MODBUS TABLE ORGANIZATION

Starting Address of the Group Registers (Dec)	Starting Address of the Group Registers (Hex)	System Version (Release)	System Version (Build)	Group Name (Text)	Group Code (Hex)	Group Complexity (Hex)	Group Version (Hex)
36096	8D00			Table Option	F040	D1	101, C
36176	8D50			Alarms	F040	D1	101, C
50512	C550			Measures - Metrology Affected by current and voltage transformers	F040	D2	101, C
50768	C650			Measures - Energies	F040	D2	101, C
51024	C750			Measures - Statistique Affected by current and voltage transformers	F040	D2	101, C
51280	C850			Measures - Metrology No Affected by current and voltage transformers	F040	D2	101, C
51536	C950			Measure - Harmonic THD	F040	D2	101, C
1024	400			Reset	F040	D2	101, C
36352	8E00			Table setup	F040	D2	101, C
57344	E000			Network Settings	F040	D2	101, C
57856	E200			Action System	F040	D2	101, C

MODBUS PROTOCOL DETAILS

Function Code (Dec)	Exception Codes (Dec)	Data Encoding
3	01, 02, 03, 04, 05, 06, 07, 08	"Big Endian" (most significant byte first)
6	01, 02, 03, 04, 05, 06, 07, 08	
16	01, 02, 03, 04, 05, 06, 07, 08	

MODBUS OVER SERIAL DETAILS

Physical Layer	Trasmission Modes	Device Addressing	Baud Rates (bit/s)	Data Bits	Data bits trasmission sequence	Parity	Stop Bits
standard EIA/TIA 485 (RS-485) two-wire configuration	RTU	1÷247	programmable (2400, 4800, 9600, 19200, 38400)	8	Least significant bit first	no, odd, even	1, 2

MASTER/SLAVE COMMUNICATION TIMING

Timer Descrtiption	Timer Value (msec)
Inter-character time-out	< 1,5 character times
Response delay (from master request)	250
Delay Time (between two master trasmissions)	-

REFER ALSO TO: www.modbus.org
- MODBUS over serial line specification and implementation guide V1.02
- MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b

NOTE: File and printed copies of this document are not subject to document change control.

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [bit]	Description	Note	Read Function Codes (Dec)	Data Storing (2)
				(no DISCRETE INPUTS availables)			

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [bit]	Description	Note	Read Function Codes (Dec)	Write Function Codes (Dec)	Data Storing (2)
				(no COILS availables)				

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Type	Scale	Unit	Range	Note	Read Function Code (Dec)	Data Storing (2)
36097	36096	8D00	4		Table Option							
36097	36096	8D00	1		Product option code (bit field) : bit 1: Metering Option bit 2: Communication option						3	
36098	36097	8D01	1		(reserved)						3	
36099	36098	8D02	1		Option Slot 1 0xFF : None 0x0 : Metering option 0x1 : Communication option						3	
36100	36099	8D03	1		Option Slot 2 0xFF : None 0x0 : Metering option 0x1 : Communication option						3	
36177	36176	8D50	1		Table Option							
36177	36176	8D50	1		**Current alarm on lower threshold cause:** 0 : No Alarm / 1 : I1 / 2 : I2 / 3 : I3 / 4 : IN / 5 : U12 / 6 : U23 / 7 : U31 / 8 : ∑P+ / 9 : ∑Q+ / 10 : ∑S / 11 : F / 12 : ∑PFL / 15: thdI1 / 16: thdI2 / 17 : thdI3 / 18 : thdU12 / 19 : thdU23 / 20 : thdU31 / 21 : Hour / 22: V1 / 23 : V2 / 24 : V3 / 26: thdV1 / 27 : thdV2 / 28 : thd V3 / 31 : ∑PFC / 32 : T°C 1			0 : - 1 / 2 / 3 / 4 : mA 5 / 6 / 7 : mV 8 : mW 9 : mVAr 10 : mVA 11 : Hz/1000 12 : - 15 / 16 / 17 : /1000 18 / 19 / 20 : /1000 21 : Hour/100 22 / 23 / 24 : mV 31: - 32 : °C/10			3	
36178	36177	8D51	2		**Current alarm on lower threshold : min value**			-			3	
36179	36178	8D52	1		**Current alarm on upper threshold cause:** 0 : No Alarm / 1 : I1 / 2 : I2 / 3 : I3 / 4 : IN / 5 : U12 / 6 : U23 / 7 : U31 / 8 : ∑P+ / 9 : ∑Q+ / 10 : ∑S / 11 : F / 12 : ∑PFL / 15: thdI1 / 16: thdI2 / 17 : thdI3 / 18 : thdU12 / 19 : thdU23 / 20 : thdU31 / 21 : Hour / 22: V1 / 23 : V2 / 24 : V3 / 26: thdV1 / 27 : thdV2 / 28 : thd V3 / 31 : ∑PFC / 32 : T°C 1			0 : - 1 / 2 / 3 / 4 : mA 5 / 6 / 7 : mV 8 : mW 9 : mVAr 10 : mVA 11 : Hz/1000 12 : - 15 / 16 / 17 : /1000 18 / 19 / 20 : /1000 21 : Hour/100 22 / 23 / 24 : mV 31: - 32 : °C/10			3	
36180	36179	8D53	2		**Current alarm on upper threshold : max value**			-			3	
36181	36180	8D54	1		**Current alarm duration**			s			3	

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Type	Scale	Unit	Range	Note	Read Function Code (Dec)	Data Storing (2)
50513	50512	C550	54		Measure - Metrology Affected by current and voltage transformers							
50513	50512	C550	2		Hour Meter	unsigned long	0,01	h		NOTE1	3	
50515	50514	C552	2		Phase to Phase Voltage: U12	unsigned long	0,01	V		NOTE1	3	
50517	50516	C554	2		Phase to Phase Voltage: U23	unsigned long	0,01	V		NOTE1	3	
50519	50518	C556	2		Phase to Phase Voltage: U31	unsigned long	0,01	V		NOTE1	3	
50521	50520	C558	2		Simple voltage : V1	unsigned long	0,01	V		NOTE1	3	
50523	50522	C55A	2		Simple voltage : V2	unsigned long	0,01	V		NOTE1	3	
50525	50524	C55C	2		Simple voltage : V3	unsigned long	0,01	V		NOTE1	3	
50527	50526	C55E	2		Frequency : F	unsigned long	0,01	Hz		NOTE1	3	
50529	50528	C560	2		Current : I1	unsigned long	1	mA		NOTE1	3	
50531	50530	C562	2		Current : I2	unsigned long	1	mA		NOTE1	3	
50533	50532	C564	2		Current : I3	unsigned long	1	mA		NOTE1	3	
50535	50534	C566	2		Neutral Current : In	unsigned long	0,01	mA		NOTE1	3	
50537	50536	C568	\		Σ active Power +/- : P	signed long	0,01	kW		NOTE2	3	
50539	50538	C56A	2		Σ reactive Power +/- : Q	signed long	0,01	kvar		NOTE2	3	
50541	50540	C56C	2		Σ apparent power : S	signed long	0,01	kVA		NOTE2	3	
50543	50542	C56E	2		Σ power factor : -: leading et + : lagging : PF	signed long	0,001			NOTE2	3	
50545	50544	C570	2		Active Power phase 1 +/- : P1	signed long	0,01	kW		NOTE2	3	
50547	50546	C572	2		Active Power phase 2 +/- : P2	signed long	0,01	kW		NOTE2	3	
50549	50548	C574	2		Active Power phase 3 +/- : P3	signed long	0,01	kW		NOTE2	3	
50551	50550	C576	2		Reactive Power phase 1 +/- : Q1	signed long	0,01	kvar		NOTE2	3	
50553	50552	C578	2		Reactive Power phase 2 +/- : Q2	signed long	0,01	kvar		NOTE2	3	
50555	50554	C57A	2		Reactive Power phase 3 +/- : Q3	signed long	0,01	kvar		NOTE2	3	
50557	50556	C57C	2		Apparent power phase 1 : S1	unsigned long	0,01	kVA		NOTE1	3	
50559	50558	C57E	2		Apparent power phase 2 : S2	unsigned long	0,01	kVA		NOTE1	3	
50561	50560	C580	2		Apparent power phase 3 : S3	unsigned long	0,01	kVA		NOTE1	3	
50563	50562	C582	2		Power Factor phase 1 -: leading and + : lagging : PF1	signed long	0,001			NOTE2	3	
50565	50564	C584	2		Power Factor phase 2 -: leading and + : lagging : PF2	signed long	0,001			NOTE2	3	
50567	50566	C586	2		Power Factor phase 3 -: leading and + : lagging : PF3	signed long	0,001			NOTE2	3	
50769	50768	C650	6		Measure - Energies							
50769	50768	C650	2		Hour meter	unsigned long	0,01	h		NOTE1	3	
50781	50780	C65C	2		Partial Positive Active Energy: Ea+	unsigned long	1	kWh		NOTE1	3	
50783	50782	C65E	2		Partial Positive Reactive Energy: Er +	unsigned long	1	kvarh		NOTE1	3	
51025	51024	C750	18		Measure - Statistique Affected by current and voltage transformers							
51071	51070	C77E	2		Max/avg I1	unsigned long	1	mA		NOTE1	3	
51073	51072	C780	2		Max/avg I2	unsigned long	1	mA		NOTE1	3	
51075	51074	C782	2		Max/avg I3	unsigned long	1	mA		NOTE1	3	
51077	51076	C784	2		Max/avg In	unsigned long	1	mA		NOTE1	3	
51079	51078	C786	2		Max/avg P+	unsigned long	0,01	kW		NOTE1	3	
51081	51080	C788	2		Max/avg P-	unsigned long	0,01	kW		NOTE1	3	
51083	51082	C78A	2		Max/avg Q+	unsigned long	0,01	kvar		NOTE1	3	
51085	51084	C78C	2		Max/avg Q-	unsigned long	0,01	kvar		NOTE1	3	
51087	51086	C78E	2		Max/avg S	unsigned long	0,01	kVA		NOTE1	3	
51281	51280	C850	30		Measure - Metrology No Affected by current and voltage transformers							
51281	51280	C850	1		Hour Meter	unsigned word	1	h		NOTE1	3	
51282	51281	C851	1		Phase to Phase Voltage: U12	unsigned word	0,01	V		NOTE1	3	
51283	51282	C852	1		Phase to Phase Voltage: U23	unsigned word	0,01	V		NOTE1	3	
51284	51283	C853	1		Phase to Phase Voltage: U31	unsigned word	0,01	V		NOTE1	3	
51285	51284	C854	1		Simple voltage : V1	unsigned word	0,01	V		NOTE1	3	
51286	51285	C855	1		Simple voltage : V2	unsigned word	0,01	V		NOTE1	3	

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Type	Scale	Unit	Range	Note	Read Function Code (Dec)	Data Storing (2)
51287	51286	C856	1		Simple voltage : V3	unsigned word	0,01	V		NOTE1	3	
51288	51287	C857	1		Frequency : F	unsigned word	0,01	Hz		NOTE1	3	
51289	51288	C858	1		Current : I1	unsigned word	1	mA		NOTE1	3	
51290	51289	C859	1		Current : I2	unsigned word	1	mA		NOTE1	3	
51291	51290	C85A	1		Current : I3	unsigned word	1	mA		NOTE1	3	
51292	51291	C85B	1		Neutral Current : In	unsigned word	1	mA		NOTE1	3	
51293	51292	C85C	1		Σ active Power +/- : P	signed word	0,01	kW		NOTE2	3	
51294	51293	C85D	1		Σ reactive Power +/- : Q	signed word	0,01	kvar		NOTE2	3	
51295	51294	C85E	1		Σ apparent power : S	unsigned word	0,01	kVA		NOTE1	3	
51296	51295	C85F	1		Σ power factor : -: leading and + : lagging : PF	signed word	0,001			NOTE2	3	
51297	51296	C860	1		Active Power phase 1 +/- : P1	signed word	0,01	kW		NOTE2	3	
51298	51297	C861	1		Active Power phase 2 +/- : P2	signed word	0,01	kW		NOTE2	3	
51299	51298	C862	1		Active Power phase 3 +/- : P3	signed word	0,01	kW		NOTE2	3	
51300	51299	C863	1		Reactive Power phase 1 +/- : Q1	signed word	0,01	kvar		NOTE2	3	
51301	51300	C864	1		Reactive Power phase 2 +/- : Q2	signed word	0,01	kvar		NOTE2	3	
51302	51301	C865	1		Reactive Power phase 3 +/- : Q3	signed word	0,01	kvar		NOTE2	3	
51303	51302	C866	1		Apparent power phase 1 : S1	unsigned word	0,01	kVA		NOTE1	3	
51304	51303	C867	1		Apparent power phase 2 : S2	unsigned word	0,01	kVA		NOTE1	3	
51305	51304	C868	1		Apparent power phase 3 : S3	unsigned word	0,01	kVA		NOTE1	3	
51306	51305	C869	1		Power Factor phase 1 -: leading and + : lagging : PF1	signed word	0,001			NOTE2	3	
51307	51306	C86A	1		Power Factor phase 2 -: leading and + : lagging : PF2	signed word	0,001			NOTE2	3	
51308	51307	C86B	1		Power Factor phase 3 -: leading and + : lagging : PF3	signed word	0,001			NOTE2	3	
51312	51311	C86F	1		Total Positive Active Energy (no resetable) : Ea+	unsigned word	1	MWh		NOTE1	3	
51314	51313	C871	1		Total Negative Active Energy (no resetable) : Ea-	unsigned word	1	MWh		NOTE1	3	
51537	51536	C950	10		Measure - Harmonic THD							
51537	51536	C950	1		thd U12	unsigned word	0,1	%		NOTE1	3	
51538	51537	C951	1		thd U23	unsigned word	0,1	%		NOTE1	3	
51539	51538	C952	1		thd U31	unsigned word	0,1	%		NOTE1	3	
51540	51539	C953	1		thd V1	unsigned word	0,1	%		NOTE1	3	
51541	51540	C954	1		thd V2	unsigned word	0,1	%		NOTE1	3	
51542	51541	C955	1		thd V3	unsigned word	0,1	%		NOTE1	3	
51543	51542	C956	1		thd I1	unsigned word	0,1	%		NOTE1	3	
51544	51543	C957	1		thd I2	unsigned word	0,1	%		NOTE1	3	
51545	51544	C958	1		thd I3	unsigned word	0,1	%		NOTE1	3	
51546	51545	C959	1		thd In	unsigned word	0,1	%		NOTE1	3	

NOTE 1
value if not available (0xFFFFFFFF for long, 0xFFFF for word)
NOTE 2
value if not available (0x7FFFFFFF for long, 0x7FFF for word)

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Type	Scale	Unit	Range	Note	Read Function Code (Dec)	Data Storing (2)

EXAMPLE: Read the "Simple voltage: V1" value from device having Modbus address 5

Modbus Request: 05 03 **C558** 0002 CRC

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Type	Scale	Unit	Range	Note	Read Function Code (Dec)	Data Storing (2)
50521	50520	C558	2		Simple voltage : V1	unsigned long	0,01	V		NOTE1	3	

Modbus Reponse: 05 03 02 **08FC** CRC

"Simple voltage" value:

1) Register Value 08FC is in Hexadecimal
2) Value 08FC correspond to 2300 in Decimal
3) "Simple voltage: V1" register has **Scale=0,01**
4) Real value=Register Value * Scale
5) ⇨ "Simple voltage: V1" value is 2300*0,01=**230 V**

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Scale	Unit	Range	Note	Read Function Codes (Dec)	Write Function Codes (Dec)	Data Storing (2)
1025	1024	400	1		Reset							
1025	1024	400	1		Reset : Max 4I : 0x1 Max P+,Q+,S : 0x2 kWh+ : 0x80 kvarh+ : 0x100 All parameters : 0x1000				These values could be combine all		6	
36353	36352	8E00	17		Table setup							
36353	36352	8E00	1		Network : 0 : 1BL 1 : 2BL 2 : 3BL 3 : 3NBL 4 : 4BL 5 : 4NBL					3	6,16	
36354	36353	8E01	1		Current Transformer secondary : 1: 1 A 5: 5 A		A			3	6,16	
36355	36354	8E02	1		Current Transformer primary		A			3	6,16	
36356	36355	8E03	1		Reserved					3	6,16	
36357	36356	8E04	1		Synchronisation of I AVG/MAX: 2 : 2 seconds 10 : 10 seconds 300 : 5 minutes 480 : 8 minutes 600 : 10 Minutes 900 : 15 minutes 1200 : 20 minutes 1800 : 30 minutes 3600 : 60 minutes					3	6,16	
36358	36357	8E05	1		Synchronisation of P/Q/S AVG/MAX 10 : 10 seconds 300 : 5 minutes 480 : 8 minutes 600 : 10 Minutes 900 : 15 minutes 1200 : 20 minutes 1800 : 30 minutes 3600 : 60 minutes					3	6,16	
36359	36358	8E06	1		OUT 1 : pulse output allocation : 0 : kWh+ 1 : kvarh + 2 :Alarm 3 : Command					3	6,16	
36360	36359	8E07	1		OUT 1 : pulse output value : 0 : 0,1 kWh/kvarh 1 : 1 kWh/kvarh 2 : 10 kWh/kvarh 3 : 100 kWh/kvarh 4 : 1000 kWh/kvarh 5 : 10000 kWh/kvarh					3	6,16	
36361	36360	8E08	1		OUT 1 : pulse output duration : 1 : 100ms - 2 : 200ms 3 : 300ms - 4 : 400ms 5 : 500ms - 6 : 600ms 7 : 700ms - 8 : 800ms 9 : 900ms					3	6,16	

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Scale	Unit	Range	Note	Read Function Codes (Dec)	Write Function Codes (Dec)	Data Storing (2)
36362	36361	8E09	1		Hour meter allocation 1 : Auxiliary power supply 2 : Currents 3 : phase to phase voltage					3	6,16	
36363	36362	8E0A	1		Hour meter trigger threshold		A/V			3	6,16	
36364	36363	8E0B	1		Alarm Type : 1 : I 2 : In 3 : U 4 : V 5 : ∑P+ 6 : ∑Q+ 7 : ∑S+ 8 : ∑PFC 9 : ∑PFL 5 : P 6 : Q 7 : S 8 : CPF 9 : LPF 10 : THDU 11 : THDV 12 : THDI 13 : HOUR 14 : F 15 : Internal temperature					3	6,16	
36365	36364	8E0C	1		Alarm Specified time (0-999)					3	6,16	
36366	36365	8E0D	1		Alarm upper Threshold					3	6,16	
36367	36366	8E0E	1		Alarm Lower Threshold					3	6,16	
36368	36367	8E0F	1		Alarm Hysteresis(0-99)					3	6,16	
36369	36368	8E10	1		Relay State : 0 : Open 1 : Closed					3	6,16	
57345	57344	E000	3		Network Settings							
57345	57344	E000	1		Network Type : 0 : 1BL 1 : 2BL 2 : 3BL 3 : 3NBL 4 : 4BL 5 : 4NBL				value if not available = 0xFFFF	3	6,16	
57346	57345	E001	1		Current Transformer secondary : 1: 1 A 5: 5 A		A		value if not available = 0xFFFF	3	6,16	
57347	57346	E002	1		Current Transformer primary		A		value if not available = 0xFFFF	3	6,16	
57857	57856	E200	1		Action System							
57857	57856	E200	1		Action : 0xA1 : Product Configuration storage 0xB2 : Produit reboot				NOTE4		6	

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Scale	Unit	Range	Note	Read Function Codes (Dec)	Write Function Codes (Dec)	Data Storing (2)

NOTE 4 - Configuration Procedure
1) Write the new Configuration (one or more registers...)
2) Save/Confirm the new Configuration (writing the value **0xA1** in the register 0xE200)
3) Reset the device (writing the **0xB2** in the register 0xE200). The new Configuration is now available
4) The new Configuration is now available