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## POWER ANALYZERS

Modbus manual



电力分析仪

Modbus 手册

**DMG7000-7500-8000-9000**  
**EXS4000-EXS4001**



### INTRODUCTION

The DMG series power analyzers and the EXS4... current measuring modules support the modbus protocol in the variants RTU, ASCII and TCP. The protocols differ mainly in the structure of the messages, although the information content is equivalent, and in some constraints which make them suitable for different communication buses.

### RTU

Message structure:

Pause	Modbus node	Function	Data	CRC16	Pause
3,5 characters	1 byte	1 byte	2N bytes	2 bytes	3,5 characters

Bit timing is critical, therefore the RTU variant is suitable for serial buses (RS485).

### ASCII

Message structure:

Character	Modbus node	Function	Data	CRC16	Characters
:	2 chars	2 chars	2N chars	2 chars	CR LF

The beginning and end of a message are marked by specific bytes and there are no time constraints, so the ASCII variant is suitable for buses with non-deterministic timings (for example, modems).

### TCP

Message structure:

Transaction ID	Protocol ID	Length	Modbus node	Function	Data
2 bytes	00 00 (2 bytes)	2 bytes	1 byte	1 byte	2N bytes

The messages are marked by an identifier which lets the association between a specific query of the master and the relevant response of the slave, therefore the TCP variant is suitable for buses in which the sequence of messages is not guaranteed (ethernet).

### PROTOCOL SPECIFICATIONS

- Byte and word order: big endian (high word first, high byte first), except for CRC which is a little endian (low byte first) register.
- A maximum of 120 registers can be contained in the data.
- Max connection number supported on Modbus TCP: 1 each physical communication port.
- Supported functions:

Function	Query data content	Reply data content
0x03 (Read holding register)	Address (2 bytes)	Replied registers byte number (1 byte)
0x04 (Read input register)	Register number R (2 bytes)	Registers (2R bytes)
0x06 (Preset single register)	Address (2 bytes)	Address (2 bytes)
	Register (2 bytes)	Register (2 bytes)
0x10 (Preset multiple registers)	Address (2 bytes)	Address (2 bytes)
	Register number R (2 bytes)	Written bytes number
	Registers (2R bytes)	
0x11 (Slave ID)	-	Replied registers byte number (1 byte)
		Model code (1 byte)
		Firmware revision (1 byte)
		Hardware revision (1 byte)
		Parameter revision (1 byte)
		0x11
		0x00
		0x00
		0x00

Model code:

DMG7000: 0x70  
DMG7500: 0x75  
DMG8000: 0x80  
DMG9000: 0x90  
EXS4...: 0x40

In the event of an error, the reply involves modifying the function code by raising the most significant bit (for example, if the error occurs with function 0x04, the function code in the response is 0x84) and the data consists only of 1 byte for the exception code:

Error code	Description
0x01	Function is not valid
0x02	Address is not valid
0x03	Value is out of range
0x04	Operation not valid
0x06	Slave busy

### 简介

DMG 系列电力分析仪和 EXS4... 电流测量模块支持 RTU、ASCII 和 TCP 模式的 Modbus 协议。这些协议的不同之处主要在于消息的结构，但信息内容是等效的，在某些限制条件下可使它们适用于不同的通讯总线。

### RTU

消息结构:

停顿	Modbus 节点	功能码	数据	CRC16	停顿
3.5 个字符	1 个字节	1 个字节	2N 个字节	2 个字节	3.5 个字符

位定时是关键，因此 RTU 模式适用于串行总线 (RS485)。

### ASCII

消息结构:

字符	Modbus 节点	功能码	数据	CRC16	字符
:	2 个字符	2 个字符	2N 个字符	2 个字符	CR LF

消息的开头和结尾由特定字节进行标记，没有时间限制，所以 ASCII 模式适用于具有非确定性定时的总线（例如调制解调器）。

### TCP

消息结构:

事务 ID	协议 ID	长度	Modbus 节点	功能码	数据
2 个字节	00 00 (2 个字节)	2 个字节	1 个字节	1 个字节	2N 个字节

消息由一个标识符进行标记，该标识符允许主站的特定查询与从站的相关响应之间相互关联，因此 TCP 模式适用于无法保证消息顺序的总线（以太网）。

### 协议规范

- 字节和字顺序：大端序（高位字优先，高位字节优先），CRC 除外，这是小端序（低位字节优先）寄存器。
- 数据中最多可包含 120 个寄存器。
- Modbus TCP 支持的最大连接数：每个物理通讯端口 1 个。
- 受支持的功能码：

功能码	查询数据内容	回复数据内容
0x03 (读保持寄存器)	地址 (2 个字节)	回复的寄存器字节数 (1 个字节)
0x04 (读输入寄存器)	寄存器数 R (2 个字节)	寄存器 (2R 个字节)
0x06 (预置单个寄存器)	地址 (2 个字节)	地址 (2 个字节)
	寄存器 (2 个字节)	寄存器 (2 个字节)
0x10 (预置多个寄存器)	地址 (2 个字节)	地址 (2 个字节)
	寄存器数 R (2 个字节)	写入的字节数
	寄存器 (2R 个字节)	
0x11 (从站 ID)	-	回复的寄存器字节数 (1 个字节)
		型号代码 (1 个字节)
		固件修订版本 (1 个字节)
		硬件修订版本 (1 个字节)
		参数修订版本 (1 个字节)
		0x11
		0x00
		0x00
		0x00

### 型号代码:

DMG7000: 0x70  
DMG7500: 0x75  
DMG8000: 0x80  
DMG9000: 0x90  
EXS4...: 0x40

如果发生错误，则回复会通过提高最高有效位来修改功能码（例如，如果功能码 0x04 发生错误，则响应中的功能码为 0x84），并且数据仅包括 1 个字节的异常码：

错误码	描述
0x01	功能码无效
0x02	地址无效
0x03	值超出范围
0x04	操作无效
0x06	从站繁忙

## CRC COMPUTATION EXAMPLE

Frame = 0207h

CRC initialization	1111	1111	1111	1111
Load the first byte			0000	0010
Execute xor with the first Byte of the frame	1111	1111	1111	1101
Execute 1st right shift	0111	1111	1111	1110 1
Carry=1, load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1101	1111	1111	1111
Execute 2nd right shift	0110	1111	1111	1111 1
Carry=1, load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1100	1111	1111	1110
Execute 3rd right shift	0110	0111	1111	1111 0
Execute 4th right shift	0011	0011	1111	1111 1
Carry=1, load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1001	0011	1111	1110
Execute 5th right shift	0100	1001	1111	1111 0
Execute 6th right shift	0010	0100	1111	1111 1
Carry=1, load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1000	0100	1111	1110
Execute 7th right shift	0100	0010	0111	1111 0
Execute 8th right shift	0010	0001	0011	1111 1
Carry=1, load polynomial	1010	0000	0000	0001
Load the second byte of the frame			0000	0111
Execute xor with the Second byte of the frame	1000	0001	0011	1001
Execute 1st right shift	0100	0000	1001	1100 1
Carry=1,load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1110	0000	1001	1101
Execute 2nd right shift	0111	0000	0100	1110 1
Carry=1,load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1101	0000	0100	1111
Execute 3rd right shift	0110	1000	0010	0111 1
Carry=1,load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1100	1000	0010	0110
Execute 4th right shift	0110	0100	0001	0011 0
Execute 5th right shift	0010	0100	0000	1001 1
Carry=1,load polynomial	1010	0000	0000	0001
Execute xor with the polynomial	1001	0010	0000	1000
Execute 6th right shift	0100	1001	0000	0100 0
Execute 7th right shift	0010	0100	1000	0010 0
Execute 8th right shift	0001	0010	0100	0001 0
CRC Result	0001	0010	0100	0001
	<b>0x12</b>		<b>0x41</b>	

## LRC COMPUTATION EXAMPLE

Address	01	00000001
Function	04	00000100
Start address hi.	00	00000000
Start address lo.	00	00000000
Register number	08	00001000
Sum		00001101
Complement to 1		11110010
+ 1		00000001
Complement to 2		11110101

LRC result

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## MODBUS REGISTERS

FUNCTION 0x03 - 0x04

The system consisting of a DMG power analyzer and EXS4... current measurement modules (EASY BRANCH) is seen by the master as a series of independent devices each with its own modbus node and belonging to the same communication channel used to connect to the DMG. As default setting, the power analyzers have modbus node 1, while the EASY BRANCH measuring points assume an incremental value based on their ordering in the system. For example, if there were 3 EASY BRANCH points:

- DMG modbus node: 1
- Modbus node BRN01 (first measurement point identified and visible on the DMG display): 2
- Modbus node BRN02: 3
- Modbus node BRN03: 4

However, if necessary, the modbus nodes can be individually set by accessing on the DMG parameter P07.n.01 for the DMG and P20.n.05 for the measurement point of interest.

## CRC 计算示例

帧 = 0207h

CRC	1111	1111	1111	1111
加载第一个字节			0000	0010
使用帧的第一个字节执行异或	1111	1111	1111	1101
执行第一次右移	0111	1111	1111	1110 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1101	1111	1111	1111
执行异或				
执行第二次右移	0110	1111	1111	1111 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1100	1111	1111	1110
执行异或				
执行第三次右移	0110	0111	1111	1111 0
执行第四次右移	0011	0011	1111	1111 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1001	0011	1111	1110
执行异或				
执行第五次右移	0100	1001	1111	1111 0
执行第六次右移	0010	0100	1111	1111 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1000	0100	1111	1110
执行异或				
执行第七次右移	0100	0010	0111	1111 0
执行第八次右移	0010	0001	0011	1111 1
进位=1, 加载多项式	1010	0000	0000	0001
加载帧的第二个字节			0000	0111
使用帧的第二个字节执行异或	1000	0001	0011	1001
执行第一次右移	0100	0000	1001	1100 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1110	0000	1001	1101
执行异或				
执行第二次右移	0111	0000	0100	1110 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1101	0000	0100	1111
执行异或				
执行第三次右移	0110	1000	0010	0111 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1100	1000	0010	0110
执行异或				
执行第四次右移	0110	0100	0001	0011 0
执行第五次右移	0010	0100	0000	1001 1
进位=1, 加载多项式	1010	0000	0000	0001
使用多项式	1001	0010	0000	1000
执行异或				
执行第六次右移	0100	1001	0000	0100 0
执行第七次右移	0010	0100	1000	0010 0
执行第八次右移	0001	0010	0100	0001 0
CRC 结果	0001	0010	0100	0001
	<b>0x12</b>		<b>0x41</b>	

## LRC 计算示例

地址	01	00000001
功能码	04	00000100
起始地址高位	00	00000000
起始地址低位	00	00000000
寄存器数	08	00001000
累加		00001101
补码 1		11110010
+ 1		00000001
补码 2		11110101

LRC 结果

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## MODBUS 寄存器

功能码 0x03 - 0x04

由 DMG 电力分析仪和 EXS4... 电流测量模块 (EASY BRANCH) 组成的系统被主站视为一系列独立的设备, 每个设备都有自己的 Modbus 节点, 并属于用于连接 DMG 的同一通讯信道。作为默认设置, 电力分析仪具有 Modbus 节点 1, 而 EASY BRANCH 测量点则根据其在系统中的顺序假定一个增量值。例如, 如果有 3 个 EASY BRANCH 测量点:

- DMG Modbus 节点: 1
- Modbus 节点 BRN01 (在 DMG 显示器上识别并显示的第一个测量点): 2
- Modbus 节点 BRN02: 3
- Modbus 节点 BRN03: 4

但是, 必要时, 可以通过访问 DMG 的参数 P07.n.01 和 P20.n.05 对感兴趣的测量点单独设置 Modbus 节点。

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x0002	2	L1 Phase Voltage	L1 相电压	V/100	Unsigned Long	*
0x0004	2	L2 Phase Voltage	L2 相电压	V/100	Unsigned Long	*
0x0006	2	L3 Phase Voltage	L3 相电压	V/100	Unsigned Long	*
0x0008	2	L1 Current	L1 电流	A/10000	Unsigned Long	*
0x000A	2	L2 Current	L2 电流	A/10000	Unsigned Long	*
0x000C	2	L3 Current	L3 电流	A/10000	Unsigned Long	*
0x000E	2	L1-L2 Voltage	L1-L2 电压	V/100	Unsigned Long	*
0x0010	2	L2-L3 Voltage	L2-L3 电压	V/100	Unsigned Long	*
0x0012	2	L3-L1 Voltage	L3-L1 电压	V/100	Unsigned Long	*
0x0014	2	L1 Active Power	L1 有功功率	kW/100000 (1)	Signed Long	*
0x0016	2	L2 Active Power	L2 有功功率	kW/100000 (1)	Signed Long	*
0x0018	2	L3 Active Power	L3 有功功率	kW/100000	Signed Long	*
0x001A	2	L1 Reactive Power	L1 无功功率	kvar/100000 (1)	Signed Long	*
0x001C	2	L2 Reactive Power	L2 无功功率	kvar/100000 (1)	Signed Long	*
0x001E	2	L3 Reactive Power	L3 无功功率	kvar/100000 (1)	Signed Long	*
0x0020	2	L1 Apparent Power	L1 视在功率	kVA/100000 (1)	Unsigned Long	*
0x0022	2	L2 Apparent Power	L2 视在功率	kVA/100000 (1)	Unsigned Long	*
0x0024	2	L3 Apparent Power	L3 视在功率	kVA/100000 (1)	Unsigned Long	*
0x0026	2	L1 Power Factor	L1 功率因数	/10000	Signed Long	*
0x0028	2	L2 Power Factor	L2 功率因数	/10000	Signed Long	*
0x002A	2	L3 Power Factor	L3 功率因数	/10000	Signed Long	*
0x002C	2	L1 Dpf	L1 cos $\phi$	/10000	Unsigned Long	*
0x002E	2	L2 Dpf	L2 cos $\phi$	/10000	Unsigned Long	*
0x0030	2	L3 Dpf	L3 cos $\phi$	/10000	Unsigned Long	*
0x0032	2	Frequency	频率	Hz/1000	Unsigned Long	*
0x0034	2	Eqv Phase Voltage	等效相电压	V/100	Unsigned Long	*
0x0036	2	Eqv Phase-To-Phase Voltage	等效线电压	V/100	Unsigned Long	*
0x0038	2	Eqv Current	等效电流	A/10000	Unsigned Long	*
0x003A	2	Eqv Active Power	等效有功功率	kW/100000 (1)	Signed Long	*
0x003C	2	Eqv Reactive Power	等效无功功率	kvar/100000 (1)	Signed Long	*
0x003E	2	Eqv Apparent Power	等效视在功率	kVA/100000 (1)	Unsigned Long	*
0x0040	2	Eqv Power Factor	等效功率因数	/10000	Signed Long	*
0x0042	2	VLL Unbalance	线电压不平衡	%/100	Unsigned Long	*
0x0044	2	VLN Unbalance	相电压不平衡	%/100	Unsigned Long	*
0x0046	2	Current Unbalance	电流不平衡	%/100	Unsigned Long	*
0x0054	2	Thd L1 Voltage	Thd L1 电压	%/100	Unsigned Long	*
0x0056	2	Thd L2 Voltage	Thd L2 电压	%/100	Unsigned Long	*
0x0058	2	Thd L3 Voltage	Thd L3 电压	%/100	Unsigned Long	*
0x005A	2	THD L1 Current	THD L1 电流	%/100	Unsigned Long	*
0x005C	2	THD L2 Current	THD L2 电流	%/100	Unsigned Long	*
0x005E	2	THD L3 Current	THD L3 电流	%/100	Unsigned Long	*
0x0060	2	Thd L1-2 Voltage	Thd L1-2 电压	%/100	Unsigned Long	*
0x0062	2	Thd L2-3 Voltage	Thd L2-3 电压	%/100	Unsigned Long	*
0x0064	2	Thd L3-1 Voltage	Thd L3-1 电压	%/100	Unsigned Long	*
0x0066	2	THD V4 (DMG9000)	THD V4 (DMG9000)	%/100	Unsigned Long	*
0x0068	2	THD I4	THD I4	%/100	Unsigned Long	*
0x006A	2	Voltage V4-N (DMG9000)	电压 V4-N (DMG9000)	V/100	Unsigned Long	*
0x006C	2	Current I4 (DMG9000)	电流 I4 (DMG9000)	A/10000	Unsigned Long	*
0x0080	2	Reactive power fund L1	无功功率基波 L1	kvar/100000	Unsigned Long	*
0x0082	2	Reactive power fund L2	无功功率基波 L2	kvar/100000	Unsigned Long	*
0x0084	2	Reactive power fund L3	无功功率基波 L3	kvar/100000	Unsigned Long	*
0x0086	2	VL1 peak	VL1 峰值	V/100	Unsigned Long	*
0x0088	2	VL2 peak	VL2 峰值	V/100	Unsigned Long	*
0x008A	2	VL3 peak	VL3 峰值	V/100	Unsigned Long	*
0x008C	2	VL4 peak	VL4 峰值	V/100	Unsigned Long	*
0x008E	2	VL1-L2 peak	VL1-L2 峰值	V/100	Unsigned Long	*
0x0090	2	VL2-L3 peak	VL2-L3 峰值	V/100	Unsigned Long	*
0x0092	2	VL3-L1 peak	VL3-L1 峰值	V/100	Unsigned Long	*
0x0094	2	Peak I1	峰值 I1	A/10000	Unsigned Long	*
0x0096	2	Peak I2	峰值 I2	A/10000	Unsigned Long	*
0x0098	2	Peak I3	峰值 I3	A/10000	Unsigned Long	*
0x009A	2	Peak I4	峰值 I4	A/10000	Unsigned Long	*
0x009C	2	Fundamental VL1	基波 VL1	V/100	Unsigned Long	*
0x009E	2	Fundamental VL2	基波 VL2	V/100	Unsigned Long	*
0x00A0	2	Fundamental VL3	基波 VL3	V/100	Unsigned Long	*
0x00A2	2	Fundamental VL4 (DMG9000)	基波 VL4 (DMG9000)	V/100	Unsigned Long	*
0x00A4	2	Fundamental I1	基波 I1	A/10000	Unsigned Long	*
0x00A6	2	Fundamental I2	基波 I2	A/10000	Unsigned Long	*
0x00A8	2	Fundamental I3	基波 I3	A/10000	Unsigned Long	*
0x00AA	2	Fundamental I4	基波 I4	A/10000	Unsigned Long	*
0x00AC	2	Fundamental VL1-L2	基波 VL1-L2	V/100	Unsigned Long	*
0x00AE	2	Fundamental VL2-L3	基波 VL2-L3	V/100	Unsigned Long	*
0x00B0	2	Fundamental VL3-L1	基波 VL3-L1	V/100	Unsigned Long	*
0x00B2	2	VL1-I1 angle	VL1-I1 相角	°/100	Unsigned Long	*
0x00B4	2	VL2-I2 angle	VL2-I2 相角	°/100	Unsigned Long	*
0x00B6	2	VL3-I3 angle	VL3-I3 相角	°/100	Unsigned Long	*
0x00B8	2	VL1-L2 angle	VL1-L2 相角	°/100	Unsigned Long	*
0x00BA	2	VL2-L3 angle	VL2-L3 相角	°/100	Unsigned Long	*
0x00BC	2	VL3-L1 angle	VL3-L1 相角	°/100	Unsigned Long	*

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x00BE	2	I1-2 angle	I1-2 相角	°/100	Unsigned Long	
0x00C0	2	I2-3 angle	I2-3 相角	°/100	Unsigned Long	
0x00C2	2	I3-1 angle	I3-1 相角	°/100	Unsigned Long	
0x00C4	2	Crest factor L1	峰值因数 L1	/1000	Unsigned Long	
0x00C6	2	Crest factor L2	峰值因数 L2	/1000	Unsigned Long	
0x00C8	2	Crest factor L3	峰值因数 L3	/1000	Unsigned Long	
0x00CA	2	Crest factor I1	峰值因数 I1	/1000	Unsigned Long	
0x00CC	2	Crest factor I2	峰值因数 I2	/1000	Unsigned Long	
0x00CE	2	Crest factor I3	峰值因数 I3	/1000	Unsigned Long	
0x00D0	2	Crest factor VL1-L2	峰值因数 VL1-L2	/1000	Unsigned Long	
0x00D2	2	Crest factor VL2-L3	峰值因数 VL2-L3	/1000	Unsigned Long	
0x00D4	2	Crest factor VL3-L1	峰值因数 VL3-L1	/1000	Unsigned Long	
0x00D6	2	I4 calculated	I4 计算值	A/10000	Unsigned Long	*
0x00D8	2	THD I4 calculated	THD I4 计算值	%/100	Unsigned Long	*
0x00DA	2	Earth current (DMG9000)	接地电流 (DMG9000)	A/10000	Unsigned Long	
0x00DC	2	THD neutral current	THD 中性线电流	%/100	Unsigned Long	*
0x00DE	2	THD earth current (DMG9000)	THD 接地电流 (DMG9000)	%/100	Unsigned Long	
0x00E0	2	Average weekly power factor	平均每周功率因数	/10000	Unsigned Long	
0x00E2	2	Average weekly Tanfi	平均每周 Tanfi	/10000	Unsigned Long	
0x00E4	2	k-factor I1	k-系数 I1	/1000	Unsigned Long	
0x00E6	2	k-factor I2	k-系数 I2	/1000	Unsigned Long	
0x00E8	2	k-factor I3	k-系数 I3	/1000	Unsigned Long	
0x00EA	2	Maximum value of phase voltages	相电压最大值	V/100	Unsigned Long	
0x00EC	2	Minimum value of phase voltages	相电压最小值	V/100	Unsigned Long	
0x00EE	2	Maximum value of phase-to-phase voltages	线电压最大值	V/100	Unsigned Long	
0x00F0	2	Minimum value of phase-to-phase voltages	线电压最小值	V/100	Unsigned Long	
0x00F2	2	Maximum current values	最大电流值	A/10000	Unsigned Long	
0x00F4	2	Minimum current value	最小电流值	A/10000	Unsigned Long	
0x00F6	2	Crest factor VL4 (DMG9000)	峰值因数 VL4 (DMG9000)	/1000	Unsigned Long	
0x0F50	2	Analog Input 1	模拟输入 1	/100	Signed Long	
0x0F52	2	Analog Input 2	模拟输入 2	/100	Signed Long	
0x0F54	2	Analog Input 3	模拟输入 3	/100	Signed Long	
0x0F56	2	Analog Input 4	模拟输入 4	/100	Signed Long	
0x0F58	2	Analog Input 5	模拟输入 5	/100	Signed Long	
0x0F5A	2	Analog Input 6	模拟输入 6	/100	Signed Long	
0x1D00	2	Counters 01	计数器 01	/1	Unsigned Long	
0x1D02	2	Counters 02	计数器 02	/1	Unsigned Long	
0x1D04	2	Counters 03	计数器 03	/1	Unsigned Long	
0x1D06	2	Counters 04	计数器 04	/1	Unsigned Long	
0x1D08	2	Counters 05	计数器 05	/1	Unsigned Long	
0x1D0A	2	Counters 06	计数器 06	/1	Unsigned Long	
0x1D0C	2	Counters 07	计数器 07	/1	Unsigned Long	
0x1D0E	2	Counters 08	计数器 08	/1	Unsigned Long	
0x1E00	2	Hour counter	计时器	s/1	Unsigned Long	
0x1E02	2	Hour counter 2	计时器 2	s/1	Unsigned Long	
0x1E04	2	Hour counter 3	计时器 3	s/1	Unsigned Long	
0x1E06	2	Hour counter 4	计时器 4	s/1	Unsigned Long	
0x1FF0	2	Serial number	序列号	/1	Unsigned Long	*

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x0400	2	High Voltage L1	高电压 L1	V/100	Unsigned Long	*
0x0402	2	High Voltage L2	高电压 L2	V/100	Unsigned Long	*
0x0404	2	High Voltage L3	高电压 L3	V/100	Unsigned Long	*
0x0406	2	High Current L1	大电流 L1	A/10000	Unsigned Long	*
0x0408	2	High Current L2	大电流 L2	A/10000	Unsigned Long	*
0x040A	2	High Current L3	大电流 L3	A/10000	Unsigned Long	*
0x040C	2	High Voltage L1L2	高电压 L1L2	V/100	Unsigned Long	*
0x040E	2	High Voltage L2L3	高电压 L2L3	V/100	Unsigned Long	*
0x0410	2	High Voltage L3L1	高电压 L3L1	V/100	Unsigned Long	*
0x0412	2	High Active Power L1	高有功功率 L1	kW/100000	Signed Long	*
0x0414	2	High Active Power L2	高有功功率 L2	kW/100000	Signed Long	*
0x0416	2	High Active Power L3	高有功功率 L3	kW/100000	Signed Long	*
0x0418	2	High Reactive Power L1	高无功功率 L1	kvar/100000	Signed Long	*
0x041A	2	High Reactive Power L2	高无功功率 L2	kvar/100000	Signed Long	*
0x041C	2	High Reactive Power L3	高无功功率 L3	kvar/100000	Signed Long	*
0x041E	2	High Apparent Power L1	高视在功率 L1	kVA/100000	Unsigned Long	*
0x0420	2	High Apparent Power L2	高视在功率 L2	kVA/100000	Unsigned Long	*
0x0422	2	High Apparent Power L3	高视在功率 L3	kVA/100000	Unsigned Long	*
0x0424	2	High Power Factor L1	高功率因数 L1	/10000	Signed Long	*
0x0426	2	High Power Factor L2	高功率因数 L2	/10000	Signed Long	*
0x0428	2	High Power Factor L3	高功率因数 L3	/10000	Signed Long	*
0x0430	2	High Frequency	高频率	Hz/1000	Unsigned Long	*
0x0432	2	High Voltage Ln Eqv	高电压 Ln 等效	V/100	Unsigned Long	*
0x0434	2	High Voltage LL Eqv	高电压 LL 等效	V/100	Unsigned Long	*
0x0436	2	High Current Eqv	大电流等效	A/10000	Unsigned Long	*
0x0438	2	High Active Power Tot	高有功功率 Tot	kW/100000	Signed Long	*
0x043A	2	High Reactive Power Tot	高无功功率 Tot	kvar/100000	Signed Long	*
0x043C	2	High Apparent Power Tot	高视在功率 Tot	kVA/100000	Unsigned Long	*

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x043E	2	High Power Factor Tot	高功率因数 Tot	/10000	Signed Long	*
0x0440	2	High VII Unbalance	高线电压不平衡	V/100	Unsigned Long	*
0x0442	2	High VIn Unbalance	高相电压不平衡	V/100	Unsigned Long	*
0x0444	2	High Current Unbalance	大电流不平衡	A/10000	Unsigned Long	*
0x0446	2	High Neutral Current	大中性线电流	A/10000	Unsigned Long	*
0x0452	2	High Thd L1	高 Thd L1	%/100	Unsigned Long	*
0x0454	2	High Thd L2	高 Thd L2	%/100	Unsigned Long	*
0x0456	2	High Thd L3	高 Thd L3	%/100	Unsigned Long	*
0x0458	2	High THD I1	高 THD I1	%/100	Unsigned Long	*
0x045A	2	High THD I2	高 THD I2	%/100	Unsigned Long	*
0x045C	2	High THD I3	高 THD I3	%/100	Unsigned Long	*
0x045E	2	High Thd L12	高 Thd L12	%/100	Unsigned Long	*
0x0460	2	High Thd L23	高 Thd L23	%/100	Unsigned Long	*
0x0462	2	High Thd L31	高 Thd L31	%/100	Unsigned Long	*
0x0600	2	Low Voltage L1	低电压 L1	V/100	Unsigned Long	*
0x0602	2	Low Voltage L2	低电压 L2	V/100	Unsigned Long	*
0x0604	2	Low Voltage L3	低电压 L3	V/100	Unsigned Long	*
0x0606	2	Low Current L1	小电流 L1	A/10000	Unsigned Long	*
0x0608	2	Low Current L2	小电流 L2	A/10000	Unsigned Long	*
0x060A	2	Low Current L3	小电流 L3	A/10000	Unsigned Long	*
0x060C	2	Low Voltage L1L2	低电压 L1L2	V/100	Unsigned Long	*
0x060E	2	Low Voltage L2L3	低电压 L2L3	V/100	Unsigned Long	*
0x0610	2	Low Voltage L3L1	低电压 L3L1	V/100	Unsigned Long	*
0x0612	2	Low Active Power L1	低有功功率 L1	kW/100000	Signed Long	*
0x0614	2	Low Active Power L2	低有功功率 L2	kW/100000	Signed Long	*
0x0616	2	Low Active Power L3	低有功功率 L3	kW/100000	Signed Long	*
0x0618	2	Low Reactive Power L1	低无功功率 L1	kvar/100000	Signed Long	*
0x061A	2	Low Reactive Power L2	低无功功率 L2	kvar/100000	Signed Long	*
0x061C	2	Low Reactive Power L3	低无功功率 L3	kvar/100000	Signed Long	*
0x061E	2	Low Apparent Power L1	低视在功率 L1	kVA/100000	Unsigned Long	*
0x0620	2	Low Apparent Power L2	低视在功率 L2	kVA/100000	Unsigned Long	*
0x0622	2	Low Apparent Power L3	低视在功率 L3	kVA/100000	Unsigned Long	*
0x0624	2	Low Power Factor L1	低功率因数 L1	/10000	Signed Long	*
0x0626	2	Low Power Factor L2	低功率因数 L2	/10000	Signed Long	*
0x0628	2	Low Power Factor L3	低功率因数 L3	/10000	Signed Long	*
0x0630	2	Low Frequency	低频率	Hz/1000	Unsigned Long	*
0x0632	2	Low Voltage Ln Eqv	低电压 Ln 等效	V/100	Unsigned Long	*
0x0634	2	Low Voltage II Eqv	低电压 II 等效	V/100	Unsigned Long	*
0x0636	2	Low Current Eqv	小电流等效	A/10000	Unsigned Long	*
0x0638	2	Low Active Power Tot	低有功功率 Tot	kW/100000	Signed Long	*
0x063A	2	Low Reactive Power Tot	低无功功率 Tot	kvar/100000	Signed Long	*
0x063C	2	Low Apparent Power Tot	低视在功率 Tot	kVA/100000	Unsigned Long	*
0x063E	2	Low Power Factor Tot	低功率因数 Tot	/10000	Signed Long	*
0x0640	2	Low VII Unbalance	低 VII 不平衡	V/100	Unsigned Long	*
0x0642	2	Low VIn Unbalance	低 VIn 不平衡	V/100	Unsigned Long	*
0x0644	2	Low Current Unbalance	小电流不平衡	A/10000	Unsigned Long	*
0x0646	2	Low Neutral Current	低中性线电流	A/10000	Unsigned Long	*
0x0652	2	Low Thd L1	低 Thd L1	%/100	Unsigned Long	*
0x0654	2	Low Thd L2	低 Thd L2	%/100	Unsigned Long	*
0x0656	2	Low Thd L3	低 Thd L3	%/100	Unsigned Long	*
0x0658	2	Low Thd I1	低 Thd I1	%/100	Unsigned Long	*
0x065A	2	Low Thd I2	低 Thd I2	%/100	Unsigned Long	*
0x065C	2	Low Thd I3	低 Thd I3	%/100	Unsigned Long	*
0x065E	2	Low Thd L12	低 Thd L12	%/100	Unsigned Long	*
0x0660	2	Low Thd L23	低 Thd L23	%/100	Unsigned Long	*
0x0662	2	Low Thd L31	低 Thd L31	%/100	Unsigned Long	*
0x0800	2	Average Voltage L1	平均电压 L1	V/100	Unsigned Long	*
0x0802	2	Average Voltage L2	平均电压 L2	V/100	Unsigned Long	*
0x0804	2	Average Voltage L3	平均电压 L3	V/100	Unsigned Long	*
0x0806	2	Average Current L1	平均电流 L1	A/10000	Unsigned Long	*
0x0808	2	Average Current L2	平均电流 L2	A/10000	Unsigned Long	*
0x080A	2	Average Current L3	平均电流 L3	A/10000	Unsigned Long	*
0x080C	2	Average Voltage L1L2	平均电压 L1L2	V/100	Unsigned Long	*
0x080E	2	Average Voltage L2L3	平均电压 L2L3	V/100	Unsigned Long	*
0x0810	2	Average Voltage L3L1	平均电压 L3L1	V/100	Unsigned Long	*
0x0812	2	Average Active Power L1	平均有功功率 L1	kW/100000	Signed Long	*
0x0814	2	Average Active Power L2	平均有功功率 L2	kW/100000	Signed Long	*
0x0816	2	Average Active Power L3	平均有功功率 L3	kW/100000	Signed Long	*
0x0818	2	Average Reactive Power L1	平均无功功率 L1	kvar/100000	Signed Long	*
0x081A	2	Average Reactive Power L2	平均无功功率 L2	kvar/100000	Signed Long	*
0x081C	2	Average Reactive Power L3	平均无功功率 L3	kvar/100000	Signed Long	*
0x081E	2	Average Apparent Power L1	平均视在功率 L1	kVA/100000	Unsigned Long	*
0x0820	2	Average Apparent Power L2	平均视在功率 L2	kVA/100000	Unsigned Long	*
0x0822	2	Average Apparent Power L3	平均视在功率 L3	kVA/100000	Unsigned Long	*
0x0824	2	Average Power Factor L1	平均功率因数 L1	/10000	Signed Long	*
0x0826	2	Average Power Factor L2	平均功率因数 L2	/10000	Signed Long	*
0x0828	2	Average Power Factor L3	平均功率因数 L3	/10000	Signed Long	*
0x0830	2	Average Frequency	平均频率	Hz/1000	Unsigned Long	*
0x0832	2	Average Voltage Ln Eqv	平均电压 Ln 等效	V/100	Unsigned Long	*

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x0834	2	Average Voltage LI Eqv	平均电压 II 等效	V/100	Unsigned Long	•
0x0836	2	Average Current Eqv	平均电流等效	A/10000	Unsigned Long	•
0x0838	2	Average Active Power Tot	平均有功功率 Tot	kW/100000	Signed Long	•
0x083A	2	Average Reactive Power Tot	平均无功功率 Tot	kvar/100000	Signed Long	•
0x083C	2	Average Apparent Power Tot	平均视在功率 Tot	kVA/100000	Unsigned Long	•
0x083E	2	Average Power Factor Tot	平均功率因数 Tot	/10000	Signed Long	•
0x0840	2	Average VII Unbalance	平均 VII 不平衡	V/100	Unsigned Long	•
0x0842	2	Average VIn Unbalance	平均 VIn 不平衡	V/100	Unsigned Long	•
0x0844	2	Average Current Unbalance	平均电流不平衡	A/10000	Unsigned Long	•
0x0846	2	Average Neutral Current	平均中性线电流	A/10000	Unsigned Long	•
0x0852	2	Average Thd L1	平均 Thd L1	%/100	Unsigned Long	•
0x0854	2	Average Thd L2	平均 Thd L2	%/100	Unsigned Long	•
0x0856	2	Average Thd L3	平均 Thd L3	%/100	Unsigned Long	•
0x0858	2	Average Thd I1	平均 Thd I1	%/100	Unsigned Long	•
0x085A	2	Average Thd I2	平均 Thd I2	%/100	Unsigned Long	•
0x085C	2	Average Thd I3	平均 Thd I3	%/100	Unsigned Long	•
0x085E	2	Average Thd L12	平均 Thd L12	%/100	Unsigned Long	•
0x0860	2	Average Thd L23	平均 Thd L23	%/100	Unsigned Long	•
0x0862	2	Average Thd L31	平均 Thd L31	%/100	Unsigned Long	•
0x0A00	2	Max Demand Voltage L1	最大需量电压 L1	V/100	Unsigned Long	•
0x0A02	2	Max Demand Voltage L2	最大需量电压 L2	V/100	Unsigned Long	•
0x0A04	2	Max Demand Voltage L3	最大需量电压 L3	V/100	Unsigned Long	•
0x0A06	2	Max Demand Current L1	最大需量电流 L1	A/10000	Unsigned Long	•
0x0A08	2	Max Demand Current L2	最大需量电流 L2	A/10000	Unsigned Long	•
0x0A0A	2	Max Demand Current L3	最大需量电流 L3	A/10000	Unsigned Long	•
0x0A0C	2	Max Demand Voltage L1L2	最大需量电压 L1L2	V/100	Unsigned Long	•
0x0A0E	2	Max Demand Voltage L2L3	最大需量电压 L2L3	V/100	Unsigned Long	•
0x0A10	2	Max Demand Voltage L3L1	最大需量电压 L3L1	V/100	Unsigned Long	•
0x0A12	2	Max Demand Active Power L1	最大需量有功功率 L1	kW/100000	Signed Long	•
0x0A14	2	Max Demand Active Power L2	最大需量有功功率 L2	kW/100000	Signed Long	•
0x0A16	2	Max Demand Active Power L3	最大需量有功功率 L3	kW/100000	Signed Long	•
0x0A18	2	Max Demand Reactive Power L1	最大需量无功功率 L1	kvar/100000	Signed Long	•
0x0A1A	2	Max Demand Reactive Power L2	最大需量无功功率 L2	kvar/100000	Signed Long	•
0x0A1C	2	Max Demand Reactive Power L3	最大需量无功功率 L3	kvar/100000	Signed Long	•
0x0A1E	2	Max Demand Apparent Power L1	最大需量视在功率 L1	kVA/100000	Unsigned Long	•
0x0A20	2	Max Demand Apparent Power L2	最大需量视在功率 L2	kVA/100000	Unsigned Long	•
0x0A22	2	Max Demand Apparent Power L3	最大需量视在功率 L3	kVA/100000	Unsigned Long	•
0x0A24	2	Max Demand Power Factor L1	最大需量功率因数 L1	/10000	Signed Long	•
0x0A26	2	Max Demand Power Factor L2	最大需量功率因数 L2	/10000	Signed Long	•
0x0A28	2	Max Demand Power Factor L3	最大需量功率因数 L3	/10000	Signed Long	•
0x0A30	2	Max Demand Frequency	最大需量频率	Hz/1000	Unsigned Long	•
0x0A32	2	Max Demand Voltage Ln Eqv	最大需量电压 Ln 等效	V/100	Unsigned Long	•
0x0A34	2	Max Demand Voltage LI Eqv	最大需量电压 LI 等效	V/100	Unsigned Long	•
0x0A36	2	Max Demand Current Eqv	最大需量电流等效	A/10000	Unsigned Long	•
0x0A38	2	Max Demand Active Power Tot	最大需量有功功率 Tot	kW/100000	Signed Long	•
0x0A3A	2	Max Demand Reactive Power Tot	最大需量无功功率 Tot	kvar/100000	Signed Long	•
0x0A3C	2	Max Demand Apparent Power Tot	最大需量视在功率 Tot	kVA/100000	Unsigned Long	•

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x1B20	4	Active Energy - Import	有功电能 — 正向	kWh/100	Unsigned Long	•
0x1B24	4	Active Energy - Export	有功电能 — 反向	kWh/100	Signed Long	•
0x1B28	4	Reactive Energy - Import	无功电能 — 正向	kvarh/100	Unsigned Long	•
0x1B2C	4	Reactive Energy - Export	无功电能 — 反向	kvarh/100	Signed Long	•
0x1B30	4	Apparent Energy	视在电能	kVAh/100	Unsigned Long	•
0x1B34	4	Partial Active Energy - Import	分计有功电能 — 正向	kWh/100	Unsigned Long	•
0x1B38	4	Partial Active Energy - Export	分计有功电能 — 反向	kWh/100	Signed Long	•
0x1B3C	4	Partial Reactive Energy - Import	分计无功电能 — 正向	kvarh/100	Unsigned Long	•
0x1B40	4	Partial Reactive Energy - Export	分计无功电能 — 反向	kvarh/100	Signed Long	•
0x1B44	4	Partial Apparent Energy	分计视在电能	kVAh/100	Unsigned Long	•
0x1B48	4	T1 Active Energy (Imp)	T1 有功电能 (正)	kWh/100	Unsigned Long	•
0x1B4C	4	T1 Active Energy (Exp)	T1 有功电能 (反)	kWh/100	Unsigned Long	•
0x1B50	4	T1 Reactive Energy (Imp)	T1 无功电能 (正)	kvarh/100	Unsigned Long	•
0x1B54	4	T1 Reactive Energy (Exp)	T1 无功电能 (反)	kvarh/100	Unsigned Long	•
0x1B58	4	T1 Apparent Energy	T1 视在电能	kVAh/100	Unsigned Long	•
0x1B5C	4	T2 Active Energy (Imp)	T2 有功电能 (正)	kWh/100	Unsigned Long	•
0x1B60	4	T2 Active Energy (Exp)	T2 有功电能 (反)	kWh/100	Unsigned Long	•
0x1B64	4	T2 Reactive Energy (Imp)	T2 无功电能 (正)	kvarh/100	Unsigned Long	•
0x1B68	4	T2 Reactive Energy (Exp)	T2 无功电能 (反)	kvarh/100	Unsigned Long	•
0x1B6C	4	T2 Apparent Energy	T2 视在电能	kVAh/100	Unsigned Long	•
0x1B70	4	T3 Active Energy (Imp)	T3 有功电能 (正)	kWh/100	Unsigned Long	•
0x1B74	4	T3 Active Energy (Exp)	T3 有功电能 (反)	kWh/100	Unsigned Long	•
0x1B78	4	T3 Reactive Energy (Imp)	T3 无功电能 (正)	kvarh/100	Unsigned Long	•
0x1B7C	4	T3 Reactive Energy (Exp)	T3 无功电能 (反)	kvarh/100	Unsigned Long	•
0x1B80	4	T3 Apparent Energy	T3 视在电能	kVAh/100	Unsigned Long	•
0x1B84	4	T4 Active Energy (Imp)	T4 有功电能 (正)	kWh/100	Unsigned Long	•
0x1B88	4	T4 Active Energy (Exp)	T4 有功电能 (反)	kWh/100	Unsigned Long	•
0x1B8C	4	T4 Reactive Energy (Imp)	T4 无功电能 (正)	kvarh/100	Unsigned Long	•
0x1B90	4	T4 Reactive Energy (Exp)	T4 无功电能 (反)	kvarh/100	Unsigned Long	•

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x1B94	4	T4 Apparent Energy	T4 视在电能	kVAh/100	Unsigned Long	
0x1B98	4	L1 Active Energy - Import	L1 有功电能 — 正向	kWh/100	Unsigned Long	*
0x1B9C	4	L1 Active Energy - Export	L1 有功电能 — 反向	kWh/100	Unsigned Long	*
0x1BA0	4	L1 Reactive Energy - Import	L1 无功电能 — 正向	kvarh/100	Unsigned Long	*
0x1BA4	4	L1 Reactive Energy - Export	L1 无功电能 — 反向	kvarh/100	Unsigned Long	*
0x1BA8	4	L1 Apparent Energy	L1 视在电能	kVAh/100	Unsigned Long	*
0x1BAC	4	L2 Active Energy - Import	L2 有功电能 — 正向	kWh/100	Unsigned Long	*
0x1BB0	4	L2 Active Energy - Export	L2 有功电能 — 反向	kWh/100	Unsigned Long	*
0x1BB4	4	L2 Reactive Energy - Import	L2 无功电能 — 正向	kvarh/100	Unsigned Long	*
0x1BB8	4	L2 Reactive Energy - Export	L2 无功电能 — 反向	kvarh/100	Unsigned Long	*
0x1BBC	4	L2 Apparent Energy	L2 视在电能	kVAh/100	Unsigned Long	*
0x1BC0	4	L3 Active Energy - Import	L3 有功电能 — 正向	kWh/100	Unsigned Long	*
0x1BC4	4	L3 Active Energy - Export	L3 有功电能 — 反向	kWh/100	Unsigned Long	*
0x1BC8	4	L3 Reactive Energy - Import	L3 无功电能 — 正向	kvarh/100	Unsigned Long	*
0x1BCC	4	L3 Reactive Energy - Export	L3 无功电能 — 反向	kvarh/100	Unsigned Long	*
0x1BD0	4	L3 Apparent Energy	L3 视在电能	kVAh/100	Unsigned Long	*
0x1BD4	4	Partial L1 Active Energy - Import	分计 L1 有功电能 — 正向	kWh/100	Unsigned Long	*
0x1BD8	4	Partial L1 Active Energy - Export	分计 L1 有功电能 — 反向	kWh/100	Unsigned Long	*
0x1BDC	4	Partial L1 Reactive Energy - Import	分计 L1 无功电能 — 正向	kvarh/100	Unsigned Long	*
0x1BE0	4	Partial L1 Reactive Energy - Export	分计 L1 无功电能 — 反向	kvarh/100	Unsigned Long	*
0x1BE4	4	Partial L1 Apparent Energy	分计 L1 视在电能	kVAh/100	Unsigned Long	*
0x1BE8	4	Partial L2 Active Energy - Import	分计 L2 有功电能 — 正向	kWh/100	Unsigned Long	*
0x1BEC	4	Partial L2 Active Energy - Export	分计 L2 有功电能 — 反向	kWh/100	Unsigned Long	*
0x1BF0	4	Partial L2 Reactive Energy - Import	分计 L2 无功电能 — 正向	kvarh/100	Unsigned Long	*
0x1BF4	4	Partial L2 Reactive Energy - Export	分计 L2 无功电能 — 反向	kvarh/100	Unsigned Long	*
0x1BF8	4	Partial L2 Apparent Energy	分计 L2 视在电能	kVAh/100	Unsigned Long	*
0x1BFC	4	Partial L3 Active Energy - Import	分计 L3 有功电能 — 正向	kWh/100	Unsigned Long	*
0x1C00	4	Partial L3 Active Energy - Export	分计 L3 有功电能 — 反向	kWh/100	Unsigned Long	*
0x1C04	4	Partial L3 Reactive Energy - Import	分计 L3 无功电能 — 正向	kvarh/100	Unsigned Long	*
0x1C08	4	Partial L3 Reactive Energy - Export	分计 L3 无功电能 — 反向	kvarh/100	Unsigned Long	*
0x1C0C	4	Partial L3 Apparent Energy	分计 L3 视在电能	kVAh/100	Unsigned Long	*
0x1C10	4	T1 Active Energy (Imp) L1	T1 有功电能 (正) L1	kWh/100	Unsigned Long	
0x1C14	4	T1 Active Energy (Exp) L1	T1 有功电能 (反) L1	kWh/100	Unsigned Long	
0x1C18	4	T1 Reactive Energy (Imp) L1	T1 无功电能 (正) L1	kvarh/100	Unsigned Long	
0x1C1C	4	T1 Reactive Energy (Exp) L1	T1 无功电能 (反) L1	kvarh/100	Unsigned Long	
0x1C20	4	T1 Apparent Energy L1	T1 视在电能 L1	kVAh/100	Unsigned Long	
0x1C24	4	T1 Active Energy (Imp) L2	T1 有功电能 (正) L2	kWh/100	Unsigned Long	
0x1C28	4	T1 Active Energy (Exp) L2	T1 有功电能 (反) L2	kWh/100	Unsigned Long	
0x1C2C	4	T1 Reactive Energy (Imp) L2	T1 无功电能 (正) L2	kvarh/100	Unsigned Long	
0x1C30	4	T1 Reactive Energy (Exp) L2	T1 无功电能 (反) L2	kvarh/100	Unsigned Long	
0x1C34	4	T1 Apparent Energy L2	T1 视在电能 L2	kVAh/100	Unsigned Long	
0x1C38	4	T1 Active Energy (Imp) L3	T1 有功电能 (正) L3	kWh/100	Unsigned Long	
0x1C3C	4	T1 Active Energy (Exp) L3	T1 有功电能 (反) L3	kWh/100	Unsigned Long	
0x1C40	4	T1 Reactive Energy (Imp) L3	T1 无功电能 (正) L3	kvarh/100	Unsigned Long	
0x1C44	4	T1 Reactive Energy (Exp) L3	T1 无功电能 (反) L3	kvarh/100	Unsigned Long	
0x1C48	4	T1 Apparent Energy L3	T1 视在电能 L3	kVAh/100	Unsigned Long	
0x1C4C	4	T2 Active Energy (Imp) L1	T2 有功电能 (正) L1	kWh/100	Unsigned Long	
0x1C50	4	T2 Active Energy (Exp) L1	T2 有功电能 (反) L1	kWh/100	Unsigned Long	
0x1C54	4	T2 Reactive Energy (Imp) L1	T2 无功电能 (正) L1	kvarh/100	Unsigned Long	
0x1C58	4	T2 Reactive Energy (Exp) L1	T2 无功电能 (反) L1	kvarh/100	Unsigned Long	
0x1C5C	4	T2 Apparent Energy L1	T2 视在电能 L1	kVAh/100	Unsigned Long	
0x1C60	4	T2 Active Energy (Imp) L2	T2 有功电能 (正) L2	kWh/100	Unsigned Long	
0x1C64	4	T2 Active Energy (Exp) L2	T2 有功电能 (反) L2	kWh/100	Unsigned Long	
0x1C68	4	T2 Reactive Energy (Imp) L2	T2 无功电能 (正) L2	kvarh/100	Unsigned Long	
0x1C6C	4	T2 Reactive Energy (Exp) L2	T2 无功电能 (反) L2	kvarh/100	Unsigned Long	
0x1C70	4	T2 Apparent Energy L2	T2 视在电能 L2	kVAh/100	Unsigned Long	
0x1C74	4	T2 Active Energy (Imp) L3	T2 有功电能 (正) L3	kWh/100	Unsigned Long	
0x1C78	4	T2 Active Energy (Exp) L3	T2 有功电能 (反) L3	kWh/100	Unsigned Long	
0x1C7C	4	T2 Reactive Energy (Imp) L3	T2 无功电能 (正) L3	kvarh/100	Unsigned Long	
0x1C80	4	T2 Reactive Energy (Exp) L3	T2 无功电能 (反) L3	kvarh/100	Unsigned Long	
0x1C84	4	T2 Apparent Energy L3	T2 视在电能 L3	kVAh/100	Unsigned Long	
0x1C88	4	T3 Active Energy (Imp) L1	T3 有功电能 (正) L1	kWh/100	Unsigned Long	
0x1C8C	4	T3 Active Energy (Exp) L1	T3 有功电能 (反) L1	kWh/100	Unsigned Long	
0x1C90	4	T3 Reactive Energy (Imp) L1	T3 无功电能 (正) L1	kvarh/100	Unsigned Long	
0x1C94	4	T3 Reactive Energy (Exp) L1	T3 无功电能 (反) L1	kvarh/100	Unsigned Long	
0x1C98	4	T3 Apparent Energy L1	T3 视在电能 L1	kVAh/100	Unsigned Long	
0x1C9C	4	T3 Active Energy (Imp) L2	T3 有功电能 (正) L2	kWh/100	Unsigned Long	
0x1CA0	4	T3 Active Energy (Exp) L2	T3 有功电能 (反) L2	kWh/100	Unsigned Long	
0x1CA4	4	T3 Reactive Energy (Imp) L2	T3 无功电能 (正) L2	kvarh/100	Unsigned Long	
0x1CA8	4	T3 Reactive Energy (Exp) L2	T3 无功电能 (反) L2	kvarh/100	Unsigned Long	
0x1CAC	4	T3 Apparent Energy L2	T3 视在电能 L2	kVAh/100	Unsigned Long	
0x1CB0	4	T3 Active Energy (Imp) L3	T3 有功电能 (正) L3	kWh/100	Unsigned Long	
0x1CB4	4	T3 Active Energy (Exp) L3	T3 有功电能 (反) L3	kWh/100	Unsigned Long	
0x1CB8	4	T3 Reactive Energy (Imp) L3	T3 无功电能 (正) L3	kvarh/100	Unsigned Long	
0x1CBC	4	T3 Reactive Energy (Exp) L3	T3 无功电能 (反) L3	kvarh/100	Unsigned Long	
0x1CC0	4	T3 Apparent Energy L3	T3 视在电能 L3	kVAh/100	Unsigned Long	
0x1CC4	4	T4 Active Energy (Imp) L1	T4 有功电能 (正) L1	kWh/100	Unsigned Long	
0x1CC8	4	T4 Active Energy (Exp) L1	T4 有功电能 (反) L1	kWh/100	Unsigned Long	
0x1CCC	4	T4 Reactive Energy (Imp) L1	T4 无功电能 (正) L1	kvarh/100	Unsigned Long	

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x1CD0	4	T4 Reactive Energy (Exp) L1	T4 无功电能 (反) L1	kvarh/100	Unsigned Long	
0x1CD4	4	T4 Apparent Energy L1	T4 视在电能 L1	kVAh/100	Unsigned Long	
0x1CD8	4	T4 Active Energy (Imp) L2	T4 有功电能 (正) L2	kWh/100	Unsigned Long	
0x1CDC	4	T4 Active Energy (Exp) L2	T4 有功电能 (反) L2	kWh/100	Unsigned Long	
0x1CE0	4	T4 Reactive Energy (Imp) L2	T4 无功电能 (正) L2	kvarh/100	Unsigned Long	
0x1CE4	4	T4 Reactive Energy (Exp) L2	T4 无功电能 (反) L2	kvarh/100	Unsigned Long	
0x1CE8	4	T4 Apparent Energy L2	T4 视在电能 L2	kVAh/100	Unsigned Long	
0x1CEC	4	T4 Active Energy (Imp) L3	T4 有功电能 (正) L3	kWh/100	Unsigned Long	
0x1CF0	4	T4 Active Energy (Exp) L3	T4 有功电能 (反) L3	kWh/100	Unsigned Long	
0x1CF4	4	T4 Reactive Energy (Imp) L3	T4 无功电能 (正) L3	kvarh/100	Unsigned Long	
0x1CF8	4	T4 Reactive Energy (Exp) L3	T4 无功电能 (反) L3	kvarh/100	Unsigned Long	
0x1CFC	4	T4 Apparent Energy L3	T4 视在电能 L3	kVAh/100	Unsigned Long	

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式	Available for EXS4 可用于 EXS4
0x0C00	2	Harmonic 2 VL1	谐波 2 VL1	/100	Unsigned Long	*
0x0C02	2	Harmonic 3 VL1	谐波 3 VL1	/100	Unsigned Long	*
...	...	...	...	...	...	*
0x0C3A	2	Harmonic 31 VL1	谐波 31 VL1	/100	Unsigned Long	*
0x0C40	2	Harmonic 2 VL2	谐波 2 VL2	/100	Unsigned Long	*
0x0C42	2	Harmonic 3 VL2	谐波 3 VL2	/100	Unsigned Long	*
...	...	...	...	...	...	*
0x0C7A	2	Harmonic 31 VL2	谐波 31 VL2	/100	Unsigned Long	*
0x0C80	2	Harmonic 2 VL3	谐波 2 VL3	/100	Unsigned Long	*
0x0C82	2	Harmonic 3 VL3	谐波 3 VL3	/100	Unsigned Long	*
...	...	...	...	...	...	*
0x0CBA	2	Harmonic 31 VL3	谐波 31 VL3	/100	Unsigned Long	*
0x0CC0	2	Harmonic 1 I1	谐波 1 I1	/100	Unsigned Long	*
0x0CC2	2	Harmonic 2 I1	谐波 2 I1	/100	Unsigned Long	*
...	2	...	...	...	...	*
0x0CFA	2	Harmonic 31 I1	谐波 31 I1	/100	Unsigned Long	*
0x0D00	2	Harmonic 1 I2	谐波 1 I2	/100	Unsigned Long	*
0x0D02	2	Harmonic 2 I2	谐波 2 I2	/100	Unsigned Long	*
...	2	...	...	...	...	*
0x0D3A	2	Harmonic 31 I2	谐波 31 I2	/100	Unsigned Long	*
0x0D40	2	Harmonic 1 I3	谐波 1 I3	/100	Unsigned Long	*
0x0D42	2	Harmonic 2 I3	谐波 2 I3	/100	Unsigned Long	*
...	2	...	...	...	...	*
0x0D7A	2	Harmonic 31 I3	谐波 31 I3	/100	Unsigned Long	*
0x0D80	2	Harmonic 2 VL12	谐波 2 VL12	/100	Unsigned Long	*
0x0D82	2	Harmonic 3 VL12	谐波 3 VL12	/100	Unsigned Long	*
...	...	...	...	...	...	*
0x0DBA	2	Harmonic 31 VL12	谐波 31 VL12	/100	Unsigned Long	*
0x0DC0	2	Harmonic 2 VL23	谐波 2 VL23	/100	Unsigned Long	*
0x0DC2	2	Harmonic 3 VL23	谐波 3 VL23	/100	Unsigned Long	*
...	...	...	...	...	...	*
0x0DFA	2	Harmonic 31 VL23	谐波 31 VL23	/100	Unsigned Long	*
0x0E00	2	Harmonic 2 VL31	谐波 2 VL31	/100	Unsigned Long	*
0x0E02	2	Harmonic 3 VL31	谐波 3 VL31	/100	Unsigned Long	*
...	...	...	...	...	...	*
0x0E3A	2	Harmonic 31 VL31	谐波 31 VL31	/100	Unsigned Long	*

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式
0x2100	1	Input 1 (bit 0) - 12 (bit 11)	输入 1 (bit 0) — 12 (bit 11)	/1	Unsigned Int
0x2110	1	Output 1 (bit 0) - 12 (bit 11)	输出 1 (bit 0) — 12 (bit 11)	/1	Unsigned Int
0x2120	3	Alarm 1 (bit 0) - 40 (bit 39)	报警 1 (bit 0) — 40 (bit 39)	/1	Unsigned Int
0x2130	3	PLC 1 (bit 0) - 40 (bit 39)	PLC 1 (bit 0) — 40 (bit 39)	/1	Unsigned Int
0x2140	3	Limit 1 (bit 0) - 40 (bit 39)	极限 1 (bit 0) — 40 (bit 39)	/1	Unsigned Int
0x4F00	3	Remote variable 1 (bit 0) - 40 (bit 39)	远程变量 1 (bit 0) — 40 (bit 39)	/1	Unsigned Int

REAL TIME CLOCK  
FUNCTION 0x03 - 0x04 - 0x06 - 0x10

实时时钟  
功能码 0x03 - 0x04 - 0x06 - 0x10

Address 地址	Word 字	Description	描述	Unit 单位	Format 格式
0x28F0	1	Year	年	/1	Unsigned Int
0x28F1	1	Month	月	/1	Unsigned Int
0x28F2	1	Day	日	/1	Unsigned Int
0x28F3	1	Hour	时	/1	Unsigned Int
0x28F4	1	Minutes	分	/1	Unsigned Int
0x28F5	1	Seconds	秒	/1	Unsigned Int

The following registers are available for DMG9000 only

以下寄存器仅适用于 DMG9000



Address 地址	Word 字	Description	描述	Unit 单位	Format 格式
0x1800	2	Dip	DIP 骤降	/1	Unsigned Long
0x1802	2	Swell	SWELL 骤升	/1000	Signed Long
0x1804	2	Interruptions	中断	/1	Unsigned Long
0x1806	2	Interruptions > 180S	中断 > 180S	/1	Unsigned Long
0x1808	2	Voltage variation NHI	电压变化 NHI	/1	Unsigned Long
0x180A	2	Voltage variation HI	电压变化 HI	/1	Unsigned Long
0x180C	2	Voltage variation NLOW	电压变化 NLOW	/1	Unsigned Long
0x180E	2	Voltage variation LOW	电压变化 LOW	/1	Unsigned Long
0x1810	2	THD	THD	/1	Unsigned Long
0x1812	2	Asymmetry	不对称	/1	Unsigned Long
0x1814	2	Frequency variation NHI	频率变化 NHI	/1	Unsigned Long
0x1816	2	Frequency variation HI	频率变化 HI	/1	Unsigned Long
0x1818	2	Frequency variation NLOW	频率变化 NLOW	/1	Unsigned Long
0x181A	2	Frequency variation LOW	频率变化 LOW	/1	Unsigned Long
0x181C	2	Harmonics	谐波	/1	Unsigned Long
0x33E0	1	Overvoltage (Weekly)	过电压 (每周)	%/10	Unsigned Long
0x33E1	1	Undervoltage (Weekly)	欠电压 (每周)	%/10	Unsigned Long
0x33E3	1	Voltage asymmetry (Weekly)	电压不对称 (每周)	%/10	Unsigned Long
0x33E4	1	Overfrequency (Weekly)	过频率 (每周)	%/10	Unsigned Long
0x33E5	1	Underfrequency (Weekly)	欠频率 (每周)	%/10	Unsigned Long
0x33E5	1	Voltage THD (Weekly)	电压 THD (每周)	%/10	Unsigned Long
0x33E6	1	Voltage single harmonics (Weekly)	电压单次谐波 (每周)	%/10	Unsigned Long
0x3770	1	Overvoltage (Yearly)	过电压 (每年)	%/10	Unsigned Long
0x3771	1	Undervoltage (Yearly)	欠电压 (每年)	%/10	Unsigned Long
0x3772	1	Voltage THD (Yearly)	电压 THD (每年)	%/10	Unsigned Long
0x3773	1	Voltage asymmetry (Yearly)	电压不对称 (每年)	%/10	Unsigned Long
0x3774	1	Overfrequency (Yearly)	过频率 (每年)	%/10	Unsigned Long
0x3775	1	Underfrequency (Yearly)	欠频率 (每年)	%/10	Unsigned Long
0x3776	1	Voltage single harmonics (Yearly)	电压单次谐波 (每年)	%/10	Unsigned Long

## PARAMETERS SETUP

FUNCTION 0x06 - 0x10

The parameters are read and modified according to the following rules.

## 参数设置

功能码 0x06 - 0x10

参数根据以下规则读取和修改。

Address 地址	Word 字	Meaning 含义	Function 功能码	Example 示例
0x5000	1	Menu number selection 菜单编号选择	0x04 read 读 0x06 write 写	Write value 1 to select the menu number 1 写入值 1 选择菜单编号 1
0x5001	1	Submenu number selection 子菜单编号选择	0x04 read 读 0x06 write 写	Write value 4 to select the submenu number 4. If the submenu number is not required, write 0. 写入值 4 选择子菜单编号 4 如果不需要子菜单编号, 则写入 0
0x5002	1	Parameter number selection 参数编号选择	0x04 read 读 0x06 write 写	Write value 2 to select the parameter number 2 写入值 2 选择参数编号 2
0x5004	1...28	Parameter value 参数值	0x04 read 读 0x06 write 写 0x10 multi-write 写入多个	
0x2F03	1	Save to flash memory 保存到闪存	0x06 write 写	Value=5 值=5

## Example: language setting from menu M02 - Utility, P02.01

Menu 02: 01 06 4F FF 00 02 2E EF

Submenu: not necessary

Parameter P02.01 (Language): 01 06 50 01 00 01 08 CA

Parameter value (Language=Spanish): 01 06 50 03 00 03 28 CB

## Example: alarm n.2 source from menu M09 - Alarms, P09.02.01

Menu 09: 01 06 4F FF 00 09 6F 28

Submenu 02: 01 06 50 00 00 02 19 0B

Parameter P09.02.01: 01 06 50 01 00 01 08 CA

Parameter value (LIM=1): 01 06 50 03 00 01 A9 0A

Save

01 06 2F 02 00 05 E0 DD

The device saves and reboots (no response modbus protocol message will be received).

## COMMANDS

FUNCTION 0x06

## 示例: 菜单 M02 - 实用功能的语言设置, P02.01

菜单 02: 01 06 4F FF 00 02 2E EF

子菜单: 不需要

参数 P02.01 (语言): 01 06 50 01 00 01 08 CA

参数值 (语言=西班牙语): 01 06 50 03 00 03 28 CB

## 示例: 菜单 M09 - 报警的报警 n.2 来源, P09.02.01

菜单 09: 01 06 4F FF 00 09 6F 28

子菜单 02: 01 06 50 00 00 02 19 0B

参数 P09.02.01: 01 06 50 01 00 01 08 CA

参数值 (LIM=1): 01 06 50 03 00 01 A9 0A

保存

01 06 2F 02 00 05 E0 DD

设备保存并重启 (将不会收到任何响应 Modbus 协议消息)。

命令

功能码 0x06

Address 地址	Word 字	Value 值	Format 格式	Description	描述	Available for EXS4 可用于 EXS4
0x2FF0	1	0x00	Unsigned int	Reset MAX-MIN	复位最大和最小值	•
0x2FF0	1	0x01	Unsigned int	Reset MAX demand	复位最大需求	•
0x2FF0	1	0x02	Unsigned int	Reset partial and tariff energy counters	复位分计和费率电能计数器	•
0x2FF0	1	0x03	Unsigned int	Reset partial hour counters	复位分计时器	
0x2FF0	1	0x04	Unsigned int	Reset counters	复位计数器	
0x2FF0	1	0x05	Unsigned int	Reset alarms	复位报警	
0x2FF0	1	0x06	Unsigned int	Reset limit thresholds	复位极限阈值	
0x2FF0	1	0x08	Unsigned int	Setup to default (run a system reboot after this command)	设置为默认值 (在此命令后执行系统重启)	
0x2FF0	1	0x0C	Unsigned int	Reset event list	复位事件列表	
0x2FF0	1	0xFF	Unsigned int	Reset energy quality counters (DMG9000)	复位电能质量计数器 (DMG9000)	
0x2FF0	1	0x10	Unsigned int	Reset energy quality statistics (DMG9000)	复位电能质量统计 (DMG9000)	
0x4200	1	0x01	Unsigned int	Set energy tariff 1	设置电能费率 1	

Address 地址	Word 字	Value 值	Format 格式	Description	描述	Available for EXS4 可用于 EXS4
0x4200	1	0x02	Unsigned int	Set energy tariff 2	设置电能费率 2	
0x4200	1	0x03	Unsigned int	Set energy tariff 3	设置电能费率 3	
0x4200	1	0x04	Unsigned int	Set energy tariff 4	设置电能费率 4	
0x2F03	1	0x05	Unsigned int	System reboot	系统重启	
0x4F00	1	0xAA	Unsigned int	Set REM1 to ON	将 REM1 设为 ON	
0x4F01	1	0xAA	Unsigned int	Set REM2 to ON	将 REM2 设为 ON	
...	...	...	...	...	...	
0x4F27	1	0xAA	Unsigned int	Set REM40 to OFF	将 REM40 设为 OFF	
0x4F00	1	0xBB	Unsigned int	Set REM1 to OFF	将 REM1 设为 OFF	
0x4F01	1	0xBB	Unsigned int	Set REM2 to OFF	将 REM2 设为 OFF	
...	...	...	...	...	...	
0x4F27	1	0xBB	Unsigned int	Set REM40 to OFF	将 REM40 设为 OFF	