, 4=StopRelay, 5=Threshold Current warning active, 6=AhStrokeTimer, 7=SupplyReady, 8=BatchStep Out, 9=AhStrokeTimer2, 10=Fan		
4416	AuxRelay12	1	0	10	4	R/W	*	Auxiliary relay #1.2 (customer redefinable relay) on first communication board	0=Off, 1=On, 2=FaultRelay, 3=RunRelay, 4=StopRelay, 5=Threshold Current warning active, 6=AhStrokeTimer, 7=SupplyReady, 8=BatchStep Out, 9=AhStrokeTimer2, 10=Fan		
4417	AuxRelay13	1	0	10	2	R/W	*	Auxiliary relay #1.3 (customer redefinable relay) on first communication board	0=Off, 1=On, 2=FaultRelay, 3=RunRelay, 4=StopRelay, 5=Threshold Current warning active, 6=AhStrokeTimer, 7=SupplyReady, 8=BatchStep Out, 9=AhStrokeTimer2, 10=Fan		
4420	VoltTripEnable	1	0	1	1	R/W	*	Voltage Trip Enable	0=Disabled, 1=Enabled		
4421	VoltTripFwd	1	-	-	650	R/W	*	Forward voltage trip level for all outputs	x.xx v (default 6.50 V)		
4422	VoltTripRev	1	-	-	1300	R/W	*	Reverse voltage trip level for all outputs	x.xx v (default 13.0 V)		
4430	Master [2]	1	0	4	0	R/W	*	Master/Slave selection. Range Check on LSByte only MSByte= Mode, LSByte can have: 0=Slave, 1=Master, 2=Stand Alone, 3=ECMintern, 4=ECMextern	Msbyte contains the ECM trigger modes: 1:Single pulse, 2:Two pulses…254:254 Pulses, 255 continuous		
4431	ExtCommCheck	1	0	3	0	R/W	*	External communication check	0=Disabled, 1=Enabled, bit#0 enables check for COM1, bit#1 = enables check for COM2		
4432	EepromWriteEnable	1	0	1	1	R/W	*	Enable writing of parameters to external eeprom	0=Disabled, 1=Enabled		
4433	High Impedance	1	0	512	0	R/W	*	High impedance mode b0:Hiz in stop mode, b1=Hiz out1, b2=Hiz out2, …, b8=Hiz out8			
4435	ExtSupplyMode	1	-	-	0	R/W	*	External Supply Input for using the external digital signal to start the supply (Run), start a Batch or Enable the Supply. The Msbyte controls the Emergency Stop function.	LSbyte: 0=Disabled, 1=StartSupplyRun, 2=StartBatch, 3=EnableSupply. Msbyte: 0=EmergencyStop disabled, 1=EmergencyStop enabled		
4440	RampTime	1	0	1000	0	R/W	*	Ramptime in percentage of set-current per second	0 = disabled 0..100.0%/s is percentage of current parms 6000..6300. e.g. let CurrentSetFwd1=750A (parm6000) then if this parm is set at 50.0%/s (500) the current will be ramped with 375A/s		
4450	MeasuredCurrentOutputMode	1	0	1	0	R/W	*	This parameter prm#4450 has no meaning when the current setpoints prm#6000-6300 are used in current mode. When the current setpoints prm#6000-6300 are used in current density mode: - parameter prm#4450=0 will set the measured current parameters (prm#1000-1300) in current mode [A], - parameter prm#4450=1 will set the measured current parameters	0=Current [A] 1=Current Density [A/dm^2]		
4500	Percentage	8	0	1000	1000	R/W	*	Percentage of current setpoint values, for output 1..8, used in the PatternData	0..1000 means 0..100.0%		
4510	SetVoltagePerc	8	0	1200	1000	R/W	*	Percentage of voltage setpoint values, for output 1..8, used in the PatternData	0..1000 means 0..100.0% (0..1200 - 0..120%)		
	Dynamic Overcurrent										
4600	DynamicOCenable	1	0	1	0	R/W	*	Dynamic Overcurrent enable	0=Disabled, 1=Enabled		
4601	DynamicOCcount	1	1	64000	1	R/W	*	Dynamic Overcurrent Count sets the amount of allowed occurences of a dynamic over current.			
4602	DynamicOCrel	1	0	100	10	R/W	*	Dynamic Overcurrent Rel sets the relative allowed over current in percentages			
4603	DynamicOCabs	1	-	-	0	R/W	*	Dynamic Overcurrent Abs sets the absolute allowed over current.	Value is a scaled current setting as defined in 5)		
	Thresholds										
5000	ThresholdCurrTime	1	0	100	30	R/W	*	Current threshold timer value	Time in seconds, 0=disabled		
5001	ThresholdCurrRel	1	0	100	10	R/W	*	If current exceeds this percentage level in relation to the current setpoint, the threshold timer starts	in % [3]		
5002	ThresholdCurrAbs	1	0	10000	0	R/W	*	If current exceeds this absolute level in relation to the current setpoint, the threshold timer starts	in A [3]		
	Surfaces										
5500	Surface	8	0		0	R/W	*	Surface of product or product side to be plated output 1..8	in dm^2, unit info [4] and surface format see [5]		
	PatternData - 2										

6000	CurrentSetFwd1	8	0	Imax	0	R/W	*	Current forward setting of output 1, level 1 to 8	Current Setting indexed by level	f	
6020	CurrentSetRev1	8	0	Imax	0	R/W	*	Current reverse setting of output 1, level 1 to 8		f	
6040	CurrentSetFwd2	8	0	Imax	0	R/W	*	Current forward setting of output 2, level 1 to 8	Curent setting [A] or Current Density setting [A/dm^2].	f	
6060	CurrentSetRev2	8	0	Imax	0	R/W	*	Current reverse setting of output 2, level 1 to 8	For current and current density **unit** see [4])	f	
6080	CurrentSetFwd3	8	0	Imax	0	R/W	*	Current forward setting of output 3, level 1 to 8	For current and current density parameter **format** see [5])	f	
6100	CurrentSetRev3	8	0	Imax	0	R/W	*	Current reverse setting of output 3, level 1 to 8		f	
6120	CurrentSetFwd4	8	0	Imax	0	R/W	*	Current forward setting of output 4, level 1 to 8		f	
6140	CurrentSetRev4	8	0	Imax	0	R/W	*	Current reverse setting of output 4, level 1 to 8		f	
6160	CurrentSetFwd5	8	0	Imax	0	R/W	*	Current forward setting of output 5, level 1 to 8		f	
6180	CurrentSetRev5	8	0	Imax	0	R/W	*	Current reverse setting of output 5, level 1 to 8		f	
6200	CurrentSetFwd6	8	0	Imax	0	R/W	*	Current forward setting of output 6, level 1 to 8		f	
6220	CurrentSetRev6	8	0	Imax	0	R/W	*	Current reverse setting of output 6, level 1 to 8		f	
6240	CurrentSetFwd7	8	0	Imax	0	R/W	*	Current forward setting of output 7, level 1 to 8		f	
6260	CurrentSetRev7	8	0	Imax	0	R/W	*	Current reverse setting of output 7, level 1 to 8		f	
6280	CurrentSetFwd8	8	0	Imax	0	R/W	*	Current forward setting of output 8, level 1 to 8		f	
6300	CurrentSetRev8	8	0	Imax	0	R/W	*	Current reverse setting of output 8, level 1 to 8		f	
6500	VoltageSetFwd1	8	0	Vmax	0	R/W	*	Voltage forward setting of output 1, level 1 to 8	Set Voltages indexed by level	f	
6520	VoltageSetRev1	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 1, level 1 to 8		f	
6540	VoltageSetFwd2	8	0	Vmax	0	R/W	*	Voltage forward setting of output 2, level 1 to 8		f	
6560	VoltageSetRev2	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 2, level 1 to 8		f	
6580	VoltageSetFwd3	8	0	Vmax	0	R/W	*	Voltage forward setting of output 3, level 1 to 8		f	
6600	VoltageSetRev3	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 3, level 1 to 8		f	
6620	VoltageSetFwd4	8	0	Vmax	0	R/W	*	Voltage forward setting of output 4, level 1 to 8		f	
6640	VoltageSetRev4	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 4, level 1 to 8		f	
6660	VoltageSetFwd5	8	0	Vmax	0	R/W	*	Voltage forward setting of output 5, level 1 to 8		f	
6680	VoltageSetRev5	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 5, level 1 to 8		f	
6700	VoltageSetFwd6	8	0	Vmax	0	R/W	*	Voltage forward setting of output 6, level 1 to 8		f	
6720	VoltageSetRev6	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 6, level 1 to 8		f	
6740	VoltageSetFwd7	8	0	Vmax	0	R/W	*	Voltage forward setting of output 7, level 1 to 8		f	
6760	VoltageSetRev7	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 7, level 1 to 8		f	
6780	VoltageSetFwd8	8	0	Vmax	0	R/W	*	Voltage forward setting of output 8, level 1 to 8		f	
6800	VoltageSetRev8	8	0	Vmax	0	R/W	*	Voltage reverse setting of output 8, level 1 to 8		f	
	Amp Hour Timer										
7000	AhIntervalHI	1	-	-	0	R/W	*	Amp Hour Counter target setpoint value MS Word	The Amp Hour Counter uses this target setpoint (prm#7000 and #7001) to determine, when the required ampere hours have been generated during production. The target value is copied to the actual ampere hour parameters (prm#2590 and #2590) and down counted to zero, meaning that the requiered ampere hours have been counted, which will switch on the Aux Relay for a stroke time adjusted with prm#7002.		
7001	AhIntervalLO	1	-	-	0	R/W	*	Amp Hour Counter target setpoint value LS Word			
7002	AhStrokeTime	1	0	60000	0	R/W	*	The time (in s) that the Aux Relay is activated, after the Amp Hour Counter has counted the target amount of ampere hours (prm#7000 and #7001) during production			
7003	AhIntervalSum	1	-	-	0	R/W	*	Sum enabled bits for the Amp Hour Counter behavior. If a bit is enabled then its corresponding output is summed to the counting result.	Bitwise selection of the way the Amp Hour Counter will count the ampere hours. 16 bits organized (MSbit..LSbit): r8, f8,r7, f7,r6, f6,r5, f5,r4, f4,r3, f3,r2, f2, r1, f1 Expl.:r1=1, sum (or substract) bit enabled of the reverse of output 1, etc. Expl.: prm#7003 = 0b00000101 (f1,f2 sum) and prm#7004 = 0b00001010 (r1, r2 substract). The ampere hour count result is increased, with the sum amount (f1 and f2) and decreased with subtract amount (r1 and r2). This count result is used to down count the remaining ampere hour parameters prm#2590 and #2591. Note: The down count of prm#2590 and #2591 is stopped, when the ampere hour amount of the reverse has become larger than the forward. It will be continued again, when the amount of forward ampere hours has become larger than that of the reverse amount.		
7004	AhIntervalSubtract	1	-	-	0	R/W	*	Substract enable bits for the Amp Hour Counter behavior. If a bit is enabled then its corresponding output is subtracted from the counting result.			
7005	AhIntervalMode	1	0	2	0	R/W	*	The parameter to start (single run or continues run) and stop the Amp Hour Counter	0 = Reset/Stop (to stop and reset the Amp Hour Counter) 1 = Single Shot (the Amp Hour Counter will run only once, after counting down parameters prm#2590 and #2591, the Aux Relay is activated for the stroke time adjusted with prm#7002) 2 = Continuous (the Amp Hour Counter will run multiple times, each time the counter has counted down parameters prm#2590 and #2591 the Aux Relay is activated for the stroke time adjusted with prm#7002, and the counter target setpoint is reloaded and the counter restarted, until the reset command is sent to prm#7005)		
7006	AhIntervalSumScaled	1	-	-	0	R/W	*	Sum enabled bits for the Scaled Amp Hour Counter behavior. If a bit is enabled then its corresponding output is summed to the counting result.	Bitwise selection of the way the Amp Hour Counter will count the ampere hours. 4 bits organized (MSbit..LSbit): r2, f2, r1, f1 Expl.:r1=1, sum (or substract) bit enabled of the reverse of output 1, etc. Expl.: prm#7003 = 0b00000101 (f1,f2 sum) and prm#7004 = 0b00001010 (r1, r2 substract). The ampere hour count result is increased, with the sum amount (f1 and f2) and decreased with subtract amount (r1 and r2). This count result is used to down count the remaining ampere hour parameters prm#2590 and #2591. Note: The down count of prm#2590 and #2591 is stopped, when the ampere hour amount of the reverse has become larger than the forward. It will be continued again, when the amount of forward ampere hours has become larger than that of the reverse amount.		
7007	AhIntervalSubtractScaled	1	-	-	0	R/W	*	Substract enable bits for the Scaled Amp Hour Counter behavior. If a bit is enabled then its corresponding output is subtracted from the counting result.	Bitwise selection of the way the Amp Hour Counter will count the ampere hours. 4 bits organized (MSbit..LSbit): r2, f2, r1, f1 Expl.:r1=1, sum (or substract) bit enabled of the reverse of output 1, etc. Expl.: prm#7003 = 0b00000101 (f1,f2 sum) and prm#7004 = 0b00001010 (r1, r2 substract). The ampere hour count result is increased, with the sum amount (f1 and f2) and decreased with subtract amount (r1 and r2). This count result is used to down count the remaining ampere hour parameters prm#2590 and #2591. Note: The down count of prm#2590 and #2591 is stopped, when the ampere hour amount of the reverse has become larger than the forward. It will be continued again, when the amount of forward ampere hours has become larger than that of the reverse amount.		
7010	AhIntervalHI2	1	-	-	0	R/W	*	Amp Hour Counter 2 target setpoint value MS Word	The Amp Hour Counter 2 uses this target setpoint (prm#7010 and #7011) to determine, when the required ampere hours have been generated during production. The target value is copied to the actual ampere hour parameters (prm#2590 and #2590) and down counted to zero, meaning that the requiered ampere hours have been counted, which will switch on the Aux Relay for a stroke time adjusted with prm#7002.		
7011	AhIntervalLO2	1	-	-	0	R/W	*	Amp Hour Counter 2 target setpoint value LS Word			
7012	AhStrokeTime2	1	0	60000	0	R/W	*	The time (in s) that the Aux Relay is activated, after the Amp Hour Counter has counted the target amount of ampere hours (prm#7000 and #7001) during production			
7013	AhIntervalSum2	1	-	-	0	R/W	*	Sum enabled bits for the Amp Hour Counter 2 behavior. If a bit is enabled then its corresponding output is summed to the counting result.	Bitwise selection of the way the Amp Hour Counter will count the ampere hours. 16 bits organized (MSbit..LSbit): r8, f8,r7, f7,r6, f6,r5, f5,r4, f4,r3, f3,r2, f2, r1, f1 Expl.:r1=1, sum (or substract) bit enabled of the reverse of output 1, etc. Expl.: prm#7003 = 0b00000101 (f1,f2 sum) and prm#7004 = 0b00001010 (r1, r2 substract). The ampere hour count result is increased, with the sum amount (f1 and f2) and decreased with subtract amount (r1 and r2). This count result is used to down count the remaining ampere hour parameters prm#2590 and #2591. Note: The down count of prm#2590 and #2591 is stopped, when the ampere hour amount of the reverse has become larger than the forward. It will be continued again, when the amount of forward ampere hours has become larger than that of the reverse amount.		
7014	AhIntervalSubtract2	1	-	-	0	R/W	*	Substract enable bits for the Amp Hour Counter 2 behavior. If a bit is enabled then its corresponding output is subtracted from the counting result.			
7015	AhIntervalMode2	1	0	2	0	R/W	*	The parameter to start (single run or continues run) and stop the Amp Hour Counter 2	0 = Reset/Stop (to stop and reset the Amp Hour Counter) 1 = Single Shot (the Amp Hour Counter will run only once, after counting down parameters prm#2590 and #2591, the Aux Relay is activated for the stroke time adjusted with prm#7002) 2 = Continuous (the Amp Hour Counter will run multiple times, each time the counter has counted down parameters prm#2590 and #2591 the Aux Relay is activated for the stroke time adjusted with prm#7002, and the counter target setpoint is reloaded and the counter restarted, until the reset command is sent to prm#7005)		

7016	AhIntervalSumScaled2	1	-	-	0	R/W	*	Sum enabled bits for the Scaled Amp Hour Counter behavior. If a bit is enabled then its corresponding output is summed to the counting result.	Bitwise selection of the way the Amp Hour Counter will count the ampere hours. 4 bits organized (MSbit..LSbit): r2, f2, r1, f1 Expl.:r1=1, sum (or substract) bit enabled of the reverse of output 1, etc. Expl.: prm#7003 = 0b00000101 (f1,f2 sum) and prm#7004 = 0b00001010 (r1, r2 substract). The ampere hour count result is increased, with the sum amount (f1 and f2) and decreased with subtract amount (r1 and r2). This count result is used to down count the remaining ampere hour parameters prm#2590 and #2591. Note: The down count of prm#2590 and #2591 is stopped, when the ampere hour amount of the reverse has become larger than the forward. It will be continued again, when the amount of forward ampere hours has become larger than that of the reverse amount.		
7017	AhIntervalSubtractScaled2	1	-	-	0	R/W	*	Substract enable bits for the Scaled Amp Hour Counter behavior. If a bit is enabled then its corresponding output is subtracted from the counting result.	Bitwise selection of the way the Amp Hour Counter will count the ampere hours. 4 bits organized (MSbit..LSbit): r2, f2, r1, f1 Expl.:r1=1, sum (or substract) bit enabled of the reverse of output 1, etc. Expl.: prm#7003 = 0b00000101 (f1,f2 sum) and prm#7004 = 0b00001010 (r1, r2 substract). The ampere hour count result is increased, with the sum amount (f1 and f2) and decreased with subtract amount (r1 and r2). This count result is used to down count the remaining ampere hour parameters prm#2590 and #2591. Note: The down count of prm#2590 and #2591 is stopped, when the ampere hour amount of the reverse has become larger than the forward. It will be continued again, when the amount of forward ampere hours has become larger than that of the reverse amount.		
7100	AhScaledOutputSelect	1	1	8	1	R/W	*	Select output to be scaled for first Ahcounter	1..8=Output1..Output8		
7101	AhScaledOutputSelect2	1	1	8	1	R/W	*	Select output to be scaled for second Ahcounter	1..8=Output1..Output8		
7400	PROFINETstationName	32				R		PROFINET Station Name	Data is read at power-up, power must be cycled after a Profinet IO controller changed the name.		
7500	AnyBusNetworkType	1	-	-	65535	R		Returns networktype	5=Profibus, 128=Modbus_TCP, 133=Ethernet I/P, 65535=no interface present		
7505	AnyBusProfibusAddress	1	0	125	0	R/W	*	Read / Write Profibus address of Anybus interface			
7510	AnyBusIPaddress	4	0	255	0	R/W		Read / Write IP address of Anybus interface	Only activated in case of Ethernet module and DHCP is off		
7520	AnyBusFormatDisc	1	0	1	0	W		Format the file system disc (Webbrowser side) of the ANYBUS compactcom module	1=Format		
7525	AnyBusEnableMail	1	0	1	0	R/W	*	Enable or disable automatic sending of a trip e-mail	1=Enable e-mail, 0=disable sending of e-mail		
7530	AnyBusTestMail	1	0	1	0	R/W		Send test E-mail, Parametrize SMTP on the Web Interface and set from and to E-mail addresses via parameters 7600 and 7700	1=Enable send e-mail, if the parameter is read the amount of filesize in bytes of the E-mail is returned.		
7600	AnyBusEmailFrom	50	-	-	-	R/W	*	Content of "From:" field in e-mail header (source address or name)	example: ASCII coding of info@munk-nl.com; = $6E69, $6F66, $6D40, $6E75, $2D6B, $6C6E, $632E, $6D6F, $0000 , NOTE delimit with '/0' character (null terminated)		
7700	AnyBusEmailTo	50	-	-	-	R/W	*	Content of "To:" field in e-mail header (destination address)	example: ASCII coding of sales@munk-nl.com; =$6173, $656C, $4073, $756D, $6B6E, $6E2D, $2E6C, $6F63, $206D, $0000 , NOTE delimit with '/0' character (null terminated)		
7800	AnyBusCyclicMapRead	50	-	-	-	R/W	*	This parameter contains the mapping of modbus parameters which must be read into cyclic fieldbus processdata.	A zero means not used.		
7850	AnyBusCyclicMapWrite	50	-	-	-	R/W	*	This parameter contains the mapping of modbus parameters which must be written to cyclic fieldbus processdata.	A zero means not used.		
7900	AnyBusCyclicMapLength	50	-	-	-	R/W	*	This parameter contains the length of the modbus parameters which must be read or written fromto cyclic fieldbus processdata. MSbyte is the length of a parameter to be read, LSbyte is the length of a parameter to be written. The index is mapped the same as the AnyBusCyclicMapRead and AnyBusCyclicMapWrite parameter. So length of AnyBusCyclicMapRead[0] is the most significant byte of AnyBusCyclicMapLength[0].	A zero means not used. The Msbyte contains the length of a read parameter, the Lsbyte the length of a write parameter		
7950	AnyBusGSDconfigCount	1	0	20	-	R/W	*	This parameter contains the amount of Profibus GSD configuration bytes which are mapped to parameter 7955 up			
7955	AnyBusGSDconfiguration	10	-	-	-	R/W	*	Each parameter (WORD) contains 2 configuration bytes: 7955 MSB byte#1, 7955 LSB byte#2, 7956 MSB byte#3, LSB byte#4 etc. So a total of 20 bytes are possible			

END

Eepr field: An * indicates that this parameter is stored in the external eeprom

IF Max forward current
IR Max reverse current
VF Max forward voltage
VR Max reverse voltage
MaxSeg Max segment time see Supervisor Parameters: MaxFwdTime, MaxRevTime, MaxDeadTime, MaxHIZTime

1) Segment parameters should be written as a block of 1 to 12 words at once. The number of parameters written will determine the number of used segments!

SegmentTime format: ***16 bits: LLLLMMPPPVVVVVVV***

Level:

LLLL:0000	Level#1
LLLL:0001	Level#2
LLLL:0010	Level#3
LLLL:0011	Level#4
LLLL:0100	Level#5
LLLL:0101	Level#6
LLLL:0110	Level#7
LLLL:0111	Level#8

Segment mode:

MM:00	HIZ/Dead value of LLLL determines HIZ or Dead : 0= HIZ, 1=DEAD e.g. 0001 00 000 1001101 is 77us dead time
MM:01	Fwd
MM:10	Rev
MM:11	Illegal

Prescaler power of 10

PPP: 000	10^0
PPP: 001	10^1
PPP: 010	10^2
PPP: 011	10^3
PPP: 100	10^4

Time Value (mantisse)
VVVVVVV: 0..127d

Time is in us

Example: 3593h = 20ms fwd for level 4

2) In stand alone mode, the supply does not go to stop mode when the DCMode or a SegmentTime is changed.

3) The threshold levels are used pos and neg in relation with the setpoint. Note that always the max pos and min neg level are used to generate the status warning signal too high or too low

4) **Current, Current Density and Surface parameters**

Units and Formulas of Current,Current Density and Surface
Current: Current [A] = Surface [dm^2] * Current Density [A/dm^2] {formula 1}
Note: The unit of the used Surface and Current Density are always related: for example dm^2 and A/dm^2 or mm^2 and A/mm^2, etc

Parameter Format of Current, Current Density and Surface
Format: uppp.vvvv.vvvv.vvvv, (b15-b0, with bit= 0 or 1: u=unit bit, p=prescale bit,v=value bit)
Unit: u, b15 = 0 or 1: Currents in A (bit15=0), Current Density in A/dm^2 (bit15=1), Surface in dm^2 (bit15=0 or 1)
Note: unit of Current Density and Surface are related and selected in VPC
Prescale: ppp, b14-b12: 000b=1x, 001b=0.01x, 010b=0.1x, 011b=1x,100b=10x, 101b=100x
Value: vvvv.vvvv.vvvv, b11-b0: range 000hex-FFFhex=0dec-4095dec
Parameter = value x prescale [Unit]

5) **Surface setpoint parameter example** (prm 5500 = 8292d = 10.0 dm^2):
prm 5500: 0010.0000.0110.0100b = 2064hex = 8292dec
Unit: 0xxx.xxxx.xxxx.xxxx b, b15=0, unit in dm^2
Prescale: x010.xxxx.xxxx.xxxx b, b14-b12, scale: 0.1x
Value: xxxx. 0000.0110.0100 b, b11-b0: 064hex=100d (no unit)
Surface = value x prescale = 100d x 0.1 = 10.0 dm^2[unit related to Current Density and selected in VPC]

6) **Current setpoint parameter example** (prm 1000 = 16829d = 4450 A):
Prm 1000: 0100.0001.1011.1101b = 41BDh = 16829d
Unit: 0xxx.xxxx.xxxx.xxxx b, b15 = 0, unit A
Prescale: x100.xxxx.xxxx.xxxx b, b14-b12 = 100b, prescale: 10x
Value: xxxx. 0001.1011.1101 b, b11-b0 = 1BDh = 445d (no unit)
Current: value x prescale = 445d x 10 = 4450 A

7) **Current Density setpoint parameter example** (prm 1000 = 41062d = 10.2 A/dm^2):
Prm 1000: 1010.0000.0110.0110b = A066h = 41062d
Unit: 1xxx.xxxx.xxxx.xxxx b, b15 =1, unit in A/dm^2[unit is related to Surface and selected in VPC]
Prescale: x010.xxxx.xxxx.xxxx b, b14-b12 = 010b, prescale: 0.1x
Value: xxxx. 0000.0110.0110 b, b11-b0 = 066h = 102d (no unit)
Current Density: value x prescale = 102d x 0.1 = 10.2 A/dm^2 [unit is related to Surface and selected in VPC]

Fault Registers

BEGIN

Fault masks for FaultReg1

BitNr	Fault description	(prm# 300)
0	ERR_FR1_DCLINK_OFF	DClink off input was activated
1	ERR_FR1_DSP_PWM1_GENERATOR	DSP did not find PWM generator #1
2	ERR_FR1_DSP_PWM2_GENERATOR	DSP did not find PWM generator #2
3	ERR_FR1_DSP_ERROR	DSP does not respond to run command or DSP not responding
4	ERR_FR1_DSP_PIC_DEAD	DSP noticed that he IO controller does not respond
5	ERR_FR1_DSP_TICKCOUNT_ERROR	DSP tickcounter does not change (DSP does not run) Fatal not resettable
6	ERR_FR1_INTERNAL_ERROR	An internal error occurred
7	ERR_FR1_EXTCOMM2	No communication found to PC/PLC on control board com-port 2
8	ERR_FR1_CHARGING	Error charging the DC-link
9	ERR_FR1_TEMP_POWERBOARD	Overtemperature of Powerboard
10	ERR_FR1_EXTCOMM1	No communication found to PC/PLC on control board com-port 1
11	ERR_FR1_SYNCHRO	Synchronization lost. (Only supported when supply is in 'Slave' mode).
12	ERR_FR1_TEMP_MAINSCONTROLLER	Mains controller overtemperature
13	ERR_FR1_ZEROBATCH	Attempted to start a 'Zero Batch' or 'Zero Pattern'
14	ERR_FR1_GENERAL_OVERCURRENT	Active if any output has an over current or hardware overcurrent trip (All trips OR-ed)
15	ERR_FR1_GENERAL_OVERVOLTAGE	Active if any output has an over voltage trip (All trips OR-ed)

Fault masks for FaultReg2

BitNr	Fault description	(prm# 301)
0	ERR_FR2_AMPHOURCHECKSUM	AmpHour variables are corrupt
1	ERR_FR2_INT_EEPROM	Internal eeprom data invalid
2	ERR_FR2_EXT_EEPROM	External eeprom data invalid
3	ERR_FR2_EEPROM_FORMAT	Eeprom has been formatted (Format operation=0010)
4	ERR_FR2_BATCH_READ	Crc check invaldid when reading batch from eeprom or BatchReadCommand (prm 4210) > 16
5	ERR_FR2_BATCH_WRITE	Pattern No (prm 4200) zero when writing the batch to memory/eeporm or BatchWriteCommand (prm 4211) > 16.
6	ERR_FR2_PATTERN_READ	Crc check invalid when reading pattern from eeprom or PatReadCommand (prm 4190) > 16
7	ERR_FR2_PATTERN_WRITE	Pattern set invalid when writing to memory/eeprom or BatchWriteCommand (prm 4191) > 16
8	ERR_FR2_IDCLINK_IXT_TRIP1	Tripped on primary DClink current Ixt
9	ERR_FR2_CONTROLSUPPLY	Control voltage timed out on threshold of CtrlVoltageThreshold parameter (9200)
10	ERR_FR2_DCLINK1	Primary Dclink voltage too low
11	ERR_FR2_PLD_1_5_SUPPLY	DSP measured that the 1.5V supply of the PWM generators (PLD's) are too low
12	ERR_FR2_IDCLINK_IXT_TRIP2	Tripped on secundary DClink current Ixt
13	ERR_FR2_DCLINK2	Secundary Dclink voltage too low
14	ERR_FR2_RESERVED	
15	ERR_FR2_SET_CURRENT_EXCEEDED	Current set point value is too high

Fault masks for FaultReg3

BitNr	Fault description	(prm# 302)
0	ERR_FR3_EXTERNAL_TRIP1	External Trip #1
1	ERR_FR3_EXTERNAL_TRIP2	External Trip #2
2	ERR_FR3_PLD_PWM_GENERATOR1	IO controller did not find PWM generator #1, Fatal Error not resettable
3	ERR_FR3_PLD_PWM_GENERATOR2	IO controller did not find PWM generator #2, Fatal Error not resettable
4	ERR_FR3_LOST_FIELDBUS	Lost communication with field bus
5	ERR_FR3_DYNAMIC_OVERCURRENT	A dynamic overcurrent occurred see prm 4600..4603
6	ERR_FR3_RESERVED_7	
7	ERR_FR3_RESERVED_8	
8	ERR_FR3_RESERVED_9	
9	ERR_FR3_RESERVED_10	
10	ERR_FR3_RESERVED_11	
11	ERR_FR3_RESERVED_12	
12	ERR_FR3_RESERVED_13	
13	ERR_FR3_RESERVED_14	
14	ERR_FR3_RESERVED_15	
15	ERR_FR3_RESERVED_16	

Fault masks for DetailedFaults1

BitNr	Fault Description	(prm# 320)
0	ERR_DFR1_HW_TRIP_FWD_OUT1	Output #1 Forward Current Hardware Trip
1	ERR_DFR1_HW_TRIP_REV_OUT1	Output #1 Reverse Current Hardware Trip
2	ERR_DFR1_HW_TRIP_FWD_OUT2	Output #2 Forward Current Hardware Trip
3	ERR_DFR1_HW_TRIP_REV_OUT2	Output #2 Reverse Current Hardware Trip
4	ERR_DFR1_HW_TRIP_FWD_OUT3	Output #3 Forward Current Hardware Trip
5	ERR_DFR1_HW_TRIP_REV_OUT3	Output #3 Reverse Current Hardware Trip
6	ERR_DFR1_HW_TRIP_FWD_OUT4	Output #4 Forward Current Hardware Trip
7	ERR_DFR1_HW_TRIP_REV_OUT4	Output #4 Reverse Current Hardware Trip
8	ERR_DFR1_HW_TRIP_FWD_OUT5	Output #5 Forward Current Hardware Trip
9	ERR_DFR1_HW_TRIP_REV_OUT5	Output #5 Reverse Current Hardware Trip
10	ERR_DFR1_HW_TRIP_FWD_OUT6	Output #6 Forward Current Hardware Trip
11	ERR_DFR1_HW_TRIP_REV_OUT6	Output #6 Reverse Current Hardware Trip
12	ERR_DFR1_HW_TRIP_FWD_OUT7	Output #7 Forward Current Hardware Trip
13	ERR_DFR1_HW_TRIP_REV_OUT7	Output #7 Reverse Current Hardware Trip
14	ERR_DFR1_HW_TRIP_FWD_OUT8	Output #8 Forward Current Hardware Trip
15	ERR_DFR1_HW_TRIP_REV_OUT8	Output #8 Reverse Current Hardware Trip

Fault masks for DetailedFaults2

BitNr	Fault Description	(prm# 321)
0	ERR_DFR2_SW_TRIP_IFWD_1	Measured fwd current level of output #1 is too high
1	ERR_DFR2_SW_TRIP_IREV_1	Measured rev current level of output #1 is too high
2	ERR_DFR2_SW_TRIP_IFWD_2	Measured fwd current level of output #2 is too high
3	ERR_DFR2_SW_TRIP_IREV_2	Measured rev current level of output #2 is too high
4	ERR_DFR2_SW_TRIP_IFWD_3	Measured fwd current level of output #3 is too high
5	ERR_DFR2_SW_TRIP_IREV_3	Measured rev current level of output #3 is too high
6	ERR_DFR2_SW_TRIP_IFWD_4	Measured fwd current level of output #4 is too high
7	ERR_DFR2_SW_TRIP_IREV_4	Measured rev current level of output #4 is too high

8	ERR_DFR2_SW_TRIP_IFWD_5	Measured fwd current level of output #5 is too high
9	ERR_DFR2_SW_TRIP_IREV_5	Measured rev current level of output #5 is too high
10	ERR_DFR2_SW_TRIP_IFWD_6	Measured fwd current level of output #6 is too high
11	ERR_DFR2_SW_TRIP_IREV_6	Measured rev current level of output #6 is too high
12	ERR_DFR2_SW_TRIP_IFWD_7	Measured fwd current level of output #7 is too high
13	ERR_DFR2_SW_TRIP_IREV_7	Measured rev current level of output #7 is too high
14	ERR_DFR2_SW_TRIP_IFWD_8	Measured fwd current level of output #8 is too high
15	ERR_DFR2_SW_TRIP_IREV_8	Measured rev current level of output #8 is too high
	Fault masks for DetailedFaults3	
BitNr	**Fault Description**	**(prm# 322)**
0	ERR_DFR3_SW_TRIP_VFWD_1	Measured fwd voltage of output #1 is too high
1	ERR_DFR3_SW_TRIP_VREV_1	Measured rev voltage of output #1 is too high
2	ERR_DFR3_SW_TRIP_VFWD_2	Measured fwd voltage of output #2 is too high
3	ERR_DFR3_SW_TRIP_VREV_2	Measured rev voltage of output #2 is too high
4	ERR_DFR3_SW_TRIP_VFWD_3	Measured fwd voltage of output #3 is too high
5	ERR_DFR3_SW_TRIP_VREV_3	Measured rev voltage of output #3 is too high
6	ERR_DFR3_SW_TRIP_VFWD_4	Measured fwd voltage of output #4 is too high
7	ERR_DFR3_SW_TRIP_VREV_4	Measured rev voltage of output #4 is too high
8	ERR_DFR3_SW_TRIP_VFWD_5	Measured fwd voltage of output #5 is too high
9	ERR_DFR3_SW_TRIP_VREV_5	Measured rev voltage of output #5 is too high
10	ERR_DFR3_SW_TRIP_VFWD_6	Measured fwd voltage of output #6 is too high
11	ERR_DFR3_SW_TRIP_VREV_6	Measured rev voltage of output #6 is too high
12	ERR_DFR3_SW_TRIP_VFWD_7	Measured fwd voltage of output #7 is too high
13	ERR_DFR3_SW_TRIP_VREV_7	Measured rev voltage of output #7 is too high
14	ERR_DFR3_SW_TRIP_VFWD_8	Measured fwd voltage of output #8 is too high
15	ERR_DFR3_SW_TRIP_VREV_8	Measured rev voltage of output #8 is too high
	Status masks for StatusReg1	
BitNr	**Status code**	**(prm# 310)**
0	ST_SR1_CHARGING	Supply is charging the DC-link. Status is cleared when DC-link reached its voltage
1	ST_SR1_LOADINGDEFAULTS	Busy loading defaults to eeprom
2	ST_SR1_EEPROM_INT_TO_EXT	Busy copying config parameters from internal to external eeprom
3	ST_SR1_EEPROM_EXT_TO_INT	Busy copying config parameters from external to internal eeprom
4	ST_SR1_WAITING	Waiting for Power to be switched off, restart with dipswitch #3 on to initialize the eeprom
5	ST_SR1_DIPSW_FORCED_ADDRESS	Dipswitch #4 is on, MODBUS Address forced to 1 and Baudrate to 19k2
6	ST_SR1_EEPROM_BUSY	Busy Reading/Writing EEPROM
7	ST_SR1_GENERAL_IRMS	This input exceeds the maximum allowed RMS current of a output (detailed in StatusRegs3)
8	ST_SR1_Reserved1	
9	ST_SR1_EXCEEDED_IDCLINK1	Primary DClink current exceeds the maximum allowed value
10	ST_SR1_CONTROLSUPPLY_LOW	Warning Control voltage passes threshold of CtrlVoltageThreshold parameter (9200)
11	ST_SR1_DSP_WATCHDOG	Watchdog of DSP has been active
12	ST_SR1_IOCONTROLLER_WATCHDOG	Watchdog of IOcontroller has been active
13	ST_SR1_GENERAL_THRESHOLD	There is an over-current or current-too-low situation on any output
14	ST_SR1_DSP_STANDALONE	DSP took over complete control
15	ST_SR1_EXCEEDED_IDCLINK2	Secundary DClink current exceeds the maximum allowed value
	Detailed status masks StatusReg2	
BitNr	**Status Description**	**(prm# 311)**
0	ST_SR2_THRESH_IFWD_1	Threshold of fwd current of output #1 is surpassed
1	ST_SR2_THRESH_IREV_1	Threshold of rev current of output #1 is surpassed
2	ST_SR2_THRESH_IFWD_2	Threshold of fwd current of output #2 is surpassed
3	ST_SR2_THRESH_IREV_2	Threshold of rev current of output #2 is surpassed
4	ST_SR2_THRESH_IFWD_3	Threshold of fwd current of output #3 is surpassed
5	ST_SR2_THRESH_IREV_3	Threshold of rev current of output #3 is surpassed
6	ST_SR2_THRESH_IFWD_4	Threshold of fwd current of output #4 is surpassed
7	ST_SR2_THRESH_IREV_4	Threshold of rev current of output #4 is surpassed
8	ST_SR2_THRESH_IFWD_5	Threshold of fwd current of output #5 is surpassed
9	ST_SR2_THRESH_IREV_5	Threshold of rev current of output #5 is surpassed
10	ST_SR2_THRESH_IFWD_6	Threshold of fwd current of output #6 is surpassed
11	ST_SR2_THRESH_IREV_6	Threshold of rev current of output #6 is surpassed
12	ST_SR2_THRESH_IFWD_7	Threshold of fwd current of output #7 is surpassed
13	ST_SR2_THRESH_IREV_7	Threshold of rev current of output #7 is surpassed
14	ST_SR2_THRESH_IFWD_8	Threshold of fwd current of output #8 is surpassed
15	ST_SR2_THRESH_IREV_8	Threshold of rev current of output #8 is surpassed
	Detailed status masks StatusReg3	
BitNr	**Status Description**	**(prm# 312)**
0	ST_SR3_IRMS_1	This input exceeds the maximum allowed RMS current of output 1
1	ST_SR3_IRMS_2	This input exceeds the maximum allowed RMS current of output 2
2	ST_SR3_IRMS_3	This input exceeds the maximum allowed RMS current of output 3
3	ST_SR3_IRMS_4	This input exceeds the maximum allowed RMS current of output 4
4	ST_SR3_IRMS_5	This input exceeds the maximum allowed RMS current of output 5
5	ST_SR3_IRMS_6	This input exceeds the maximum allowed RMS current of output 6
6	ST_SR3_IRMS_7	This input exceeds the maximum allowed RMS current of output 7
7	ST_SR3_IRMS_8	This input exceeds the maximum allowed RMS current of output 8
8	ST_SR3_NO_OUTPUTS_ENABLED	A run command is given, however no outputs are enabled
9	ST_SR3_SUPPLY_OFF_MODE	Unit is in stand-by where the mains contactor is de-energized
10	ST_SR3_Reserved3	
11	ST_SR3_Reserved4	
12	ST_SR3_Reserved5	
13	ST_SR3_Reserved6	
14	ST_SR3_Reserved7	
15	ST_SR3_Reserved8	
END		