







Easily-Scaled 5V DC Powered 3.5 Digit Panel Meter

Selectable Multi-range: 50mVDC, 100mVDC Current Shunt, 2V, 20V and 200V with optional 1000VDC range, optional 4-20mA, optional 5V isolator and optional Differential Measurement

# **Great for High Voltage EV Battery and Solar Battery Range**

### **General Features**

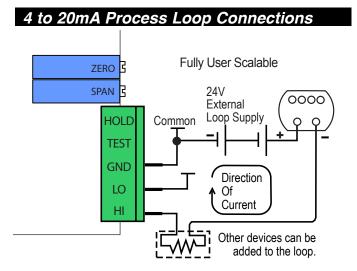
The SM-Series meters have LCD or LED displays and offer many unique features designed to simplify installation, calibration and scaling. SM-35-DCV and SM-35X-DCV meters are pin-compatible, which enables LED and LCD meters to be interchanged within the same panel without necessitating wiring or panel cutout changes.

All SM-Series meters are powered with bipolar single-ended inputs with optional differential measurement. The meters feature Display Hold, Display Test and Auto-Polarity indication.

The SM-series of meters are designed to be user scalable to almost any engineering unit of readout. On-site scaling and recalibration is facilitated by multi-turn potentiometers that provide continuous adjustment within each of the six header-programmable full scale ranges.

The five ranges provided with the SM-35-DCV (LED display) and SM-35X-DCV (LCD display) are 50mV, 100mV current shunt, 2V, 20V and 200V DC full scale. 5V power isolator, 1000V DC range, 4-20mA and Differential Measurement are factory installed options only.

Both SM-35-DCV and SM-35X-DCV have Zero-offset and Span adjustment potentiometers as a standard feature.



### Specifications

| Input Configuration:   | Single-ended, with optional differential measurement and provision to offset the zero of the reading displayed  |
|--|---|
| Input Impedance:   | 1MΩ minimum   |
| Full Scale Ranges:   | ±2VDC (Meters shipped with 2V range<br>selected) ±20VDC, ±200VDC, 50mVDC<br>and 100mVDC ranges are header<br>programmable.  |
| A/D Converter:   | 12 Bit Dual Slope   |
| Accuracy:  | ±(0.05% of reading + 2 digits)  |
| Temperature Coefficien   | t: 100ppm/°C typical  |
| Warmup Time:   | One minute to specified accuracy  |
| Conversion Rate:   | 3 readings per second   |
| Display:   | 0.56" High efficiency LED's "Display Hold" feature  |
|  |   |
| Decimal Selection:   | User programmable to 3 positions  |
|  | User programmable to 3 positions<br>When input exceeds full scale on any range<br>being used, most significant "1" digit and<br>polarity symbol are displayed with all other<br>digits blank  |
| Over-range Indication:   | When input exceeds full scale on any range<br>being used, most significant "1" digit and<br>polarity symbol are displayed with all other  |
| Over-range Indication:   | When input exceeds full scale on any range<br>being used, most significant "1" digit and<br>polarity symbol are displayed with all other<br>digits blank<br>+4.5 to +5.5V DC at 150mA;<br>Optional 1.5kV 5V Isolation                                   |
| Over-range Indication: Power Supply:   | When input exceeds full scale on any range<br>being used, most significant "1" digit and<br>polarity symbol are displayed with all other<br>digits blank<br>+4.5 to +5.5V DC at 150mA;<br>Optional 1.5kV 5V Isolation<br>: 0°C to +60°C                 |
| Over-range Indication:<br>Power Supply:  | When input exceeds full scale on any range<br>being used, most significant "1" digit and<br>polarity symbol are displayed with all other<br>digits blank<br>+4.5 to +5.5V DC at 150mA;<br>Optional 1.5kV 5V Isolation<br>: 0°C to +60°C<br>20° to +70°C |
| Over-range Indication:<br>Power Supply:<br>Operating Temperature<br>Storage Temperature:<br>Relative Humidity: | When input exceeds full scale on any range<br>being used, most significant "1" digit and<br>polarity symbol are displayed with all other<br>digits blank<br>+4.5 to +5.5V DC at 150mA;<br>Optional 1.5kV 5V Isolation<br>: 0°C to +60°C<br>20° to +70°C |

### SM-Series with LCD Display

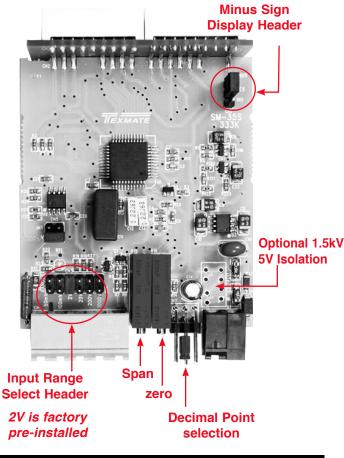
SM-35X-DCV ......3.5 digit LCD with back light, 5VDC Powered input ranges: 50mV/100mV/2/20/200/1000VDC

## Open the Meter to Select Input



To open meter, insert a flat head screwdriver or similar instrument in both slots on the side of the cover and pry open.

Component Layout

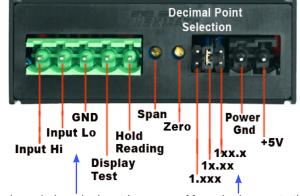


### **Calibration Procedure**

- 1) Select the DC Volt input range 20V, for example, by re-positioning the jumper clip on the range select headers indicated by and marked on the PCB Range select Header, shown on Component Layout section.
- 2) Input 0VDC, meter will automatically will display 000 or adjust Zero pot until meter display 000.
- 3) Apply at least 95% of full voltage range, eg 19V for a 20 DCVolt range.
- 4) Adjust Span pot until meter displays 19.00 (20V Range). For other ranges, the voltage applied should be similarly proportional to the particular full-scale voltage.

CAUTION - ELECTRICAL SHOCK HAZARD All internal parts of the meter may be at the same electrical potential as the input signal and power supply. Do not reposition the signal conditioning components when input voltages are applied. When measuring dangerously high input voltages, extreme care must be taken to insulate the connector pins as well as all metal parts of the meter. A suitable high voltage warning notice should be affixed to those meters where there is any possibility that the meter could be removed from its case, or the internal components accessed, concurrent with the existence of a high voltage input signal.

# **Connector Pinouts**



In single-ended mode, input Lo and GND are internally connected. In differential mode, input Lo and GND are disconnected

Move the jumper to the indicated position on the header for the decimal required.

### Signal Conditioning Components

# RANGE SELECT Header 50 50 100

Range values are marked on the PCB. six positions are provided. After selecting a new range with the single jumper clip, recalibration is required.



DC mV

·**^**· 200

#### ZERO Potentiometer (Pot)

The ZERO pot is to the right of the SPAN pots (as viewed from the back of the meter). Typically it enables the displayed reading to be offset ±1000 counts. Not available on differential option



Increase Reading

#### SPAN Potentiometer (Pot)

The SPAN pot is on the right side of the signal input. Typical adjustment is 100% of the input signal range.

# Minus Sign Header

#### Minus Sign Header

Activates Minus sign on display

**Disable Minus sign** 

This header allows the Minus Sign to work normally.

NO VES

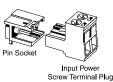
on display\*

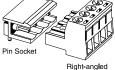
NO • VES

\*Note: Removing the header disables Minus Sign

### Connectors

This meter uses plug-in type screw terminal connectors for all input and output connections. The power supply connections have a unique plug and socket outline to prevent cross connection. The main board uses standard right-angled connectors.





Screw Terminal Plug

WARNING: AC and DC input signals and power supply voltages can be hazardous. Do Not connect live wires to screw terminal plugs, and do not insert, remove or handle screw terminal plugs with live wires connected.

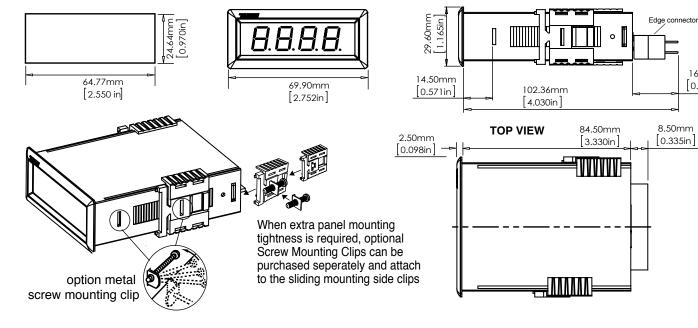


## SM Case Dimensions and Panel Cutouts

#### PANEL CUTOUT

#### FRONT VIEW





#### Ordering Information

Part Number

► BASIC MODEL NUMBER Includes screw terminal connectors, standard display and standard power supply unless optional versions are ordered

Description

SM-35-DCV ....... 3.5 digit Red LED, 50mV/100mV/2v/20V/200V,optional 1000V, 4-20mA, 5V Isolator and differential measurement. 5VDC Powered

| ► DISPLAY  |  |
|--|--|
| STANDARD Red LED, 0.96 inch high<br>SM-GREEN Green LEDs<br>SM-BLUE Blue LEDs |  |
| SPECIAL OPTIONS (Specify Inputs & Beg  |  |

TIONS (Specify Inputs & Req. Reading) V0-ISO5V. 5V isolator-1.5kV isolaton between signal and power ZZ-SM35-DIFF Differential Measurement ZR-SM35-50M. Range change 0 to 50mV DC. Display scaling 100.0 ZR-SM35-100M . Range change 0 to 100mV DC. Display scaling 100.0 ZR-SM35-4-20 . Range change 4 to 20mV DC. Display scaling 100.0 ZR-SM35-20V. Range change 0 to 20V DC. Display scaling 1999 ZR-SM35-200V Range change 0 to 200V DC. Display scaling 1999 ZR-SM35-1KV. Range change 0 to 1000V DC. Display scaling 1999 ZR-SM35-1KV. Range change 0 to 1000V DC. Display scaling 1000 ZS. . . . . . . . . . . . . Custom digital display scaling within standard ranges

#### ►ACCESSORIES

| SL.CASERED | Slim Bezel Case, Red Faceplate w/Mtg Hrdwre |
|------------|---|
| PS-505     | 5V DC Regulated Power Supply, 0.5A Output   |
| PS-510     | 5V DC Regulated Power Supply, 1A Output     |

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# Meters in Dashboard Case Enclosure



AM-20...... 20 segment LED bargraph, 5V DC power

🏬 C E 🖌

- CM-35XTL ..... Less than 1V DC loop drop and 1 Joule energy storage
- CM-35XT ..... Economical 4-20mA loop-powered meter
- PM-45X ...... 4.5 digit 0.48" LCD DPM PM-45L ...... 4.5 digit 0.4" LED DPM



16.82mm

[0.662in]

8.50mm

[0.335in]

SP-35X ...... Signal Power DC voltage measurement from 5.0V DC to 199.9V DC



PS-505 . . . . . . . 5V DC Regulated Power Supply, 0.5A Output PS-510 . . . . . . 5V DC Regulated Power Supply, 1A Output

#### WARRANTY

Texmate warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment. Texmate's obligations under this warranty are limited to replacement or repair, at its option, at its factory, of any of the products which shall, within the applicable period after shipment, be returned to Texmate's facility, transportation charges pre-paid, and which are, after examination, disclosed to the satisfaction of Texmate to be thus defective. The warranty shall not apply to any equipment which shall have been repaired or altered, except by Texmate, or which shall have been subjected to misuse, negligence, or accident. In no case shall Texmate's liability exceed the original purchase price. The aforementioned provisions do not extend the original warranty period of any product which has been either repaired or replaced by Texmate.

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SM-35DCV Data Sheet (d0211)