KPM33 Three Phase Rail Energy Meter
MODBUS-RTU Communication Protocol_V1.0

KPM33 three phase rail energy meter provides MODBUS-RTU communication protocol, one start bit, 8-bit data bits, 1/0 parity bit, 1/2 stop bits, each byte length is 11 bits.

Supported baud rates:：1200bps, 2400bps, 4800bps, 9600bps.

Factory default communication parameters: 9600bps, Even parity bit, 1 stop bit

♦ The format of each byte in the RTU mode:

1 start bit + 8 data bits + 1 parity bit + 1 stop bit

The format of the data frame is as follows:

Address field + command field + data field + CRC check field

Supported function codes			
DEC	HEX	Definition	Operation description
03	0x03	Read register data	Read the value of one or more registers
16	0x10	Write Multiple Registers	Write multiple register data at once

6.1 System parameters read and write

This area stores system parameters related to equipment operation, including communication parameters, current ratio, etc., which can be read by using the Modbus protocol 03H function code，or using the 10H function code setting.

Address	Parameter	Numerical range	Data type
0000H	Protection password	0~9999	Word
0001H	Communication address	Modbus address：1~247	Word
0002H	Baud rate	Baud rate (BIT0~7)： 0：1200bps 1：2400bps 2：4800bps 3：9600bps Data format： 0：8, 1，n 1：8, 1, O 2：8, 1, e	Word
0003H	Current ratio	1~9999	Word
000CH	Clear power	Enter 0x5578 command to clear the power immediately	Word

6.3 Basic Measurement Parameters Area

Basic measurement area, mainly measuring basic voltage, current, power, power factor, etc.;

All parameters in this area are real-time measurement parameters and are read using the Modbus protocol 03H function code, It is read-only data. The data format is floating-point data, and the data in this area is a real-time data on the primary side because it has been multiplied by the transformation ratio.

Address	Parameter	Data type	Unit
0030H	Phase A voltage	Floating point	V
0032H	Phase B voltage	Floating point	V
0034H	Phase C voltage	Floating point	V

0036H	Phase A current	Floating point	A
0038H	Phase B current	Floating point	A
003AH	Phase C current	Floating point	A
003CH	AB Line voltage	Floating point	V
003EH	BC Line voltage	Floating point	V
0040H	CA Line voltage	Floating point	V
0042H	Phase A active power	Floating point	W
0044H	Phase B active power	Floating point	W
0046H	Phase C active power	Floating point	W
0048H	Three active power	Floating point	W
004AH	Phase A reactive power	Floating point	var
004CH	Phase B reactive power	Floating point	var
004EH	Phase C reactive power	Floating point	var
0050H	Three reactive power	Floating point	var
0052H	Phase A apparent power	Floating point	VA
0054H	Phase B apparent power	Floating point	VA
0056H	Phase C apparent power	Floating point	VA
0058H	Three phase apparent power	Floating point	VA
005AH	Phase A power factor	Floating point	
005CH	Phase B power factor	Floating point	
005EH	Phase C power factor	Floating point	
0060H	Three phase power meter	Floating point	
0062H	Frequency	Floating point	Hz

6.3 Energy data area

All data in this area are cumulative amount of energy and they all belong to the primary side, which can be read using the Modbus protocol 03H function code.

Address	Parameter	Data type	Unit
0080H	Total active energy	Floating point	kWh
0082H	Forward active energy	Floating point	kWh
0084H	Reverse active energy	Floating point	kWh
0086H	Total reactive energy	Floating point	kvarh
0088H	Forward total reactive energy	Floating point	kvarh
008AH	Reverse total reactive energy	Floating point	kvarh
008CH	Total sharp active energy	Floating point	kWh
008EH	Total peak active energy	Floating point	kWh
0090H	Total flat active energy	Floating point	kWh
0092H	Total valley active energy	Floating point	kWh

0094H	Total sharp reactive energy	Floating point	kvarh
0096H	Total peak reactive energy	Floating point	kvarh
0098H	Total flat reactive energy	Floating point	kvarh
009AH	Total valley reactive energy	Floating point	kvarh
009CH	Total combined active energy for this month	Floating point	kWh
009EH	Total combined active energy of the previous 1 settlement day	Floating point	kWh
00A0H	Total combined active energy of the previous 2 settlement day	Floating point	kWh
00A2H	Total combined active energy of the previous 3 settlement day	Floating point	kWh
00A4H	Total combined active energy of the previous 4 settlement day	Floating point	kWh
00A6H	Total combined active energy of the previous5 settlement day	Floating point	kWh
00A8H	Total combined active energy of the previous 6 settlement day	Floating point	kWh
00AAH	Total combined active energy of the previous7 settlement day	Floating point	kWh
00ACH	Total combined active energy of the previous 8 settlement day	Floating point	kWh
00AEH	Total combined active energy of the previous 9 settlement day	Floating point	kWh
00B0H	Total combined active energy of the previous 10 settlement day	Floating point	kWh
00B2H	Total combined active energy of the previous 11 settlement day	Floating point	kWh
00B4H	Total combined active energy of the previous 12 settlement day	Floating point	kWh
00B6H	Total combined reactive energy for this month	Floating point	kvarh
00B8H	Total combined reactive energy of the previous 1 settlement day	Floating point	kvarh
00BAH	Total combined reactive energy of the previous 2 settlement day	Floating point	kvarh
00BCH	Total combined reactive energy of the previous 3 settlement day	Floating point	kvarh
00BEH	Total combined reactive energy of the previous 4 settlement day	Floating point	kvarh
00C0H	Total combined reactive energy of the previous 5 settlement day	Floating point	kvarh
00C2H	Total combined reactive energy of the previous 6 settlement day	Floating point	kvarh
00C4H	Total combined reactive energy of the previous 7 settlement day	Floating point	kvarh
00C6H	Total combined reactive energy of the previous 8 settlement day	Floating point	kvarh
00C8H	Total combined reactive energy of the previous 9 settlement day	Floating point	kvarh
00CAH	Total combined reactive energy of the previous 10 settlement day	Floating point	kvarh
00CCH	Total combined reactive energy of the previous 11 settlement day	Floating point	kvarh
00CEH	Total combined reactive energy of the previous 12 settlement day	Floating point	kvarh
00D0H	Sharp active energy for this month	Floating point	kWh
00D2H	Sharp active energy of the previous 1 settlement day	Floating point	kWh
00D4H	Sharp active energy of the previous 2 settlement day	Floating point	kWh
00D6H	Sharp active energy of the previous 3 settlement day	Floating point	kWh
00D8H	Sharp active energy of the previous 4 settlement day		kWh
00DAH	Sharp active energy of the previous 5 settlement day	Floating point	kWh
00DCH	Sharp active energy of the previous 6 settlement day	Floating point	kWh
00DEH	Sharp active energy of the previous 7 settlement day	Floating point	kWh
00E0H	Sharp active energy of the previous 8 settlement day	Floating point	kWh
00E2H	Sharp active energy of the previous 9 settlement day	Floating point	kWh
00E4H	Sharp active energy of the previous 10settlement day	Floating point	kWh
00E6H	Sharp active energy of the previous 11 settlement day	Floating point	kWh
00E8H	Sharp active energy of the previous 12 settlement day	Floating point	kWh

00EAH	Sharp reactive energy for this month	Floating point	kvarh
00ECH	Sharp reactive energy of the previous 1 settlement day	Floating point	kvarh
00EEH	Sharp reactive energy of the previous 2 settlement day	Floating point	kvarh
00F0H	Sharp reactive energy of the previous 3 settlement day	Floating point	kvarh
00F2H	Sharp reactive energy of the previous 4 settlement day	Floating point	kvarh
00F4H	Sharp reactive energy of the previous 5 settlement day	Floating point	kvarh
00F6H	Sharp reactive energy of the previous 6 settlement day	Floating point	kvarh
00F8H	Sharp reactive energy of the previous 7 settlement day	Floating point	kvarh
00FAH	Sharp reactive energy of the previous 8 settlement day	Floating point	kvarh
00FCH	Sharp reactive energy of the previous 9 settlement day	Floating point	kvarh
00FEH	Sharp reactive energy of the previous 10 settlement day	Floating point	kvarh
0100H	Sharp reactive energy of the previous 11 settlement day	Floating point	kvarh
0102H	Sharp reactive energy of the previous 12 settlement day	Floating point	kvarh
0104H	Peak active energy for this month	Floating point	kWh
0106H	Peak active energy of the previous 1 settlement day	Floating point	kWh
0108H	Peak active energy of the previous 2 settlement day	Floating point	kWh
010AH	Peak active energy of the previous 3 settlement day	Floating point	kWh
010CH	Peak active energy of the previous 4 settlement day	Floating point	kWh
010EH	Peak active energy of the previous 5 settlement day	Floating point	kWh
0110H	Peak active energy of the previous 6 settlement day	Floating point	kWh
0112H	Peak active energy of the previous 7 settlement day	Floating point	kWh
0114H	Peak active energy of the previous 8 settlement day	Floating point	kWh
0116H	Peak active energy of the previous 9 settlement day	Floating point	kWh
0118H	Peak active energy of the previous 10 settlement day	Floating point	kWh
011AH	Peak active energy of the previous 11 settlement day	Floating point	kWh
011CH	Peak active energy of the previous 12 settlement day	Floating point	kWh
011EH	Peak reactive energy of this month	Floating point	kvarh
0120H	Peak reactive energy of the previous 1 settlement day	Floating point	kvarh
0122H	Peak reactive energy of the previous 2 settlement day	Floating point	kvarh
0124H	Peak reactive energy of the previous 3 settlement day	Floating point	kvarh
0126H	Peak reactive energy of the previous 4 settlement day	Floating point	kvarh
0128H	Peak reactive energy of the previous 5 settlement day	Floating point	kvarh
012AH	Peak reactive energy of the previous 6 settlement day	Floating point	kvarh
012CH	Peak reactive energy of the previous 7 settlement day	Floating point	kvarh
012EH	Peak reactive energy of the previous 8 settlement day	Floating point	kvarh
0130H	Peak reactive energy of the previous 9 settlement day	Floating point	kvarh
0132H	Peak reactive energy of the previous 10 settlement day	Floating point	kvarh
0134H	Peak reactive energy of the previous 11 settlement day	Floating point	kvarh
0136H	Peak reactive energy of the previous 12 settlement day	Floating point	kvarh
0138H	Flat active energy for this month	Floating point	kWh
013AH	Flat active energy of the previous 1 settlement day	Floating point	kWh
013CH	Flat active energy of the previous 2 settlement day	Floating point	kWh
013EH	Flat active energy of the previous 3 settlement day	Floating point	kWh

0140H	Flat active energy of the previous 4 settlement day	Floating point	kWh
0142H	Flat active energy of the previous 5 settlement day	Floating point	kWh
0144H	Flat active energy of the previous 6 settlement day	Floating point	kWh
0146H	Flat active energy of the previous 7 settlement day	Floating point	kWh
0148H	Flat active energy of the previous 8 settlement day	Floating point	kWh
014AH	Flat active energy of the previous 9 settlement day	Floating point	kWh
014CH	Flat active energy of the previous 10 settlement day	Floating point	kWh
014EH	Flat active energy of the previous 11 settlement day	Floating point	kWh
0150H	Flat active energy of the previous 12 settlement day	Floating point	kWh
0152H	Flat reactive energy for this month	Floating point	kvarh
0154H	Flat reactive energy of the previous 1 settlement day	Floating point	kvarh
0156H	Flat reactive energy of the previous 2 settlement day	Floating point	kvarh
0158H	Flat reactive energy of the previous 3 settlement day	Floating point	kvarh
015AH	Flat reactive energy of the previous 4 settlement day	Floating point	kvarh
015CH	Flat reactive energy of the previous 5 settlement day	Floating point	kvarh
015EH	Flat reactive energy of the previous 6 settlement day	Floating point	kvarh
0160H	Flat reactive energy of the previous 7 settlement day	Floating point	kvarh
0162H	Flat reactive energy of the previous 8 settlement day	Floating point	kvarh
0164H	Flat reactive energy of the previous 9 settlement day	Floating point	kvarh
0166H	Flat reactive energy of the previous 10 settlement day	Floating point	kvarh
0168H	Flat reactive energy of the previous 11 settlement day	Floating point	kvarh
016AH	Flat reactive energy of the previous 12 settlement day	Floating point	kvarh
016CH	Valley active energy for this month	Floating point	kWh
016EH	Valley active energy of the previous 1 settlement day	Floating point	kWh
0170H	Valley active energy of the previous 2settlement day	Floating point	kWh
0172H	Valley active energy of the previous 3 settlement day	Floating point	kWh
0174H	Valley active energy of the previous 4 settlement day	Floating point	kWh
0176H	Valley active energy of the previous 5 settlement day	Floating point	kWh
0178H	Valley active energy of the previous 6 settlement day	Floating point	kWh
017AH	Valley active energy of the previous 7 settlement day	Floating point	kWh
017CH	Valley active energy of the previous 8 settlement day	Floating point	kWh
017EH	Valley active energy of the previous 9 settlement day	Floating point	kWh
0180H	Valley active energy of the previous 10 settlement day	Floating point	kWh
0182H	Valley active energy of the previous 11 settlement day	Floating point	kWh
0184H	Valley active energy of the previous 12 settlement day	Floating point	kWh
0186H	Valley reactive energy for this month	Floating point	kvarh
0188H	Valley reactive energy of the previous 1 settlement day	Floating point	kvarh
018AH	Valley reactive energy of the previous 2 settlement day	Floating point	kvarh
018CH	Valley reactive energy of the previous 3 settlement day	Floating point	kvarh
018EH	Valley reactive energy of the previous 4 settlement day	Floating point	kvarh
0190H	Valley reactive energy of the previous 5 settlement day	Floating point	kvarh
0192H	Valley reactive energy of the previous 6 settlement day	Floating point	kvarh
0194H	Valley reactive energy of the previous 7 settlement day	Floating point	kvarh

0196H	Valley reactive energy of the previous 8 settlement day	Floating point	kvarh
0198H	Valley reactive energy of the previous 9 settlement day	Floating point	kvarh
019AH	Valley reactive energy of the previous 10 settlement day	Floating point	kvarh
019CH	Valley reactive energy of the previous 11 settlement day	Floating point	kvarh
019EH	Valley reactive energy of the previous 12 settlement day	Floating point	kvarh