

DUAL ENERGY METER



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 ± 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 |
| ∑ : | 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

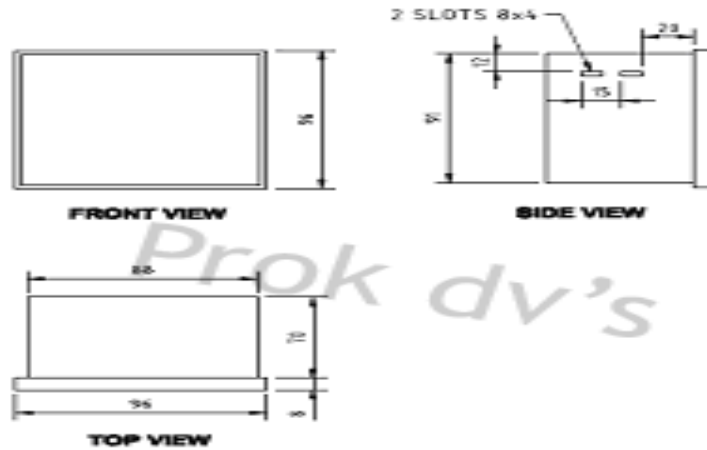
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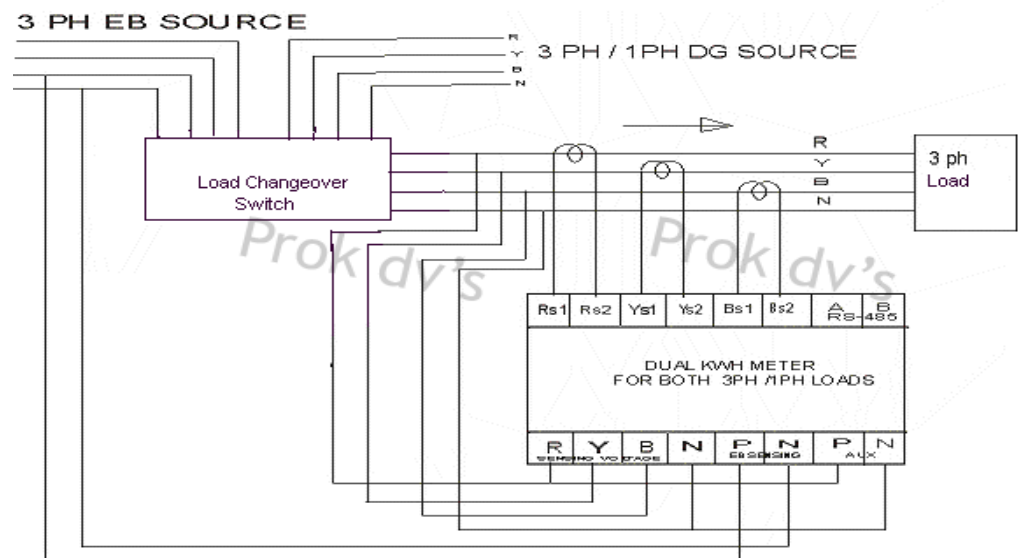
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Mechanical Dimension
DIGITAL MICROCONTROLLER BASED THREE PHASE DUAL KILOWATT HOUR (KWH/ENERGY METER)



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

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



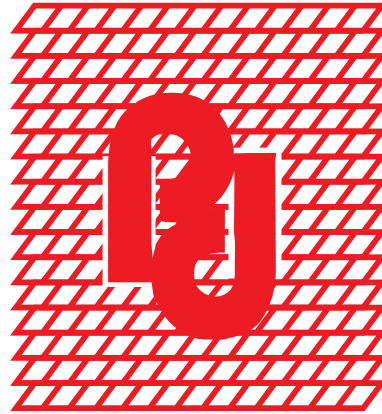
NOTE : If DG is for Single Phase Load
Energy accumulated only for particular phase
Voltage and Current connected to KWH meter remaining Phases reading shows zero in meter

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Prok Devices Private Limited
SIMHADRI ,No.2930, 14 th Cross,
Banashankari II nd Stage, Off K.R. Road,
Bengaluru-560070
Karnataka,India

Tel: +91 80 43487777/26760718/26761719
Fax: +91 80 26761720

For Marketing Information & Assistance
enquiry@prokdvs.com
marketing@prokdvs.com

For Product Information & Technical Details
info@prokdvs.com

For Service Information
service@prokdvs.com