**1. FEATURES**
- STAR (Wye)/ DELTA/1. phase programmable
- Universal Auxiliary (80 - 300 VAC / DC) supply
- PT ratio / CT ratio programmable including CT secondary
- User configurable (editable) password
- Simultaneous sampling of Volts & Amps
- True RMS measurement
- Universal Voltage Input (50 - 550 VAC) and True RMS measurement
- Current Secondary (0.05 to 6A)
- True RMS measurement
- 3 row, 4 digit display for better readability.
- Compact size and weight

**2. UNIQUE FEATURES**
- Optional Programmable relay output maximum 2 (up to 6 threshold parameters) and tripping time up to 180 seconds.
- 3 row, 4 digit display for better readability.
- Auto-scaling of kila & mega, decimal point.

**3. KEY FUNCTIONS**

<table>
<thead>
<tr>
<th>Key</th>
<th>In SET (Programming) mode</th>
<th>In RUN (Measurement) mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP</td>
<td>To select the value and accept the value (it act as a Right key in programming mode)</td>
<td>Up scroll pages to look at different parameters</td>
</tr>
<tr>
<td>DOWN</td>
<td>To edit the value/system type down -ward in edit mode and scroll through the parameters</td>
<td>To scroll pages to look at different parameters</td>
</tr>
</tbody>
</table>

**4. LED INDICATIONS**

<table>
<thead>
<tr>
<th>LED status</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>KILO – ON</td>
<td>Kilo</td>
</tr>
<tr>
<td>KILO – OFF</td>
<td>Direct reading</td>
</tr>
<tr>
<td>VLL - ON</td>
<td>Voltage line to line</td>
</tr>
<tr>
<td>VLN - On</td>
<td>Voltage line to Neutral</td>
</tr>
<tr>
<td>A - ON</td>
<td>Amps</td>
</tr>
<tr>
<td>Hz2 - ON</td>
<td>Frequency</td>
</tr>
</tbody>
</table>

**5. ENABLING AND DISABLING**

Enabling auto scrolling: Press UP key continuously for 5 seconds or until display shows EnBL Auto.Sc for upward scrolling. Press Down key continuously for 5 seconds or until display shows EnBL Auto.Sc for downward scrolling.

Disabling auto scrolling: Press any key (UP/DOWN), display shows dSBL Auto.Sc and returns to normal mode.

**6. WIRING DIAGRAM**

6.1. Star connection (3E) 3 phase 4 wire system

6.2. Delta connection (2E) 3 phase 3 wire system

6.3. Single phase connection

**7. CONFIGURE (SETUP MODE)**

To configure the setup parameters through front panel, the following steps can be followed:

<table>
<thead>
<tr>
<th>Step</th>
<th>Actions</th>
<th>Display Reads</th>
<th>Range/Options/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press UP &amp; DOWN keys together to enter SETUP</td>
<td>Row 1: 0000 with first digit '0' blinking</td>
<td>Default password (100)</td>
</tr>
<tr>
<td>2</td>
<td>Press DOWN key to decrement the first digit to '9' sequentially come to digit '1'</td>
<td>Row 1: 1000 with first digit '1' blinking</td>
<td>Press DOWN key to decrement the first digit to '9' sequentially come to digit '1'</td>
</tr>
<tr>
<td>3</td>
<td>Press UP key</td>
<td>Row 1: xxxx</td>
<td>Display will prompt to digit '1'. Press UP key to change to</td>
</tr>
<tr>
<td>4</td>
<td>Press UP key</td>
<td>Row 2: Display will prompt key</td>
<td>Press DOWN key to change to</td>
</tr>
<tr>
<td>5</td>
<td>Press UP key</td>
<td>Row 1: xxxx</td>
<td>Clear MODE (Only 1310)</td>
</tr>
</tbody>
</table>

**Warning!** Installation by person with electrotechnical expertise only.

**Note:** Wiring should be in accordance with the National Electrical Code and/or the Canadian Electrical Code, Part I. For DC AUX Voltage, +/-ve can be connected anyway.
7.1 The List of parameters can be configured and the range is given below

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Parameter</th>
<th>Default setup</th>
<th>Range / Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Connection mode (ELEMENT)</td>
<td>STAR</td>
<td>STAR/ DELTA/ 1 Phase</td>
</tr>
<tr>
<td>2</td>
<td>PT Primary (PT Prim)</td>
<td>415.0</td>
<td>100V - 999kV</td>
</tr>
<tr>
<td>3</td>
<td>PT Secondary (PT SEC)</td>
<td>415.0</td>
<td>50V - 550V</td>
</tr>
<tr>
<td>4</td>
<td>CT Primary (CT Prim)</td>
<td>5.000</td>
<td>0.5A - 5A</td>
</tr>
<tr>
<td>5</td>
<td>CT Secondary (CT SEC)</td>
<td>5.000</td>
<td>0.5A - 5A</td>
</tr>
<tr>
<td>6</td>
<td>Password (PWd)</td>
<td>1000</td>
<td>1000 to 9999</td>
</tr>
<tr>
<td>7</td>
<td>No of Poles (POLES)</td>
<td>4.000</td>
<td>1.000 to 28.00</td>
</tr>
<tr>
<td>8</td>
<td>Voltage Suppression</td>
<td>15.00</td>
<td>10.00 to 80.00</td>
</tr>
</tbody>
</table>

Current measurement inputs

- Number of current inputs: 3 (L1, L2, L3)
- CT secondary: 1A or 5A
- Measurement range without accuracy derating: 50mA-6A (5%-120% as per standard. From 50mA onwards, it will measure)
- Max. CT Primary: 99 kA
- Burden: 0.2VA Max. per phase

User Interface
- Access to device: 2 pushbuttons
- Display type: LED display
- LED Digit height: 10 mm

Mechanical characteristics
- Overall dimensions: 96 X 96 X 58 mm (52 mm depth inside the switchboard)
- IP degree of protection: IP51 (IEC 60529)
- Weight: 0.300 kg

Climatic conditions
- Operating temperature: -10°C to +60°C
- Storage temperature: -25°C to +70°C
- Relative humidity: 5% to 95% non-condensing
- Altitude: Below 2000m

Terminal characteristics
- Current inputs: 6 terminals, 3 inputs, 5A with S1 and s2 on each input
- Voltage inputs: 4 terminals, 80-520V LL

Standards
- Electrical safety: IEC 61010
- EMC: IEC 61000 4-2, 4-3, 4-6, 4-8, 4-11, CISPR-22

Note:
- Accuracy class note for current: For input current below 250mA, additional error of 0.1% of full scale.
- Accuracy class error for Temperature: Below 10°C, mean temperature coefficient for the meter is 0.15%/K

8. MECHANICAL SPECIFICATION

9. TECHNICAL SPECIFICATION

Precautionary Measures to be taken while Wiring the Circuit:
- Turn OFF the power to the circuit, when wiring the circuit. Connecting or removing measurement cables while the power is turned ON is dangerous.
- Take special caution not to wire a current measurement circuit to the voltage input terminal or vice-versa.
- Strip the insulation cover of the measurement cable so that when it is wired to the input terminal, the conductive parts (bare wires) do not protrude from the terminal. It is recommended to use appropriate pre lug after crimping the wire. Also, make sure to fasten the input terminal screws securely so that the cable does not come loose.
- Use cables with safety terminals that cover the conductive parts for connecting to the voltage input terminals. Using a terminal with bare conductive parts is dangerous if the terminal comes loose.
- After connecting the measurement cable, attach the current input protection cover for your safety. Make sure that the conductive parts are not exposed from the protection cover.
- Use the suitable star screwdriver and apply optimum torque to prevent damage to the meter terminals.

TROUBLESHOOTING

Due to programming error, site conditions, some problems can cause the meter malfunction. The fault symptoms and their remedial action for correction is given below:

1. If the display does not turn ON:
   - a) Check that there are at least 80 volts available to the power supply (L1 and N connections) on the Aux supply terminals. If the above steps do not solve the problem, Contact us.
2. If the voltage or current readings are incorrect:
   - a) Check that the Connection mode (star/delta) is properly programmed.
   - b) Check that the voltage and current ratios are properly set.
   - c) Check that the output of the CT’s and PT’s is being used.
3. If the KW or Power Factor readings are incorrect but voltage and current readings are correct:
   - a) Make sure that the phase relationship between voltage and current inputs are correct by comparing the wiring with the appropriate wiring diagram.
   - b) CT reversal can be observed by either seeing the phase wise kW. Negative kW is shown where the current polarity is reversed, need to be corrected. Model where kW information is not available, you may check Amps Phase angle.

CAUTION: During normal operation of this instrument, hazardous voltages are present at the real terminals, which can cause severe injury or death. These voltages are present throughout the potential transformer (PT) or current transformer (CT) auxiliary supply, communication and input/output terminal. Installation, disconnection or removal of the meter should be carried out only by qualified, properly trained personnel after de-energizing connected circuits. Improper installation, including improper wiring and/or improper grounding will void warranty.