***GENERIC SPECIFICATION FOR MULTIFUNCTION ELECTRICAL SWITCHBOARD METER, SHARK® 50***

1. PRODUCT

2.1 POWER METER

1. The meter shall be UL listed and CE marked. Meter shall have third party lab testing or certification for the following standards:
   * + 1. IEC 62053-22 0.5S Class Accuracy
       2. IEC 61326-1, IEC 61000-6-2, IEC 61000-6-4 and subordinate standards Certification
       3. IEEE C37.90.1
       4. IEEE C62.41
2. Meter shall meet environmental (EMC) as well as accuracy requirements for 0.5 accuracy class. Meter shall pass all emissions and immunity tests for its class.
3. Meter shall have accuracy of +/- 0.4% or better for voltage and current, and 0.5% for power and energy. Meter shall meet accuracy requirements of IEC 62053-22 (Class 0.5S) and ANSI C12.20 (Class 0.5 CL).
   * + 1. Meter shall provide sampling at 400+ samples per cycle on all channels measured readings simultaneously.
       2. Meter shall have an anti-dither algorithm to improve reading stability.
       3. Meter shall measure voltage, current, kW, kVAR, power factor, kVA, frequency, kWh, kVAh, and kVARh at an update rate of 100 ms for power parameters and 1 s for other parameters.
4. Meter shall be designed for electrical measurement on 3 phase power systems.
   * + 1. Voltage inputs shall be user programmable for voltage range to any PT ratio.
       2. Voltage burden shall be .36 VA per phase Max at 600 volts and 0.014 VA at 120 volts.
       3. Absolute voltage input range shall be (20-416) V L-N and (0- 721) Volts L-L.
       4. Voltage and current inputs shall be color-coordinated.
       5. Phasor diagram clearly showing wiring status shall be available.
       6. There shall be a dual input method for current inputs:
          1. CT allowed to pass directly through meter without any physical termination on meter.
          2. Provides additional termination pass-through bars, allowing CT leads to be terminated on meter.
       7. Fault current withstand shall be 100 A for 10 seconds, 300 A for 3 seconds, and 500 A for 1 second.
       8. Current shall be programmable to any CT ratio.
       9. Current burden shall be 0.005VA per phase, Max at 11 A.
       10. Pick up current shall be a 5 mA.
       11. Inputs and outputs shall be galvanically isolated to 2500 V AC.
       12. Current inputs for Class 10 shall be: 5 A Nominal CT with over-range to 10 amps secondary
       13. Current for Class 2 shall be: 1 A Nominal CT with over-range to 2 A secondary.
5. Meter shall have a three-line, 4 digits per line bright red, .56” LED display, which presents a scrolling display of measured readings.
   * + 1. Meter shall display a 10 segment % of Load bar on the front panel to provide an analog feel.
6. Meter shall be a traceable revenue meter, containing a utility-grade test pulse on the front panel for energy accuracy verification.
7. Meter shall offer an optional RS485 Com port through its back plate.
   * + 1. RS485 port shall support Modbus RTU and Modbus ASCII; and baud rates from 9,600 to 57,600.
       2. Optional port shall have a KYZ fixed energy pulse output, mapped to positive energy.
8. Meter shall provide user configured fixed window or rolling window demand so the user can set up the specific utility demand profile.
   * + 1. Readings for kW, kVAR, kVA and PF shall be calculated using utility demand features. All other parameters shall offer max and min capability over the user selectable averaging period.
       2. Voltage shall provide an instantaneous max and min reading displaying the highest surge and lowest sag seen by the meter.
9. Meter shall install in standard ANSI or DIN cutouts.
10. Meter shall be field-upgradeable after installation. Upgrade packs shall allow the base model (V1) to be upgraded to measure Power and Frequency (V2) and to enable Energy Counters (V3).
11. Meter 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
12. Meter shall have a 4-year warranty.
13. The following options shall be available for ordering:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Options | **Model** | **V-Switch™ Pack** | **Communication Format** | **Mounting (Shark 100 Only)** |
|  | Shark 50 meter | -V1: Default; Volts/Amps | -X  No Com Port | -X:  ANSI Mounting |
| -V2: V1 + Power and Frequency |
| -RS485P RS485 Com port and KYZ pulse output | -DIN:  DIN Mounting Brackets |
| -V3: V2 + Energy Counters |

1. Acceptable product is Electro Industries/GaugeTech, Model SHARK50-V1-485P-X.

For specification information, contact:

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