## Static Watt Hour Meter

### Single Phase Multifunction Energy Meter

**SEM 9510 / SEM 9511**

**SALIENT FEATURES**

- State-of-the-art SMD Technology
- Wide range of input voltage
- Whole current operation (5A & 10A Ib with 600% operating range)
- Accuracy class 1.0 as per IS 13779, IEC 62053-21, CBIP88
- Accurate under Harmonic conditions
- 6 Digit custom made LCD with backlit
- Simultaneous sampling of voltage and current
- Instantaneous start and records energy for low starting current (0.2% of Ib)
- Measures both phase and neutral current and which ever is high is used for Energy processing
- Very low voltage and current burden
- Over voltage protection (440V)
- Built in transient protection
- Tamper indication for current reversal, earth load tamper, neutral missing, magnetic tamper and cover open tamper
- Higher meter constant for faster testing
- High quality poly carbonate enclosure with sealing arrangements

### SPECIFICATION

<table>
<thead>
<tr>
<th>Type of Meter</th>
<th>Single Phase Two wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>IS13779:1999, CBIP 88, IEC 62052 &amp; 53</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Class 1, Class 0.5 (Optional)</td>
</tr>
<tr>
<td>Voltage Rating</td>
<td>Nominal 240V AC Working Range 120V to 300V AC Capability to withstand 440V AC for 30 minutes</td>
</tr>
<tr>
<td>Current Rating</td>
<td>5 - 30A / 10 - 60A</td>
</tr>
<tr>
<td>Frequency</td>
<td>50Hz (± 5%)</td>
</tr>
<tr>
<td>Power Factor</td>
<td>Zero Lag-Unity-Zero Lead</td>
</tr>
<tr>
<td>Starting Current</td>
<td>0.2% Of Basic Current</td>
</tr>
<tr>
<td>Display</td>
<td>6 Digit Custom Made LCD 10mm Height 5mm Width with backlit</td>
</tr>
<tr>
<td>Push Buttons</td>
<td>Available for battery backup and display scroll</td>
</tr>
<tr>
<td>Calibration Output</td>
<td>3200 Imp / kWh</td>
</tr>
<tr>
<td>Communication Facility</td>
<td>Optical Port (standard) IrDA, RS232, RS485, LPRF, GPRS (optional)</td>
</tr>
<tr>
<td>Battery Backup</td>
<td>3 V Primary Battery or 3.6 V Rechargeable Battery</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Less than 1 W and 6 VA</td>
</tr>
<tr>
<td>Impulse Test</td>
<td>8 kV</td>
</tr>
<tr>
<td>ESD Test</td>
<td>8 kV Direct, 16 kV Air discharge</td>
</tr>
<tr>
<td>High Voltage Test</td>
<td>4 kV AC</td>
</tr>
<tr>
<td>Temperature</td>
<td>Operation -10 to 60°C / Storage -10 to 70°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>&lt;95% (Non Condensing)</td>
</tr>
<tr>
<td>Insulation Class</td>
<td>Double Insulation</td>
</tr>
<tr>
<td>Terminal Block</td>
<td>Glass filled Poly Carbonate</td>
</tr>
<tr>
<td>Terminal Cover</td>
<td>Transparent Poly Carbonate</td>
</tr>
<tr>
<td>Meter Casing</td>
<td>Poly Carbonate - Black</td>
</tr>
<tr>
<td>Top Cover</td>
<td>Transparent Poly Carbonate</td>
</tr>
<tr>
<td>Sealing Arrangement</td>
<td>Sealing provision available for cover, terminal cover and optical port</td>
</tr>
<tr>
<td>Meter Dimension</td>
<td>180 mm x 135 mm x 75 mm (H x W x D)</td>
</tr>
<tr>
<td>Meter Weight</td>
<td>~700 gms</td>
</tr>
<tr>
<td>Mounting</td>
<td>Projection</td>
</tr>
</tbody>
</table>

[www.icdipl.net](http://www.icdipl.net)
### Features

#### Maximum Demand
- MD Calculation Method fixed or sliding window
- Integration time 15/30 minutes
- Both the functions are Selectable through CMRI using BCS

#### Load Survey
- Load survey record is stored in the meter for a maximum of 45/90 days with 15/30 minutes interval.
- The load survey record stored are cumulative kWh, kVAh, consumption kWh, kVAh at 00.00 hours on daily basis
- Demand kWh, kVAh for 96/48 integrated values with max/min of the day
- Daily average VI profile for every 30 minutes with high/low of the day
- No supply period and no load period on daily basis in hours and minutes

#### Communication Capability
- Data Collection through Optical Port / IrDA with IEC 62056-21 protocol (Standard)
- Data Collection through Optical Port with DLMS (Optional)
- Isolated RS232 / RS485 with MODBUS RTU protocol (Optional)
- Data Collection through Low Power RF / GPRS networks for AMR applications (Optional)

#### Data Collections
- Billing Data, Load Survey Data, Tamper Data are stored in the meter
- A menu driven CMRI Software is supplied along with the meter for data collection
- The CMRI Software also has facility to set RTC, Sequence of Display Parameters, Demand Integration period, Reset Date and Time (odd/even billing months) and MD Type (kW, kVA)

#### BCS Features
- User friendly and menu driven
- Secured user login
- Facility to upload / download data from CMRI
- Facility to communicate directly with meter via optical port
- Load Survey data analysis
- Information about tamper events with date and time
- Graphical representation of captured data
- Customized report generation
- Facility to export data in MS Excel and PDF Format

#### Meter Casings
- High grade flame retardant poly carbonate material having good dielectric & mechanical strength
- Capability to withstand 650 °C glow wire test and UV test
- Capability to withstand ball pressure test at 125°C as per IEC-60335-1
- Glass filled terminal block satisfies heat deflection temperature test of 135°C as per ISO 75-1 and glow wire test of 960°C as per IS:11000 or IEC 60695-2-1
- Ultrasonic welding for casing is provided to avoid tamper

### Displays
- True RMS Voltages R,Y,B
- True RMS Currents R,Y,B
- Instantaneous kVA
- Instantaneous signed kW, kVar
- Instantaneous Power Factor with lag and lead indication
- Rising Demand in kW / kVA
- Demand Time
-RTC

### Billing Parameters
- Cumulative kWh and kVArh
- Average Power Factor
- MD kW and kVA
- MD Reset Date & Time
- MD Reset Count
- Power OFF hours
- Load OFF hours

### Billing Reset
- Billing period is user programmable
- Available options are:
  - Auto / Manual
  - Monthly / Bi monthly (odd / even)
  - Date and time for particular month
- Last six reset billing data is available for downloading
- Billing parameters stored are cumulative kWh, kVAh, kVArh lag, kVArh lead, MD kW, MD kVA, Average Power Factor, MD Reset Date and Time, MD Reset Count, Total Power OFF period and No load period

### TOD
- 8 TOD Time zones are provided for energy and demand
- Number of zones and timings of zones are programmable
- Changing of time zones through optical port is possible with password protection through CMRI

### Tamper and Fraud Detection Features
- Meter detects and records
  - Phase sequence reversal
  - Current reversal
  - Missing potential
  - Neutral missing
  - DC Signal/Voltage injected to neutral
  - Abnormal frequency signal (less than 47.5Hz & more than 52.5Hz)
  - Influence of AC / DC magnetic fields
  - Cover Open
  - Software change
  - Tamper details are shown in LCD
- Tamper data for last 200 events are recorded
- Snapshot of cumulative kWh, kVAh, V, I, date and time of tamper occurrence and restoration is recorded
- Immune to signals emitted by mobile phone
- Capability to withstand 35 kV spark discharge test

### Harmonics
- Measures the total energy consisting of fundamental energy and harmonic energy

### Overall Dimensions

---

**Industrial Controls & Drives (India) Pvt. Ltd.**

33, Mettukuppam Road (Via Alappakkam Road), Maduravoyal, Chennai 600095, Tamil Nadu, India

Mobile: +91 87544 22555 / 87544 22502 Phone: +91 44 4293 4324 / 25 / 33 / 2378 1753

Fax: +91 44 4293 4355 E-mail: gcicdipl@vsnl.com / sales@icdipl.net Web: www.icdipl.net

Note: Specifications are subject to change without prior notice due to continuous improvement in product development.