

## DUAL ENERGY METER



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**DIGITAL MICROCONTROLLER BASED THREE PHASE DUAL KILOWATT HOUR (KWH/ENERGY METER) WITH VOLTAGE, CURRENT, FREQUENCY, POWER FACTOR, ACTIVE POWER, EB&DG ON HOUR DISPLAY**

Prok dv's make Digital Microcontroller Based Three Phase Dual Kilowatt Hour (Kwh/Energy Meter) offer the latest technology, user friendly features. It is Designed with features like – selectable CT ratio, RS 485 communication port, Dual source Energy recording with display of voltage, current, frequency power factor, Active power, EB&DG ON Hour.

## Principle of Operations

All the phase voltages and currents are stepped down to the acceptable levels of energy meter chip. It process the acquired signal and performs the signal processing such as digitizing, filtering and averaging to extract active power, RMS values of current and voltages required computes the consumption of the energy. The measured values are stored as bit streams in the registers. These registers are accessed by serial interface using the microcontroller. MicroController accesses the data from the chip and displays the various electrical parameters and energy consumption for both the EB/DG Sources with ON hours on the LCD screen.

## Features

- True RMS measurements
- Accuracy class 1.0
- 2 –Line, 16 Char back lit LCD display.
- Display parameters
  1. E.B Energy ( 6.3 format)
  2. D.G Energy (6.3 format)
  3. Line voltages ( $V_r$ ,  $V_y$ , and  $V_b$  with respect to neutral)
  4. Line currents ( $I_r$ ,  $I_y$ , and  $I_b$ ).
  5. Line Frequency.
  6. Average power factor lag or lead
  7. Active power- R ph, Y ph, B ph & summation
  8. a) EB On hour  
b) DG On hour
- L.E.D Indications
  1. Presence of phases (R, Y, B)
  2. Reverse polarity
  3. Presence of D.G source
- Confirms to IS-13779/ IEC-62052-11 & IEC-62053-21
- CT ratio- selectable from 5/5 to 3000/5
- RS 485 MODBUS Communication Port
- Compact and ideal for industrial environment

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## Applications

- Electrical Panels- HT & LT panels
- Generator Panel and Capacitive power plant
- OEM application
- Test benches and laboratory equipment.

## Models

- PDM 9025 – Digital Microcontroller Based Three Phase Dual Kilowatt Hour (Kwh/Energy Meter) with RS 485 Communication port-modbus protocol and without communication port
- PDM 9025PM–Digital Microcontroller Based Three Phase Dual Kilowatt Hour (Kwh/Energy Meter) With Power monitor and RS 485 communication port modbus protocol and without communication port.

## Specifications

Accuracy class	Class1.0
Frequency	50Hz $\pm$ 5 %
System voltage	415V AC/ 110V AC
Auxiliary	40- 275V AC/ DC
Operating temperature	-5° C to +55° C
CT ratio – field programmable	5/5 to 3000/5 in steps of 5
Power consumption - Sensing voltage Current input Auxiliary	Less than 0.2 VA Less than 0.2 VA Less than 5 VA
Weight	300 grams
Models	PDM9025 – 3Ph. 4W
Dimension	96 X 96X 70 mm ( W X H X D)
Mounting	flush
Impulses/ Kwhr	15,000

Note: Energy meter reading Overflows after recording- 999999.999 KWH  
Energy EB On Hour / DG On Hour reading Overflows after recording- 99999.59 H

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## Setting Procedure

Refer to wiring diagram-DEMw-01RS

- 1) Connect the suitable AUX Supply – ( 40-275vac/dc) refer wiring diagram to Energy meter.

Display shows

Prok dv's Dual KWh Meter	
EB: 0.000	
Vr=000	Ir=0.00

Display shows the following screens in sequence

EB:	0.000
Vy=000	Iy=0.00


DG:	0.000
Vb=000	Ib=0.00

DG:	0.000
F =49.86	pf= 1.00

B ph:	0.00 kW
Σ :	0.00 kW

R ph:	0.00 kW
Y ph:	0.00 kW

EB ON:	00000.00 H
DG ON:	00000.00 H

To enter non scroll (Hold) mode Press  key

Display enters non scroll (Hold) mode, remains there by 30 sec's and then comes back to scroll mode.

- 2) Press  Key for 5 Sec

1. CT Ratio
5/5 [5 – 3000/5]

Press  Key or  key to select the CT Ratio

Then press  key to save the value.

Display changes to

1. Slave ID
1 [ 1 – 31 ]

Note: Applicable for RS 485 mod bus protocol

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Press  Key or  key to select the Slave ID

Then press  key to save the value. Data saving done

After saving the data display shows

For a while Then display changes to normal operation

EB:	0.000
Vr=000	Ir=0.00

This completes the setting of the energy meter.

Note: In setting mode none of the key is not pressed until 15 sec's time out will occur

Display shows for a while

Display changes to normal operation.

RS- 485 COMMUNICATION

Time out

Mod bus protocol: Address and parameter data type details.

Address	Description	Data Type	Ct type
0001	Single/Dual kWh	Unsigned Int	1= single 2=Dual
0002	CT -type	Unsigned Int	1=/1, 5=/5
0003	CT -ratio	Unsigned Int	
0004	Phase R- VRMS	Unsigned Int	
0005	Phase Y- VRMS	Unsigned Int	
0006	Phase B- VRMS	Unsigned Int	
0007	Phase R- IRMS	float	
0009	Phase Y- IRMS	float	
0011	Phase B- IRMS	float	
0013	Frequency	float	
0015	EB- Energy	float	Format 6.3
0017	DG- Energy	float	Format 6.3
0019	pf	float	
0021	Reactive power sign	Unsigned Int	0= lag 1=lead
0022	Phase R - kW	float	
0024	Phase Y - kW	float	
0026	Phase B - kW	float	
0028	Total- kW	float	
0030	EB On Hour	float	
0032	DG On Hour	float	

Note: These addresses are valid for mod bus tester.exe

Baud rate: 9600

Slave id: 1- 31

Data bits: 8

Parity: None

Stop Bits: 1

Time out >3 sec (for 100% Response)

Scan rate >3 sec (for 100% Response)

Data formats: 1. unsigned integer length = 1 Byte

2. Float= 2 Bytes

Query - As usual

# DUAL ENERGY METER

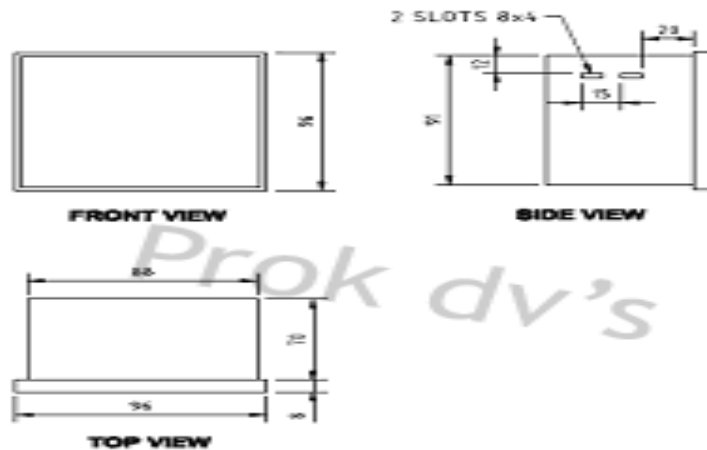
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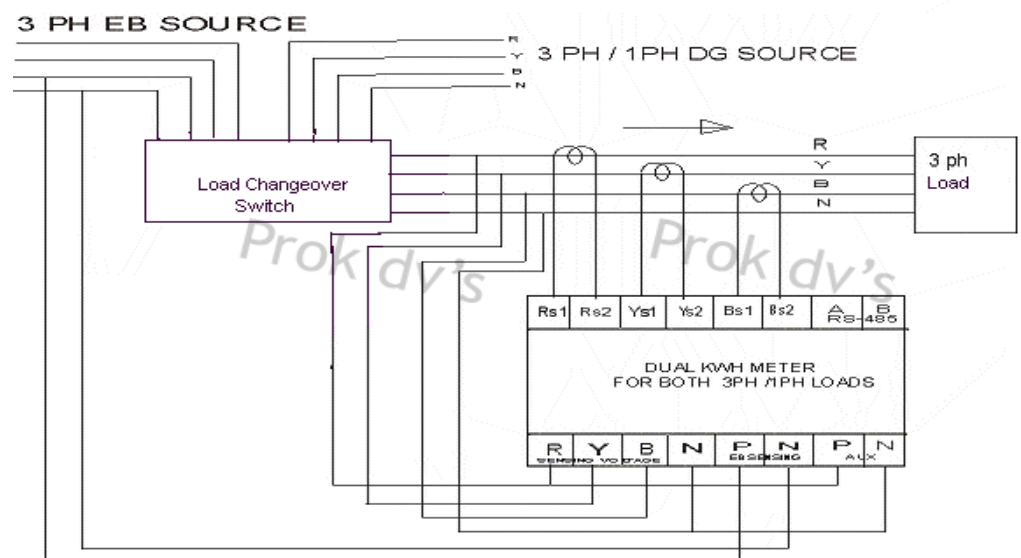
## Mechanical Dimension

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**NOTE: ALL DIMENSIONS ARE IN MM TOLERANCE: ± 1MM**

## Wiring Diagram DIGITAL MICROCONTROLLER BASED THREE PHASE DUAL KILOWATT HOUR (KWH/ENERGY METER)



**NOTE : If DG is for Single Phase Load**

Energy accumulated only for particular phase

Voltage and Current connected to KWH meter remaining Phases reading shows zero in meter

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