Simpson's Mini DC Voltage Indicators provide high quality, accuracy, and reliability in a compact 12mm deep case. M145 has a 4-1/2 digit, 0.5" LCD display and is available with a negative image, bright red backlight option. Mini M145s feature user-selectable decimal point and display hold.

Three power supply choices are available, and a low battery indication is provided for 9VDC battery applications. Mini units feature a standard 3/64 DIN, high-impact plastic case. The standard LCD units have a clear viewing window. The units with optional negative image, bright red backlighting, have a red window.
**Specifications**

**DISPLAY**
Type: 7-segment LCD  
Height: 0.5” (12.7mm)  
Decimal point: 12-position programmable  
Overrange indication: Most significant = “1”  
Backlighting: Optional negative image, red backlighting at 5, 10, 12, 24, or 48VDC  
Polarity: Auto with “-” indication, “+” indication implied

**POWER REQUIREMENTS**
DC Power: ±5V, ±5V, and ±9V  
(Low battery indication provided with 9V units)  
Power supply current: 2mA max  
Backlight supply current: 50mA typical  
For 24 and 48VDC, 10mA typical

**ACCURACY @ 25°C:**  
±(0.04% of reading + 1 count)

**Environmental**
Operating Temperature: 0 to 55°C  
Storage Temperature: -10 to 60°C  
Relative Humidity: 0 to 85% non-condensing  
Warmup time: Less than 20 minutes  
Temperature Coefficient: (All inputs)  
±(0.2% of input ± 0.2 digit)/°C

**Noise Rejection**
NMRR: 60dB, 50/60Hz  
CMRR: (with 1KV unbalanced @ 60Hz): 90dB min

**Mechanical**
Bezel: 0.945” x 2.835”  
(24mm x 72mm)

**Connections**
These instruments are designed for maximum safety to the operator when mounted in a panel according to instructions. They are not to be unmounted or for exploratory measurements in unknown circuits.

A reversed polarity power supply will permanently damage this instrument.

IN HI and IN LOW must remain within the limits of the power supply breakdown voltage.

No internal isolation provided. Each meter requires an isolated power supply. Supply voltage must also be isolated from the circuit being switched.

A positive reading will be displayed when IN HI is more positive than IN LOW.

**Internal Reference:** REFIN must always be connected to REFIN unless an external reference is being used.

**External Reference:** Connect between REFIN and ANALOG.GROUND; REFIN should then be connected (open). For best results, external reference voltage should be in the range of 50mV to 150mV.

**Calibration**
Model M145 has two internal adjustments on the rear panel, one that is covered by a label, and one that is always exposed. The exposed adjustment is a “fine” calibration point, and the covered adjustment is for “coarse” calibration. Apply an appropriate current input for a near full scale reading, typically 18000 counts on the display. For these adjustments to function, REFIN must be connected to REFIN. Once a unit has been calibrated with the “coarse” adjustment, future calibrations should be performed with the “fine” adjustment only.

**Backlight Power Supply**
A 2-pin connector is included with the unit if backlighting is specified. The right pin is for the negative power supply. See the Rear Connections diagram for location.

**Safety Symbols**
The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury.

The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly adhered to, could result in damage to or destruction of part or all of the instrument.

**Ordering Information**
Mini Voltage Indicators can be configured by making an entry for each box

**Mini M145**
4-1/2 Digit Indicator

<table>
<thead>
<tr>
<th>Input Signal</th>
<th>Basic Unit</th>
<th>Display</th>
<th>DPM Power Supply</th>
<th>Range</th>
<th>Backlight Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>M145</td>
<td>0, 1, 2</td>
<td>0, 1</td>
<td>0/1</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>±5VDC</td>
<td>11 VDC</td>
<td>1 VDC</td>
</tr>
<tr>
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<td></td>
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<td>2 VDC</td>
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<tr>
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<td>±5VDC</td>
<td>13 VDC</td>
<td>3 VDC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>±5VDC</td>
<td>14 VDC</td>
<td>4 VDC</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>±5VDC</td>
<td>15 VDC</td>
<td>5 VDC</td>
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<tr>
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<td></td>
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</tr>
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**Decimals Point**
DP 1 is the first decimal point to the left of the least significant digit. Connect DP4 to Positive Supply to activate. Unneeded features should remain unconnected.

Display Hold: The display can be held indefinitely by connecting Hold to Positive Supply. The display will function normally when this connection is removed.

**Specifications**

**UNIT**
Power Supply: ±5VDC, 10mA typical  
50mA typical  
Backlight supply current: 2mA max  
Internal Reference: 50mA typical  
External Reference: 5mA typical

**Displays**
Type: 7-segment LCD  
Height: 0.5” (12.7mm)  
Decimal point: 12-position programmable  
Overrange indication: Most significant = “1”  
Backlighting: Optional negative image, red backlighting at 5, 10, 12, 24, or 48VDC  
Polarity: Auto with “-” indication, “+” indication implied

**Accuracy**
±(0.04% of reading + 1 count)  
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**Environmental**
Operating Temperature: 0 to 55°C  
Storage Temperature: -10 to 60°C  
Relative Humidity: 0 to 85% non-condensing  
Warmup time: Less than 20 minutes  
Temperature Coefficient: (All inputs)  
±(0.2% of input ± 0.2 digit)/°C

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