Mikro® Power Meter

DPM680

Modbus Communication Manual

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1 INTRODUCTION

The DPM680 Digital Power Meter is equipped with multiple communication capabilities for SCADA and remote monitoring purposes. In particular, its Modbus communication capabilities can be realised either through the Modbus RTU or Modbus TCP/IP system. As a supplement to the DPM680/B Instruction Manual for aiding the configuration and commissioning of these systems, this manual contains the details of the available Modbus registers.

Note the details contained herein are based on the DPM680 power meter firmware version 4.03. Where conflict arises, the DPM680/B Instruction Manual shall take precedence.

2 DATA TYPE

By default, the data format in each register is unsigned 16-bit word. Shorter data may be encoded in the unsigned 8-bit byte format whereas longer data may be encoded either in the unsigned 32-bit double word format, signed 32-bit integer format or signed 64-bit long integer format. Two's complement is used to represent signed numbers. The nomenclature used in this manual is shown in Table 1.

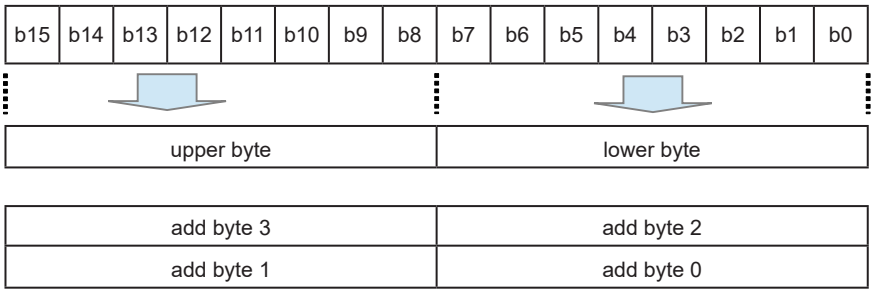
Table 1: Data length nomenclature

Date length	Unsigned	Signed
4-bit	nibble	-
8-bit	byte	-
16-bit	word	short
32-bit	dword	int
64-bit	qword	long

For data with length shorter than 16 bits, the upper unused bits, nibbles or bytes can be ignored. In cases where multiple registers are required, the big endian convention shall apply unless otherwise specified.

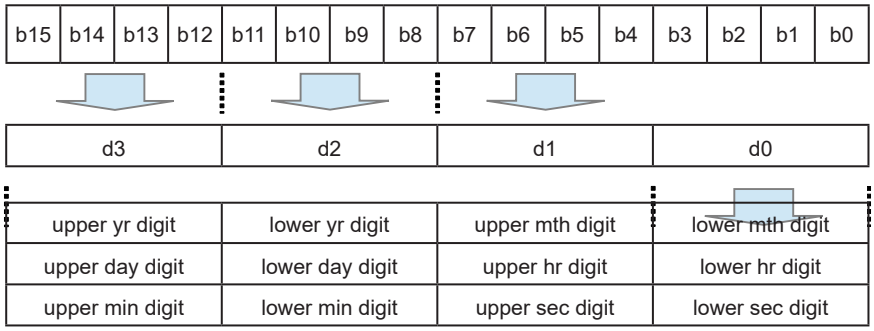
For composite words used in IP address and subnet mask registers, each word is partitioned into upper and lower bytes where 4 consecutive bytes collectively form the address as shown in Fig 1 where b denotes bit.

Fig 1: IP and subnet partitioning



In Binary Coded Decimal or BCD data, the data is partitioned into nibbles (4-bit blocks) and each nibble represents a digit (from 0 to 9) where the resulting sequence of digits represent a whole decimal number. This format is used in the date and time registers. In composite words used in time stamp registers, the data format is shown in Fig 2 where b and d denote bit and digit.

Fig 2: Time stamp partitioning



3 LIST OF REGISTERS

Tables 2, 3, 4, 5, 6 and 7 show the read only variables (function code 0x03 or 0x04) for device & communication info, operations, power factor, harmonics, time-stamped data and energy respectively whereas Table 8 shows the read and write variables (function codes 0x03, 0x04 or 0x06) for the settings data.

Table 2: Device and communication info registers

	Read Only (function code 0x03 or $04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Device Info	0000	Device type – main	word	0x0000 ; 0x0003 ; 0x0002	-
	0001				
	0002				
	0003	Device type – sub	word	0x0000	-
	0004	Version number- main	word	0x0000 ; 0x0002	-
	0005				
	0006	Version number- sub	word	0x0000 ; 0x0000	-
	0007				
Communication Info	1000	Device ID address	byte	0x01	-
	1001	Parity selection	byte	0=none, 1 stop bit 1=none, 2 stop bit 2=odd, 1 stop bit 3=even, 1 stop bit	0 to 3
	1002	Baudrate selection	byte	1=300 2=600 3=1200 4=2400 5=4800 6=9600 7=19200 8=38400	0 to 8
	1003	IP Address	word	0x00 | 0x00 ; 0x00 | 0x00	0 to 0xFF | 0 to 0xFF ; 0 to 0xFF | 0 to 0xFF
	1004				
	1005	Subnet mask	word	0x00 | 0x00 ; 0x00 | 0x00	0 to 0xFF | 0 to 0xFF ; 0 to 0xFF | 0 to 0xFF
	1006				

Table 3: Operations data registers

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Operations Data	4000	Real energy	long	1Wh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	4001				
	4002				
	4003				
	4004	Apparent energy	long	1VAh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	4005				
	4006				
	4007				
	4008	Reactive energy	long	1VArh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	4009				
	4010				
	4011				
	4012	Total real power	int	1W	-0x7FFFFFFF to +0x7FFFFFFF
	4013				
	4014	Total apparent power	int	1VA	-0x7FFFFFFF to +0x7FFFFFFF
	4015				
	4016	Total reactive power	int	1VAr	-0x7FFFFFFF to +0x7FFFFFFF
	4017				
	4018	Total power factor**	word	0.001	0 to 1000
	4019	Frequency	word	0.01Hz	4500 to 6500

Table 3: Operations data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Operations Data	4020	Instantaneous current A	dword	0.01A	0 to 0xFFFFFFFF
	4021				
	4022	Instantaneous current B	dword	0.01A	0 to 0xFFFFFFFF
	4023				
	4024	Instantaneous current C	dword	0.001A	0 to 0xFFFFFFFF
	4025				
	4026	instantaneous current N	dword	0.001A	0 to 0xFFFFFFFF
	4027				
	4028	Voltage line AB	dword	0.1V	0 to 0xFFFFFFFF
	4029				
	4030	Voltage line BC	dword	0.1V	0 to 0xFFFFFFFF
	4031				
	4032	Voltage line AC	dword	0.1V	0 to 0xFFFFFFFF
	4033				
	4034	Voltage phase AN	dword	0.1V	0 to 0xFFFFFFFF
	4035				
	4036	Voltage phase BN	dword	0.1V	0 to 0xFFFFFFFF
	4037				
	4038	Voltage phase CN	dword	0.1V	0 to 0xFFFFFFFF
	4039				
	4040	Real power A	int	1W	-0x7FFFFFFF to +0x7FFFFFFF
	4041				
	4042	Real power B	int	1W	-0x7FFFFFFF to +0x7FFFFFFF
	4043				
	4044	Real power C	int	1W	-0x7FFFFFFF to +0x7FFFFFFF
	4045				
	4046	Apparent power A	int	1VA	-0x7FFFFFFF to +0x7FFFFFFF
	4047				
	4048	Apparent power B	int	1VA	-0x7FFFFFFF to +0x7FFFFFFF
	4049				
	4050	Apparent power C	int	1VA	-0x7FFFFFFF to +0x7FFFFFFF
	4051				
	4052	Reactive power A	int	1VAr	-0x7FFFFFFF to +0x7FFFFFFF
	4053				
	4054	Reactive power B	int	1VAr	-0x7FFFFFFF to +0x7FFFFFFF
	4055				
	4056	Reactive power C	int	1VAr	-0x7FFFFFFF to +0x7FFFFFFF
	4057				
	4058	Current demand A	dword	0.001Arms	0 to 0xFFFFFFFF
	4059				
	4060	Current demand B	dword	0.001Arms	0 to 0xFFFFFFFF
	4061				
	4062	Current demand C	dword	0.001Arms	0 to 0xFFFFFFFF
	4063				
	4064	Real power demand	int	1W	-0x7FFFFFFF to +0x7FFFFFFF
	4065				

Table 3: Operations data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Operations Data	4066	Reactive power demand	int	1VAr	-0x7FFFFFFF to +0x7FFFFFFF
	4067				
	4068	Apparent power demand	int	1VA	-0x7FFFFFFF to +0x7FFFFFFF
	4069				
	4070	Positive sequence current	dword	0.001A	0 to 0xFFFFFFFF
	4071				
	4072	Negative sequence current	dword	0.001A	0 to 0xFFFFFFFF
	4073				
	4074	Zero sequence current	dword	0.001A	0 to 0xFFFFFFFF
	4075				
	4076	Positive sequence phase voltage	dword	0.1V	0 to 0xFFFFFFFF
	4077				
	4078	Negative sequence phase voltage	dword	0.1V	0 to 0xFFFFFFFF
	4079				
	4080	Zero sequence phase voltage	dword	0.1V	0 to 0xFFFFFFFF
	4081				
	4082	Current THD A**	word	0.1%	0 to 1000
	4083	Current THD B**	word	0.1%	0 to 1000
	4084	Current THD C**	word	0.1%	0 to 1000
	4085	Voltage THD A**	word	0.1%	0 to 1000
	4086	Voltage THD B**	word	0.1%	0 to 1000
	4087	Voltage THD C**	word	0.1%	0 to 1000

Table 4: Power factor data registers

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Power Factor Data	4153	Power factor A**	word	0.001	0 to 1000
	4154	Power factor sector A**	byte	0=resistive 1=inductive 2=capacitive	0 to 2
	4155	Power factor B**	word	0.001	0 to 1000
	4156	Power factor sector B**	byte	0=resistive 1=inductive 2=capacitive	0 to 2
	4157	Power factor C**	word	0.001	0 to 1000
	4158	Power factor sector C**	byte	0=resistive 1=inductive 2=capacitive	0 to 2
	4159	Total power factor**	word	0.001	0 to 1000
	4160	Total power factor sector**	byte	0=resistive 1=inductive 2=capacitive	0 to 2
	4161	Displacement power factor A**	word	0.001	0 to 1000
	4162	Displacement power factor sector A**	byte	0=resistive 1=inductive 2=capacitive	0 to 2
	4163	Displacement power factor B**	word	0.001	0 to 1000
	4164	Displacement power factor sector B**	byte	0=resistive 1=inductive 2=capacitive	0 to 2
	4165	Displacement power factor C**	word	0.001	0 to 1000
	4166	Displacement power factor sector C**	byte	0=resistive 1=inductive 2=capacitive	0 to 2

*** for indeterminate power factor and total harmonic distortion data, 0xFFFF will be returned*

Table 5: Harmonics data registers

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Harmonics Data	4200	Current fundamental harmonic A	byte	1%	0 to 100
	4201	Current 2nd harmonic A	byte	1%	0 to 100
	4202	Current 3rd harmonic A	byte	1%	0 to 100
	4203	Current 4th harmonic A	byte	1%	0 to 100
	4204	Current 5th harmonic A	byte	1%	0 to 100
	4205	Current 6th harmonic A	byte	1%	0 to 100
	4206	Current 7th harmonic A	byte	1%	0 to 100
	4207	Current 8th harmonic A	byte	1%	0 to 100
	4208	Current 9th harmonic A	byte	1%	0 to 100
	4209	Current 10th harmonic A	byte	1%	0 to 100
	4210	Current 11th harmonic A	byte	1%	0 to 100
	4211	Current 12th harmonic A	byte	1%	0 to 100
	4212	Current 13th harmonic A	byte	1%	0 to 100
	4213	Current 14th harmonic A	byte	1%	0 to 100
	4214	Current 15th harmonic A	byte	1%	0 to 100
	4215	Current 16th harmonic A	byte	1%	0 to 100
	4216	Current 17th harmonic A	byte	1%	0 to 100
	4217	Current 18th harmonic A	byte	1%	0 to 100
	4218	Current 19th harmonic A	byte	1%	0 to 100
	4219	Current 20th harmonic A	byte	1%	0 to 100
	4220	Current 21st harmonic A	byte	1%	0 to 100
	4221	Current 22nd harmonic A	byte	1%	0 to 100
	4222	Current 23rd harmonic A	byte	1%	0 to 100
	4223	Current 24th harmonic A	byte	1%	0 to 100
	4224	Current 25th harmonic A	byte	1%	0 to 100
	4225	Current 26th harmonic A	byte	1%	0 to 100
	4226	Current 27th harmonic A	byte	1%	0 to 100
	4227	Current 28th harmonic A	byte	1%	0 to 100
	4228	Current 29th harmonic A	byte	1%	0 to 100
	4229	Current 30th harmonic A	byte	1%	0 to 100
	4230	Current 31st harmonic A	byte	1%	0 to 100
	4231	Current 32nd harmonic A	byte	1%	0 to 100
	4232	Current fundamental harmonic B	byte	1%	0 to 100
	4233	Current 2nd harmonic B	byte	1%	0 to 100
	4234	Current 3rd harmonic B	byte	1%	0 to 100
	4235	Current 4th harmonic B	byte	1%	0 to 100
	4236	Current 5th harmonic B	byte	1%	0 to 100
	4237	Current 6th harmonic B	byte	1%	0 to 100
	4238	Current 7th harmonic B	byte	1%	0 to 100
	4239	Current 8th harmonic B	byte	1%	0 to 100
	4240	Current 9th harmonic B	byte	1%	0 to 100
	4241	Current 10th harmonic B	byte	1%	0 to 100
	4242	Current 11th harmonic B	byte	1%	0 to 100
	4243	Current 12th harmonic B	byte	1%	0 to 100
	4244	Current 13th harmonic B	byte	1%	0 to 100
	4245	Current 14th harmonic B	byte	1%	0 to 100

Table 5: Harmonics data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Harmonics Data	4246	Current 15th harmonic B	byte	1%	0 to 100
	4247	Current 16th harmonic B	byte	1%	0 to 100
	4248	Current 17th harmonic B	byte	1%	0 to 100
	4249	Current 18th harmonic B	byte	1%	0 to 100
	4250	Current 19th harmonic B	byte	1%	0 to 100
	4251	Current 20th harmonic B	byte	1%	0 to 100
	4252	Current 21st harmonic B	byte	1%	0 to 100
	4253	Current 22nd harmonic B	byte	1%	0 to 100
	4254	Current 23rd harmonic B	byte	1%	0 to 100
	4255	Current 24th harmonic B	byte	1%	0 to 100
	4256	Current 25th harmonic B	byte	1%	0 to 100
	4257	Current 26th harmonic B	byte	1%	0 to 100
	4258	Current 27th harmonic B	byte	1%	0 to 100
	4259	Current 28th harmonic B	byte	1%	0 to 100
	4260	Current 29th harmonic B	byte	1%	0 to 100
	4261	Current 30th harmonic B	byte	1%	0 to 100
	4262	Current 31st harmonic B	byte	1%	0 to 100
	4263	Current 32nd harmonic B	byte	1%	0 to 100
	4264	Current fundamental harmonic C	byte	1%	0 to 100
	4265	Current 2nd harmonic C	byte	1%	0 to 100
	4266	Current 3rd harmonic C	byte	1%	0 to 100
	4267	Current 4th harmonic C	byte	1%	0 to 100
	4268	Current 5th harmonic C	byte	1%	0 to 100
	4269	Current 6th harmonic C	byte	1%	0 to 100
	4270	Current 7th harmonic C	byte	1%	0 to 100
	4271	Current 8th harmonic C	byte	1%	0 to 100
	4272	Current 9th harmonic C	byte	1%	0 to 100
	4273	Current 10th harmonic C	byte	1%	0 to 100
	4274	Current 11th harmonic C	byte	1%	0 to 100
	4275	Current 12th harmonic C	byte	1%	0 to 100
	4276	Current 13th harmonic C	byte	1%	0 to 100
	4277	Current 14th harmonic C	byte	1%	0 to 100
	4278	Current 15th harmonic C	byte	1%	0 to 100
	4279	Current 16th harmonic C	byte	1%	0 to 100
	4280	Current 17th harmonic C	byte	1%	0 to 100
	4281	Current 18th harmonic C	byte	1%	0 to 100
	4282	Current 19th harmonic C	byte	1%	0 to 100
	4283	Current 20th harmonic C	byte	1%	0 to 100
	4284	Current 21st harmonic C	byte	1%	0 to 100
	4285	Current 22nd harmonic C	byte	1%	0 to 100
	4286	Current 23rd harmonic C	byte	1%	0 to 100
	4287	Current 24th harmonic C	byte	1%	0 to 100
	4288	Current 25th harmonic C	byte	1%	0 to 100
	4289	Current 26th harmonic C	byte	1%	0 to 100
	4290	Current 27th harmonic C	byte	1%	0 to 100
	4291	Current 28th harmonic C	byte	1%	0 to 100

Table 5: Harmonics data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Harmonics Data	4292	Current 29th harmonic C	byte	1%	0 to 100
	4293	Current 30th harmonic C	byte	1%	0 to 100
	4294	Current 31st harmonic C	byte	1%	0 to 100
	4295	Current 32nd harmonic C	byte	1%	0 to 100
	4296	Voltage fundamental harmonic AN	byte	1%	0 to 100
	4297	Voltage 2nd harmonic AN	byte	1%	0 to 100
	4298	Voltage 3rd harmonic AN	byte	1%	0 to 100
	4299	Voltage 4th harmonic AN	byte	1%	0 to 100
	4300	Voltage 5th harmonic AN	byte	1%	0 to 100
	4301	Voltage 6th harmonic AN	byte	1%	0 to 100
	4302	Voltage 7th harmonic AN	byte	1%	0 to 100
	4303	Voltage 8th harmonic AN	byte	1%	0 to 100
	4304	Voltage 9th harmonic AN	byte	1%	0 to 100
	4305	Voltage 10th harmonic AN	byte	1%	0 to 100
	4306	Voltage 11th harmonic AN	byte	1%	0 to 100
	4307	Voltage 12th harmonic AN	byte	1%	0 to 100
	4308	Voltage 13th harmonic AN	byte	1%	0 to 100
	4309	Voltage 14th harmonic AN	byte	1%	0 to 100
	4310	Voltage 15th harmonic AN	byte	1%	0 to 100
	4311	Voltage 16th harmonic AN	byte	1%	0 to 100
	4312	Voltage 17th harmonic AN	byte	1%	0 to 100
	4313	Voltage 18th harmonic AN	byte	1%	0 to 100
	4314	Voltage 19th harmonic AN	byte	1%	0 to 100
	4315	Voltage 20th harmonic AN	byte	1%	0 to 100
	4316	Voltage 21st harmonic AN	byte	1%	0 to 100
	4317	Voltage 22nd harmonic AN	byte	1%	0 to 100
	4318	Voltage 23rd harmonic AN	byte	1%	0 to 100
	4319	Voltage 24th harmonic AN	byte	1%	0 to 100
	4320	Voltage 25th harmonic AN	byte	1%	0 to 100
	4321	Voltage 26th harmonic AN	byte	1%	0 to 100
	4322	Voltage 27th harmonic AN	byte	1%	0 to 100
	4323	Voltage 28th harmonic AN	byte	1%	0 to 100
	4324	Voltage 29th harmonic AN	byte	1%	0 to 100
	4325	Voltage 30th harmonic AN	byte	1%	0 to 100
	4326	Voltage 31st harmonic AN	byte	1%	0 to 100
	4327	Voltage 32nd harmonic AN	byte	1%	0 to 100
	4328	Voltage fundamental harmonic BN	byte	1%	0 to 100
	4329	Voltage 2nd harmonic BN	byte	1%	0 to 100
	4330	Voltage 3rd harmonic BN	byte	1%	0 to 100
	4331	Voltage 4th harmonic BN	byte	1%	0 to 100
	4332	Voltage 5th harmonic BN	byte	1%	0 to 100
	4333	Voltage 6th harmonic BN	byte	1%	0 to 100
	4334	Voltage 7th harmonic BN	byte	1%	0 to 100
	4335	Voltage 8th harmonic BN	byte	1%	0 to 100
	4336	Voltage 9th harmonic BN	byte	1%	0 to 100
	4337	Voltage 10th harmonic BN	byte	1%	0 to 100

Table 5: Harmonics data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Harmonics Data	4338	Voltage 11th harmonic BN	byte	1%	0 to 100
	4339	Voltage 12th harmonic BN	byte	1%	0 to 100
	4340	Voltage 13th harmonic BN	byte	1%	0 to 100
	4341	Voltage 14th harmonic BN	byte	1%	0 to 100
	4342	Voltage 15th harmonic BN	byte	1%	0 to 100
	4343	Voltage 16th harmonic BN	byte	1%	0 to 100
	4344	Voltage 17th harmonic BN	byte	1%	0 to 100
	4345	Voltage 18th harmonic BN	byte	1%	0 to 100
	4346	Voltage 19th harmonic BN	byte	1%	0 to 100
	4347	Voltage 20th harmonic BN	byte	1%	0 to 100
	4348	Voltage 21st harmonic BN	byte	1%	0 to 100
	4349	Voltage 22nd harmonic BN	byte	1%	0 to 100
	4350	Voltage 23rd harmonic BN	byte	1%	0 to 100
	4351	Voltage 24th harmonic BN	byte	1%	0 to 100
	4352	Voltage 25th harmonic BN	byte	1%	0 to 100
	4353	Voltage 26th harmonic BN	byte	1%	0 to 100
	4354	Voltage 27th harmonic BN	byte	1%	0 to 100
	4355	Voltage 28th harmonic BN	byte	1%	0 to 100
	4356	Voltage 29th harmonic BN	byte	1%	0 to 100
	4357	Voltage 30th harmonic BN	byte	1%	0 to 100
	4358	Voltage 31st harmonic BN	byte	1%	0 to 100
	4359	Voltage 32nd harmonic BN	byte	1%	0 to 100
	4360	Voltage fundamental harmonic C	byte	1%	0 to 100
	4361	Voltage 2nd harmonic CN	byte	1%	0 to 100
	4362	Voltage 3rd harmonic CN	byte	1%	0 to 100
	4363	Voltage 4th harmonic CN	byte	1%	0 to 100
	4364	Voltage 5th harmonic CN	byte	1%	0 to 100
	4365	Voltage 6th harmonic CN	byte	1%	0 to 100
	4366	Voltage 7th harmonic CN	byte	1%	0 to 100
	4367	Voltage 8th harmonic CN	byte	1%	0 to 100
	4368	Voltage 9th harmonic CN	byte	1%	0 to 100
	4369	Voltage 10th harmonic CN	byte	1%	0 to 100
	4370	Voltage 11th harmonic CN	byte	1%	0 to 100
	4371	Voltage 12th harmonic CN	byte	1%	0 to 100
	4372	Voltage 13th harmonic CN	byte	1%	0 to 100
	4373	Voltage 14th harmonic CN	byte	1%	0 to 100
	4374	Voltage 15th harmonic CN	byte	1%	0 to 100
	4375	Voltage 16th harmonic CN	byte	1%	0 to 100
	4376	Voltage 17th harmonic CN	byte	1%	0 to 100
	4377	Voltage 18th harmonic CN	byte	1%	0 to 100
	4378	Voltage 19th harmonic CN	byte	1%	0 to 100
	4379	Voltage 20th harmonic CN	byte	1%	0 to 100
	4380	Voltage 21st harmonic CN	byte	1%	0 to 100
	4381	Voltage 22nd harmonic CN	byte	1%	0 to 100
	4382	Voltage 23rd harmonic CN	byte	1%	0 to 100
	4383	Voltage 24th harmonic CN	byte	1%	0 to 100

Table 5: Harmonics data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
	4384	Voltage 25th harmonic CN	byte	1%	0 to 100
	4385	Voltage 26th harmonic CN	byte	1%	0 to 100
	4386	Voltage 27th harmonic CN	byte	1%	0 to 100
	4387	Voltage 28th harmonic CN	byte	1%	0 to 100
	4388	Voltage 29th harmonic CN	byte	1%	0 to 100
	4389	Voltage 30th harmonic CN	byte	1%	0 to 100
	4390	Voltage 31st harmonic CN	byte	1%	0 to 100
	4391	Voltage 32nd harmonic CN	byte	1%	0 to 100

Table 6: Time-stamped data registers

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5000	Maximum current A	dword	0.001A	0 to 0xFFFFFFFF
	5001				
	5002	Year & month of maximum current A	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5003	Day & hour of maximum current A	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5004	Minute & second of maximum current A	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5005	Maximum current B	dword	0.001A	0 to 0xFFFFFFFF
	5006				
	5007	Year & month of maximum current B	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5008	Day & hour of maximum current B	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5009	Minute & second of maximum current B	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5010	Maximum current C	dword	0.001A	0 to 0xFFFFFFFF
	5011				
	5012	Year & month of maximum current C	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5013	Day & hour of maximum current C	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5014	Minute & second of maximum current C	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5015	Maximum current N	dword	0.001A	0 to 0xFFFFFFFF
	5016				
	5017	Year & month of maximum current N	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5018	Day & hour of maximum current N	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5019	Minute & second of maximum current N	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5020	Minimum current A	dword	0.001A	0 to 0xFFFFFFFF
	5021				
	5022	Year & month of minimum current A	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9

Table 6: Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5023	Day & hour of minimum current A	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5024	Minute & second of minimum current A	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5025	Minimum current B	dword	0.001A	0 to 0xFFFFFFFF
	5026				
	5027	Year & month of minimum current B	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5028	Day & hour of minimum current B	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5029	Minute & second of minimum current B	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5030	Minimum current C	dword	0.001A	0 to 0xFFFFFFFF
	5031				
	5032	Year & month of minimum current C	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5033	Day & hour of minimum current C	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5034	Minute & second of minimum current C	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5035	Minimum current N	dword	0.001A	0 to 0xFFFFFFFF
	5036				
	5037	Year & month of minimum current N	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5038	Day & hour of minimum current N	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5039	Minute & second of minimum current N	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5040	Maximum phase voltage A	dword	0.1V	0 to 0xFFFFFFFF
	5041				
	5042	Year & month of maximum phase voltage A	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5043	Day & hour of maximum phase voltage A	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5044	Minute & second of maximum phase voltage A	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5045	Maximum phase voltage B	dword	0.1V	0 to 0xFFFFFFFF
	5046				
	5047	Year & month of maximum phase voltage B	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5048	Day & hour of maximum phase voltage B	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5049	Minute & second of maximum phase voltage B	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5050	Maximum phase voltage C	dword	0.1V	0 to 0xFFFFFFFF
	5051				
	5052	Year & month of maximum phase voltage C	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5053	Day & hour of maximum phase voltage C	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5054	Minute & second of maximum phase voltage C	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9

Table 6 Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5055	Minimum phase voltage A	dword	0.1V	0 to 0xFFFFFFFF
	5056				
	5057	Year & month of minimum phase voltage A	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5058	Day & hour of minimum phase voltage A	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5059	Minute & second of minimum phase voltage A	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5060	Minimum phase voltage B	dword	0.1V	0 to 0xFFFFFFFF
	5061				
	5062	Year & month of minimum phase voltage B	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5063	Day & hour of minimum phase voltage B	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5064	Minute & second of minimum phase voltage B	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5065	Minimum phase voltage C	dword	0.1V	0 to 0xFFFFFFFF
	5066				
	5067	Year & month of minimum phase voltage C	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5068	Day & hour of minimum phasevoltage C	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5069	Minute & second of minimum phase voltage C	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5070	Maximum line voltage AB	dword	0.1V	0 to 0xFFFFFFFF
	5071				
	5072	Year & month of maximum line voltage AB	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5073	Day & hour of maximum line voltage AB	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5074	Minute & second of maximum line voltage AB	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5075	Maximum line voltage BC	dword	0.1V	0 to 0xFFFFFFFF
	5076				
	5077	Year & month of maximum line voltage BC	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5078	Day & hour of maximum line voltage BC	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5079	Minute & second of maximum line voltage BC	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5080	Maximum line voltage CA	dword	0.1V	0 to 0xFFFFFFFF
	5081				
	5082	Year & month of maximum line voltage CA	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5083	Day & hour of maximum line voltage CA	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5084	Minute & second of maximum line voltage CA	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5085	Minimum line voltage AB	dword	0.1V	0 to 0xFFFFFFFF
	5086				
	5087	Year & month of minimum line voltage AB	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9

Table 6: Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5088	Day & hour of minimum line voltage AB	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5089	Minute & second of minimum line voltage AB	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5090	Minimum line voltage BC	dword	0.1V	0 to 0xFFFFFFFF
	5091				
	5092	Year & month of minimum line voltage BC	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5093	Day & hour of minimum line voltage BC	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5094	Minute & second of minimum line voltage BC	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5095	Minimum line voltage CA	dword	0.1V	0 to 0xFFFFFFFF
	5096				
	5097	Year & month of minimum line voltage CA	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5098	Day & hour of minimum line voltage CA	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5099	Minute & second of minimum line voltage CA	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5100	Maximum phase A active power	int	1W	0 to +0x7FFFFFFF
	5101				
	5102	Year & month of maximum phase A active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5103	Day & hour of maximum phase A active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5104	Minute & second of maximum phase A active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5105	Maximum phase B active power	int	1W	0 to +0x7FFFFFFF
	5106				
	5107	Year & month of maximum phase B active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5108	Day & hour of maximum phase B active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5109	Minute & second of maximum phase B active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5110	Maximum phase C active power	int	1W	0 to +0x7FFFFFFF
	5111				
	5112	Year & month of maximum phase C active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5113	Day & hour of maximum phase C active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5114	Minute & second of maximum phase C active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5115	Maximum total active power	int	1W	0 to +0x7FFFFFFF
	5116				
	5117	Year & month of maximum total active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5118	Day & hour of maximum total active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5119	Minute & second of maximum total active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9

Table 6: Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5120	Minimum phase A active power	int	1W	0 to +0x7FFFFFFF
	5121				
	5122	Year & month of minimum phase A active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5123	Day & hour of minimum phase A active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5124	Minute & second of minimum phase A active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5125	Minimum phase B active power	int	1W	0 to +0x7FFFFFFF
	5126				
	5127	Year & month of minimum phase B active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5128	Day & hour of minimum phase B active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5129	Minute & second of minimum phase B active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5130	Minimum phase C active power	int	1W	0 to +0x7FFFFFFF
	5131				
	5132	Year & month of minimum phase C active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5133	Day & hour of minimum phase C active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5134	Minute & second of minimum phase C active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5135	Minimum total active power	int	1W	0 to +0x7FFFFFFF
	5136				
	5137	Year & month of minimum total active power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5138	Day & hour of minimum total active power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5139	Minute & second of minimum total active power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5140	Maximum phase A reactive power	int	1VAr	0 to +0x7FFFFFFF
	5141				
	5142	Year & month of maximum phase A reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5143	Day & hour of maximum phase A reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5144	Minute & second of maximum phase A reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5145	Maximum phase B reactive power	int	1VAr	0 to +0x7FFFFFFF
	5146				
	5147	Year & month of maximum phase B reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5148	Day & hour of maximum phase B reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5149	Minute & second of maximum phase B reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5150	Maximum phase C reactive power	int	1VAr	0 to +0x7FFFFFFF
	5151				
	5152	Year & month of maximum phase C reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9

Table 6: Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5153	Day & hour of maximum phase C reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5154	Minute & second of maximum phase C reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5155	Maximum total reactive power	int	1VAr	0 to +0x7FFFFFFF
	5156				
	5157	Year & month of maximum total reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5158	Day & hour of maximum total reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5159	Minute & second of maximum total reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5160	Minimum phase A reactive power	int	1VAr	0 to +0x7FFFFFFF
	5161				
	5162	Year & month of minimum phase A reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5163	Day & hour of minimum phase A reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5164	Minute & second of minimum phase A reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5165	Minimum phase B reactive power	int	1VAr	0 to +0x7FFFFFFF
	5166				
	5167	Year & month of minimum phase B reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5168	Day & hour of minimum phase B reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5169	Minute & second of minimum phase B reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5170	Minimum phase C reactive power	int	1VAr	0 to +0x7FFFFFFF
	5171				
	5172	Year & month of minimum phase C reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5173	Day & hour of minimum phase C reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5174	Minute & second of minimum phase C reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5175	Minimum total reactive power	int	1VAr	0 to +0x7FFFFFFF
	5176				
	5177	Year & month of minimum total reactive power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5178	Day & hour of minimum total reactive power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5179	Minute & second of minimum total reactive power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5180	Maximum phase A apparent power	int	1VA	0 to +0x7FFFFFFF
	5181				
	5182	Year & month of maximum phase A apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5183	Day & hour of maximum phase A apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5184	Minute & second of maximum phase A apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9

Table 6: Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5185	Maximum phase B apparent power	int	1VA	0 to +0x7FFFFFFF
	5186				
	5187	Year & month of maximum phase B apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5188	Day & hour of maximum phase B apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5189	Minute & second of maximum phase B apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5190	Maximum phase C apparent power	int	1VA	0 to +0x7FFFFFFF
	5191				
	5192	Year & month of maximum phase C apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5193	Day & hour of maximum phase C apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5194	Minute & second of maximum phase C apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5195	Maximum total apparent power	int	1VA	0 to +0x7FFFFFFF
	5196				
	5197	Year & month of maximum total apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5198	Day & hour of maximum total apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5199	Minute & second of maximum total apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5200	Minimum phase A apparent power	int	1VA	0 to +0x7FFFFFFF
	5201				
	5202	Year & month of minimum phase A apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5203	Day & hour of minimum phase A apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5204	Minute & second of minimum phase A apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5205	Minimum phase B apparent power	int	1VA	0 to +0x7FFFFFFF
	5206				
	5207	Year & month of minimum phase B apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5208	Day & hour of minimum phase B apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5209	Minute & second of minimum phase B apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5210	Minimum phase C apparent power	int	1VA	0 to +0x7FFFFFFF
	5211				
	5212	Year & month of minimum phase C apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5213	Day & hour of minimum phase C apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5214	Minute & second of minimum phase C apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5215	Minimum total apparent power	int	1VA	0 to +0x7FFFFFFF
	5216				
	5217	Year & month of minimum total apparent power	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9

Table 6: Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5218	Day & hour of minimum total apparent power	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5219	Minute & second of minimum total apparent power	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5220	Maximum inductive power factor	word	0.001	0 to 1000
	5221	Year & month of maximum inductive power factor	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5222	Day & hour of maximum inductive power factor	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5223	Minute & second of maximum inductive power factor	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5224	Minimum inductive power factor	word	0.001	0 to 1000
	5225	Year & month of minimum inductive power factor	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5226	Day & hour of minimum inductive power factor	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5227	Minute & second of minimum inductive power factor	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5228	Maximum capacitive power factor	word	0.001	0 to 1000
	5229	Year & month of maximum capacitive power factor	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5230	Day & hour of maximum capacitive power factor	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5231	Minute & second of maximum capacitive power factor	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5232	Minimum capacitive power factor	word	0.001	0 to 1000
	5233	Year & month of minimum capacitive power factor	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5234	Day & hour of minimum capacitive power factor	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5235	Minute & second of minimum capacitive power factor	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5236	Maximum frequency	word	0.01Hz	4500 to 6500
	5237	Year & month of maximum frequency	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5238	Day & hour of maximum frequency	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5239	Minute & second of maximum frequency	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5240	Minimum frequency	word	0.01Hz	4500 to 6500
	5241	Year & month of minimum frequency	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5242	Day & hour of minimum frequency	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5243	Minute & second of minimum frequency	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5244	Maximum current demand phase A	dword	0.001Arms	0 to 0xFFFFFFFF
	5245				
	5246	Year & month of maximum current demand phase A	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5247	Day & hour of maximum current demand phase A	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9

Table 6: Time-stamped data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Time-stamped Data	5248	Minute & second of maximum current demand phase A	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5249	Maximum current demand phase B	dword	0.001Arms	0 to 0xFFFFFFFF
	5250				
	5251	Year & month of maximum current demand phase B	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5252	Day & hour of maximum current demand phase B	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5253	Minute & second of maximum current demand phase B	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5254	Maximum current demand phase C	dword	0.001Arms	0 to 0xFFFFFFFF
	5255				
	5256	Year & month of maximum current demand phase C	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5257	Day & hour of maximum current demand phase C	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5258	Minute & second of maximum current demand phase C	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5259	Maximum active power demand	int	1W	0 to +0x7FFFFFFF
	5260				
	5261	Year & month of maximum active power demand	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5262	Day & hour of maximum active power demand	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5263	Minute & second of maximum active power demand	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5264	Maximum reactive power demand	int	1VAr	0 to +0x7FFFFFFF
	5265				
	5266	Year & month of maximum reactive power demand	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5267	Day & hour of maximum reactive power demand	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5268	Minute & second of maximum reactive power demand	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9
	5269	Maximum apparent power demand	int	1VA	0 to +0x7FFFFFFF
	5270				
	5271	Year & month of maximum apparent power demand	BCD	1yr ; 1mth	0 to 5 : 0 to 9 ; 0 to 1 : 0 to 9
	5272	Day & hour of maximum apparent power demand	BCD	1day ; 1hr	0 to 3 : 0 to 9 ; 0 to 2 : 0 to 9
	5273	Minute & second of maximum apparent power demand	BCD	1min ; 1sec	0 to 5 : 0 to 9 ; 0 to 5 : 0 to 9

Table 7: Energy data registers

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Energy Data	6000	Real energy A - import	long	1Wh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6001				
	6002				
	6003				
	6004	Real energy B - import	long	1Wh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6005				
	6006				
	6007				
	6008	Real energy C - import	long	1Wh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6009				
	6010				
	6011				
	6012	Real energy A - export	long	1Wh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6013				
	6014				
	6015				
	6016	Real energy B - export	long	1Wh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6017				
	6018				
	6019				
	6020	Real energy C - export	long	1Wh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6021				
	6022				
	6023				
	6024	Reactive energy A - import	long	1VArh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6025				
	6026				
	6027				
	6028	Reactive energy B - import	long	1VArh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6029				
	6030				
	6031				
	6032	Reactive energy C - import	long	1VArh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6033				
	6034				
	6035				

Table 7: Energy data registers (cont'd)

	Read Only (function code 0x03 or 0x04)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Energy Data	6036	Reactive energy A - export	long	1VArh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6037				
	6038				
	6039				
	6040	Reactive energy B - export	long	1VArh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6041				
	6042				
	6043				
	6044	Reactive energy C - export	long	1VArh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6045				
	6046				
	6047				
	6048	Apparent energy A - import	long	1VAh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6049				
	6050				
	6051				
	6052	Apparent energy B - import	long	1VAh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6053				
	6054				
	6055				
	6056	Apparent energy C - import	long	1VAh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6057				
	6058				
	6059				
	6060	Apparent energy A - export	long	1VAh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6061				
	6062				
	6063				
	6064	Apparent energy B - export	long	1VAh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6065				
	6066				
	6067				
	6068	Apparent energy C - export	long	1VAh	-0x7FFFFFFFFFFFFFFF to +0x7FFFFFFFFFFFFFFF
	6069				
	6070				
	6071				

Table 8: Settings data registers

	Read or write (function code 0x03, 0x04 or 0x06)				
	Register	**Description**	**Type**	**Min unit**	**Range**
Settings Data	100	PT primary voltage	word	1V	60 to 50000
	101	PT secondary voltage	word	1V	60 to 300
	102	CT primary current	word	1A	5 to 50000
	103	CT secondary current	word	5A	-
	104	Power demand interval	word	1sec	60 to 1800
	105	Power demand sub interval	byte	-	2 to 120
	106	Current demand interval	word	1sec	60 to 1800
	107	Current demand sub interval	byte	-	2 to 120
	111	Clock minute	BCD	1min	0 to 5 : 0 to 9
	112	Clock hour	BCD	1hr	0 to 2 : 0 to 9
	113	Day of month	BCD	1day	0 to 3 : 0 to 9

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