

DIGITAL ENERGY METER



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

Prok dv's make Digital Microcontroller Kilowatt Hour Meter-(Kwh/Energy Meter) offer the latest technology, user friendly features. It is designed with features like – selectable CT ratio, RS 485 communication port, source energy recording with display of voltage, current, frequency power factor, Active power, EB 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. Micro Controller accesses the data from the chip and displays the various electrical parameters and energy consumption for the EB Source 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. Line voltages (Vr, Vy, and Vb with respect to Neutral)
 3. Line currents (Ir, Iy, and Ib).
 4. Line Frequency.
 5. Average power factor lag or lead
 6. Active power- R ph, Y ph, B ph & summation
 7. a) EB On hour
- L.E.D Indications
 1. Presence of phases (R, Y, B
 2. Reverse polarity
- Confirms to IS-13779/ IEC-62052-11 & IEC-62053-21
- CT ratio- selectable from 5/5 to 3000/5
- RS 485 PORT – Mod bus protocol
- 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 9023 – Single Source Digital Microcontroller based three phase kilowatt hour meter(kwh/energy meter) with communication port RS 485 & without communication port.

PDM 9023PM– Single Source Digital Microcontroller based three phase kilowatt hour meter(kwh/energy meter)with power monitor and communication port RS 485 modbus protocol & without communication port.

Setting Procedure

Refer to wiring diagram-DEMW-01RS

- 1) Connect Suitable AUX Supply 40 to 275VAC/DC to Energy meter.

Display shows

Prok dv's
KWh Meter

0.000 kWh
Vr=000 Ir=0.00

Display shows the following screens in sequence

0.000 kWh
Vy=000 Iy=0.00

0.000 kWh
Vb=000 Ib=0.00

0.000 kWh
F =49.86 pf=1.00

R ph: 0.00 kW
Y ph: 0.00 kW

B ph: 0.00 kW
Σ : 0.00 kW

Source ON Time
00000:00 Hur


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Setting Procedure

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]

Press  Key or  key to select the Slave ID

Then press  key to save the value.

After saving the data display shows Data saving done

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 Time out
Display changes to normal operation.

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Specifications

Accuracy class	Class1.0
Frequency	50Hz ± 5 %
System voltage	415V AC/ 110V AC
Auxiliary	40- 275V AC/ DC
Operating temperature	0° 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	PDM9023 – 3Ph. 4W
Dimension	96 X 96X 70 mm (W X H X D)
Mounting	flush

Model: PDM 9023 – KWH / 3ph .4W with or with out com port

Note: Energy meter reading Overflows after recording- 999999.999 KWH

Energy EB ON Hour Reading Over flows after recording- 99999.59 H

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
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	

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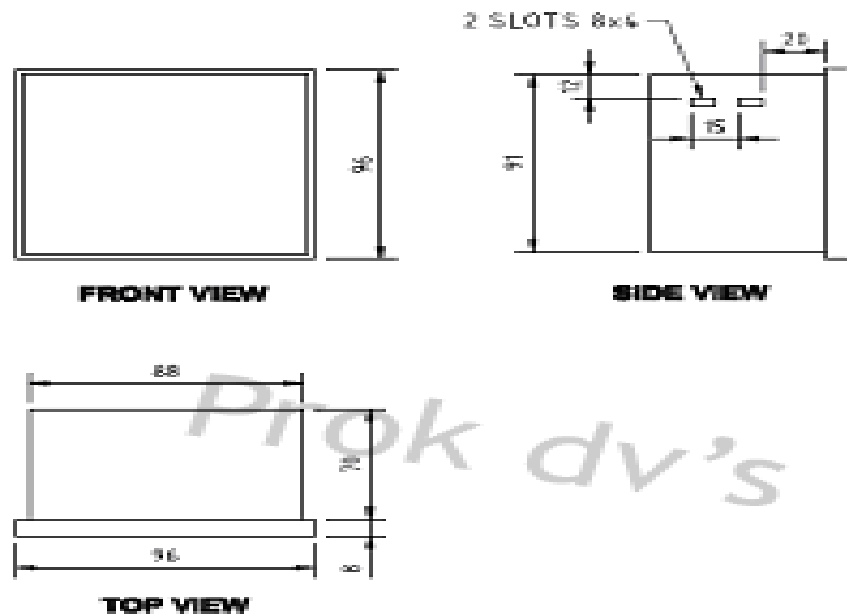
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Note: These addresses are valid for mod bus tester.exe
Baud rate: 9600
Slave id: 1- 31
Data bits: 8
Parity: None
Stop Bits: 1
Time out >3 sec (for 100% Response)
Scan rate >3 sec (for 100% Response)
Data formats: 1. unsigned integer length = 1 Byte
2. Float= 2 Bytes
Query - As usual

Mechanical Dimensions DIGITAL MICROCONTROLLER BASED KILOWATT HOUR METER-(KWH/ENERGY METER)



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

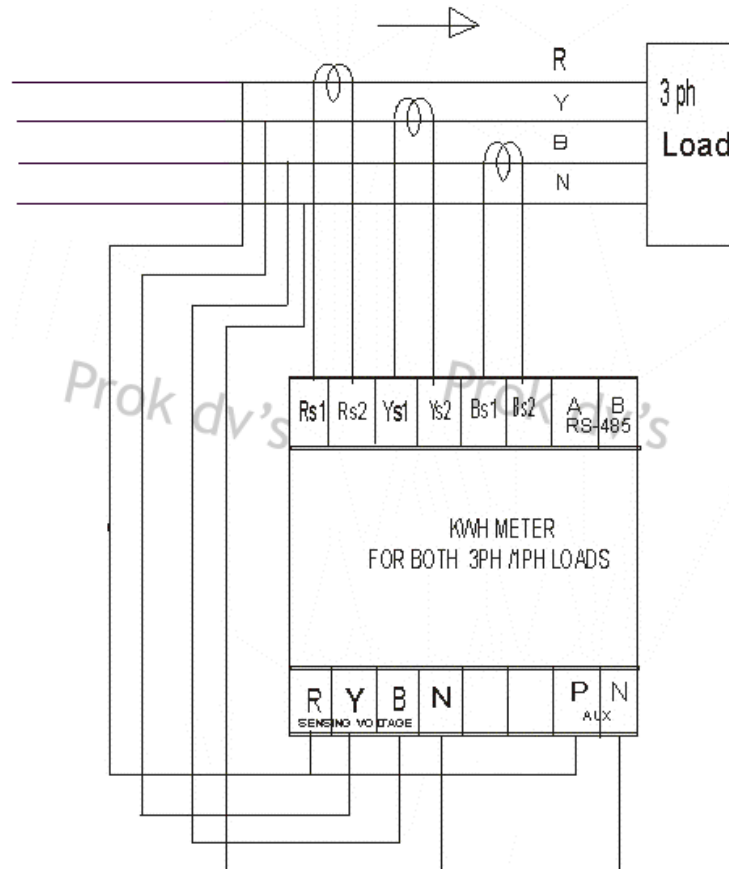
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Wiring Diagram DIGITAL MICRO CONTROLLER BASED KILOWATT HOUR METER-(KWH/ENERGY METER)



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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