DIGITAL ENERGY METER

Prok dv’s kWh Meter.

www.prokdvs.com

An ISO 9001 : 2008 Company
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
DIGITAL MICROCONTROLLER BASED KILOWATT Hour METER-(KWH/ENERGY METER) WITH Voltage, Current, Frequency, Power factor, Active power, EB & DG ON Hour Display

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

F = 49.86 pf=1.00

R ph: 0.00 kW
Y ph: 0.00 kW

B ph: 0.00 kW
∑ : 0.00 kW

Source ON Time
00000:00 Hour
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 SET Key for 5 Sec

1. CT Ratio
5/5 [5 – 3000/5]

Press ▲ key or ▼ key to select the CT Ratio
Then press SE 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 SET 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
Display changes to normal operation.

Time out
# Specifications

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

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- 999999.59 H

Mod bus protocol: Address and parameter data type details.
DIGITAL MICROCONTROLLER BASED KILOWATT HOUR METER-(KWH/ENERGY METER) WITH VOLTAGE, CURRENT, FREQUENCY, POWER FACTOR, ACTIVE POWER, EB & DG ON HOUR DISPLAY

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: ± 1 mm
DIGITAL MICROCONTROLLER BASED KILOWATT HOUR METER-(KWH/ENERGY METER) WITH Voltage, Current, Frequency, Power factor, Active power, EB & DG ON Hour Display

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
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
Email: info@prokdvs.com