

## Eastron SDM230-LORAWAN Protocol V1.1

### 1. Function Code = 0x04

Address (Register)	Input Register Parameter		Modbus Protocol Start Address Hex	
	Description	Units	Hi Byte	Lo Byte
30001	Line to neutral volts.	Volts	00	00
30007	Current.	Amps	00	06
30013	Active power.	Watts	00	0C
30019	Apparent power	VoltAmps	00	12
30025	Reactive power	VAr	00	18
30031	Power factor	None	00	1E
30037	Phase angle.	Degree	00	24
30071	Frequency	Hz	00	46
30073	Import active energy	kwh	00	48
30075	Export active energy	kwh	00	4A
30077	Import reactive energy	kvarh	00	4C
30079	Export reactive energy	kvarh	00	4E
30085	Total system power demand	W	00	54
30087	Maximum total system power demand	W	00	56
30089	Current system positive power demand	W	00	58
30091	Maximum system positive power demand	W	00	5A
30093	Current system reverse power demand	W	00	5C
30095	Maximum system reverse power demand	W	00	5E
30259	Current demand.	Amps	01	02
30265	Maximum current demand.	Amps	01	08
30343	Total active energy	kwh	01	56
30345	Total reactive energy	kvarh	01	58
30385	Current resettable total active energy	kwh	01	80
30387	Current resettable total reactive energy	kvarh	01	82

### 2. Function Code = 0x10/0x03

Address Register	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode
		High Byte	Low Byte		
40003	Demand Period	00	02	Write demand period: 0~60 minutes, default 15. Setting the period to 0 will cause the demand to show	r/w

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				the current parameter value, and demand max to show the maximum parameter value since last demand reset. <b>Length : 4 byte</b> <b>Data Format : Float</b>	
40013	Pulse output 1 Width	00	0C	Write relay on period in Milliseconds: 60, 100 or 200, default 100. <b>Data Format: float (length: 4 byte)</b>	r/w
40015	Key Parameter Programming Authorization (KPPA)	00	0E	Read: to get the status of the KPPA 0 = not authorized; 1 = authorized Write the correct password to get KPPA, enable to program key parameters. <b>Length : 4 byte</b> <b>Data Format : Float</b>	r/w
40025	Password	00	18	Write password for access to protected registers. Default password is 1000. <b>Length : 4 byte</b> <b>Data Format : Float</b>	r/w
40061	Backlit time	00	3C	Default 60, min Range 0~121, 0 means backlit always on , 121 means backlit always off <b>Length : 4byte</b> <b>Data Format : Float</b>	r/w
40087	Pulse1 Energy Type	00	56	Write MODBUS Protocol input parameter for pulse relay 1: 1=Import Wh; 2=Import and ExportWh; 4=Export Wh;(default) 5=Import VARh; 6=Import and Export VARh; 8=Export VARh. <b>Data Format: float (length: 4 byte)</b>	r/w
461457	Reset	F0	10	00 00: Reset the Maximum demand 00 03: Reset the resettable energy <b>Length: 2 byte</b> <b>Data Format: Hex</b>	wo
462721	Demand interval, slide time, automatic scroll display interval (scroll Time),	F5	00	min-min-s-min scroll time=0: the display does not scroll automatically. Backlight time=0 Backlight always on	r/w

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	Backlight time			<b>Data Format: BCD (length: 4 byte)</b>	
463761	Pulse 1 constant	F9	10	0000: 0.001kwh (kvarh) /imp (default) 0001: 0.01kwh (kvarh) /imp 0002: 0.1kwh (kvarh) /imp 0003: 1kwh (kvarh) /imp <b>Data Format: Hex (length: 2 byte)</b>	r/w
463776	Measurement mode	F9	20	0001:mode 1(total = import) 0002:mode 2(total = import + export) (default) 0003:mode 3 (total = import - export) <b>Data Format: Hex (length: 2 byte)</b>	r/w
463792	Running time	F9	30	Continuous working period--hour <b>Data Format: float (length: 4 byte)</b>	r/w
464513	Serial Number	FC	00	Serial Number <b>Length : 4 byte</b> <b>Data Format : unsigned int32</b> <b>Note: Only read</b>	ro
464641	Software version number	FC	80	Software version number Version number of software Data Format : the first byte means XX, the second byte means YY Example: if XX YY = 01 02, Software version = 01.02 <b>Length : 2 byte</b> <b>Data Format : Hex</b> <b>Note: Only read</b>	ro
464643	Hardware version number	FC	82	Hardware version number XX YY, XX means the first byte , YY means the second byte Example: if XX YY = 01 02, hardware version =01.02 <b>Length : 2 byte</b> <b>Data Format : Hex</b> <b>Note: Only read</b>	ro
465025	Active upload function mode (1)	FE	00	Active upload function mode 00 00 = active-upload off 00 55 = active-upload on <b>Length : 2 byte</b> <b>Data Format : Hex</b> (KPPA is asked)	r/w
465026	Interval of Active	FE	01	Interval of Active upload	r/w

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	upload (1)			Range: 0~255, Unit: min <b>Length : 2 byte</b> <b>Data Format : Hex</b> (KPPA is asked)	
465027	Active Upload parameters (2)	FE	02	Active Upload parameters Range: 00 ~ 49, FF = invalid parameter, won't be uploaded An active upload window supports up to 30 parameter upload operations. <b>Length : 30 byte</b> <b>Data Format : Hex</b> (KPPA is asked)	r/w
465043	Number of Registers in each active upload command (3)	FE	12	Number of Registers in each active upload command Range: 3 ~ 8, default: 3 <b>Length : 2 byte</b> <b>Data Format : Hex</b> (KPPA is asked)	r/w
465044	Offline detection time (4)	FE	13	LORAWAN Offline detection time. Range: 0~255, Unit: Min 0 = no detection. <b>Length : 2 byte</b> <b>Data Format : Hex</b> (KPPA is asked)	r/w
465045	LoRaWAN Confirm mode	FE	14	LORAWAN message transfer mode 00 00 = Non-confirm mode 00 55 = confirm mode <b>Length : 2 byte</b> <b>Data Format : Hex</b> (KPPA is asked)	r/w

**Note:**

Mode 1: Measure import energy, Total energy=Import energy.

Mode 2: Measure import energy and exported energy, Total energy=Import energy + export energy(default).

Mode 3: Measure import energy and exported energy, Total energy=Import energy- export energy.

**Note:**

(1). When the active upload mode is turned on, the interval of active upload needs to be set to a value not equal to 0, otherwise the active upload function cannot be properly enabled.

(2). Active upload window represents a time window for the meter to start its active upload operation when the active upload interval is reached; During the active uploading, the meter will upload in order

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according to the parameters set through register until the invalid parameter (FF) appears. Please refer to the following table 1 for the active uploading parameters.

(3). This is to set the number of registers in each active uploading. If the registers amount exceeds the set value. Meter will upload the parameters in stages. For example, if set 3 for the number of registers in each uploading command while the total quantity of registers is 10, then the meter will upload 3 registers each time and will have all the registers uploaded within 4 commands.

(4). Offline detection: the time is counted since the last data reception from the gateway. If over a period of time, the meter doesn't receive information from gateway, it will be judged as OFF LINE, and will re-Join to the network actively. This period of time is the off-line detection time.

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Table 1:

SDM230-LORAWAN Active Uploading Parameters					
Index Number		Parameter	Unit	Data format	Length (Byte)
Decimalism	Hex				
0	00	Voltage	V	Float	4
1	01	Frequency	Hz	Float	4
2	02	Current	A	Float	4
3	03	Power factor	None	Float	4
4	04	Active power	W	Float	4
5	05	Reactive power	var	Float	4
6	06	Apparent power	VA	Float	4
7	07	Phase Angle	Degrees	Float	4
8	08	Maximum system power demand	W	Float	4
9	09	Maximum import power demand	W	Float	4
10	0A	Maximum export power demand	W	Float	4
11	0B	Maximum current demand	A	Float	4
12	0C	Import kwh	kWh	Float	4
13	0D	Export kwh	kWh	Float	4
14	0E	Total kwh	kWh	Float	4
15	0F	Import kvarh	kvarh	Float	4
16	10	Export kvarh	kvarh	Float	4
17	11	Total kvarh	kvarh	Float	4
18	12	Resettable total active energy	kWh	Float	4
19	13	Resettable total reactive energy	kvarh	Float	4

Example: If the register is set as:

00 01 02 FF,

there are 3 active upload parameters:

L1-N Voltage, L2-N Voltage, L3-N Voltage

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### Data Format:

Serial Number of the energy meter (4byte)	Number of active upload parameter (1byte)	The bytes number of sent data	Data1 (4byte)	Data 2 (4byte)	Data 3 (4byte)	CRC (2byte)
Integer, Big-endian	N	Represent bytes number of the following data, not including CRC (Fixed= 0x0C)	Format: Float, Big-endian	Format: Float, Big-endian	Format: Float, Big-endian	Little-endian

### Note:

- 1) For active upload parameters, only 3 data can be uploaded at a time. If there are more than 3 parameters, the meter will be actively uploaded in batches (completed in each upload window. The operation method is: once the last uploading is successful, immediately upload the next data.
- 2) Sometimes, the meter will upload parameters in multiples. The number of active upload parameter (N) can help to check more clearly on which registers are uploaded.  
For example:  
NO.1: L1 voltage  
NO.2: L1 current  
NO.3: Total kWh, Total kVArh  
N=01 represent the uploading data of L1 Voltage, L2 Current, L3 kWh/KVArh
- 3) The active upload parameters are uploaded in the order specified when the active upload data type is set.

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