***GENERIC SPECIFICATION FOR COMPACT DIN RAIL ENERGY METER WITH POWER QUALITY, ST40***

1. PRODUCT

2.1 POWER METER

1. Meter shall be UL listed and CE marked.
2. Meter shall be designed for multifunction electrical measurement on 3 phase power systems.
   * + 1. Meter shall support 3 element Wye, 2.5 element Wye, 2 element Delta, 4 wire Delta systems.
       2. Meter shall measure real time and max/min voltage and current; average current per phase and current neutral; real time and average watts, VARs, VA, power factor; and real time and max/min frequency.
       3. Meter shall accumulate readings for watt-hour, VA-hour, and VAR-hour. All readings shall be accumulated and stored for each of the 4 quadrants of power.
       4. Meter shall measure watts, VARs, and VA at an update rate of 100 ms and other parameters at an update rate of 1 s.
       5. Power demand shall be simultaneously calculated using two different averaging methods: Fixed Window (Block) Average and Sliding Window (Rolling Block) Average.
       6. Meter shall calculate readings that are CT and PT compensated and transformer/line loss compensated.
       7. Voltage inputs shall be user programmable for voltage range to any PT ratio.
       8. Voltage burden shall be .36 VA per phase Max at 600 volts and 0.014 VA at 120 volts.
       9. Absolute voltage input range shall be (20-576) V L-N for current input models or (0-600) V L-N for the mV option; and (0- 721) Volts L-L for both meter models.
       10. A phasor diagram that clearly shows wiring status shall be available via manufacturer software.
       11. Fault current withstand shall be 100 A for 10 seconds at 30 oC.
       12. Current shall be programmable to any CT ratio.
       13. Current burden shall be 0.005 VA per phase, Max at 11 A.
       14. Pickup current shall be 5 mA for Class 10, 1 mA for Class 2, and 0.0004 V for the mV option.
       15. Current inputs for Class 10 shall be 5 A Nominal CT secondary with overrange to 10 A secondary.
       16. Current inputs for Class 2 shall be 1 A Nominal CT secondary with overrange to 2 A secondary.
       17. Input for the mV option shall be 0.333 V.
           1. Input impedance shall be 2 MΩ.
           2. Maximum voltage shall be 5 V.
3. Meter shall have accuracy of +/- 0.1% or better for voltage and 0.2% for current, power, and energy. Meter shall meet accuracy requirements of IEC 62053-22 (Class 0.2S) and ANSI C12.20 (Class 0.2 CL). Meter shall have a Frequency accuracy measurement of not less than 0.007 Hz.
   * + 1. Meter shall provide sampling at 400+ samples per cycle on all channels of measured readings simultaneously.
4. Meter shall be a traceable revenue meter, containing a utility-grade test pulse for accuracy verification.
5. Meter shall be compatible with MV90 and many different power monitoring software systems.
6. Meter shall offer advanced power quality analysis with the following features:
   * + 1. Harmonic recording to the 40th order, and harmonic analysis of stored waveforms to the 255th order.
       2. Waveform recording at up to 512 samples per cycle for a voltage sag or swell or a current fault event. PQ triggers shall be based on a 1/2 cycle updated RMS. Up to 170 events shall be stored until the memory fills.
       3. Waveform scope via manufacturer software shall allow viewing of voltage and current real time waveforms.
       4. Independent CBEMA or SEMI F47 logs shall be available.
       5. Meter shall be programmable for limits and control applications.
7. Meter shall have two standard communication ports.
   * + 1. RS485 serial port
       2. Micro-USB front panel port.
8. Meter shall have an optional Ethernet Modbus TCP/IP port or Ethernet BACnet/IP port in place of the RS485 port.
   * + 1. Ethernet and BACnet/IP ports shall each have an embedded web server.
       2. Ethernet option shall support Modbus TCP/IP communication.
       3. BACnet/IP option shall support BACnet/IP communication.
       4. BACnet/IP implementation shall support multiple pre-programmed BACnet objects for the meter’s measured parameters.
9. Meter shall have datalogging memory and shall support:
   * + 1. Three independent, programmable, historical logs of up to 64 parameters per log.
       2. Limit/alarms log.
       3. I/O change log.
       4. Anti-tampering system events log.
       5. Power quality log with magnitude and duration of up to 2048 events.
10. Meter shall be programmable by software supplied by unit manufacturer. Unit’s data shall integrate with energy usage analysis and billing module and with cloud-based energy management system for Enterprise-wide power quality and usage analysis, predicted usage and demand, reporting, and email alarms
11. Meter shall have upgrade packs for adding additional features in the field without removing the meter from installation.
12. Meter shall have a three-line, bright red LED display, which presents a scrolling display of measured readings. LED indicator lights shall be located on the side of the display. Meter shall be programmable via the front buttons and the display.
13. Meter shall have a small footprint to fit applications where space is limited. Meter shall not be larger than 4.60” H x 4.89” W x 2.44” L.
14. Meter shall be DIN rail mountable.
15. Meter shall have a 4-year warranty.
16. The following options shall be available for ordering:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | **Frequency** | **Current Input\*** | **V-Switch™ Pack** | | Com |
| ST40 | -50  50 Hz system | -10 5 A Nominal CT Secondary | -V1  Multifunction meter only | | - RS485 RS485 Serial Port |
| -60  60 Hz system | -2 1 A Nominal CT Secondary | -V2  Above & 2 Megabytes Data-logging memory | | - INP10 10/100BaseT Ethernet Port | |
|  | | -mV 0.333 V | -V3 Above & Power quality Harmonics | -INP10B BACnet/IP Port | |
| \*1A, 5 A, 0.333 V, and mV Rogowski Coil CTs can be ordered from the EIG website: <www.electroind.com/shop>. | | | -V4 Above & Limit and control functions | |
| -V5 Above & 3 Megabytes Data-logging memory; 64 samples per cycle Waveform recorder | |
| -V6 Above & 4 Megabytes Data-logging memory; 512 samples per cycle Waveform recorder | |

1. Acceptable product is Electro Industries/GaugeTech, Model ST40-60-10-V3-RS485.

For specification information, contact:

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Acceptable software product is Electro Industries/GaugeTech ENERGYPQA-1Y – Cloud-based energy management system.