**DEMAND CONTROLLER**

Multifunction Meter | Demand Controller | Import Export | Harmonics | Power Quality | Digital/Analog Input or Output | Dual Source

**HIGH-END MULTIFUNCTION METER FOR COMPREHENSIVE ENERGY MANAGEMENT!**

**Features:**

- High / Low recording VLL, VLN, A, Hz, W, VA, PF, VAR value storage with time stamp.
- Accuracy class 1.0 as per IEC 62053-21, 0.5s option, Class 0.2s
- User programmable Password Protection.
- Measures THD and Individual harmonics up to 63rd order with a sampling rate of 512 samples / cycle.
- Captures and measures power quality events: K factor, Crest factor, Sag / Swell, Interruption and Unbalance in accordance with EN 50160.
- Display basic, power, energy, demand for both import and export parameters.
- Representation of waveforms for instantaneous V, I, Sag / Swell, voltage and current harmonics histogram.
- Records events such as Sag / Swell for voltage with the time stamp in 1s duration.
- CO₂, ON Hr, Power Interruptions.
- Max demand 4 high / 4 low, Flash 6MB, 12am snapshot, 31st day snapshot.
- Simultaneous sampling of voltage and current, programmable PT & CT ratio.
- Demand update every second to forecast kVA, kW & kVAR accurately.
- Clearance and Creepage distance meets UL- 61010.
- Programmable starting current in % of 5A secondary. Default 10mA
- Programmable Auto scrolling time - 1 sec. to 10 sec. (Default 5 sec.).
- Programmable Energy display - Counter based or Resolution based.
- Energy resetting at 9999999 kWh x MF.
- Front LED pulse 16000 imp/kWh.
- OLD register to store previously cleared Energy & Load hours.
- Ampere hour (Ah) & PF average parameter.
- Phase wise Voltage Sag & Swell Wave Forms.
- LCD 8 parameter display at a time, 8 Digits energy.
- Power save mode with Enable/Disable option.
- Available RS485 communication & optional Ethernet communication (factory configurable).
- Byte order option - Field Programmable Float / Little Endian / Big Endian data format.

**Optional Features EN :**

- Digital outputs - 4 potential free contacts with programmable time delay. Hysteresis of 1%. Trip time delay: 1 to 180 sec.
- Output configurable to any of the parameters from VLL, A, F, W, PF, VA
- TDD option ( Energy & Demand upto 8 slots ).
- Pulse output 300/7K/WK.
- Analog Input upto 2. Accuracy of class 1% FS.
- Digital Input upto 4
- Analog Output - Two independently programmable to 0-20 mA (or) 4-20 mA
- Individual Harmonics upto 63rd order.
- Demand Controller with 4 Relay outputs.
- RTC synchronisation through communication.
- Upto 60A or 100A direct measurements using Hanging CT.
- Datalogger - 6MB optional / Ethernet with 14GB memory for IOT device.
- Dual Source

**Typical Applications**

- Automatic connection or disconnection of DG connected to common bus .
- Keep equipment in safe region.
- Protection of equipment from Under/ Over Voltage or Current or Frequency.
- Process control.
- Protection of 3 phase equipment from Single phase prevention, Overload etc.

**Multiplication factor for counter based energy mode**

<table>
<thead>
<tr>
<th>Full Scale in Watts</th>
<th>0.4k to 4.0k</th>
<th>4.01k to 40k</th>
<th>40.1k to 400k</th>
<th>400.1k to 4000k</th>
<th>4M to 40M</th>
<th>40 M to 400 M</th>
<th>400 M to 4000M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>0.01</td>
<td>0.1</td>
<td>1.0</td>
<td>10</td>
<td>100</td>
<td>1000</td>
<td>10000</td>
</tr>
<tr>
<td>Unit of display</td>
<td>kWh</td>
<td>MWh</td>
<td>GWh</td>
<td></td>
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</tr>
</tbody>
</table>

**Mechanical Specification:**

![Mechanical Diagram]

- Multiplication Factor:
  - Full Scale in Watts:
    - 0.4k to 4.0k
    - 4.01k to 40k
    - 40.1k to 400k
    - 400.1k to 4000k
    - 4M to 40M
    - 40 M to 400 M
    - 400 M to 4000M
  - Factor: 0.01, 0.1, 1.0, 10, 100, 1000, 10000
  - Unit of display: kWh, MWh, GWh
## Product Selection

### ACCURACY OPTION

<table>
<thead>
<tr>
<th>EN 8400</th>
<th>EN 8420</th>
<th>PN 8710</th>
<th>PN 8740</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customised LED</td>
<td>Graphical LCD</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CLASS 1.0</th>
<th>CLASS 0.5S</th>
<th>CLASS 0.2S</th>
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</table>

### BASIC PARAMETERS

<table>
<thead>
<tr>
<th>V1, V2, V3</th>
<th>V1, V2, V3</th>
<th>A1, A2, A3</th>
<th>Hz</th>
</tr>
</thead>
<tbody>
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</table>

### POWER PARAMETERS

<table>
<thead>
<tr>
<th>Unbalance V &amp; A</th>
<th>W W</th>
<th>Power Factor</th>
<th>THD - V A Power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>63°</td>
</tr>
</tbody>
</table>

### POWER QUALITY PARAMETERS

<table>
<thead>
<tr>
<th>Ind. Harmonics</th>
<th>K Factor</th>
<th>Crest Factor</th>
<th>High Low</th>
<th>Sag &amp; Swell</th>
<th>ON Hr</th>
<th>Power Interruptions</th>
<th>CO2</th>
<th>% Load</th>
<th>TEHD</th>
<th>TOHD</th>
</tr>
</thead>
<tbody>
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</table>

### INTEGRATED PARAMETERS

<table>
<thead>
<tr>
<th>VAh</th>
<th>VARh-Ind</th>
<th>VARh-Cap</th>
<th>Load Hrs.</th>
<th>RD (IE)</th>
<th>Kwh Total</th>
<th>KVARh Total</th>
<th>OLD Energy</th>
<th>OLD Load Hrs.</th>
<th>Old RD Details</th>
<th>Volt Squared Hours</th>
<th>Amp Squared Hours</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

### TOD PARAMETERS

<table>
<thead>
<tr>
<th>TOD Demand</th>
<th>TOD Energy</th>
<th>TOD RD (IE)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

### DEMAND PARAMETERS

<table>
<thead>
<tr>
<th>Sliding Demand</th>
<th>Block Demand</th>
<th>Rising Demand</th>
<th>Forecast Demand</th>
<th>Step Demand</th>
<th>Maximum Demand</th>
<th>Maximum Demand 4 high / 4 low</th>
<th>Cumulative MD Option</th>
<th>Additional Load</th>
<th>12am &amp; 31st day snapshot</th>
<th>6 MB Data Logging</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

### DUAL SOURCE

<table>
<thead>
<tr>
<th>Dual Source</th>
<th>Ethernet + 14 GB Data Logging</th>
<th>2DI</th>
<th>4 DI (WAGES)</th>
<th>1DO</th>
<th>2DO</th>
<th>2AI</th>
<th>2AO</th>
<th>2AI, 2DO</th>
<th>2DO, 2AO</th>
<th>4DO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

### ADDITIONAL OPTIONAL FEATURES (ANY ONE)

<table>
<thead>
<tr>
<th>Additional Feature</th>
<th>EN 8400</th>
<th>EN 8420</th>
<th>PN 8710</th>
<th>PN 8740</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet + 14 GB Data Logging</td>
<td></td>
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</tr>
</tbody>
</table>
## Technical Specification:

### GENERAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Specification</th>
<th>EN 8400</th>
<th>EN 8420</th>
<th>PN 8710</th>
<th>PN 8740</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensing / Measurement</td>
<td>True RMS, 1 Sec update time, 4 Quadrant Power &amp; Energy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>50-600 VLL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current</td>
<td>10mA - 6A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>45 - 65Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polled description</td>
<td>1P + N, 3P, 3P + N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampling rate</td>
<td>512 bits / cycle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured Accuracy Class</td>
<td>Class 1 as per IEC 62053-21 / Class 0.5 / Class 0.25 as per IEC 62053-22 (Optional).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display type</td>
<td>LED 3 row</td>
<td>LCD 8 row</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instantaneous Digits</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Digits</td>
<td>8</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programmable Setting</td>
<td>110 or 415V LL Nominal &amp; Primary Programmable up to 999 kV. Burden: 0.2VA per phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissible overload</td>
<td>120%, Burden: 0.2VA per phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External Fuse Rating</td>
<td>200mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT PT Ratio Max</td>
<td>2000MVA Programmable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary supply</td>
<td>80-300V AC / DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>4VA nominal. 5VA for DMC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data update rate</td>
<td>1 Sec.</td>
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</tbody>
</table>

### COMMUNICATION

- **Device ID & Parity**: 1 to 247 & Odd, Even, None (Preferred Even)
- **Protocol & Interface**: Modbus. RTU & RS 485
- **Baud rate**: 9600 bps to 115200 bps (Preferred 9600 bps)
- **Isolation**: 2000 volts AC isolation for 1 minute between communication & other circuits

### ENVIRONMENTAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Specification</th>
<th>EN 8400</th>
<th>EN 8420</th>
<th>PN 8710</th>
<th>PN 8740</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>-10°C to + 55°C (14°F - 131°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25°C to +70°C (-13°F - 158°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>5% to 95% non-condensing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altitude</td>
<td>Below 2000mts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement Category</td>
<td>CAT III</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution degree</td>
<td>2 (As per IEC 61010)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP 51 (IP 54 front facia optional) &amp; Double Insulation (As per IEC 61010-1)</td>
<td></td>
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</tr>
</tbody>
</table>

### ELECTROMAGNETIC COMPATIBILITY

- **Electrostatic discharge**: IEC 61000-4-2g
- **Immunity to Electromagnetic RF Fields**: IEC 61000-4-3g
- **Conducted Immunity**: IEC 61000-4-6g
- **Immunity to Magnetic Fields**: IEC 61000-4-8g
- **Immunity to voltage dips and interruptions**: IEC 61000-4-11g
- **Fast transient**: IEC 61000-4-4g
- **Immunity to surge waves**: IEC 61000-4-5g
- **Impulse voltage**: CISPR-22
- **Conducted and radiated emissions**: |

### SAFETY AND STANDARDS

- **Construction**: IEC/EN 61010-1 ed.3, CAT III, 300 V LN / 600 V LL, protective class II.
- **Standards**: UL 61010-1, IEC/EN 62052-11

### MECHANICAL CHARACTERISTICS

- **Weight**: Unpacked 350 gms. Packed 450 gms. (It may vary based on optional features)
- **Dimensions**: 96x96 mm
- **Torque**: 1 N-m
- **Wire gauge**: 11 AWG