Technology of Measurement...

Electronic Energy Meters
Single Source & Dual Source

- Energy Meters
- Multifunction Meters

HPL offers wide Range of Multifunction Meters for Residential & Commercial applications

[Logos and Certifications]
Single Phase
Model:
Single Phase Electronic Energy Meter Counter & LCD Type Display
Available in class 1accuracy as per IS:13779

Ratings Available:
5-30A, 10-60A
Other Ratings are available on request

Special Features

• Instantaneous Start.
• Low power consumption less than 1 wt.
saving of more than 30% over conventional
meters.
• Meter records correct energy with same
accuracy under reverse current connection.
• LCD/LED’s indication for current reversal
tampering and phase availability.
• Optional : Optical port/RS232 communication
for LCD Meter.
• AN ISO-9001 : 2008 Company.
• Meter with optical port are suitable for AMR
application.

Design

• A sic based digital technology ensures superior
& drift free long term performance and reliability.
• Tamper proof design.
• No frequent adjustments required.
• No mechanical wear & tear.
• Immune to effects of external magnetic field as
per IS:13779.
Three Phase
Model:
Three Phase Electronic Energy Meter Counter & LCD Type Display
Available in class 1 accuracy as per IS:13779

Ratings Available:
5-20A, 10-60A, -/5A* CT Operated
*Available only in Counter type meter

Accuracy
- Accuracy irrespective of mounting position.
- Accuracy maintained even under wide voltage fluctuation from -40% to +20% of Vref.
- Accurate reading even under rapid current fluctuation.
- Accurate for balance as well as unbalance loads.

Anti Tamper Features
- Anti Tamper Features
- Meter Records correct energy with same accuracy under reverse current connection.
- For Indication please refer the technical specification.
- Phase available indication provided.
- Meter works accurately under earth load condition.
### Technical Specification of Electronic Energy Meter Single Phase & Three Phase

<table>
<thead>
<tr>
<th>Type</th>
<th>Electronic Energy Meter Single Phase</th>
<th>Electronic Energy Meter Three Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference Voltage</td>
<td>240V</td>
<td>3 x 240V</td>
</tr>
<tr>
<td>Reference Frequency</td>
<td>50Hz</td>
<td>50Hz</td>
</tr>
<tr>
<td>Starting Current</td>
<td>0.4% of basic current for direct connected meters and 0.2% of basic current for CT operated meters</td>
<td>0.4% of basic current for direct connected meters and 0.2% of basic current for CT operated meters</td>
</tr>
<tr>
<td>Operating temp.</td>
<td>-10°C to 60°C</td>
<td>-10°C to 60°C</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Polycarbonate</td>
<td>Polycarbonate</td>
</tr>
<tr>
<td>Overload Capacity</td>
<td>400% and 600% of basic current for direct reading</td>
<td>400% and 600% of basic current for direct reading</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Less than 1.0 watt</td>
<td>Less than 1.0 watt</td>
</tr>
</tbody>
</table>

### Versions Available

<table>
<thead>
<tr>
<th>Type</th>
<th>Electronic Energy Meter Single Phase</th>
<th>Electronic Energy Meter Three Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating Electromechanical Counter</td>
<td>Direct Connected: 5/30A, 10/60A</td>
<td>Direct Connected: 5/20A, 10/60A CT Operated: -15A CT Operated: -15A Direct reading type meters are available on request</td>
</tr>
<tr>
<td>Rating LCD</td>
<td>Direct Connected: 5/30A, 10/60A</td>
<td>Direct connected: 5/20A, 10/60A</td>
</tr>
<tr>
<td>Dimensions Counter</td>
<td>132mm x 168mm x 73mm</td>
<td>169mm x 200mm x 82mm</td>
</tr>
<tr>
<td>Dimensions LCD</td>
<td>112mm x 166mm x 68mm</td>
<td>247mm x 187mm x 98mm</td>
</tr>
<tr>
<td>Indications Counter</td>
<td>LED’s provided on front window for following indications: • Meter Calibration • Reverse indication • Earth tamper indication • Phase available indication</td>
<td>LED’s provided on front window for following indications: • Meter Calibration • Reverse indication • Phase available indication</td>
</tr>
<tr>
<td>Indications LCD</td>
<td>LED’s provided on front window for following indications: • Meter Calibration</td>
<td>LED’s provided on front window for following indications: • Meter Calibration</td>
</tr>
<tr>
<td></td>
<td>LCD icons indication for the following: • Reverse indication • Earth tamper indication • Phase available Indication</td>
<td>LCD icons indication for the following: • Reverse indication • Phase available indication</td>
</tr>
</tbody>
</table>

### Special Features
- Made of UV stabilized transparent polycarbonate/Flame retardant high grade engineering plastic.
- Unique arrangement for pilfer proof interlocking with hinge type boxes.
- Suitable for indoor and outdoor applications.
- Complying to IS:14772 and tested at CIPET.
- Sealable optical port provision on the cover of the meter box.
- Sealable push buttons provided on the box cover.
- Latest state of the art Inhouse tool room to design meter boxes for special application.
- Large capacity in house moulding for quick and bulk supplies.

**Meter Box for Single Phase & Three Phase Meters**

Meter Cupboard with Hinge type locking arrangement moulded in Transparent Engineering Plastic
Three Phase LT - CT
TRIVECTOR METER
Ratings Available
-/5A* CT Operated
* Direct Reading Meters available on request

Salient Features
- Accuracy Class 0.5 as per IS 14697 : 99.
- Suitable for DT Metering.
- Optical communication port.
- Logging and display of tamper data.
- TOD, Load survey, tamper information downloadable to CMRI through optical port.
- Display in absence of power supply.
- Suitable for AMR.

Other Features
- Power ON / OFF events
- Programmable TOD time zones
- Data downloading through optical port / hard wired RS232 port
- 60 Days load survey with 30 minutes integration period for the following parameters:
  a. Active Energy (kWh)
  b. Apparent Energy (kVAh)
  c. Reactive Energy lag (kVArh)
  d. Average Voltage Per Phase
  e. Average Current Per Phase
**Energy Register**
- Active / Apparent Energy
- Reactive Energy (Lag kVARh)
- Reactive Energy (Lead kVARh)

**Display Parameters**
Measures & Displays the following parameters:
- Cumulative Energy kWh
- TOD zone wise Cumulative kWh
- Current month kVA MD
- TOD zone wise previous month billing kVA MD
- Cumulative kVAh Reading
- Average Power Factor
- Total Number of Tamper Counts
- Phase wise instantaneous Phase to Neutral Voltage
- Instantaneous Line Current
- Total Instantaneous Power (kW / kVAR / kVA)
- Instantaneous Power Factor
- TOD Zone wise Cumulative kVAh Reading
- Cumulative R kVAh Lag
- Cumulative R kVAh Lead
- High resolution kWh
- Numbers of MD Reset
- Cumulative Export Active Energy kWh

**Anti-Tamper Features**
Meter is capable of detecting & recording the following tamper events. Tamper event shall be recorded with following snapshots of occurrence & restoration, tamper type, date, time, Instantaneous voltage, current, PF, cumulative kWh & kVAh. Meter records 280 tamper events on FIFO basis for following tampers available with communication.

A. Missing potential  
B. Current reversal  
C. Current circuit short  
D. CT Bypass  
E. Magnetic Tamper  
F. Potential imbalance  
G. Current Unbalance

**Communication Parameters**
Following parameters can be obtained through optical port / RS 232 port.

A. Load Survey for last 60 days.  
B. Last 6 months billing data.  
C. Instantaneous parameters at the time of meter reading.  
D. TOD / Tamper Data

**Maximum Demand and MD Integration period**
The demand is monitored during each demand interval set with 30mins integration and the maximum of these demand is stored as maximum demand along with date and time.

**Technical Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>AC, 3 Phase 4 Wire</td>
</tr>
<tr>
<td>Reference Voltage</td>
<td>3 x 240 V</td>
</tr>
<tr>
<td>Current Rating</td>
<td>-/5A CT Operated</td>
</tr>
<tr>
<td>Reference Frequency</td>
<td>50 Hz, ±5%</td>
</tr>
<tr>
<td>Starting Current</td>
<td>0.1% of basic current</td>
</tr>
<tr>
<td>Display</td>
<td>Backlit LCD display</td>
</tr>
<tr>
<td></td>
<td>Large digit size 10mm x 5 mm</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Engineering plastic</td>
</tr>
<tr>
<td>Class</td>
<td>CL 0.5</td>
</tr>
<tr>
<td>Application Standard</td>
<td>IS 14697 : 99</td>
</tr>
<tr>
<td>Dimensions</td>
<td>247mm x 187mm x 98mm</td>
</tr>
</tbody>
</table>

**Meter Details**

![Meter Details Diagram]

**Maximum Demand Reset**
Maximum demand shall reset automatically at the last day of the month at 24:00hrs. whenever MD is reset, MD reset count is
Three Phase Dual Source
STATIC ENERGY METER
Mains / Generator Selection Through
240V AC / 24V DC (Different Model)
Ratings Available
10-60A, -/5A CT Operated

Salient Features

- One meter records Active Energy of two source.
- Optical port communication & RS485 MODBUS communication.
- Mains / Generator selection through 240V AC / 24V DC (Different Model)
- Indication for current reversal tampering and phase availability on the LCD itself.
- Indication on display to indicate the source in use.
- Load survey & Tamper logging available.
- Ratings available : 10-60A, -/5A CT Operated.
**Display Parameters**
- Measures & Displays the following parameters:
  - Mains/DG/Total Cumulative Energy kWh
  - Real Date & Time
  - Mains/DG maximum demand in kW
  - Last billing Cumulative Energy for mains/DG/Total
  - Last billing maximum demand in kW for mains / DG
  - High resolution for kWh
  - Missing potential Tamper with phase identification
  - Current polarity reversal Tamper with phase identification
  - Current Bypass Tamper & Frequency Tamper
  - Neutral Disturbance present Tamper
  - Total Tamper count & Slave Address
  - Last Tamper Occurrence

**Anti-Tamper Features**
- **Display**:
  - Present source of supply indication
  - Phase available indication
  - CT Reversal indication for respective phase
  - Abnormal frequency indication
  - Present Tamper Occurrence & Restoration
  - Last Tamper Occurrence & Restoration Communication:
    - 280 Tamper events on FIFO basis for the following Tamper:
      - Missing potential
      - Current Reversal
      - Magnetic Tamper
      - Potential imbalance
      - Current Imbalance
  - The above Tamper will be recorded with snapshots of:
    - Tamper type with Date & Time of Occurrence & Restoration
    - Voltage - Current - PF - kWh

**Other Features**
- Sealable optical communication port for data downloading using CMRI
- Separate sealable RS485 communication port-for networking applications and AMR applications
- 8 TOD Zone timings

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<tr>
<td>Reference Frequency</td>
<td>50 Hz, ±5%</td>
</tr>
<tr>
<td>Starting Current</td>
<td>0.2% of basic current</td>
</tr>
<tr>
<td>Display</td>
<td>Backlit LCD display Large digit size 10mm x 5 mm</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Engineering plastic</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Less than 1.0 watt, per phase</td>
</tr>
<tr>
<td>Mains / Generator Selection</td>
<td>240V, 50Hz AC, or 24V DC</td>
</tr>
<tr>
<td>Accuracy</td>
<td>CL 1.0 as per IS:13779:99</td>
</tr>
<tr>
<td>Dimensions</td>
<td>247mm x 187mm x 98mm</td>
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</table>

**Communication Parameters**
- 30 minutes load survey for 60 days for mains / DG / Total kWh
- Load profile for 60 days for mains/DG/Total kWh, mains/DG ON hours
- 20 events on DG power ON / OFF provided on FIFO basis
- Anti-Tamper Features
- Billing parameters like kWh, MD kW with date and time for Total, Mains & Generator
- Phase Wise instantaneous Voltage, Current & Power Factor
- Frequency
- Mains Power On Hours & DG Power On Hours
- Total Power On Hours / Total Tamper Counts

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**Meter Details**

[Diagram of meter with labels for LCD Display, Battery Backup, Scroll Button, Optical Port, RS485 Port, 240V AC / 24V DC Mains / Gen Selection, Sealing Provision]

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**Customer Care No.**: 18004190198

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*This document is not a contract. As part of our continuous improvement processes the specifications are subject to change without prior notice.*