



SP-35XRMS

Two Wire Panel Meter
3 1/2 Digit 0.48" LCD
in a Slim Bezel Case

A Signal Powered Meter with Screw Terminal and Edge Connector Inputs.

General Features

The SP-35XRMS is one of Texmate's SP-Series of meters. Designed for ease of use, the two wire SP-Series meters are powered from the signal and do not require a separate power supply.

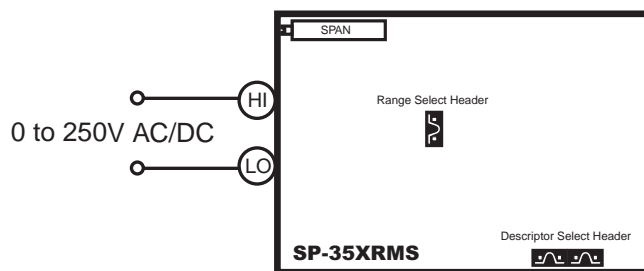
Each SP-Series meter is provided with a set of screw terminal blocks that can accept either bare wire or crimp-on 0.110" X 0.032" insulated disconnects. The SP-Series pin out is designed so that a standard PCB edge connector can also be used instead of the screw terminal blocks.

The meters in the SP-Series are:

SP-35X - designed to measure DC voltages from $\pm 3.5\text{VDC}$ to $\pm 199.9\text{VDC}$.

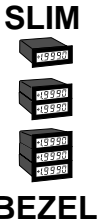
SP-35XRMS - designed to measure AC/DC voltages with two header programmable ranges 15.0V to 199.9V and 15V to 250V.

Typical Application Connections



Compatibility

The SP-Series is shipped in a standard Slim Bezel case. The Slim Bezel case is compatible with the CM, SM, PM, & TM Series of meters. The SP-Series can be ordered in End Mount cases for twin mounting or combinations of multiple center mount cases and two end mount cases for stack mounting.



Specifications

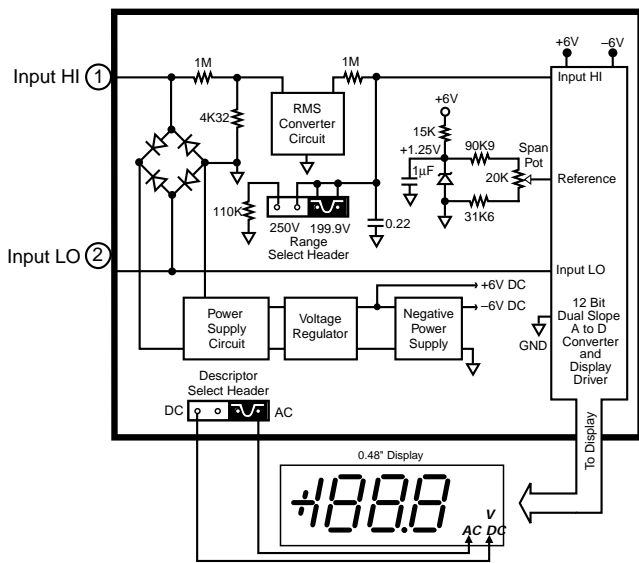
- Input Configuration:**Single-ended
- Input Impedance:**.....Since the SP35XRMS is signal powered the impedance varies depending on the input.
40k Ω to 50k Ω for inputs from 100V to 250V
25k Ω to 40k Ω for inputs from 40V to 100V
15k Ω to 25k Ω for inputs from 15V to 40V
- Full Scale Range:**15.0 to 199.9VAC/DC or 15 to 250V AC/DC
- A/D Converter:**12 Bit Dual Slope
- Accuracy:**250V range: $\pm 0.05\%$ of reading + 2 digits
199.9V range: $\pm 0.1\%$ of full scale from 70V to 200V, $\pm 0.25\%$ full scale for inputs from 40V to 70V, $\pm 0.5\%$ full scale for inputs from 15V to 40V
- Temperature Coefficient:**100ppm/ $^{\circ}\text{C}$ typical
- Warm up Time:**10 seconds to specified accuracy
- Conversion Rate:**3 readings per second
- Display:**.....0.48" Liquid Crystal Display (LCD)
- Decimal Selection:**.....The 1XX.X decimal is ON in the standard meter. For 250V range: decimal can be turned OFF, (see pg. 2.)
- Over-range Indication:** ...When input exceeds full scale on the 199.9V range, the most significant "1" digit is displayed with all other active digits blanked. There is no overload indication on the 250V AC range.
- Power Supply:**.....Does not require a separate power supply. The SP-35XRMS is powered from the signal. Minimum signal that can be measured is 15VAC/DC
- Operating Temperature:** ... 0°C to $+60^{\circ}\text{C}$
- Storage Temperature:**..... -20°C to $+70^{\circ}\text{C}$
- Relative Humidity:**95% (non condensing)
- Case Dimensions:**.....Bezel 2.76" x 1.17" (69.75 x 29.7mm)
Depth behind Bezel 3.32"(84mm)
plus 0.68" (17.27mm) for connector
- Weight:**.....143 gms (5 oz) when packed

SP-Series, low cost meters signal power for polarity indication

SP-35X.....3.5 digit LCD, Signal Powered by DC voltage
SP-35XMV.....3.5 digit LCD DCMV Input, 10-100VDC or 18-36VAC Pwr

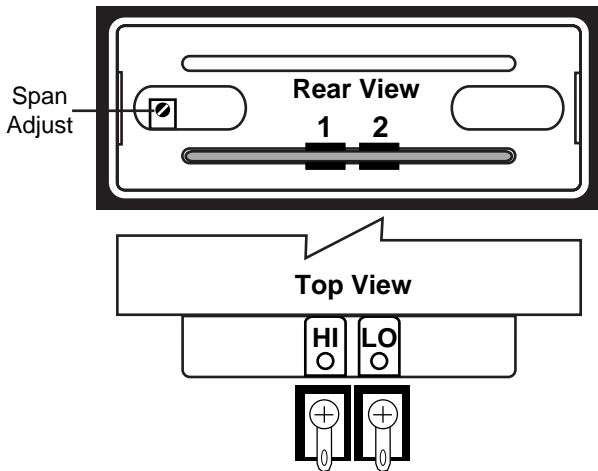
SP-35XRMS3.5 digit LCD, VAC RMS Signal Pwr, 15.0-199.9VAC/DC

Functional Diagram



Connector Pinouts

The SP-35X interconnects by means of TB-1 screw terminal clips, which are provided at no cost with the meter. A PCB edge connector (CN-L10) with 0.156" pitch and dual 10 pin rows may also be used. Texmate's proprietary PUSH-ON Connector may also be used. Connector options are shown on page 4.

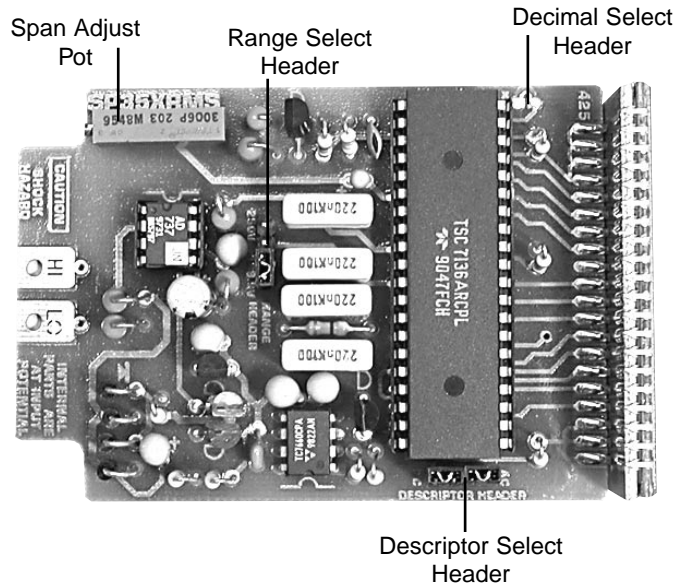


WARNING: AC and DC input signals and power supply voltages can be hazardous. Do Not connect live wires to screw terminal plugs, and do not insert, remove or handle screw terminal plugs with live wires connected.

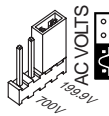
Pin 1 - Input Hi: For DC current measurement with an external shunt, the more positive end of the shunt is connected to this pin. 50mV/10 mV shunts may be used. For maximum accuracy 4 wire Kelvin connected shunts are recommended. An internal header configures the meter for HI Side or LO Side Shunt circuits.

Pin 2 - Input Lo: For DC current measurement with an external shunt, the less positive end of the shunt is connected to this pin. 50mV/100mV shunts may be used. For maximum accuracy 4 wire Kelvin connected shunts are recommended. An internal header configures the meter for HI Side or LO Side Shunt circuits.

Component Layout



Signal Conditioning Component



INPUT RANGE Header

Range values are marked on the PCB. Four positions are provided, which are selected with a single jumper clip.

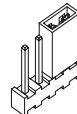


SPAN Potentiometer (Pot)

The 15 turn SPAN pot is always on the right side (as viewed from the front of the meter). Typical adjustment is 20% of the input signal range.

Descriptor Select Header

The descriptors may be changed by repositioning the jumper clip located on the Descriptor Select Header. For location of the header, see Component Layout illustration..



- AC
- AC VAC descriptor on
- AC only V descriptor on

Decimal Point Selection



1 XX.X Decimal is on



No decimals are on

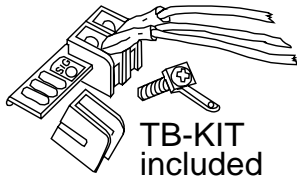
Front of meter →

Calibration Procedure

Select either the 199.9V or 250V range by positioning the jumper clip in the appropriate position on the Range Select Header.

Apply 190VDC to the input of the meter. Adjust the span pot to read 190.0 in 199.9V range or 190 in 250V range. The meter is now calibrated and ready for use.

TB-Kit Screw Connectors



**TB-KIT
included**

Texmate's individual screw terminal blocks offer a convenient alternative to edge connectors for many applications, allowing complete installation, configuration and calibration without the need for soldering.

Slide each terminal block over the PCB until the hole aligns. Insert the retaining screw to secure.

Each kit includes: 3 plastic blocks with metal contacts, 4 screws with spade connectors, 1 metal contact and 3 quick disconnects.

Push-On Screw Terminals

They provide the greatest convenience and ease of use

Texmate's exclusive optional Push-On Connectors combine an edge card connector and a 10 position screw terminal block. Push-On Connectors are ordered preconfigured for each specific power supply voltage and each optional power supply available for the SP-Series.



Part Number: CN-PUSH/SP

Optional PCB Edge Connector

PCB Edge Connector

A standard 20-pin edge connector (two rows of 10 pins on 0.156" centers) may also be used to connect the SP-35XMV meter. Order part no. CN-L10.



CAUTION - ELECTRICAL SHOCK HAZARD

All internal parts of the meter are at the same electrical potential as the input signal. 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.

Slim Bezel Meters That Are Compatible with the SP-35 Series



AM-2020 segment LED bargraph, 5V DC power



CM-35XTLLess than 1V DC loop drop and 1 Joule energy storage

CM-35XTEconomical 4-20mA loop-powered meter



CP-45Single set point, 4.5 digit BCD comparator controller

PM-45X4.5 digit 0.48" LCD DPM

PM-45XBCDPM-45X with parallel BCD output

PM-45XULower cost version of PM-45X

PM-45L4.5 digit 0.4" LED DPM

PM-45LBCDPM-45L with parallel BCD output

PM-45LULower cost version of PM-45L



SM-35MVLED display

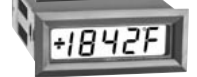
SM-35XMVLCD display with header selectable fixed trailing zero

SM-35LED display

SM-35XLCD display with header selectable fixed trailing zero

TM-353.5 digit LED, °C or °F, type J and K thermocouples

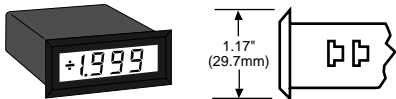
TM-35X3.5 digit LCD, °C or °F, type J and K thermocouples



SP Case Dimensions and Panel Cutouts

The Slim Bezel Case is supplied as standard. If specified at time of ordering, any combination of Twin Mounting and Multiple Array Cases may be substituted at no additional cost. Extra cases may be ordered separately.

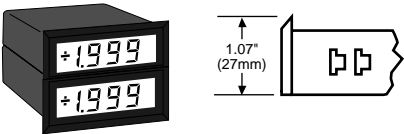
STANDARD SLIM BEZEL CASE



SLIM BEZEL CASE
Standard Black ABS case with matte finish bezel for single unit mounting.

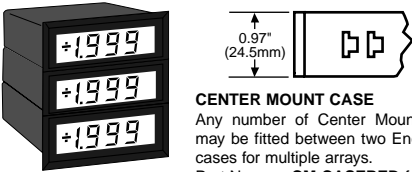
Part No. **SL-CASERED** for LED's
SL-CASECLR for LCD's

OPTIONAL TWIN MOUNTING OR MULTIPLE ARRAY CASES



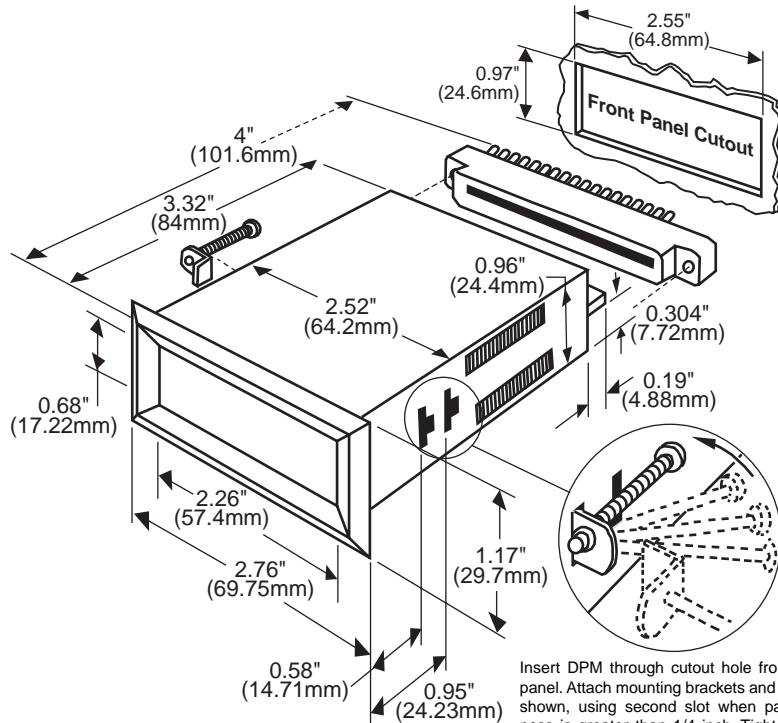
END MOUNT CASE
Same styling as Slim Bezel case but with bottom edge of bezel removed. Two End Mount cases can be twin mounted in a single cutout.

Part No. **EM-CASERED** for LED's
EM-CASECLR for LCD's



CENTER MOUNT CASE
Any number of Center Mount cases may be fitted between two End Mount cases for multiple arrays.

Part No. **CM-CASERED** for LED's
CM-CASECLR for LCD's



Insert DPM through cutout hole from front of panel. Attach mounting brackets and screws as shown, using second slot when panel thickness is greater than 1/4 inch. Tighten screws against rear of panel.

Ordering Information

Standard Options for this Model Number

Part Number	Description
► BASIC MODEL NUMBER	
SP-35XRMS	. . .3.5 digit LCD, VAC RMS Signal Pwr, 15.0-199.9VAC/DC

Special Options and Accessories

Part Number	Description
► SPECIAL OPTIONS (Specify Inputs & Req. Reading)	
SP-FS35Non-Std Range and Scale Changes, 3.5 Digit Meters

► ACCESSORIES

CN-L10Edge Connector with Solder eyelet, 10 Pin Dual
CN-PUSH/SP	. . .Push-on Screw Terminal Block Conn
TB-KITReplacement Terminal Block Connector Kit (3)
SL.CASECLR	. . .Slim Bezel Case LCD Std case w/mtg hardware
CM.CASECLR	. . .Slim Bezel Center Case LCD w/mtg hardware
EM.CASECLR	. . .Slim Bezel End Case LCD w/mtg hardware

Prices subject to change without notice.

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.

USER'S RESPONSIBILITY

We are pleased to offer suggestions on the use of our various products either by way of printed matter or through direct contact with our sales/application engineering staff. However, since we have no control over the use of our products once they are shipped, **NO WARRANTY WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHERWISE** is made beyond the repair, replacement, or refund of purchase price at the sole discretion of Texmate. Users shall determine the suitability of the product for the intended application before using, and the users assume all risk and liability whatsoever in connection therewith, regardless of any of our suggestions or statements as to application or construction. In no event shall Texmate's liability, in law or otherwise, be in excess of the purchase price of the product.

Texmate cannot assume responsibility for any circuitry described. No circuit patent or software licenses are implied. Texmate reserves the right to change circuitry, operating software, specifications, and prices without notice at any time.

TEXMATE INC

995 Park Center Drive • Vista, CA 92081-8397

Tel: 1-760-598-9899 • USA 1-800-839-6283 • That's 1-800-TEXMATE

Fax: 1-760-598-9828 • Email: sales@texmate.com • Web: www.texmate.com

Texmate has facilities in Japan, New Zealand, Taiwan, and Thailand. We also have authorized distributors throughout the USA and in 28 other countries.

For product details visit www.texmate.com

Local Distributor Address

Copyright © 2003 Texmate Inc. All Rights Reserved.