EDMI

EDMI NC30

Single Phase Multi-Tariff ANSI Meter

User Manual

Content

Single Phase Multi-Tariff ANSI Meter

Version	Date Used	Description of Revision
1.0.2	**2013.01.06**	
1.0.3	**2013.02.21**	Add New Details
1.0.4	**2013.06.17**	Rename
1.0.5	**2013.08.20**	Add Link optional
1.0.6	**2014.03.21**	Add maxim demand

1. Product Description

Socket type, Outdoor
Complied with C12.1 C12.10 C12.18 C12.19 C12.20
LCD 6+1 Energy display way, Display instantaneous item:Voltage,Current, Active Power.
Communication port: optical port,RS485,RF,and PLC Optional
Max 4 rates can be set, default T1
Max Demand display
2 levels of password
12 months History metering data and 50 events of power on/off and meter reset
Dis-connect Relay optional

The NC30 meter

Figure 1-1 NC30 Meter

2. Total kWh Register

The total kWh is displayed on the LCD by 6 digits with one decimal.
The total kWh register range is 000000.0-999999.9 kWh.

3. Meter Memory

The history data can store 12 months .
The history data include: Accumulative total and max 4 rates of Wh[abs(Wh+) + abs(Wh-)];
Accumulative total Wh-.

4. Event Record

The energy meter can record below events with time stamp;total 50 events.
Power on.
Power off.
Reset Energy data.
Reset event log.
Reset [energy data+event log].

5. LCD display during power off

Three display modes(can be set):

1. Always display Accumulative Wh[abs(Wh+)+abs(Wh-)].
2. Displaying Accumulative energy for setting time then no display.
3. No Display.

Default LCD display during power off is Mode 1.

6. Maxim Demand

1. Record T1 active (abs(Wh+) + abs(Wh-)）maxim demand ，T2 active maxim demand，T3active maxim demand，T4 active maxim demand，and the time of the corresponding maxim demand.
2. Use the slip mode, demand cycle / slip time <=15 min; demand cycle <=60 min, sliding time < = demand cycle.
3. Demand decimal use 4 digits,
4. Save one historical demand data,and clear the demand data when power energy save auto.

7. Multi-Tariff energy, maximum 4 tariff (TOU)

The meter can be up to 4 tariffs per days. And the time interval can be programmed by software.
Default Tariff is Single Tariff, T1.

8. Programming Password Protected

Meter must first through the password confirmation, then do the programming or other special operations.
There are two meter securities.
Level 1, for all permissions. 1122334455;
Level 2, Read only permission, 1111111111.

9. LED indicator

A high light LED is mounted on the front of the meter, it will blink/pulse at a rate proportional to the measured load if the current through the meter more than starting threshold. The pulse value is identified on the meters nameplate. The pulse can be used for checking the meter accuracy.

10. LCD display

The meter LCD shows 6+1 digits power consumption in kWh, without backlight. The big size of the digits (13mm×6mm) and clearly identification of display value make meter reader easily to get the data in distance.

View direction: 6 o'clock
Polarizer mode: Reflective (long life and UV)
Operating temperature :- 40°C ~ + 80°C
Storage temperature:- 45°C ~ + 85°C

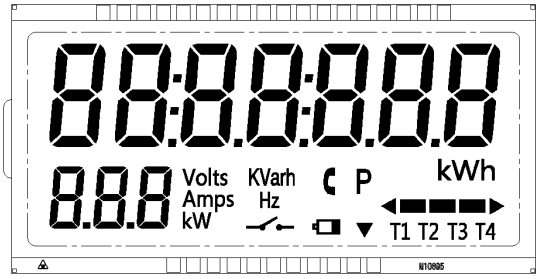


Figure 9-1 LCD symbol

10.1. The main symbol explanation:

Symbol	Explanation
	LCD display 7 digits; The energy display as 6+1 digits.(000000.0~999999.9kWh) Display kWh energy value & date and time.
	Mode 1: Display instantaneous item:Voltage,Current, Active Power. Mode 2: Display data identification(see table 1)
	Disconnect Relay Display
	Export/import energy symbol; Simulation and percentage of energy accumulated comparison to Kh value
	Communication symbol (display when comm)
	Program symbol
T1 T2 T3 T4	Current running Tariff indication
Volts Amps kW	Unit of Instantaneous Voltage, Unit of Instantaneous Current, Unit of Instantaneous Active Power.
kWh	Unit of energy

10.2. Normal scroll mode (Table 1)

No.	Data Identification	Normal scroll mode
1	0.1.0	Import Energy (Tariff 1+Tariff Display)
2	0.2.0	Import Energy (Tariff 2+Tariff Display)
3	0.3.0	Import Energy (Tariff 3+Tariff Display)
4	0.4.0	Import Energy (Tariff 4+Tariff Display)
5	0.5.0	Import + Export Energy (Tariff 1+Tariff Display)
6	0.6.0	Import + Export Energy (Tariff 2+Tariff Display)
7	0.7.0	Import + Export Energy (Tariff 3+Tariff Display)
8	0.8.0	Import + Export Energy (Tariff 4+Tariff Display)
9	0.9.0	Import Energy (Total) + Voltage
10	1.0.0	Import Energy (Total) + Current(Total)
11	1.1.0	Import Energy (Total) + Current(I1)
12	1.2.0	Import Energy (Total) + Power
13	1.3.0	Import + Export Energy (Total) + Voltage
14	1.4.0	Import + Export Energy (Total) + Current(Total)
15	1.5.0	Import + Export Energy (Total) + Current(I1)
16	1.6.0	Import + Export Energy (Total) + Power
17	1.7.0	Date
18	1.8.0	Time
19	2.0.1	T1 maxim demand
20	2.0.2	T2 maxim demand
21	2.0.3	T3 maxim demand
22	2.0.4	T4 maxim demand
23	2.1.1	T1 maxim demand Date
24	2.1.2	T2 maxim demand Date
25	2.1.3	T3 maxim demand Date
26	2.1.4	T4 maxim demand Date
27	2.2.1	T1 maxim demand Time
28	2.2.2	T2 maxim demand Time
29	2.2.3	T3 maxim demand Time
30	2.2.4	T4 maxim demand Time

10.3. Default Display scroll mode

No	Status	Normal scroll mode
1	Power on	Import + Export Energy (Total) + Voltage Import + Export Energy (Total) + Current (I1) Import + Export Energy (Total) + Power
2	Power off	Import + Export Energy (Total) +Voltage

11. Communication Port

No		explanation
1	Optical port	ANSI type 2 with 9600bps
2	RS485 port	Baud Rate 9600 BPS (Optional)
3	RF port	Optional (RF915MHZ)
4	PLC port	Optional

12. Dis-connect Relay

Dis-connect Relay : Optional.

13. Wiring Connect

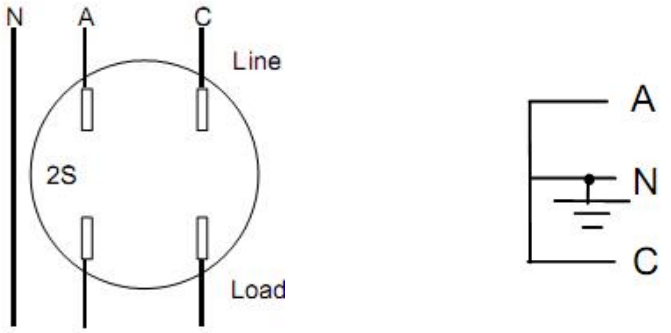


Figure 12-1 3-wire, 1-phase

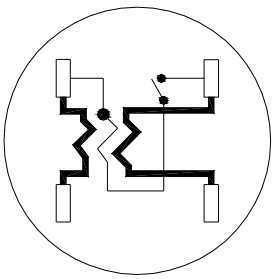


Figure12-2 Internal connect
(FM2S without Dis-connect Relay)

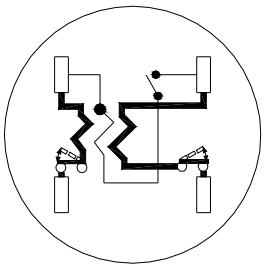


Figure12-3 Internal connect
(FM2S with Dis-connect Relay)

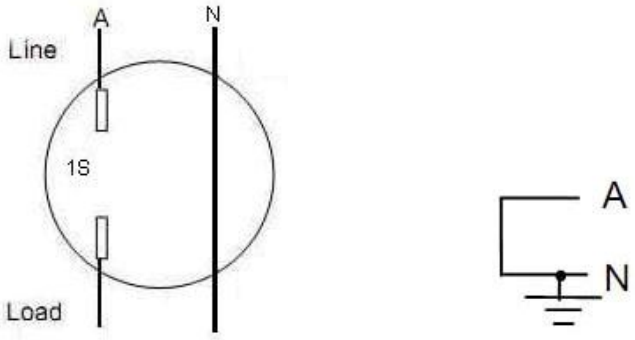


Figure 12-4 2-wire, 1-phase

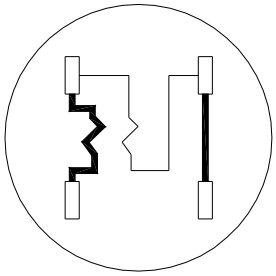


Figure12-5 Internal connect (FM2S without Dis-connect Relay)

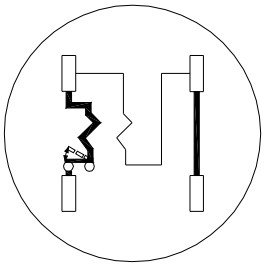


Figure12-6 Internal connect (FM1S with Dis-connect Relay)

14. Component Descriptions

The components descriptions of the meter are shown in Figure 13-1~Figure 13-8.

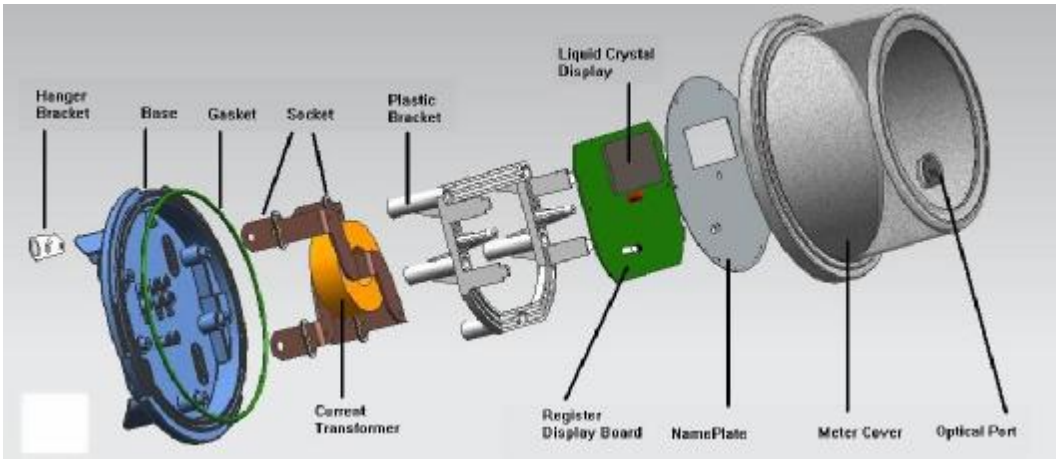


Figure 13-1: Basic NC30 Meter Components FM2S

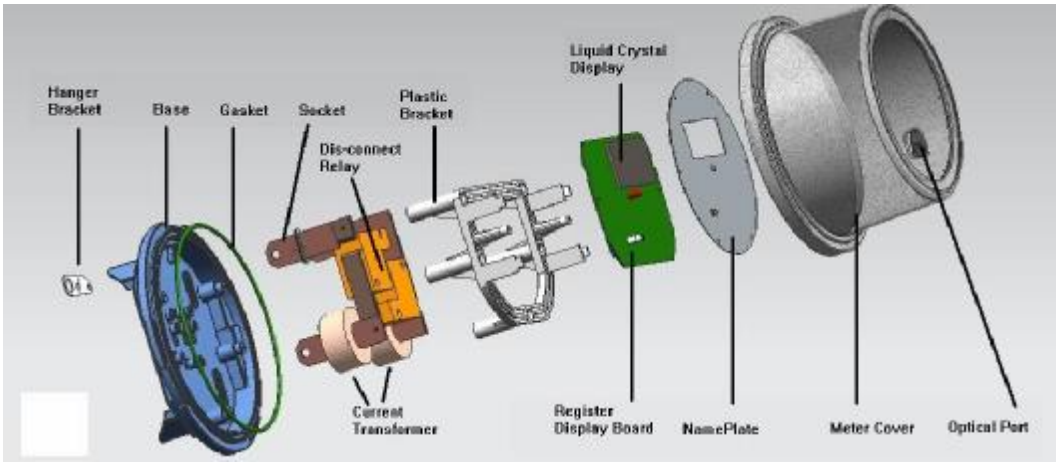


Figure 13-2:Dis-connect Relay NC30(100A) Meter Components FM2S

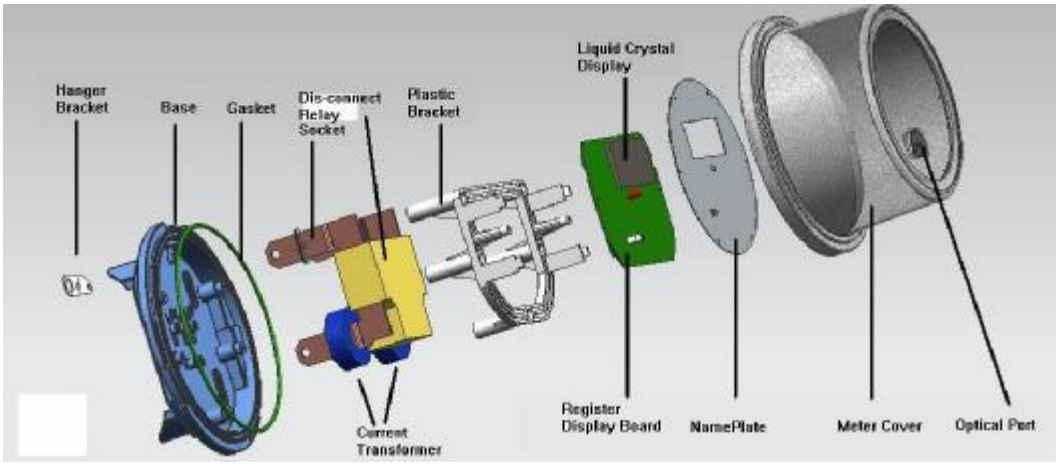


Figure 13-3:Dis-connect Relay NC30(200A) Meter Components FM2S

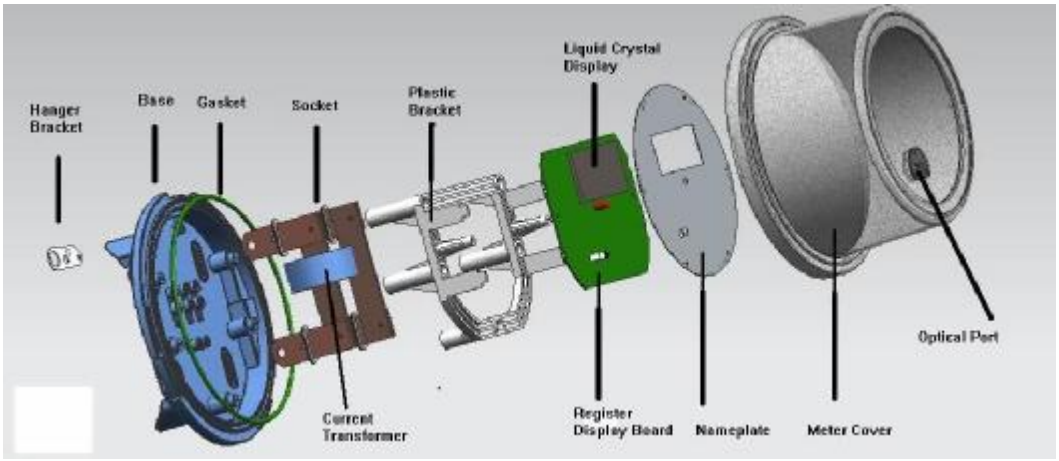


Figure 13-4: Basic NC30(100A/200,Current Transformer) Meter Components FM1S

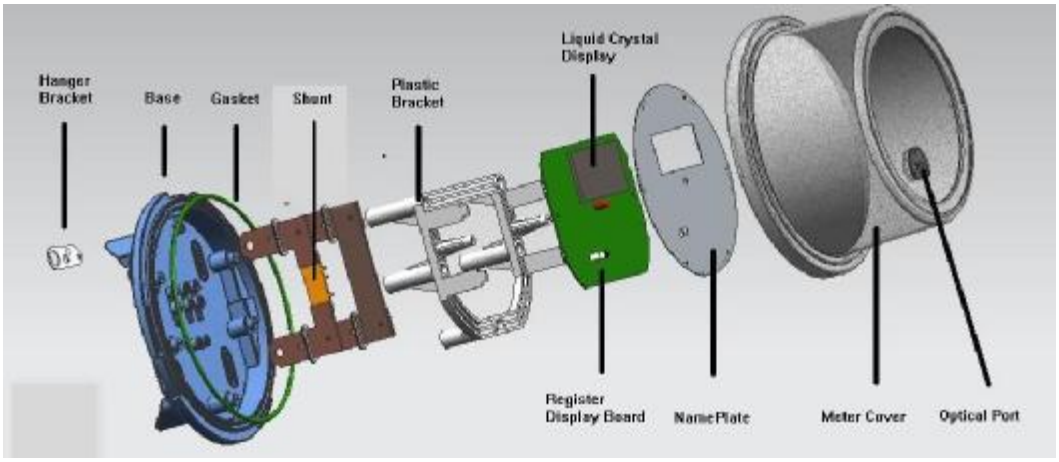


Figure 13-5: Basic NC30(100A,Shunt) Meter Components FM1S

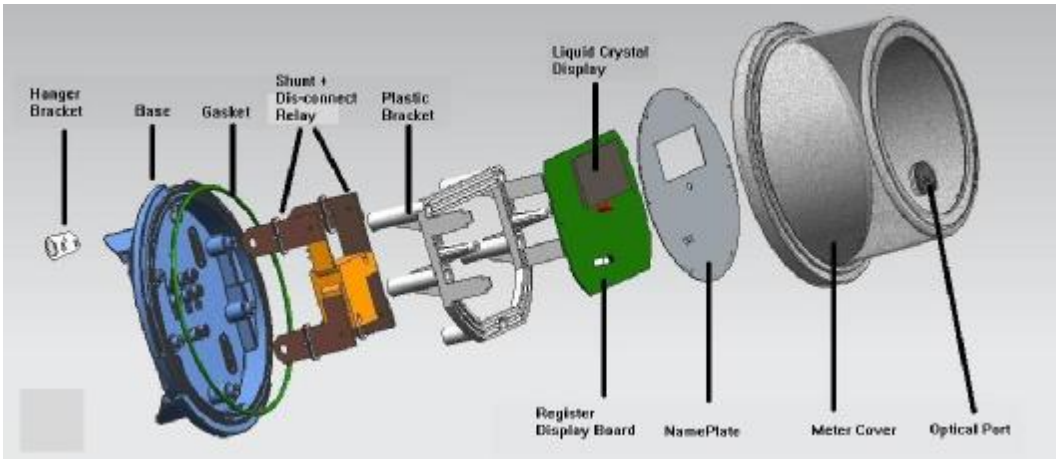


Figure 13-6: Dis-connect Relay NC30(100A,Shunt) Meter Components FM1S

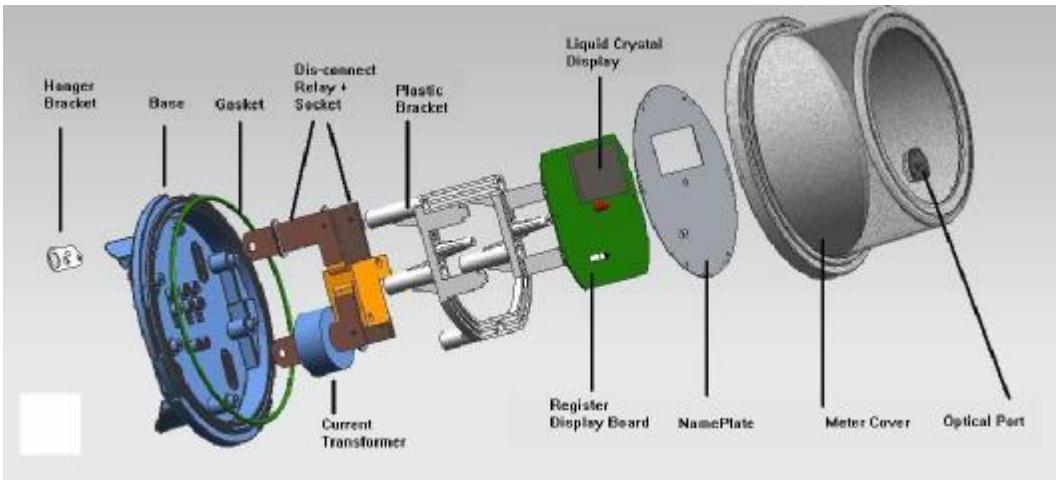


Figure 13-7: Dis-connect Relay NC30(100A,Current Transformer) Meter Components FM1S

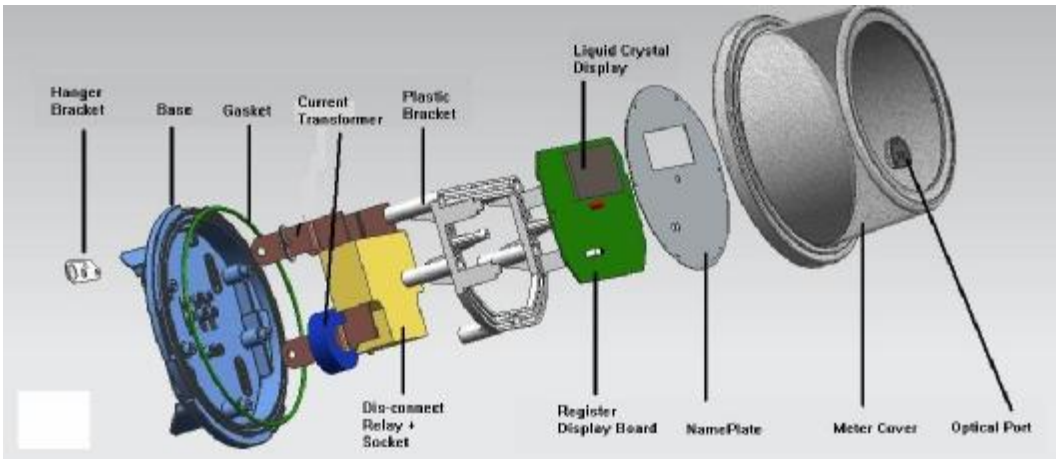


Figure 13-8: Dis-connect Relay NC30(200A,Current Transformer) Meter Components FM1S

15. Meter Outline Size

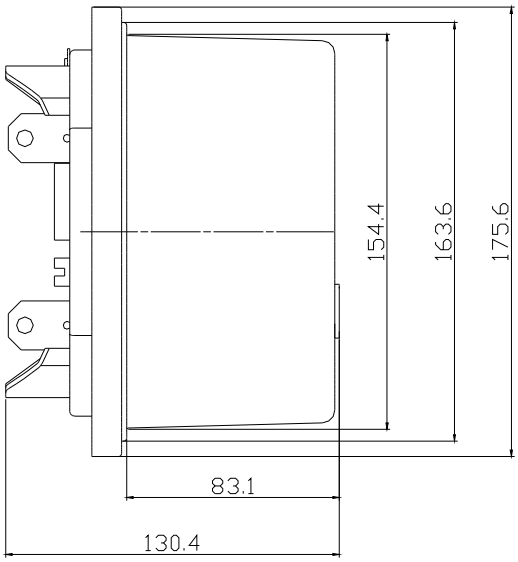


Figure 14 Meter Outline Size

16. Default Parameter Setting

- Default Tariff setting: Single rate; T1;
- Display alternation: 5 seconds.
- Default LCD display during power off: Accumulative Wh[abs(Wh+)+abs(Wh-)].
- LCD Display during power on: Accumulative Wh[abs(Wh+)+abs(Wh-)] +Active power/ Voltage/ Current.
- Security password: Level 1: 1122334455; Level 2: 1111111111.
- Meter RTC: Philippines Time;
- Communication Port : Optical port
- Dis-connect Relay: NO.
- Meter No.: According to the bar code on the meter.

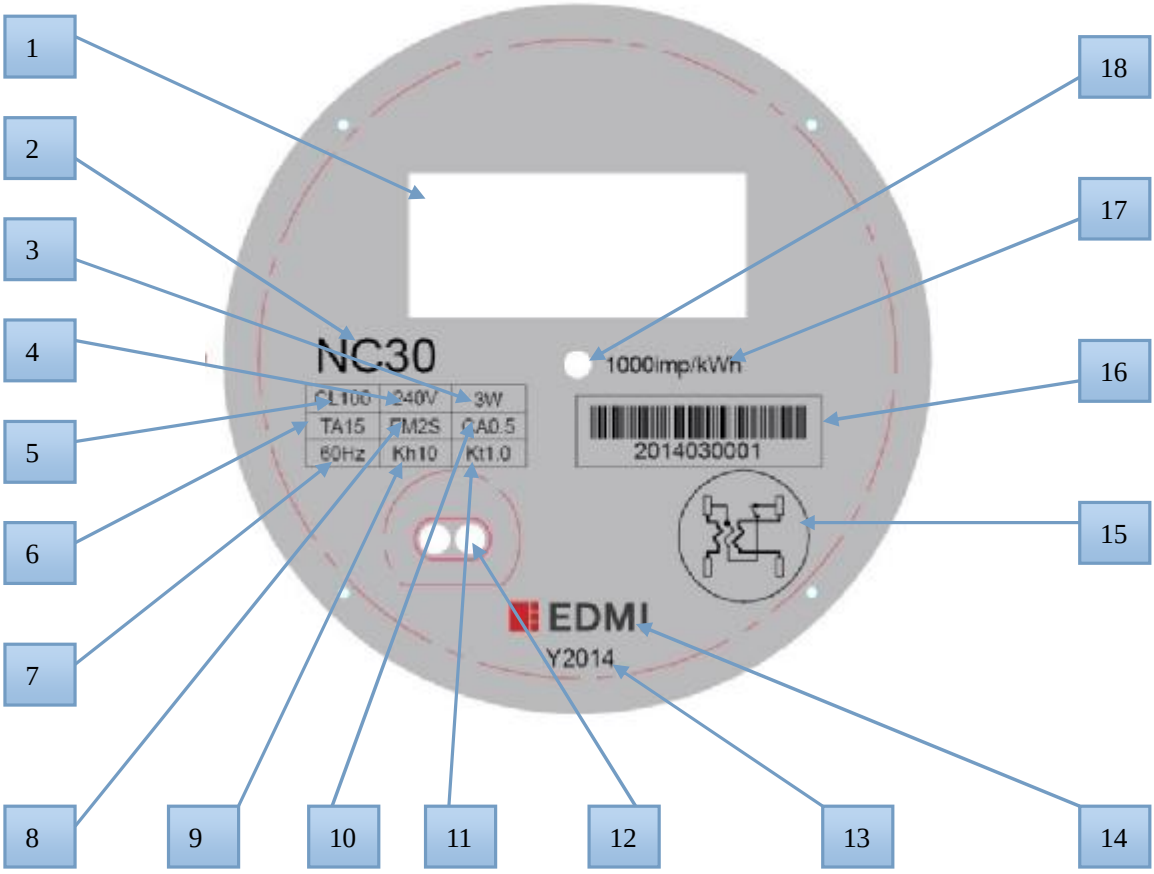
Appendix 1: *Specification*

	Item	Parameter
	ANSI standards complied with	C12.1 C12.10 C12.18 C12.19 C12.20
	Accuracy	Meet ANSI C12.10 class 0.5
	Mounting	Socket type
	Meter type, form designation and current class	FM2S, CL200
		FM2S, CL100
		FM1S, CL200
		FM1S, CL100
	Operating Voltage	80%~120%Un (Un=240V/120V)
Current	Test Current(TA)	CL200: 30A
		CL100: 15A
	Current range that guarantees accuracy	CL200: 0.6~200A (2%TA~Imax)
		CL100: 0.3~100A (2%TA~Imax)
	Starting Current	CL200: 0.030A (30mA)
		CL100: 0.015A (15mA)
	Frequency	60Hz±5%
	Kh	10
	Kt	1.0
	Power supply type	Transformer type
	Current sampling mode	Current transformer
	Power Consumption	Voltage circuit: <1W, 5VA Current circuit: <0.25VA/Each
Test Confidence	Immunity to impulse voltage	Surge >8kV(1.2/50US)
	Insulation strength	4kV,60Hz for 1 min
	Relative humidity	0%~95% no condensation
Temperature	Operating Temperature	- 40°C ~ + 80°C
	Storage and Transportation Temperature	- 45°C ~ + 85°C
	LCD Operating Temperature	- 40°C ~ + 80°C
	Clock accuracy	< 0.5 s/d, at 23°C
	Battery	Li-SOCI2, 3.6V,1200mAh for clock and LCD display during power off.
Communication Port	Optical port	ANSI type 2 with 9600bps
	RS485 port	Optional
	RF port	Optional
	PLC port	Optional
Security	Meter security	2 levels of password: Class 1:All permissions. Default:1122334455

		Class 2: Read only permission. Default:1111111111
Demand	Maxim demand	Maxim demand ;date; time;
Dis-connect Relay	15(100)A 30(200)A	Optional
LCD	LCD layout and characters & symbols on LCD's meanings	(Please see 9. LCD Display)
	LCD size	54mm x 34mm
	LCD biggest characters' size	13.0mm x6.0mm
	LCD biggest characters' segment width	1.7mm
	LCD with backlight	No
	Number of LCD display digits	7
	Energy display way	6 integers + 1 decimal
	Voltage,Current & Active Power Display way	3 digits
	LCD display item ID	3 (No ID when display voltage,current,and power)
	Display interval	5s
	Display data update rate	1s
	Sign 'Yes' at 'meter data' column can be optional displayed on LCD	Yes
	Default LCD display during power on	Accumulative Wh[abs(Wh+)+abs(Wh-)]+RMS Voltage Accumulative Wh[abs(Wh+)+abs(Wh-)]+RMS Current Accumulative Wh[abs(Wh+)+abs(Wh-)]+RMS Power T1 (Please see 9. LCD Display)
	Default LCD display during power off	Accumulative Wh[abs(Wh+)+abs(Wh-)]
	LED	1 LED (Active Energy Pulse),1000imp/kWh
Meter data	Accumulative total and 4 rates of Wh[abs(Wh+)+abs(Wh-)]	Yes
	Accumulative total and 4 rates of (Wh+) and (Wh-)	Yes
	Instantaneous frequency	Yes
	Instantaneous Voltage,Current,Active Power	Yes
	Current date & time	Yes
	Energy data reset	Yes
	History metering data	12 months
	Event log	Record latest 50 events (power on,power off,energy reset events with time stamp)
Material	Single layer of upper cover	Transparent flat face cover
	Upper cover	Full Circle; Color White

	Optical port metal plate	430 grade stainless steel,thickness min 1.2 (inner)
	Number of sealable position	1
Tariff	Max 4 rates (each rate's period is programmed by software)	Yes
	Default rate setup	T1 (Single rate)
Faceplate	Faceplate color	Color:White
	Faceplate layout	Refer to Appendix 2
	New EDMI logo on faceplate	
	Serial number	to be nominated by EDMI
	Bar code	to be nominated by EDMI
		39 code
MCU		NEC 78F0485;
Link	Outside, inside	optional

Appendix 2: *Faceplate*



1. Windows
2. Meter type
3. Number of wires for the metered service
4. Nominal Voltage
5. Current Class
6. Test amperes
7. Nominal Frequency
8. ANSI C12.10 Form Number
9. Watthour constant
10. Accuracy class
11. Meter Constant
12. Optical port
13. Month and Two digit year of manufacture
14. EDMI logo / Manufacture of meter
15. Wiring connect
16. Utility information and bar code area /Meter serial number
17. Test constant
18. Meter Pulse

19. FCC Caution.

§ 15.19 Labelling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

§ 15.21 Information to user.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

§ 15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.