OPERATING MANUAL FOR

SmartCard 3DES Prepayment Meter

Low voltage PLCC (Power Line Carrier Comunication) AMR Solutions
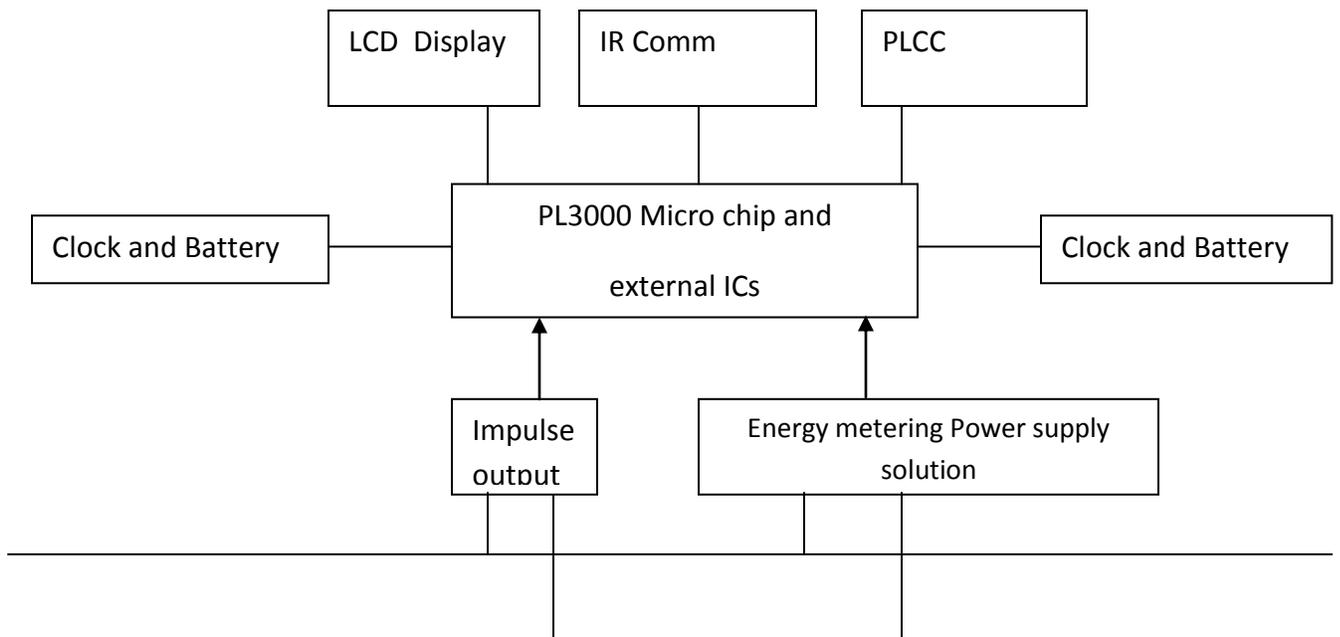
DDM304

![Momas logo] MomaS
Technolgy Concern

1.01 INTRODUCTION

Meter DDM304 is based on PL3201 (three phase multifunction measurement chip). This meter is highly integrated fast calculating, with low power consumption, with varies interfaces advantage. It is a Three Phase Smart case based Prepayment Multifunction meter and includes PLCC and 3DES encryption features. Developed by Momas and is reputed to be the latest in metering technology. The IC card parameter comply with DL/T 698-1999, IR communication standard comply with DL/T 645-1997.

2.01 Working principle

Metering completed by PLM3000 metering unit, which is high precision, large dynamic width. It is safe and stable.
IC card meter is assembled of PL3000 metering, varies communication interface, LCD display, relay control are the main control units, it is very high integrated, low power consumption, and small size. Meanwhile, it also integrates clock and crystal, very low error happens, auto leap year adjustment.

LCD Display	IR Comm	PLCC

Clock and Battery	PL3000 Micro chip and external ICs	Clock and Battery

Impulse output	Energy metering Power supply solution

3.00 teps Using Your DDM304 SmartCard PLCC Pre-Payment Meter

3.01 STEP 1

The meter has a factory waved amount of N50 which allowed for installation and commissioning. On commissioning, take the meter's UserCard to the nearest point of sales to purchase electricity.

Momas Pre-paid UserCard

Important!

- One card only matches one meter. If lost, please declare to the nearest supply authority, to reissue a replacement.
- Your meter will cut off when the balance enter zero (owing). Please ensure you reload your meter before the balance enter zero (owing).
- Ensure proper safe keeping your UserCard.
- Keep it away from magnetic, heater and electrical field, do not scratch, bend, stain and dip it in solution(s).

3.02 STEP 2

After you have taken your UserCard to the nearest sales office to load credit on it, insert the card in the following process:

a

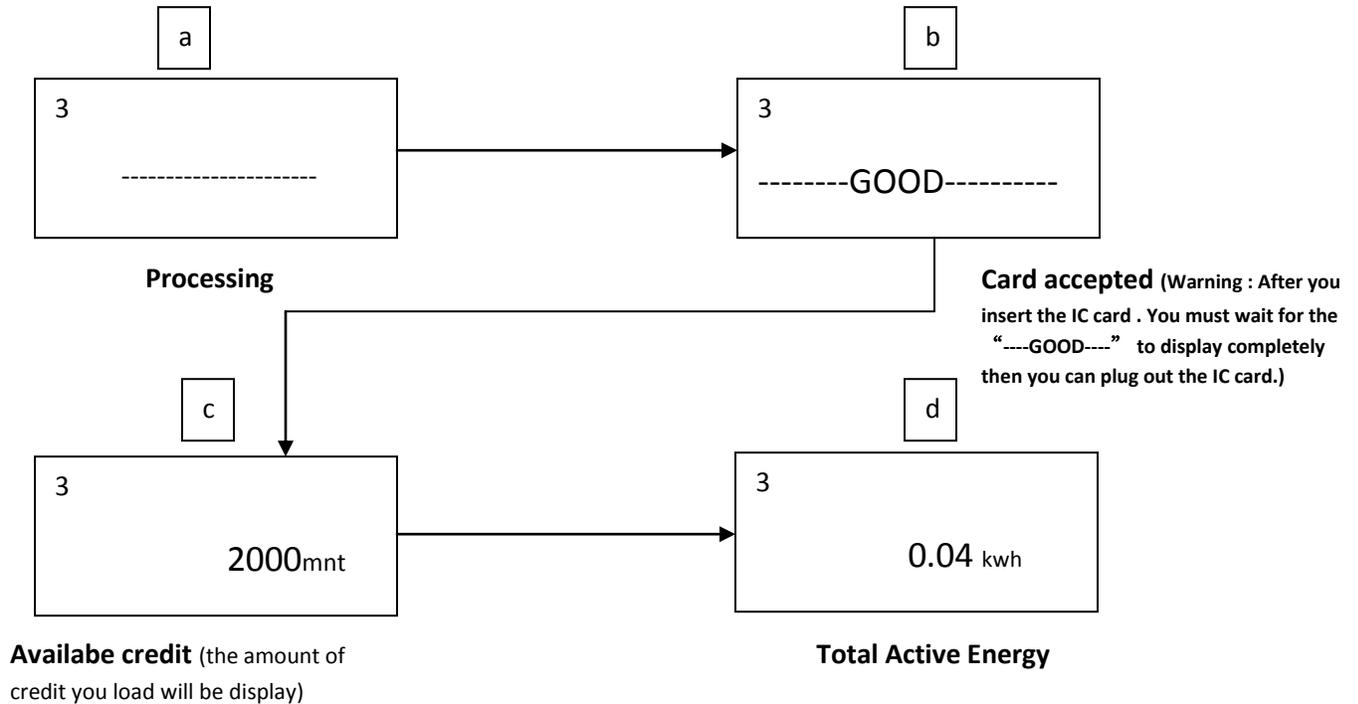Turn the microchip surface of the card to the left side of the meter.

b

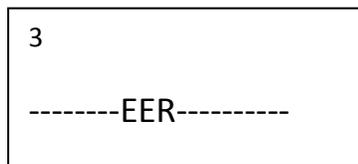Insert the card gently into the meter facing the left side, don't force it in or drag

Wait for two seconds and observe what the meter will displays. After some seconds, the meter display as follows:

a

3

Processing

b

3
--------GOOD----------

Card accepted (Warning : After you insert the IC card . You must wait for the "----GOOD----" to display completely then you can plug out the IC card.)

c

3
2000mnt

Availabe credit (the amount of credit you load will be display)

d

3
0.04 kwh

Total Active Energy

NOTE!

- If you insert the card and it give the following error

3
--------EER----------

Reason for this could be card not properly inserted, make sure you are inserting the right surface. Also try to see if the microship surface is in order, and check for punch, scratch or stains and try again.

If problem still persist contact the supply authority.

- Based on the "Power impulse up limits" IC card meter will auto judge if overloaded. If so, it will have a 1 minute's overload warning. It will

recover normal, if the overload warning is remove. Or it will directly cut off the power. When it is cut off, insert any card it will relay on.

Tip:

- When you switch your lights or any appliances on, the red light will begin to flash. The more appliances you switch on, the faster the light will flash. Use this indicator as a reminder to switch off appliances that are not in use.


3.04 STEP 4

When your credit level is running low (below ₦50), the red indicator light will start flashing. This is a warning that you must purchase another credit to reload your meter. If your meter runs out of credit, the internal switch will trip and disconnect your electricity supply. To connect your electricity supply, you must take your card to the nearest sales office to purchase electricity and insert into your meter to restore supply of electricity.
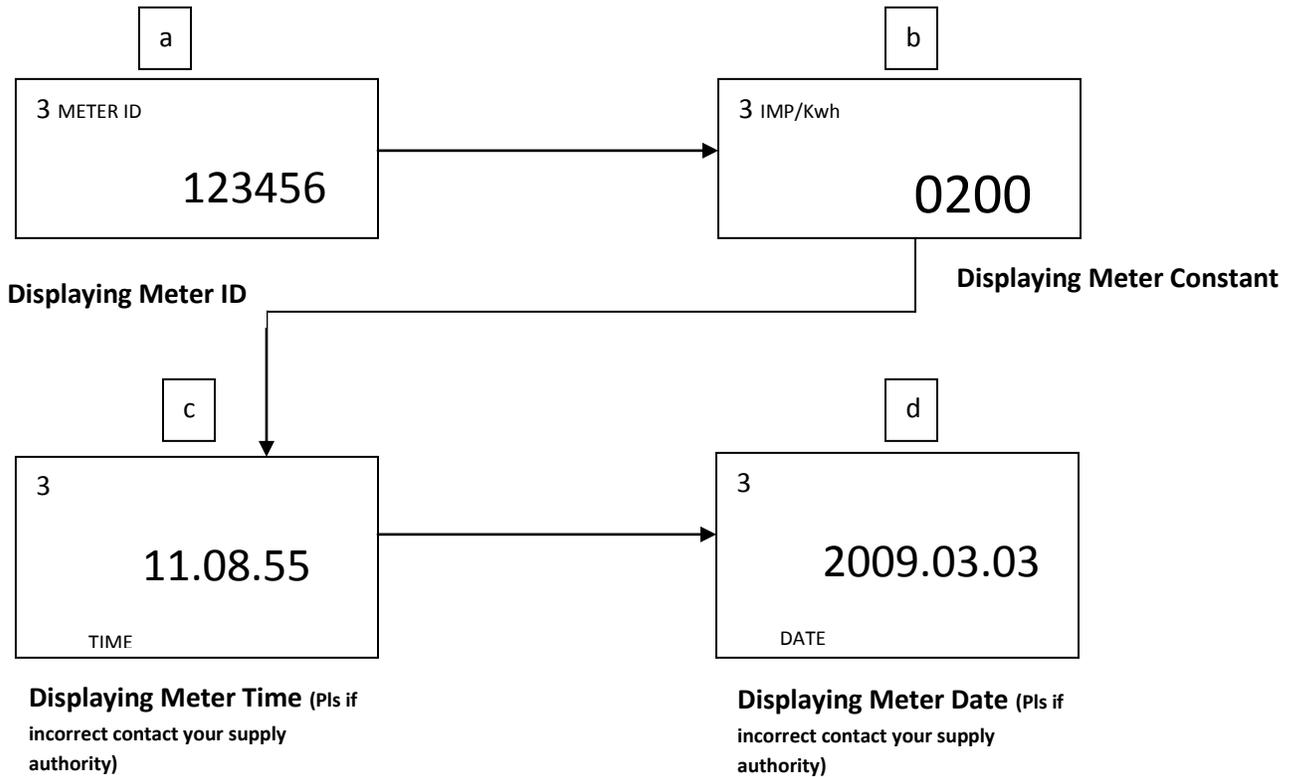
Important!

- Please before taking your UserCard to reload or purchase electricity, always make sure you insert the card into the meter to read the current information on the meter into the card before taking the card to the sales office. This prevent any error that might occur at the point of sales. When you insert the card you should see the following message:

| 3 |
| --------GOOD---------- |
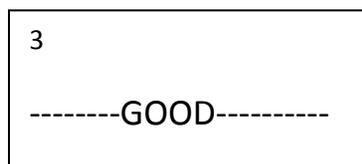
After the message goes off you can remove your card to sales office to purchase electricity.

3.05 STEP 5

Want to know, what other display functionality your meter have? You can get to know this by inserting your UserCard into the meter and wait for thirteen seconds (13secs), you will see the following display:
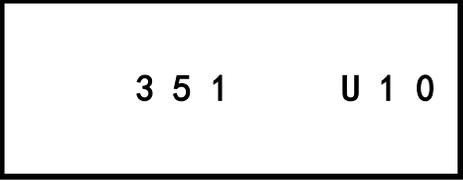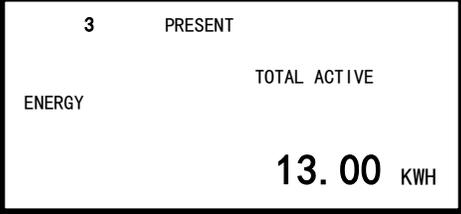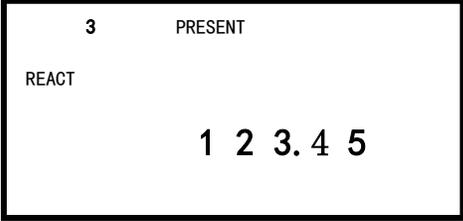
a

```
3 METER ID

        123456
```

b

```
3 IMP/Kwh

        0200
```

Displaying Meter ID

Displaying Meter Constant

c

```
3

        11.08.55

                TIME
```

d

```
3

        2009.03.03

                DATE
```

Displaying Meter Time (Pls if incorrect contact your supply authority)

Displaying Meter Date (Pls if incorrect contact your supply authority)

4.01 Display function

- LCD English segments display, store information for at least 10 years.
- Display temperature environment: -20℃…55℃
- Energy displays 6 integers, 2 decimal.
- Items display last 4 seconds (roll display period)
- The display items includes: version number, present active energy, present reactive energy, last month amount, total amount, meters ID, meters constant.

4.02 LCD Display

When the meter power on, it will display LCD all segment 3 seconds. Then it will display the meter's type and versions 3 seconds.

LCD display diagram and constant.

Indication	Meaning
3 5 1 U 1 0	Versions number
3 23. 00 ₦	Avail credit amount 23.00 N
3 PRESENT TOTAL ACTIVE ENERGY 13. 00 KWH	Present active energy 13.00 KWh
3 PRESENT REACT 1 2 3.4 5	Present reactive energy 123.45 Kvar 3 means the meters status is running status
3 LAST 4 5 6.7 8 ₦	Last month amount 456.78 3 means the meters status is running status

3 METER ID **0** 0 0 0 0 3	Meters ID is 000003 3 means the meters status is running status
3 imp/KWh 200	Meters constant 3 means the meters status is running status

5.00　Meter type and main parameters:

5.01　Type

Meter's type	Phase type	Accuracy class	Rated voltage (V)	Meter constant (imp/kWh)	Rated current (A)
FS351	3 phases	1	240/415	200	25（100

5.02 Main parameter

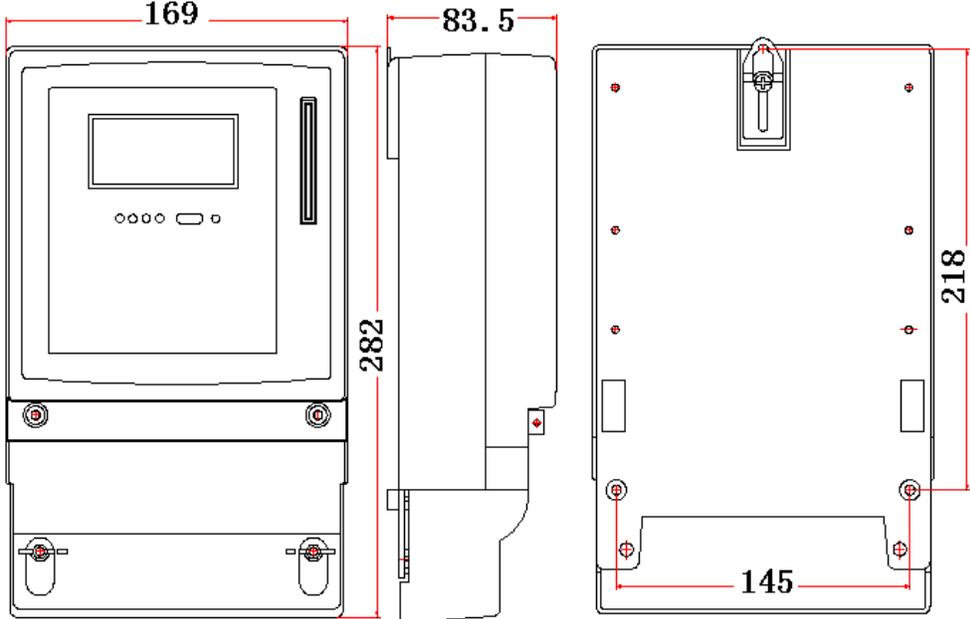| Item	Parameter and specification
error	comply to IEC 1036-1996 standard
Reference frequency	50Hz
Measurement range	000000.00――999999.99kWh
Clock error	Precede 0.5 s/day(under reference condition

PLCC	spread spectrum 63bits , main frequency 120K band width 15KHz
power consumption	static status: less than1.5w, communication status les than 3W
Meter size	lengthXwidthXheighth: 282 mm ×169 mm ×83.5mm
Power supply	240/415V±20%
Relay current	>100A
Impulse output parameter	Impulse width 80 ms±20%，5-24V DC supply
Operating temperature	-20℃～50℃
Operating humidity	Less than 75%
storage and transmit temperature temperature	-25℃～75℃

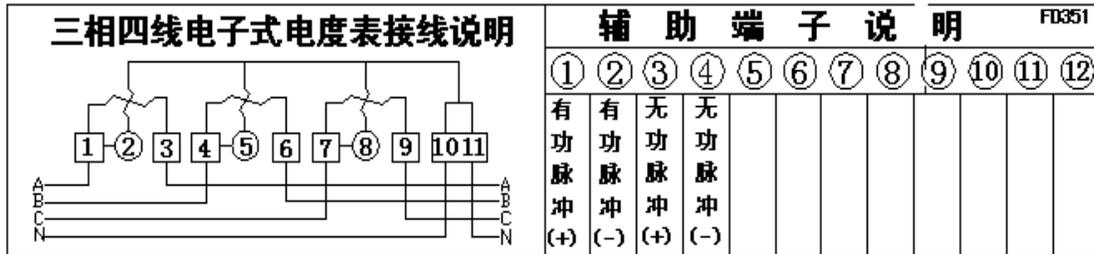## 5.03 Comply standards

- ✓ GB/T 17215-2002   Class1 ac active energy meter

- ✓ GB/T 15284-2002   Multi tariff energy meter , special requirement

- ✓ DL/T 645-1997   multi functional energy meter comm. protocol

- ✓ JB/T 7655-1995   Impulse energy meter

- ✓ GB/T 18460-2001   IC card prepayment selling system

6.00 Meter Size:

6.01 Meter type size and wall mounting discription

6.02 Energy meter link indication

三相四线电子式电度表接线说明

辅 助 端 子 说 明											FD351
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
有功脉冲(+)	有功脉冲(−)	无功脉冲(+)	无功脉冲(−)								

1—②—3—4—⑤—6—7—⑧—9—1011

A B C N

Three phase four wires electro meter indication

Sub terminal indication

1. active impulse
2. active impulse
3. reactive impulse
4. reactive impulse

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