⚡ EASTRON

SDM530-LR

DIN Rail Smart Meter for Single and Three Phase Electrical Systems

- Measures kWh Kvarh, KW, Kvar, KVA, P, F, PF, Hz, dmd, V, A, etc.
- Bi-directional measurement IMP & EXP
- Pulse output
- 2DI
- LoRaWAN
- Din rail mounting 35mm
- 100A direct connection
- Better than Class 0.5 / C accuracy

USER MANUAL

2022 V1.0

Part 1. Introduction

Introduction

The SDM530C is a three phase multi-function remote control energy meter. It measures all important electrical parameters, such as Active Energy (kWh), Current (A), Voltage (V), Frequency(Hz), Power Factor, Power Demand, import and export energy etc.

With built-in relay inside, the meter can be remotely controlled to turn on or off the electricity supply via LoRaWAN. The user can also set alarm objects and alarm level, once the alarm is activated the relay will be turned off. The relay of each phase can be controlled together or separately.

Built-in interfaces provides pulse and LoRaWAN outputs.

Product features

- Max.100A Direct Connect
- Multifunction Measurement, Displays Scrollable Settings
- Support AMR, SCADA system
- Remote Control with Bulit-in Relay
- Energy Resettable
- White Backlit LCD Display
- Din Rail Mounting 35mm

Technical parameters

◆Input Voltage： Basic Value：230V AC

Operating Voltage Range：±20%Basic Value

Measurement Form: Valid Values

- ◆ Input Current： Basic Value：5A

   Max.Current：100A

   Over Current Withstand: 20 Imax for 0.5s
- ◆ Input Frequency： Basic Value：50/60Hz

   Input Frequency Range：45-65 Hz
- ◆ Insulation Capabilities： - AC voltage withstand 4KV/1min

   Impulse Voltage Withstand 6kV – 1.2μS waveform
- ◆ Power Consumption： ≤ 2W
- ◆ Pulse Port：Can be Set(See Operating Instructions for Details)
- ◆ Pulse Output Rate：1000imp/kWh(Default)
- ◆ Display：LCD with White Backlit
- ◆ Max reading：999999.99 kWh

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Energy Measurements

- Imported active energy   0 to 999999.99 kWh
- Exported active energy   0 to 999999.99 kWh
- Imported reactive energy   0 to 999999.99 kVArh
- Exported reactive energy   0 to 999999.99 kVArh
- Total active energy   0 to 999999.99 kWh
- Total reactive energy   0 to 999999.99 kVArh

Accuracy

- Voltage   0·5% of range maximum
- Current   0·5% of nominal
- Frequency   0.1% of mid-frequency
- Power factor 1% of unity (0.01)
- Active power (W) ±1% of range maximum
- Reactive power (VAr) ±1% of range maximum
- Apparent power (VA) ±1% of range maximum
- Active energy (Wh) Class 0.5 IEC 62053-22
                     Class C EN50470-1/3
- Reactive energy (VArh) Class 2 IEC 62053-23
- Response time to step input 1s, typical, to >99% of final reading, at 50 Hz.

Interfaces for External Monitoring

Three interfaces are provided:

- LoRaWAN communication channels via protocol wireless.
- Pulse output indicating real-time measured energy

Pulse Output

Pulse output is non-configurable. It is fixed up with active kWh. The constant is 1000imp/kWh.

Reference Conditions of Influence Quantities

Influence Quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value (within the specified tolerance) of these conditions.

- Ambient temperature   23℃ ±1℃
- Input frequency   50Hz(MID)
                                   50 or 60Hz ±2%(non-MID)
- Input waveform   Sinusoidal (distortion factor < 0·005)
- Magnetic field of external origin   Terrestrial flux

Environment

- Operating temperature   3K6 (-25℃ to +55℃*)
- Storage temperature   -40℃ to +70℃*
- Relative humidity   0 to 90%, non-condensing

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- Altitude   Up to 2000m
- Warm up time   5S
- Vibration   10Hz to 50Hz, IEC 60068-2-6, 2g
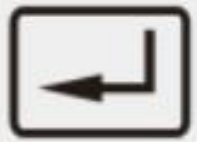- Shock   30g in 3 planes

* Maximum operating and storage temperatures are in the context of typical daily and seasonal variation.

Start-up Screens

After a short delay, the screen will display active energy measurements.

| 1		The first screen lights up all display segments and can be used as a display check.
2		The second screen indicates the firmware installed in the unit and its build number.
3		Firmware number
4		If the communication failed, the meter will show ERR 1024.

Measurements

	◆ Measurement mode, short press: switch the screen; ◆ Setting mode: short press: switch menu or single-digit increases at the same level; Long press: return to the previous menu.
	◆ Measurement mode, short press: invalid; Long press: enter the setting mode; ◆ Setting mode, short press: move the cursor (the cursor flashing number for setting the state); Long press: menu item selection confirmation and parameter modification confirmation.

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Page	Display	Description
1	000 120.00 kWh Total	Total active energy Example energy：120.00kWh ⚬—⚬ Represents relay open ⚬—⚬ Represents relay close
2	→ 00006 0.00 kWh Total L1 L2 L3	Import active energy Example：60.00kWh
3	← 00060 0.00 kWh Total L1 L2 L3	Export active energy Example：60.00kWh
4	000200.00 kVArh Total L1 L2 L3	Total reactive energy Example：200.00 kVArh
5	→ 000 100.00 kVArh Total L1 L2 L3	Import reactive energy Example：100.00 kVArh
6	← 000 100.00 kVArh Total L1 L2 L3	Export reactive energy Example：100.00kVArh
7	230.0 V Total L1 L2 L3	L1 Voltage Example：230.0V

	230.0 V Total — L1 **L2** L3	L2 Voltage Example：230.0V
	230.0 V Total — L1 L2 **L3**	L3 Voltage Example：230.0V
	50.809 A Total — **L1** L2 L3	L1 Current Example：50.809A
	50.809 A Total — L1 **L2** L3	L2 Current Example：50.809A
	50.809 A Total — L1 L2 **L3**	L3 Current Example：50.809A
	1.800 kW Total — **L1** L2 L3	L1 Active power Example：1.800kW
	1.800 kW Total — L1 **L2** L3	L2 Active power Example：1.800kW

		L3 Active power Example：1.800kW
	1.800 kW Total　　L1 L2 L3 ▼	Total Active power Example：5.400kW
	5.400 kW ▼ Total　　L1 L2 L3	L1 Power factor Example：1.000
	PF 1.000 Total　　L1 L2 L3 ▼	L2 Power factor Example：1.000
	PF 1.000 Total　　L1 L2 L3 ▼	L3 Power factor Example：1.000
	PF 1.000 Total　　L1 L2 L3 ▼	Total Power factor Example：1.000
	PF 1.000 ▼ Total　　L1 L2 L3	Frequency Example：50.00hz
	50.00 hz Total　　L1 L2 L3	

	MD **2.680** kW ▼ Total L1 L2 L3	Maximum total active power demand Example：2.680kW
	PLS 1000 kWh ▼ Total L1 L2 L3	Pulse Constant Example：1000imp/kWh The current output mode of the optocoupler pulse is total active energy mode.
	Err-01 Total L1 L2 L3	The failure interface Example：Err-01 Automatic display when the current fault occurs, and error-01 means that the relay cannot be disconnected.
	⚠ **000120.00** kWh ▼ Total L1 L2 L3	Over-limit alarm interface In the measurement interface, the upper right corner appears ⌐ and ⚠ indicates that the measured value of the alarm object exceeds the alarm value. The relay can be closed by using communication or manually only after troubleshooting.
	¹ ⌐ **dI 00017** Total L1 L2 L3	DI 1 - count
	² ⌐ **dI 00247** Total L1 L2 L3	DI 2 - count

3.3 Basic Setting

Long press " " for three seconds to enter the setting mode (exit the setting interface if there is no operation in the next minute and return the remaining amount interface) :

Instructions: on the normal display interface, press the button 3s on the right to enter the setting interface (password input interface).

In the setting state, long press the left button 3s to exit the setting state.

In the setting state, long press the right button 3s to enter/confirm.

Press the button on the right side to set the moving position;

In the setting state, press the button on the left side to scroll or change the setting item;

Page	Display	Description
1	PAS 0000 Total L1 L2 L3	**Password** Enter password into the Settings screen; Default password: 1000 Press select number, press select shift. Then long press to enter the setup system.
2-1	PLS CSt Total L1 L2 L3	**Pulse Constant** Default: 1000imp/kWh Optional：1000, 100,10,1.
2-2	CSt 1000 Total L1 L2 L3	Long press [↵] into the constant setting interface, the current character flashing. Then, press [○] to select the new constant. Finally, long press [↵] to confirm Settings.
3-1	PLS tImE Total L1 L2 L3	**Pulse width** Default: 100ms Optional:200, 100,60. If the pulse constant is equal to 1000imp/kWh, the setting interface cannot be set to 200ms at this time.

3-2	![display: tIɾE 100, Total L1 L2 L3]	Long press [↵] to enter pulse width setting interface, the current character flashing. Then, press [↻] to select the new pulse width. Finally, long press [↵] to confirm Settings.
4-1	![display: PLS tYPE, Total L1 L2 L3]	**Pulse output type** Default：P（Total active energy） Optional
4-2	![display: tYPE. P kWh, Total L1 L2 L3]	Long press [↵] into the pulse output type setting interface, the current character flicker. current charact Then, press [↻] to select the new pulse output type.Finally, long press [↵] to confirm settings. P kWh　Total active kWh q kVArh Total reactive kWh
5-1	![display: dIt 60, Total L1 L2 L3]	**Demand cycle** Default: 60 min Demand cycle range: 0-60min. 0 represents real-time update demand.
5-2	![display: dIt 60, Total L1 L2 L3]	Long press [↵] into the demand period setting interface, the current character flicker. Then, press [↻] to select a new demand cycle.

		Finally, long press [⏎] to confirm settings.
6-1	SCrL 30 Total L1 L2 L3	**Auto display scroll time** Default：0s (without round show) Rotation time range：0~ 30s
6-2	SCrL 30 Total L1 L2 L3	Long press [⏎] to enter auto wheel display time setting interface, the current character flicker. Then, press [↻] to select the new auto wheel display time. Finally, long press [⏎] to confirm settings.
7-1	LP 60 Total L1 L2 L3	**Backlight lighting time** Default：60 min optional：off,on,5,10,20,30,60,120 Off means that the backlight is turn off；on means that the backlight is turn on.
7-2	LP 60 Total L1 L2 L3	Long press [⏎] into the backlit time setting interface, the current character will flicker. Then, press [↻] to select the new backlight lighting time. Finally, long press [⏎] to confirm settings.
8	dI FLtr Total L1 L2 L3	**DI fliter time** Setting range: 0~255ms Default 100ms

| 9 | MD
CLr
Total   L1 L2 L3 | Long press ⏎ enter the maximum
demand reset setting interface, the current character flicker.

Finally, long press ⏎ to confirm zero clearing. |

3.4 Checking Meter Information

This function allows to check meter setting information, also some of below information can be set through another password (refer to section 4.3).

3.4.1 Join Information - OTAA

1	dEr EUI Total L1 L2 L3	DevEui: end-device identifier ****************(16 digits)
1-1	01234567 Total L1 L2 L3	1-8 digits
1-2	90123456 Total L1 L2 L3	9-16 digits
2	APP EUI Total L1 L2 L3	AppEui: application identifier ****************(16 digits)

2-1	![display showing 1-8 digits with Total L1 L2 L3]	1-8 digits
2-2	![display showing 9-16 digits with Total L1 L2 L3]	9-16 digits
3	![display showing APP KEY with Total L1 L2 L3]	AppKey: Application key ■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■ (32 digits)
3-1	![display showing 1-8 digits with Total L1 L2 L3]	1-8 digits
3-2	![display showing 9-16 digits with Total L1 L2 L3]	9-16 digits
3-3	![display showing 17-24 digits with Total L1 L2 L3]	17-24 digits
3-4	![display showing 25-32 digits with Total L1 L2 L3]	25-32 digits

3.4.2 Join Information - ABP

1		Dev address
	dEV Addr	
1-1		Total 8 digits
	88888888	
2		NwkSKey: Network session key ******************************** (32 digits)
	NwkS KEY	
2-1		1-8 digits
	88888888	
2-2		9-16 digits
	88888888	
2-3		17-24 digits
	88888888	
2-4		25-32 digits
	88888888	

3	APPS KEY Total L1 L2 L3	AppSKey: Application session key ******************************* (32 digits)
3-1	88888888 Total L1 L2 L3	1-8 digits
3-2	88888888 Total L1 L2 L3	9-16 digits
3-3	88888888 Total L1 L2 L3	17-24 digits
3-4	88888888 Total L1 L2 L3	25-32 digits

3.4 Join Status

| 1 | JOIN OK
Total L1 L2 L3 | JOIN OK
Means the meter is connected to the gateway successfully |

1-1		OTAA mode
	JnO OtAA	
2		ABP mode: ON/OFF
	Adr OFF	

3.5 Auto: Upload ON/OFF, Upload Interval Time

When Auto is ON, the meter will send a command to gateway automatically. This is for the gateway to check if the meter is still online.

Under Active upload mode, the Auto function is not used

1		From the Set-up menu, use and buttons to select the AUTO option. Press for 3s enter to the setting page.
	AutO	
1-1		UP LOAd: ON
	UP On	Range: ON/OFF Press for 3s, the current option will flash. Use or to choose the option.
2		Interval Time Option: 5/ 10/ 20/ 30/ 90/ 120/ 150/ 180/ 210/ 240 minutes 05 means the meter will send a command to gateway every 5 minutes.
	1NuL 05	

3.6 Password setting and alarm settings

| 1	PAS 1000	User Password Default：1000 optional：0～9999
1-1	PAS 1000	Long press [↵] to enter the user password setting interface and the current character flashes. Then, click on [◯] the new User Password. Finally, long press [↵] to confirm settings.
2	AL PAMA	**Check alarm information** Enter this setting to check alarm associated information: Voltage\Current\Active power\reactive Power\apparent power\Frequency
2-1	U1	**Alarm object** Default：NULL(No alarm object) Note: this option can only be set via communication
2-2	280 v	**Alarm Value** Default：100000.0 Note: this option can only be set via communication
2-3	MLY OFF	**Relay Control** The display status of this option is off for relay open and on for relay close. This option can be set only if the alarm occurs when the relay automatically disconnects. Set relay close through this option, which means manually disarming the alarm. Therefore, before you do this, make sure the alarm object is

|		
		troubleshooting. Long press enter relay status setting interface, current character 2-4flicker. Then, press select the new relay status. Finally, long press to confirm settings..
2-4	RLY OFF Total L1 L2 L3	Long press [↵] to enter relay status setting interface, current character flicker. Then, press [⟳] to select the new relay status. Finally, long press [↵] to confirm settings.

Dimensions:
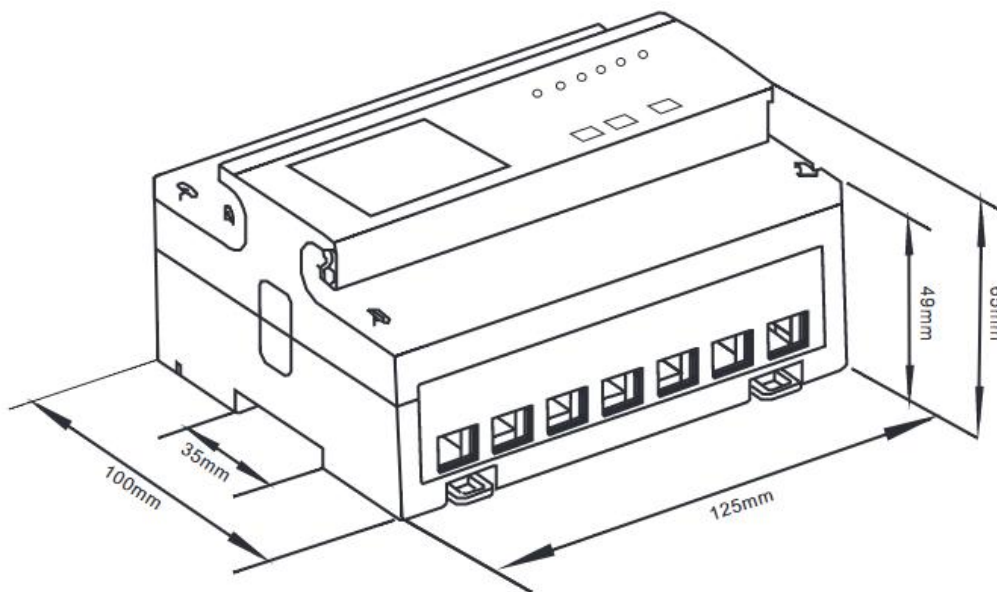
Wiring torque

Terminals		
COMM/Pulse/2T	0.5~1.5mm²	0.4Nm
Load	4~25mm²	3Nm

Wiring diagram

● Three Phase Four Wires:
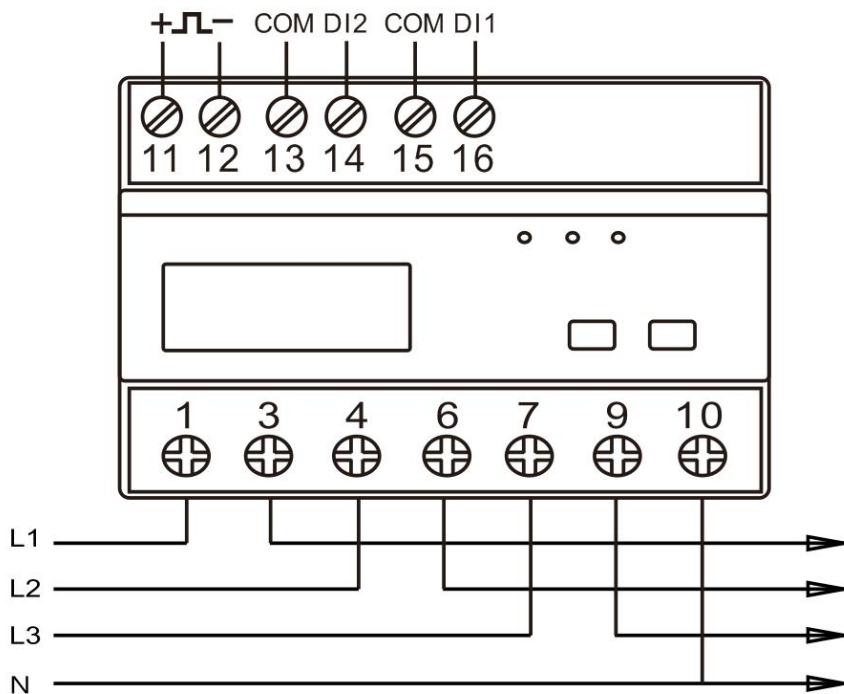
● Single Phase Two Wires:
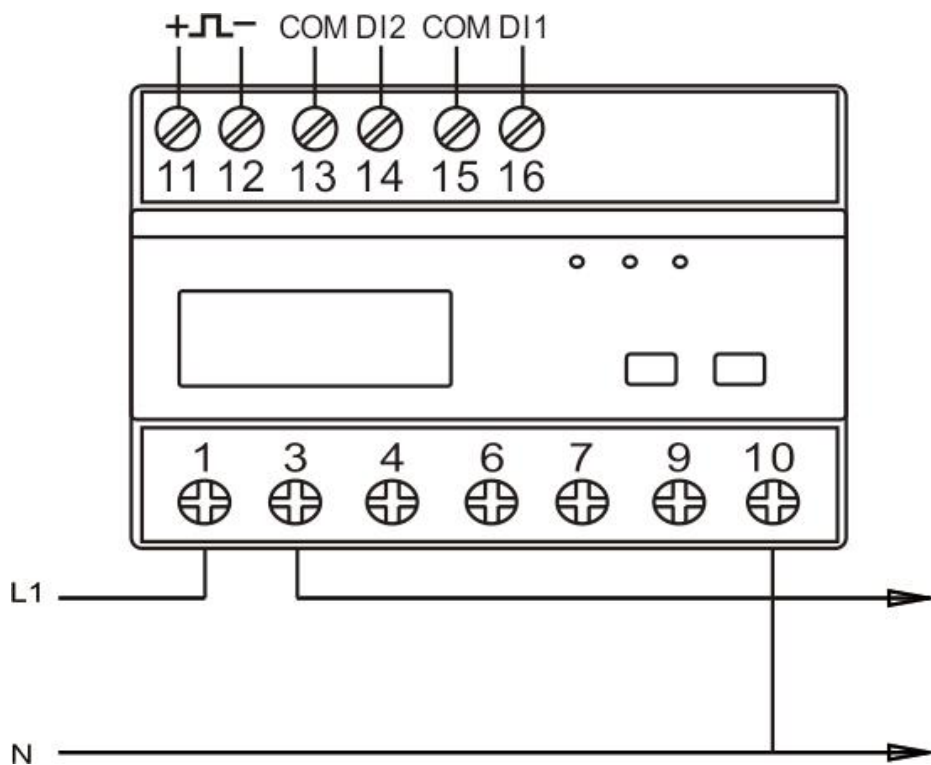
If you have any question, please feel free to contact us at:

Zhejiang Eastron Electronic Co., Ltd.

NO.1369 Chengnen Road, Jiaxing, Zhejiang, China

Email: sales@eastrongroup.com

Tel: 86-0573-83698881

Web: www.eastrongroup.com