SDM120-MB

Single-Phase Multi-function DIN Rail Meter

- Measures kWh, kVArh, kW, kVAr, KVA, PF, Hz, dmd, V, A, etc.
- Bi-directional measurement IMP & EXP
- Two pulse outputs
- M-bus conmmunication
- Din rail 18mm
- 45A direct connection
- Class C(Class 0.5) / Class B(Class 1)
- EN50470-3:2022

User Manual V1.0

Risk Reduction

Information for Your Own Safety

This manual does not contain all of the safety measures operating the equipment (module, device) for different conditions and requirements. However, it does contain information which you must know for your own safety and to avoid damages. These information are highlighted by a warning triangle indicating the degree of potential danger.

Warning

This means that failure to observe the instruction can result in death, serious injury or considerable material damage.

Caution

This means hazard of electric shock and failure to take the necessary safety precautions will result in death, serious injury or considerable material damage.

Qualified personnel

Operation of the equipment (module, device) described in this manual may only be performed by qualified personnel. Qualified personnel in this manual means person who are authorized to commission, start up, ground and label devices, systems and circuits according to safety and Regulatory standards.

Proper handling

The prerequisites for perfect, reliable operation of the product are proper transport, proper storage, installation and proper operation and maintenance. When operating electrical equipment, parts of this equipment automatically carry dangerous voltages. Improper handling can therefore result in serious injuries or material damage.

- ✧ Use only insulating tools.
- ✧ Do not connect while circuit is live (hot).
- ✧ Do not connect the meter to a 3 phase - 400VAC – network.
- ✧ Place the meter only in dry surroundings.
- ✧ Do not mount the meter in an explosive area or expose the meter to dust, mildew and insects.
- ✧ Make sure the wires are suitable for the maximum current of this meter.
- ✧ Make sure the AC wires are connected correctly before activating the current/voltage to the meter.
- ✧ Do not touch the meter connecting clamps directly with metal, blank wire and your bare hands as you may get electrical shock.
- ✧ Make sure the protection cover is placed after installation.
- ✧ Installation, maintenance and reparation should only be done by qualified personnel.
- ✧ Never break the seals and open the front cover as this might influence the function of the meter, and will cause no warranty.
- ✧ Do not drop, or allow strong physical impact on the meter as the high precisely components inside may be damaged.
- ✧ Designed to be mounted inside of switchboards or cabinet on DIN RAIL

- ✧ This device must have a suitable sized Circuit Breaker feeding the Multi Function Energy Meter so it does not exceed the maximum rated current.
- ✧ The supply wiring of this device shall be suitable sized cable to match the installed circuit breaker.
- ✧ A Disconnection Device (Circuit Breaker) should be installed close to the Multi Function Energy Meter.
- ✧ The Disconnection Device shall be marked as the Disconnection Device for the Multi Function Energy Meter

Disclaimer

We have checked the contents of this publication and every effort has been made to ensure that the descriptions are as accurate as possible.

However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors contained in the information given. The data in this manual is checked regularly and the necessary corrections are included in subsequent editions. We are grateful for any improvements that you suggest.

Application

The energy-meters SDM120-MB is used to measure single-phase applications like residential, utility and Industrial. The unit measures and displays various important electrical parameters. It equipped with a white back-lighted LCD screen for prefect reading. As well as a M-bus communication port for remote reading and monitoring. Bi-directional energy measurement makes it a good choice for solar PV energy metering. The compact design and din rail installation provides an easy and economical solution for your metering demand.

PART 1 Specification

General Specifications

Voltage AC (Un)	230V
Voltage Range	85~276V AC
Base Current (Ib)	5A
Max. Current (Imax)	45A
Mini Current (Imin)	0.15A
Starting current	0.4% of Ib
Power consumption	<2W/10VA
Frequency	50/60Hz(±10%)
AC voltage withstand	4KV for 1 minute
Impulse voltage withstand	6KV-1.2uS waveform
Overcurrent withstand	30Imax for 0.01s
Pulse output rate	
-Pulse Output 2	1000imp/kWh (default)
-Pulse Output 1	1000/100/10/1 imp/Exp/kWh/kVArh (configurable)
Display	LCD with white backlit
Max. Reading	99999.9kWh

Accuracy

Voltage	0.5% of range maximum
Current	0.5% of nominal
Frequency	0.2% of mid-frequency
Power factor	1% of Unity
Active power	1% of range maximum
Reactive power	1% of range maximum
Apparent power	1% of range maximum
Active energy	Class C /B EN50470-3:2022
	Class 0.5/1 IEC62053-21
Reactive energy	Class 2 IEC62053-23

Environment

Operating temperature	-40℃ to + 70℃
Storage and transportation temperature	-40℃ to + 80℃
Reference temperature	23℃±2℃
Relative humidity	0 to 95%, non-condensing
Altitude	up to 2000m
Warm up time	3s
Installation category	CAT III
Mechanical Environment	M1
Electromagnetic environment	E2
Degree of pollution	2
Utilization category	UC2

Output

Pulse Output

The meter provides two pulse outputs. Both pulse outputs are passive type.

Pulse output 1 is configurable. The pulse output can be set to generate pulses to represent total / import/export kWh or kVArh.

The pulse constant can be set to generate 1 pulse per: 0.001(default) /0.01/0.1/1kWh/kVArh.

Pulse width: 200/100/60ms

Pulse output 2 is non-configurable. It is fixed to total kWh. The constant is 1000imp/kWh.

M-bus Communication EN13757-3

The meter provides an M-bus port for remote communication. The protocol fully comply with EN13757-3. The following M-bus communication parameters can be configured via M-bus communication or from the set-up mode.

Baud rate: 300, 600, 1200, 2400, 4800, 9600bps Default: 2400

Parity: NONE/EVEN/ODD

Stop bits: 1 or 2

M-bus primary Address: nnn - 3 digits number from 001 to 250

M-bus Secondary address: 00 00 00 00 to 99 99 99 99

Default: last 8 digits of SN

Mechanics

Din rail dimensions	18x118x64 (WxHxD) DIN 43880
Mounting	DIN rail 35mm
Ingress protection	IP51 (indoor)
Material	Self-extinguishing UL94V-0

PART 2 Operation

Initialization Display

When it is powered on, the meter will initialize and do self-checking.

1		Full Screen It will last for 3 seconds.
2		Software version in kind prevail It will last for 3 seconds.
3		
4		CRC high bit
5		CRC low bit
6		Total active energy(kWh)

Scroll Display by Button

There is a button on the front panel of the meter.

After initialization and self-checking program, the meter display the measured values. The default page is total kWh.If the user wants to check other information, he needs to press the scroll button on the front panel.

	Press the button, the LCD display will scroll the measurements.
	Keep pressing the button for 3 seconds, the meter will enter into set-up mode.

1		Total active energy（kWh） Display format：0000.00→9999.99→10000.0→99999.9→0000.00
1-1		Import active energy（kWh） Display format：0000.00→9999.99→10000.0→99999.9→0000.00
1-2		Export active energy（kwh） Display format：0000.00→9999.99→10000.0→99999.9→0000.00
1-3		Total reactive energy（kVArh） Display format：0000.00→9999.99→10000.0→99999.9→0000.00
2		Voltage (V)
3		Current (A)
4		Active power (W)

5		Frequency (F)
6		Power factor (PF)
7		M-bus primary address (ID) Default: 001
8		Baud rate Default : 2400bps
9		Parity None/even/odd are optional Default: none
10		M-Bus secondary address High
12		M-Bus secondary address Low

Set-up Mode

To get into Set-up Mode, the user need keep pressing the button for 3 seconds, the meter will enter into the Set-up Mode.

The meter support to set five parameters : Primary address, Baud Rate, Parity,Secondary address High,Secondary address Low.

Notice: Under the “SET” mode, If there is no operation, the display will back to the default display.

M-bus Primary address setting

	Under this menu, long press the button  for 3 seconds enter to the set up mode.
	The leftmost digit will flash, press the button  to increase or decrease number, and then waiting for 2 seconds, the next digit will flash, press the button  again to increase number, and waiting for 2 seconds, repeat above options until all the digits are set
	After the setting of final digit, waiting for 2 seconds, the address information will be stored automatically and the display will returned to the setting mode.

Baud rate setting

	Under this menu, long press the button  for 3 seconds enter to the set-up mode.
	The digits will flash, press the button  to choose baud rate options (from 300 to 9600 bps), then waiting for 2 seconds
	the baud rate setting will be stored automatically after 2 seconds and the screen will return to the setting display.

Parity setting

	Under this menu, long press the button  for 3 seconds enter to the set-up mode.
	The digits will flash, press the button  to choose parity options (None/Even/Odd), then waiting for 2 seconds Notice: n=None, e=Even, o= Odd

PrtY E	the parity setting will be stored automatically after 2 seconds and the screen will return to the setting display.

The user can program the meter parameters by sending correct command via M-bus port.
The protocol is M-bus. For the details. Please look at the *"**M-bus resgiter Map**"*.

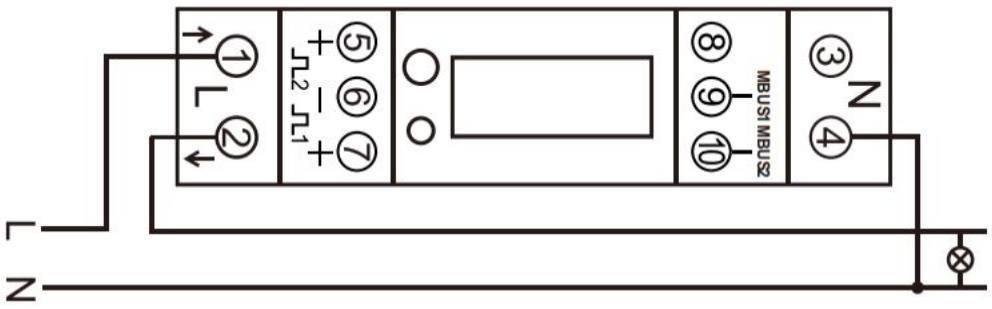
M-bus Secondary address High setting

H 2126	Under this menu, long press the button for 3 seconds enter to the set up mode.
H 2126	The leftmost digit will flash, press the button to increase or decrease number, and then waiting for 2 seconds, the next digit will flash, press the button again to increase number, and waiting for 2 seconds, repeat above options until all the digits are set
H 2126	After the setting of final digit, waiting for 2 seconds, the address information will be stored automatically and the display will returned to the setting mode.

M-bus Secondary address Low setting

L 8300	Under this menu, long press the button for 3 seconds enter to the set up mode.
L 8300	The leftmost digit will flash, press the button to increase or decrease number, and then waiting for 2 seconds, the next digit will flash, press the button again to increase number, and waiting for 2 seconds, repeat above options until all the digits are set
L 8300	After the setting of final digit, waiting for 2 seconds, the address information will be stored automatically and the display will returned to the setting mode.

Wiring Diagram

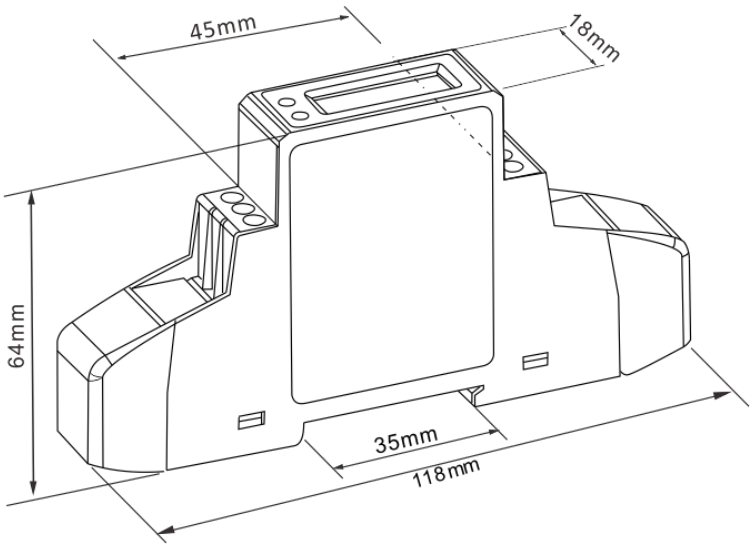


1 / 2: L-in/ L-out
3 / 4: N
5 / 6 / 7: Pulse Output 2 + / COM / Pulse Output 1 -
9 / 10： Mbus 1/ Mbus 2

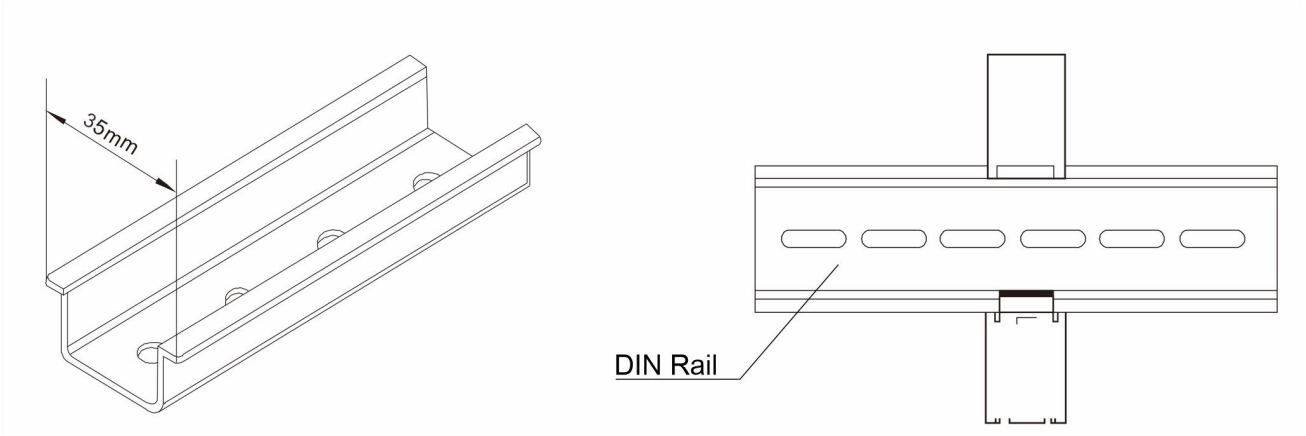
Wiring Guide

Terminal ①②③④	Measurement Connection	Screw Connection	Diameter 4.0mm*PH2 
	Strip Length	8-9mm	
	Screw	M4	
	Rigid/supple	2.5-10mm²	
	Tightening torque	1.5Nm	
	Model	PZ2	
Terminal ⑤⑥⑦⑨⑩	Measurement Connection	Screw Connection	Diameter 2.5mm*PH1 
	Strip Length	4.5-5mm	
	Screw	M2.5	
	Fixed/flexible(Wire Range)	0.5-1.5mm²(22~14 AWG)	
	Tightening torque	0.2Nm	
	Model	PZ0	

Dimension



Installation



M-bus register Map

1. Initialization slave

Format:

Start	C Field	A Field	Check Sum	Stop
10	40	XX	CS	16

XX=1 to FF

The address field serves to address the recipient in the calling direction,and to identify the sender of information in the
receiving direction.The size of this field is one Byte,and can therefore take values from 0 to 255. The addresses 1 to 250 can be allocated to the individual slaves,up to a maximum of 250.Unconfigured slaves are given the address 0 at manufacture,and as a rule are allocated one of these addresses when connected to the M-Bus. The addresses254 (FE) and 255 (FF) are used to transmit information to all participants (Broadcast). With address 255 none of the slaves reply, and with address 254 all slaves reply with their own addresses.The latter case naturally results in collisions when two or more slaves are connected,and should only be used for test purposes.The address 253 (FD) indicates that the addressing has been performed in the Network Layer instead of Data Link Layer,The FD used when using The second level address. The remaining addresses 251 and 252 have been kept for future applications.

1.1 How to initialize a meter which you don't know the address

Master to slave :10 40 fe 3e 16
Slave to master：e5(success)

1.2 Remove the secondary address matching symbol of all the meters on BUS.

Master to slave : 10 40 fd 3d 16
Slave : No answer

1.3 How to initialize all meters on the bus line by using FF as broadcast address

Master to slave : 10 40 ff 3f 16
Slave : No answer

1.4 How to Initialize a Slave with specific address

Example:Address 01
Master to slave : 10 40 01 41 16
Slave to master: e5

2. How to Set Baut rate

2.1 Point to point baud-rate setting command format(Control Frame)

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68H	03	03	68H	53/73	fe	b8~bd	CS	16

L Field------Byte length

C Field--------Control Field, Function Field
A Field --------Address Field
CI Field --------control information field
Check Sum------The Check Sum is calculated from the arithmetical sum of the data mentioned above, without taking carry digits into account.
B8-------300
B9-------600
BA-------1200
BB-------2400
BC-------4800
BD-------9600

Example:
(1) How to change Baudrate to 2400bps
Master to slave: 68 03 03 68 53 fe bb 0c 16
Slave to master: e5
(2) How to change Baudrate to 9600
Master to slave: 68 03 03 68 53 fe bd 0E 16
Slave to master: e5

2.2 how to use Broadcast command to set baudrate

Format:

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68H	03	03	68H	53/73	ff	b8~bd	CS	16

Slave to master: no answer
B8-------300
B9-------600
BA-------1200
BB-------2400
BC-------4800
BD-------9600

Example:
Change all the meters' baudrate to 2400bps
Master to slave:： 68 03 03 68 53 **ff** bb 0d 16
Slave to Master: No answer

3. How to Set primary address

3.1 How to set the address of a Slave to 01

Format:

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Address Data	Check Sum	Stop

68H	06	06	68H	53/73	fe	51	01	7A	XX	CS	16

Example：

Master to slave : 68 06 06 68 53 fe 51 01 7a **01** 1e 16

Slave to master :e5

3.2 How to use Broadcast Command to set primary address to 01

Master to slave: 68 06 06 68 53 **ff** 51 01 7a **01** 1f 16

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Address Data	Check Sum	Stop
68H	06	06	68H	53/73	ff	51	01	7A	XX	CS	16

Slave :no answer

3.3 How to change Address from 01 to 02

Format

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Address Data	Check Sum	Stop
68H	06	06	68H	53/73	XX	51	01	7A	YY	CS	16

XX--current primary Address

YY--new primary address

Master to slave: 68 06 06 68 73 **01** 51 01 7A **02** 42 16

Slave to master :e5

3.4 How to Set primary address to 01 by using secondary address

For example: secondary address:12345678

Step1 Initialize the slave

Master to slave ： 10 40 fe 3e 16

Slave to master：e5

Step2 Check the secondary address. After receiving the command, the Slave will check if the secondary address in the command is same with its secondary address or not.

Maseter to slave:68 0B 0B 68 73 **FD** 52 **78 56 34 12** FF FF FF FF D2 16

FD--- the primary Address used when you use secondary address to read data.

78 56 34 12 ---the meter's secondary address is 12 34 56 78

Master to slave :e5(success)

Step3 Change the primary address to 01

Master to slave :68 06 06 68 73 FD 51 01 7A **01** 3D

01---- new primary address

Slave to master:e5

4. Set the complete identification of the slave

(ID=12345678, Man=166E (PAD), Gen=1, Med=02 (energy))

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Identification No	Manufact-urer ID	Generati-on	Medium	Check Sum	Stop

68H	0D	0D	68H	53/73	FE	51	07	79	4 byte	2 byte	1 byte	1 byte	CS	16

Master to slave: 68 0D 0D 68 53 FE 51 07 79 78 56 34 12 24 40 01 02 9D 16
Slave to master:e5

5. How to read out of Energy information

5.1 Use primary address 01 to read Energy information

Format:
Master to slave: 10 7B/5B adr cs 16
Slave to master: Variable data structure
Example: 10 7B 01 7C 16

5.2 How to read out a meter's Energy information by using broadcast address 254 (FE)

Master to slave: 10 7b/5b fe cs 16
Slave to master: Variable data structure
Example: 10 5B FE 59 16

5.3 How to read out the meter's Energy information by using secondary Address

For example: Secondary address:12 34 56 78

Step1 initialize the slave
Master to slave:10 40 ff 3f 16
Slave to master: No answer

Step2 Check the secondary address. After receiving the command, the Slave will check if the secondary address in the command is same with its secondary address or not.

Master to slave:68 0b 0b 68 73 fd 52 78 56 34 12 FF FF FF FF d2 16
Slave to master:E5

Step3 Read the Energy information
Master to slave :10 7b fd 78 16
Slave to master:
DIF=====Coding of t e Data Information Field
VIF=====Codes for Value Information Field

bytes	Parameters	data structure	Notice
4	header telegram	68 5d 5d 68	eader of RSP_UD telegram
3		08 A 72	C field =08 address A CI field 72
4		78 65 34 21	Identification number =12345678
2		24 40	Manufacturer ID 4024
1		01	Generation 1
1		02	Energy Meter
1		55	ACCESS NO
1		00	STATUS
2		00 00	Signature
6	Current total active energy	0C	DIF: 8digit BCD ， Current Value
		04	VIF: 10w (0.01Kw)

		78 56 34 12	123456.78kwh
7	Current import active energy	0C	DIF: 8digit BCDFIE，Current Value
		04	VIF: 10w (0.01Kw)
		78 56 34 12	123456.78kwh
7	Current export active energy	0C	DIF: 8digit BCDFIECurrent Value
		04	VIF: 10w (0.01Kw)
		78 56 34 12	123456.78kwh
6	Current resettable total active energy	0C	DIF: 8digit BCD ，Current Value
		04	VIF: 10w (0.01Kw)
		78 56 34 12	123456.78kwh
7	Current resettable import active energy	0C	DIF: 8digit BCDFIE，Current Value
		04	VIF: 10w (0.01Kw)
		78 56 34 12	123456.78kwh
7	Current resettable export active energy	0C	DIF: 8digit BCDFIE，Current Value
		04	VIF: 10w (0.01Kw)
		78 56 34 12	123456.78kwh
7	Current total reactive energy	0C	DIF: 8digit BCD ，Current Value
		FD	VIF:fd
		3A	VIFE: dimensionless / no VIF
		78 56 34 12	123456.78kVarh
8	Current import reactive energy	0C	DIF: 8digit BCDFIE，Current Value
		FD	VIF:fd
		3A	VIFE: dimensionless / no VIF
		78 56 34 12	123456.78kVarh
8	Current export reactive energy	8C	DIF: 8digit BCDFIECurrent Value
		FD	VIF:fd
		3A	VIFE: dimensionless / no VIF
		78 56 34 12	123456.78kVarh
7	Current total resettable reactive energy	0C	DIF: 8digit BCD ，Current Value
		FD	VIF:fd
		3A	VIFE: dimensionless / no VIF
		78 56 34 12	123456.78kVarh
8	Current resettable import reactive energy	0C	DIF: 8digit BCDFIE，Current Value
		FD	VIF:fd
		3A	VIFE: dimensionless / no VIF
		78 56 34 12	123456.78kVar
8	Current resettable export reactive energy	0C	DIF: 8digit BCDFIE，Current Value
		FD	VIF:fd
		3A	VIFE: dimensionless / no VIF
		78 56 34 12	123456.78kVar
1	CHECK SUM	CS	
1	End	16	

6. Read out of instantaneous electrical information

The instantaneous electrical information includes:

V，I，P ，Q，S，PF , Hz ect. MD

6.1 How to read instantaneous electrical information by using primary address:

Start	L Field	L Field	Start	C Field	A Field	CI Field	C eck Sum	Stop
68	3	3	68	53/73	XX	B1	CS	16

Master to slave : 68 03 03 68 53 XX b1 05 16
Slave to master: Variable data structure (instantaneous electrical information)
If the primary address is 01 then XX=01

6.2 How to use Secondary Address to read out the instantaneous electrical information

Step1 Initialization slave
Master to slave:10 40 ff 3f 16
Slave to master： No answer

Step2 Check the secondary address. After receiving the command, the Slave will check if the secondary address in the command is same with its secondary address or not.
Master to slave: 68 0b 0b 68 73 fd 52 78 56 34 12 ff ff ff ff d2 16
Slave to master:E5

Step3 Use Secondary Address to read out the instantaneous electrical information
Master to slave : 68 03 03 68 53 fd b1 01 16
Slave to master: Variable data structure

bytes		data structure	Notice
4	eader telegram	68 90 90 68	eader of RSP_UD telegram
3		08 A 72	C field =08 address A CI field 72
4		78 65 34 21	Identification number =12345678
2		24 40	Manufacturer ID 4024
1		01	Generation 1
1		02	Energy Meter
1		55	ACCESS NO
1		00	STATUS
2		00 00	Signature
6	Voltage	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		56 34 12	1234.56V
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		00 00 00	0
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		00 00 00	0
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		00 00 00	0000.00
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		00 00 00	0000.00
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		00 00 00	0

6	current	0b	DIF: 6digit BCD
		Fd	VIF:fd
		59	VIFE: 1mA(xxx.xxxA)
		56 34 12	123456mA(123.456A)
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		59	VIFE: 1mA(xxx.xxxA)
		00 00 00	0
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		59	VIFE: 1mA(xxx.xxxA)
		00 00 00	0
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		59	VIFE: 1mA(xxx.xxxA)
		00 00 00	0
5	active power	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)
		56 34 12	12345.6w(12.3456kw)
5	Reserve	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)
		00 00 00	0
5	Reserve	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)
		00 00 00	0
5	Reserve	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)
		00 00 00	0
6	reactive power	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		56 34 12	12345.6w(12.3456kw)
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 00 00	0
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 00 00	0
6	Reserve	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 00 00	0
5	power factor	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 05	0.500
5	Reserve	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 00 00	0
5	Reserve	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF

		00 00 00	0
5	Reserve	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 00 00	0
5	Frequency	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 50	50.00 z
1	End	CS	
1		16	

7. How to read password

Start	L Field	L Field	Start	C Field	A Field	CI Field	C eck Sum	Stop
68	3	3	68	11	addr	03	CS	16

Master to Slave：68 03 03 68 11 addr 03 cs 16
Slave to Master：68 05 05 68 11 addr 03 passwordH passwordL cs 16

7.1 Change to a new Password

Start	L Field	L Field	Start	C Field	A Field	CI Field	Data		C eck Sum	Stop
68	5	5	68	11	addr	04	Password	Password L	CS	16

Master to Slave：68 05 05 68 11 addr 04 passwordH passwordL cs 16
Slave to Master：E5

8. How to reset all resettable energy data

Start	L Field	L Field	Start	C Field	A Field	CI Field	C eck Sum	Stop
68	3	3	68	11	addr	0d	CS	16

Master to Slave：68 03 03 68 11 01 0d 1f 16
Slave to Master：e5

9. Set Demand interval、slide time、Display time、LED time

Send：68 09 09 68 53 FE 51 30 01 60 01 05 06 3F 16

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	data	Check Sum	Stop
68H	09	09	68H	53/73	FE	51	30	01	Demand interval、slide time、Display time、LED time Display time=0 ： the display does not scroll automatically. LED time=0 ：Backlight always on	cs	16

									min-min-s-min 4 bytes		

Example:(Meter address is 01)

Master to Slave：68 09 09 68 53 FE 51 30 01 60 01 05 06 3F 16

Slave to Master：E5

10. Read Demand interval、slide time、Display time、LED time

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Check Sum	Stop
68H	05	05	68H	53/73	FE	51	30	81	cs	16

Example:(Meter address is 01)

Master to Slave：68 05 05 68 53 FE 51 30 81 53 16

Slave to Master：E5

Bytes	Parameters	Data structure	Notice
4	eader telegram	68 16 16 68	eader of RSP_UD telegram
3		08 A 72	C field =08 address A CI field 72
4		78 65 34 21	Identification number =12345678
2		24 40	Manufacturer ID 4024
1		01	Generation 1
1		02	Energy Meter
1		55	ACCESS NO
1		00	STATUS
2		00 00	Signature
7	Demand interval、slide time、Display time、LED time	0a	DIF: 30digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		15010610	Demand interval: 15 min slide time: 01min Display time: 06s LED time: 10s
1	CHECK SUM	CS	
1	End	16	

11. Read the measurement mode

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68	03	03	68	11	addr	**09**	CS	16

Example:(Meter address is 01)

Master to Slave:68 03 03 68 11 **01** 09 1b 16

Slave to Master:68 04 04 68 11 01 09 **01** 1c 16

The red-lighted **01** represents the measurement mode

01means Active energy

02means Active energy+Reactive energy

03emans Active energy- Reactive energy

12. Set up the measurement mode

Start	L Field	L Field	Start	C Field	A Field	CI Field	data	Check Sum	Stop
68	04	04	68	11	addr	**0A**	01/02/03	CS	16

Example:(Meter address is 01)
Master to Slave:68 04 04 68 11 01 0A **01** 1d 16
Slave to Master:e5
The red-lighted **01** represents the measurement mode
01means Active energy
02means Active energy+Reactive energy
03emans Active energy- Reactive energy

13. Read the output mode of Pulse 1

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68	03	03	68	11	addr	10	CS	16

Example:(Meter address is 01)
Master to Slave:68 03 03 68 11 01 10 22 16
Slave to Master:68 04 04 68 11 01 10 **01** 23 16
The red-lighted **01** represents the output mode of Pulse1
01: Import active energy,
02: Import + export active energy,
04:Exportactive energy(default).
05: Import reactive energy,
06: Import + export reactive energy,
08: Export reactive energy,

14. Set up the output mode of Pulse 1

Start	L Field	L Field	Start	C Field	A Field	CI Field	data	Check Sum	Stop
68	08	08	68	11	addr	11	01/02/04/05/06/08	CS	16

Example:(Meter address is 01)
Master to Slave: 68 04 04 68 11 01 11 **01** 24 16
Slave to Master:e5
The red-lighted **01** represents the output mode of Pulse1
01: Import active energy,
02: Import + export active energy,
04:Exportactive energy, (default).
05: Import reactive energy,
06: Import + export reactive energy,
08: Export reactive energy,

15. Read the constant of Pulse 1

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68	03	03	68	11	addr	12	CS	16

Example:(Meter address is 01)

Master to Slave: 68 03 03 68 11 01 12 24 16

Slave to Master:68 04 04 68 11 01 12 **00** 24 16

The red-lighted **00** represents the constant of Pulse1

00: 0.001kwh(kvarh)/imp(default)

01: 0.01kwh(kvarh)/imp

02: 0.1kwh(kvarh)/imp

03: 1kwh(kvarh)/imp

16. Set up the constant of Pulse 1

Start	L Field	L Field	Start	C Field	A Field	CI Field	data	Check Sum	Stop
68	04	04	68	11	addr	13	00/01/02/03	CS	16

Example:(Meter address is 01)

Master to Slave: 68 04 04 68 11 01 13 **00** 25 16

Slave to Master: e5

The red-lighted **00** represents the constant of Pulse1

00: 0.001kwh(kvarh)/imp(default)

01: 0.01kwh(kvarh)/imp

02: 0.1kwh(kvarh)/imp

03: 1kwh(kvarh)/imp

17. Read the parity bit of MBUS

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68	03	03	68	11	addr	14	CS	16

Example:(Meter address is 01)

Master to Slave: 68 03 03 68 11 01 14 26 16

Slave to Master:68 04 04 68 11 01 14 **00** 26 16

The red-lighted **00** represents the parity bit of MBUS

00： none

01： even

02： odd

18. Set up the parity bit of MBUS

Start	L	L Field	Start	C Field	A	CI	data	Check	Stop

	Field				Field	Field		Sum	
68	08	08	68	11	addr	15	00/01/02	CS	16

Example:(Meter address is 01)

Master to Slave: 68 04 04 68 11 01 15 **00** 27 16

Slave to Master: e5

The red-lighted **00** represents the parity bit of MBUS

00： none

01： even

02： odd

19. Read the Pulse Width of pluse1

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68	03	03	68	11	addr	16	CS	16

Example:(Meter address is 01)

Master to Slave: 68 03 03 68 11 01 16 28 16

Slave to Master:68 04 04 68 11 01 16 **00** 28 16

The red-lighted **00** represents the Pulse Width of pluse1

00： 60ms

01： 100ms

02： 200ms

20. Set the Pulse Width of pluse1

Start	L Field	L Field	Start	C Field	A Field	CI Field	data	Check Sum	Stop
68	08	08	68	11	addr	17	00/01/02	CS	16

Example:(Meter address is 01)

Master to Slave: 68 04 04 68 11 01 17 **00** 29 16

Slave to Master: e5

The red-lighted **00** represents the Pulse Width of pluse1

00： 60ms

01： 100ms

02： 200ms

If you have any question, please feel free to contact our sales team.

No. 52, Dongjin Road, Nanhu, Jiaxing, Zhejiang, China
Tel: +86-573-83698881 Fax: +86-573-83698883
Email: sales@eastrongroup.com
www.eastrongroup.com