PROCOM®

ProMeter Instruction Manual-PPM-3422

Ver 1.0

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Precautions

• Energy meters are always located in the electrically hazardous areas. To minimize the risk of electric shock it is recommended to avoid any contact with open or loose connections. If any loose wire is observed immediately concern a qualified electrician.

• Only a qualified electrician should install the meter to avoid any life changing accidents. Fiddling with the meter terminals or sealed cover is highly dangerous and is not recommended at all.

• Do not exceed the voltage and current limits above the limits mentioned on the front cover.

• After installation meter is sealed to avoid tampering with. Inappropriate handling may cause damage to seal impressing the tamper with the meter.

Deliverable

• Pro Meter - Phase Prepaid Energy Meter.
• Pro Meter - Instruction Manual (This Document).
• Atom - Home Display Unit for Pro Meter.

ProMeter Features

Prepaid Metering.

Prepayment energy meters are a type of domestic energy meter that requires users to pay for energy before using it. Tis is done via a recharge through the supplier vendor. Tey work a bit like a prepaid mobile phones, we have to top-up with balance to get our electricity. ProMeter automatically cut the electrical supply using in-built relay circuit if the balance is used-up.

All programmable parameters can be set to the meter using a centralized computer based software 'ProMeterSoft' using RS485 communication designed for vendor use. Te ProMeter can be programmed to compute the bill on either KWh or KVAh consumption.

Supply Auto Cut.

When sufcient balance is available in the meter it will work uninterrupted and will deduct the energy charges according to the energy tariff programmed. When the balance reaches a marginal limit, programmed through the ProMeterSoft, an alert via SMS or Email would be sent to the user. At this stage the user should recharge the meter to enjoy uninterrupted supply. However, if meter is not recharged till balance reaches zero then meter display will start blinking and buzzer will blow in home display unit and meter will continue operation in emergency credit limit 1. Te meter will cut supply when limit is over. But, if utility provides emergency credit limit 2 then the meter will operate in reduced load mode till the limit 2 exceeds. After limit 2 is crossed meter will cut the supply permanently and will allow the operation only in happy hours.

Emergency Credits.

ProMeter can cut the user supply when the balance reaches zero. Apart from the normal balance the meter allows to program two emergency credit limits, which works as follows:

• Emergency Credit Limit 1: Tis the limit up-to which the supply remains uninterrupted unconditionally. Only a display warning and an audible alarm, in case of home display unit, would be triggered.

• Emergency Credit Limit 2: After limit 1 the meter will operate in reduced load mode. Till limit 2 the meter will allow the reduced load for emergency services. In reduced load mode if meter exceeds the load sanctioned it will operate in overload mode as explained earlier. After limit 2 the meter will cut of the supply permanently.

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ProMeter is supplied with an elegant optional Home Display Unit 'Atom'. In case Atom is installed then the display and switch operation of the meter is replicated on the Atom.

Dual Supply Meter.

ProMeter can be used for electricity billing where more than one source of power is available like Generator. Te benefit of dual supply is that different tariff for both the supplies can be programmed separately. Meter automatically detects the supply by sensing the auxiliary terminals available. Meter stores individual records for both the Mains and

Generator supply separately. It deducts the balance corresponding to the tariff programmed.

Over-Load Cutoff.

Over load condition is generated when the load is more than the sanctioned load. Te meter shall have 5 steps of over load handling. Each step shall have the following settings:

• Duration for which the over load is allowed
• Duration for which the meter should cut the load

If the over load condition is not removed even after the 5 steps than the over load can only be reset manually by reset switch. These limit for over load as well as the settings in the five steps is programmable through ProMeterSoft.

Monthly Consumption & Demand.

Te meter stores the monthly consumption history for energy consumption and Maximum demand for last six months along with the date and time of maximum demand occurrence.

Happy Hours / Holidays.

To prevent the supply cut in the nights and holidays ProMeter has a feature of programming the happy hours and holidays. Happy hours could be programmed as Start time and End time whereas up to 30 annual holidays along with weekly holidays can also be programmed. These are the times when meter won't cut the supply even if balance is reduced to zero / below emergency credit.

DG Phase Selection.

Te Meter can be programmed to select any combination of the phases of auxiliary supply to be provided to the customer to facilitate the load management of DG.

Load Survey.

ProMeter records the daily consumption records of last 6 months for both supplies. Data can be read from the ProMeter using RS485 communication. Data can be read in blocks of 15 days. 12 blocks are available for load survey of 18 days. Te load survey is always read as FIFO bufer.

Maintenance Charge.

Apart from normal energy consumption charges some amount may be deducted as standing charges. Te maintenance charge can be set into the meter through communication. Te standing charges can be programmed to deduct daily, weekly or monthly. Te time, day and date for the deduction of standing charges can be changed.

Recharge History.

ProMeter keeps a record for last 12 recharges. Te date and time of the recharge along with the amount of recharge is recorded in the meter itself. This data can be read from the meter using 485 communication.

Parts Description

1. ProMeter Front Plate. Meter front plate is made from industrial grade plastic mounted on the base of the meter using sealed locks to avoid tampering with. Sticker on the meter front plate can be referred to check the recommended operating condition of the meter.

2. Pulse LED. Te Pulse LED blinks 1000 times for every 1KWH of energy consumed. Its blink rate increase or decrease according to the load applied. It can be used to test the accuracy of the meter.

3. Key-Pad and LCD. ProMeter comes with a 10 digit Alphanumeric LCD display to ease with the view of parameters. A handy keypad with 3 switches on board allows easy user interaction of the meter.
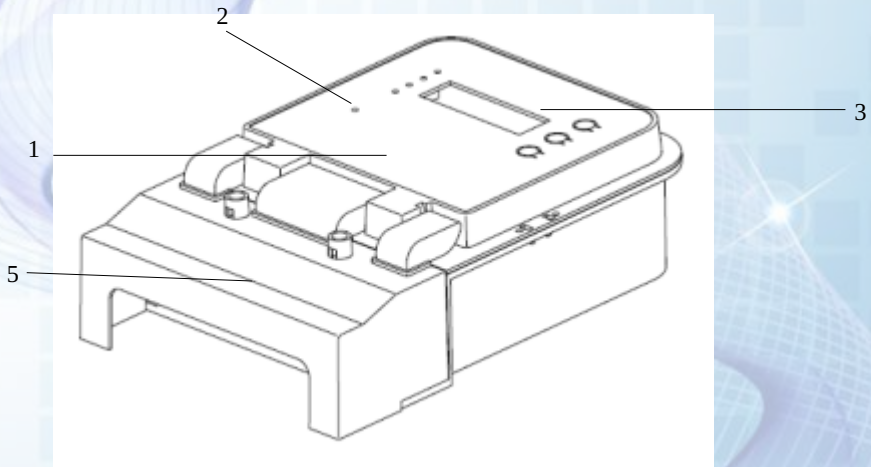
4. Sealable Terminal Cover. Terminal block cover is to shield the open terminal connection of the meter and power cables. To prevent the tampering it can be sealed after making the connections.

5. 'Atom' Home Display Unit. If the meter is to be installed in a central control panel, an additional unit can be installed at the home for user interaction. Atom remains connected to the meter via a 4-wire telephone cable. Atom replicates the ProMeter entirely and also generate alarms in sync with the meter. All LCD and keyboard operations of Atom are same as meter.

LCD & Key-Board Operation
Default mode.

Meter will be in default mode when powered on. It will show following parameters in default mode:

1. Display will show the balance amount remaining in the next screen. Press Next Switch to see the balance.	`BALANCE`
2. Available balance in Rupees. PressNext Switch to see the next parameter.	`450. 45 RS`
3. Display will show EB KWh consumed if meter is confgured to bill on KWh. Press Next Switch.	`EB KWH`
4. Display will show EB KVAh consumed if meter is confgured to bill on KVAh. Press Next switch.	`EB KVAH`
5. EB Kwh/KVAh.	`3410. 4 U`
6. Display will show DG KWh consumed if meter is confgured to bill on KWh. Press Next Switch.	`DG KWH`
7. Display will show DG KVAh consumed if meter is confgured to bill on KVAh. Press Next switch.	`DG KVAH`
8. DG Kwh/KVAh.	`238. 4 U`
9. Display will show max demand in KW during the month. Press Next switch.	`MD KW`
10. Maximum Demand in KW.	`52. 00 KW`
11. Maximum demand occurrence date.	`MD DATE`
12. Date in DD-MM-YYYY format.	`02-04-2016`
13. Maximum demand occurrence time.	`MD TIME`
14. Time in HH-MM-SS format.	`09-30-00`

Instant Parameter Mode.

Instant parameters such as voltage and current can be viewed at any time by pressing switches Next and Reset at a same time in default mode. Meter will show IN5T PARA. Press next switch to enter instant parameter mode. Display will start in following sequence. Press next switch repeatedly to scroll to next display window.

VOL R-Y	1. Phase to Phase Voltage R-Y
412.5 V	2. Voltage RY Phase.
VOL Y-B	3. Phase to Phase Voltage R-Y
414.6 V	4. Voltage RY Phase.
VOL B-R	5. Phase to Phase Voltage R-Y
418.2 V	6. Voltage RY Phase.
VOL R	7. Phase to Neutral Voltage R Phase.
240.1 V	8. Voltage R Phase.
VOL Y	9. Phase to Neutral Voltage Y Phase.
242.3 V	10. Voltage Y Phase.
VOL B	11. Phase to Neutral Voltage B Phase.
238.7 V	12. Voltage B Phase.
CURRENT R	13. Current R Phase.
23. 28 A	14. Current in Amps.
CURRENT Y	15. Current Y Phase.
23. 06 A	16. Current in Amps.
CURRENT B	17. Current B Phase.
23.54 A	18. Current in Amps.
FREQUENCY	19. Frequency in Hertz.
49. 99 HZ	20. Frequency.
POWER R	21. Active Power in Phase R.
5. 64 KW	22. Power in KW.
POWER Y	23. Active Power in Phase Y.

Instant Parameter Mode.

Instant parameters such as voltage and current can be viewed at any time by pressing switches Next and Reset at a same time in default mode. Meter will show IN5T PARA. Press next switch to enter instant parameter mode. Display will start in following sequence. Press next switch repeatedly to scroll to next display window.

1. Phase to Phase Voltage R-Y	VOL R-Y
2. Voltage RY Phase.	412.5 V
3. Phase to Phase Voltage R-Y	VOL Y-B
4. Voltage RY Phase.	414.6 V
5. Phase to Phase Voltage R-Y	VOL B-R
6. Voltage RY Phase.	418.2 V
7. Phase to Neutral Voltage R Phase.	VOL R
8. Voltage R Phase.	240.1 V
9. Phase to Neutral Voltage Y Phase.	VOL Y
10. Voltage Y Phase.	242.3 V
11. Phase to Neutral Voltage B Phase.	VOL B
12. Voltage B Phase.	238.7 V
13. Current R Phase.	CURRENT R
14. Current in Amps.	23. 28 A
15. Current Y Phase.	CURRENT Y
16. Current in Amps.	23. 06 A
17. Current B Phase.	CURRENT B
18. Current in Amps.	23.54 A
19. Frequency in Hertz.	FREQUENCY
20. Frequency.	49. 99 HZ
21. Active Power in Phase R.	POWER R
22. Power in KW.	5. 64 KW
23. Active Power in Phase Y.	POWER Y

5. 62 KW	24. Power in KW.
POWER B	25. Active Power in Phase B.
5. 75 KW	26. Power in KW.
POWER T	27. Total Active Power.
5. 75 KW	28. Power in KW.
PF R	29. Power Factor R Phase.
1. 00 PF	30. Power Factor R Phase.
PF Y	31. Power Factor Y Phase.
0. 99 PF	32. Power Factor Y Phase.
PF R	33. Power Factor B Phase.
-0. 99 PF	34. Power Factor B Phase.
PF AVG	35. Average Power Factor.
1. 00 PF	36. Average Power Factor.
KVA R	37. Apparent Power R Phase.
6. 02 KVA	38. Apparent Power in KVA.
KVA Y	39. Apparent Power Y Phase.
6. 02 KVA	40. Apparent Power in KVA.
KVA B	41. Apparent Power B Phase.
5. 93 KVA	42. Apparent Power in KVA.
KVA TOTAL	43. Total Apparent Power.
6. 82 KVA	44. Apparent Power in KVA.
DATE	45. Current Date.
28-04-2016	46. Date in DD-MM-YYYY format.
TIME	47. Current Time.
09-32-42	48. Time in HH-MM-SS format.

Communication Setings Mode.
It is possible to change the device ID to be used for communication. Also Baud rate, Parity and stop bits can also be changed from the meter. To change the parameters:

1. Press INC switch for 3 seconds. Display will show

`ENTER PASS.`

2. Press Next switch to Enter. Now Display will show the password screen. Enter the password using INC switch.

`123`

3. Press Next to accept the password, Display will show

`PASS OK.`

4. Now again press Next Switch to enter into confguration menu.

5. Press next switch to change the device ID.

`DEVICE ID`

6. Choose a device ID using INC switch from 1 to 655535. Press Next switch for next parameter.

`452`

7. Press next switch to change the baud rate.

`BAUD RATE`

8. Press INC switch to choose a baud rate from 1200/2400/4800/ 9600/195200. Press next switch to jump to new parameter.

`9600`

9. Press next switch to change the parity seting.

`PARITY`

10. Choose from None/Even/Odd using INC switch. Press Next switch for next parameter.

`EVEN`

11. Press next switch to change the Stop Bits.

`STOP BIS`

12. Choose from 1 or 2. Press Next switch to save and exit.
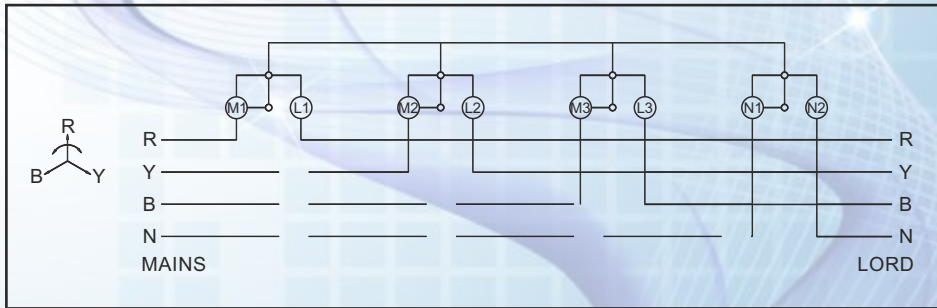
`2`

Default Setings.

Device ID : 1
Baud Rate : 9600
Parity : None
Stop Bits : 1

Technical Specifcations.

Standard : IS135779
Accuracy : Class 1.0 IEC 625053-21
Voltage Rating : 240 V 3P – 4W
Current Rating : 10 – 60 Amp
Current Withstand : 80 Amp for 1 Sec
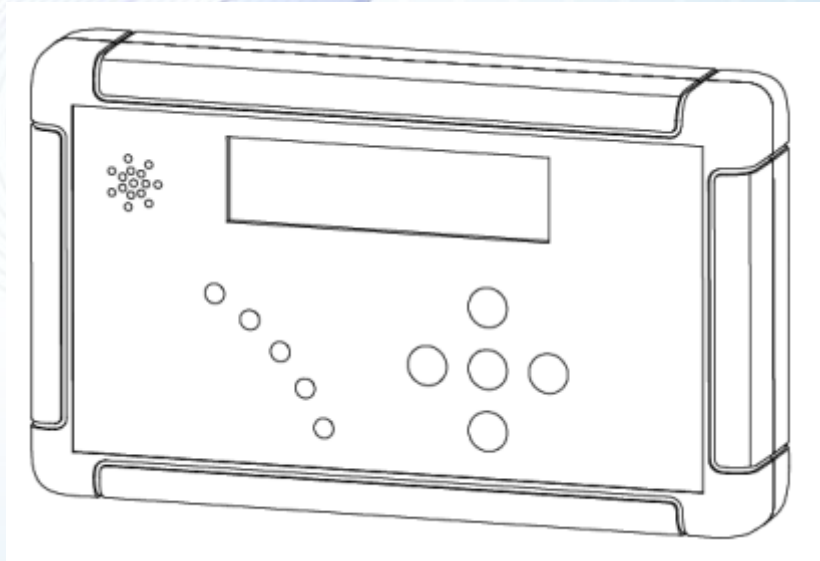Starting Current :
Frequency : 40 – 70 Hz

Connection Diagram

OPTIONAL ADD-ON – HOME DISPLAY UNIT

Normally meters are mounted either in the basement or in the corridors. Consumers are not able to verify the source of their current supply (EB or DG). Mounted in the house, the display unit forms an interface between them and their respective meters. It provides information like balance available, total DG as well as EB energy consumed, type of source running etc. on its alphanumeric display.

The display unit is ideally suited for conditions where the DG supply is being used regularly, since it lets the user plan consumption accordingly, for the source that has a higher cost.