

*Technical Specifications*  
*of*  
*Maximum Demand Controller*  
*(SPMD300)*



*Class 0.5S*

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## 1) **GENERAL:**

- Meter measures Active, Reactive, Apparent energy on 3 phase 4 wire system,
- All four quadrant measurement for MD, KWh, KVAh, KVArh (import lag, import lead, export lag and export lead) are measured and stored in four energy accumulators,
- Parameters can be viewed through 7 segment LED (3 row),
- Soft Keys are provided to stop, scroll, edit and to view the parameters,
- RTC with battery backup is used for time keeping and has a calendar of 100 years,
- Power Line Communication can be done using RS485 communication with MODBUS RTU,

## 2) **METER FEATURES:**

### 2.1) **Display Details:**

- 7 segment (3\*4 digits) LED type – The parameters are calculated by the meter are displayed,
- Selectable Parameters – Can select any out of 33 parameters.
- Scroll rate – The scroll rate of the display parameter scroll in steps of 4secs.
- Keys are provided to stop, scroll, edit and to view the particular parameter.

#### 2.1.1) **Display Parameters:**

- Time,
- Date,
- Meter ID with Phase Sequence,
- PT Primary,
- PT Secondary,
- CT Primary,
- CT Secondary,
- Frequency (Hz.),
- Cumulative – RYB – Active Energy (KWh),
- Cumulative – RYB – Apparant Energy (KVAh),
- Cumulative – RYB – Reactive Energy (KVArh Lag),
- Cumulative – RYB – Reactive Energy (KVArh Lead),
- Average Power Factor – RYB phase,
- Power ON hour,
- Load ON hour,
- Voltage L-N (R,Y,B) (V),
- Average Voltage (V),
- Phase to Phase Voltages L-L (RY,YB,RB)

- Current (R, Y, B),
- Average Current,
- Power Factor (R, Y, B),
- Combined Power Factor (RYB),
- Instant Active Power – KW – R,Y,B,
- Instant Reactive Power – KVA<sub>r</sub> – R,Y,B,
- Instant Apparent Power – KVA – R,Y,B,
- Instant – KW – RYB,
- Instant – KVA<sub>r</sub> – RYB,
- Instant – KVA – RYB,
- Rising Demand – KW / KVA,
- Maximum Demand – KW / KVA,
- Control RD – KW / KVA,
- Relay ON / OFF,
- Current Zone,
- TOD – T1 MD value, Reach time and date,  
T2 MD value, Reach time and date,  
T3 MD value, Reach time and date,  
T4 MD value, Reach time and date,

## **2.2) Key Features:**

- The Parameter setup can be done through 4 nos. of soft keys on front fascia,
- Keys on the front panel is used to
  - ✓ scroll, increment, decrement through display parameter and
  - ✓ to set the Meter ID,
  - ✓ PT Primary, PT Secondary, CT Primary, CT Secondary values,
  - ✓ Time, Date,
  - ✓ MD Reset, Energy Reset,
  - ✓ MD in KW or KVA, Integration Period, Alarm and Trip set point for all four zones and to change the password.
- Press scroll key once the parameter set is completed, this allows to view the parameters one after the other automatically (change over time period is 4 secs). If this is not done auto scroll will not happen.

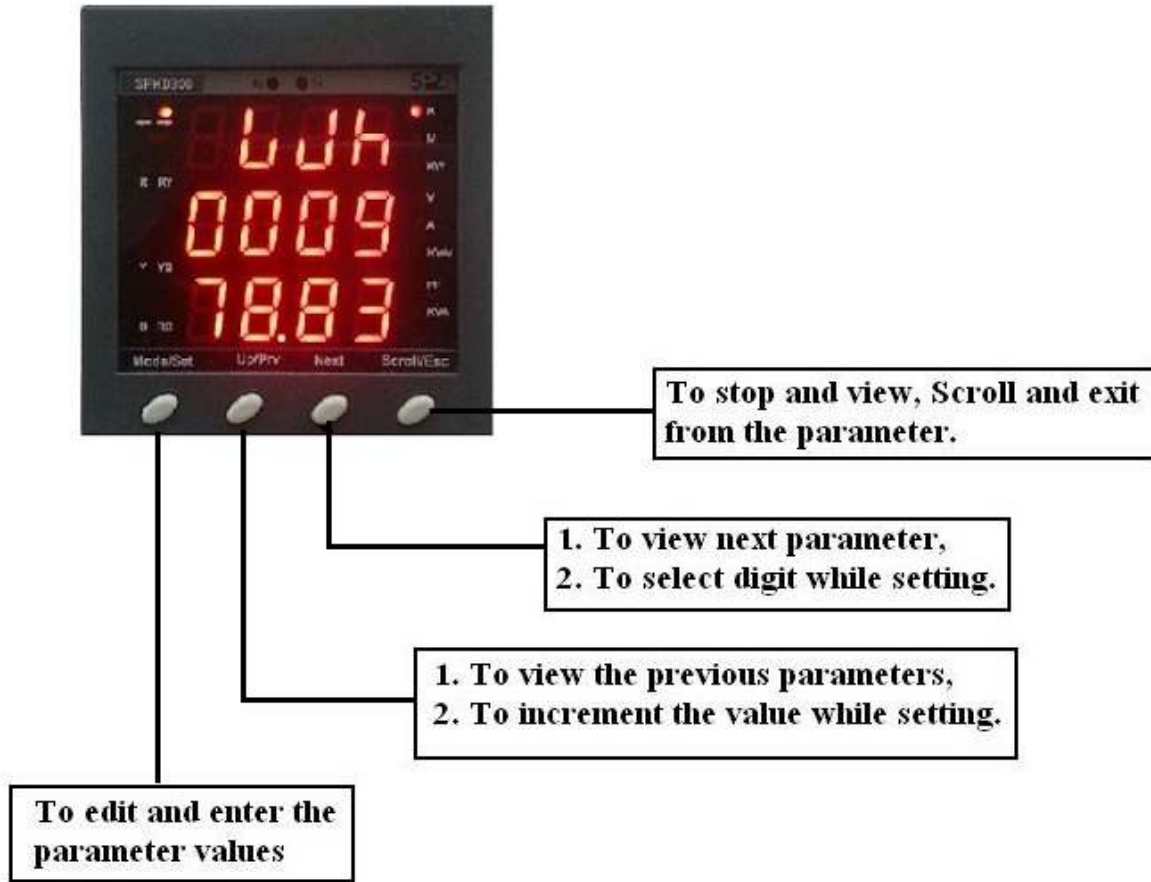


Fig.: Key Feature Description

### 2.3) Rear Terminal Details:

① S1 → ② S2 I <sub>R</sub>		③ S1 → ④ S2 I <sub>Y</sub>		⑤ S1 → ⑥ S2 I <sub>B</sub>		⑦ C	⑧ NO
Primary CT Programmable _____ /1 or 5 A						Trip Relay	
Manufactured by Sai PowerZerve Chennai, India. <a href="http://www.spowerz.com">www.spowerz.com</a>				Alarm Relay C NO			
Meter Name: MD CONTROLLER							
Model:							
Serial No.							
Volt Input		LN: 0-300V AC LL: 0-600V AC		RS 485		Aux. Supply 85 - 265 VAC	
⑨ V <sub>R</sub>	⑩ V <sub>Y</sub>	⑪ V <sub>B</sub>	⑫ V <sub>N</sub>	⑬ A	⑭ B	⑮ L	⑯ N

## **2.4) Communication:**

### **2.4.1) Communication Interface:**

- Through RS485 Communication with MODBUS RTU,
- Power Line Communication using Power Line Node and Concentrator.

**Note:**

- (i) Field Programmability of the meter is optional based on the customer requirement,
- (ii) Each meter is given a unique number at the factory.

## **2.5) Safety Precautions:**

### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Only qualified electrical workers should install this equipment. Such work should be performed only after reading this entire set of instructions.
- If the equipment is not used in a manner specified by the manufacturer, the protection provided by the equipment may be impaired.
- NEVER work alone.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power.
- Assume that all circuits are live until they have been completely de-energized, tested, and tagged.
- Consider all sources of power, including the possibility of back feeding.
- Turn off all power supplying the dual energy meter and the equipment in which it is installed before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Before closing all covers and doors, inspect the work area for tools and objects that may have been left inside the equipment.
- When removing or installing panels do not allow them to extend into the energized bus.
- The successful operation of this equipment depends upon proper handling, installation, and operation.
- Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.
- NEVER bypass external fusing.
- NEVER short the secondary of a PT.
- NEVER open circuit a CT
- High voltage testing may damage electronic components contained in the dual energy meter.
- Ensure that no wiring strands are straying outside by connecting the wires.
- Maximum Demand Controller should be installed in a suitable electrical enclosure.

**Failure to follow these instructions will result in death or serious injury.**

### **Technical Specifications**

Accuracy	: Class 0.5S
System type	: 3 Phase 4 Wire
Resolution	: 0.01 (for Combined Kwh, KVAh)
Display	: Multi Parameter LED (3 ROW)
Auxiliary Supply	: 85 – 265 VAC
Voltage PT	: Primary side – Programmable (100V – 33KV) : Secondary side – 100 to 440 V
Current CT	: Primary side – Programmable (5A – 9999A) : Secondary side – 1 or 5A
Starting Current	: 10mA
Power Factor	: 4 quadrant operation
Frequency	: 50Hz, $\pm 5\%$
Communication	: RS485 Communication with MODBUS RTU in external integration with Power Line Communication
Temperature	: Operating Temp. – (-10 to 55) $^{\circ}$ C Storage Temp. – (-20 to 70) $^{\circ}$ C Humidity 5 to 95% RH at 50 $^{\circ}$ C (Non-Condensing)
Dimension	: (96 x 96 x 48) mm (Inclusive of connector)
Panel Cutout	: 92 x 92 mm (-0.5mm)
Mounting	: Panel Mountable
Connector Type	: Screw type terminals (U Lug 2.5mm)
Weight	: 375gms. (app.)