The Front Panel at a Glance

1 Display
2 On/Off Switch
3 Measurement Function and Resolution Keys
4 Autorange and Manual Range
5 Math Operations and Edit
6 State Store/Recall, Utility and Edit Keys
7 Shift (selects blue shifted keys) and Local key
8 Secondary Display Key
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The Display at a Glance

The System Annunciators (above the primary display) are described below (see page 36 for Math Annunciators and Chapter 4 for the calibration annunciator).

<table>
<thead>
<tr>
<th>System Annunciator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>Sample annunciator—indicates readings being taken.</td>
</tr>
<tr>
<td>Remote</td>
<td>The multimeter is operating in the remote interface mode.</td>
</tr>
<tr>
<td>ManRng</td>
<td>Fixed range selected (autoranging disabled).</td>
</tr>
<tr>
<td>Hold</td>
<td>Reading hold function enabled.</td>
</tr>
<tr>
<td>Limit</td>
<td>Limit math feature enabled</td>
</tr>
<tr>
<td>Null</td>
<td>Null math feature enabled</td>
</tr>
<tr>
<td>MnMx</td>
<td>Min/Max feature enabled</td>
</tr>
<tr>
<td>` ]]</td>
<td>Continuity test function selected.</td>
</tr>
<tr>
<td>▲</td>
<td>Diode test function selected.</td>
</tr>
<tr>
<td>Shift</td>
<td>Shift key has been pressed.</td>
</tr>
</tbody>
</table>
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Making Measurements

The following pages show how to make measurement connections and how to select measurement functions from the front panel for each of the measurement functions.

For remote operation, refer to the MEASure Subsystem in the Agilent 34405A Online Programmer’s Reference online help.

Measuring AC or DC Voltage

AC Voltage:
- Five Ranges: 100.000 mV, 1.00000 V, 10.0000 V, 100.000 V, 750.00 V
- Measurement Method: AC coupled true rms - measures the AC component with up to 400 VDC bias on any range.
- Crest Factor: Maximum 5:1 at full scale
- Input Impedance: 1 MΩ ± 2% in parallel with <100pF on all ranges
- Input Protection: 750V rms on all ranges (HI terminal)

DC Voltage:
- Five Ranges: 100.000 mV, 1.00000 V, 10.0000 V, 100.000 V, 1000.00 V
- Measurement Method: Sigma Delta A-to-D converter
- Input Impedance: ~10 MΩ all ranges (typical)
- Input Protection: 1000V on all ranges (HI terminal)
Measuring Resistance

- Seven Ranges: 100.000Ω, 1.00000 kΩ, 10.0000 kΩ, 100.000 kΩ, 1.00000 MΩ, 10.0000 MΩ, 100.000 MΩ
- Measurement Method: two-wire ohms
- Open-circuit voltage limited to < 5 V
- Input protection 1000 V on all ranges (HI terminal)

Measuring AC (RMS) or DC Current up to 1.2A

- Three AC Current or DC Current Ranges: 10.0000 mA, 100.000 mA, 1.00000 A
- Shunt Resistance: 0.1Ω to 10 Ω for 10mA to 1A ranges
- Input Protection: Front Panel 1.25A, 500V FH fuse for I terminal
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Measuring AC (RMS) or DC Current up to 12A

- 10 Amp AC Current or DC Current Range
- Shunt Resistance: 0.01 Ω for 10A range
- Internal 15A, 600V fuse for 12A terminal

Measuring Frequency

- Five Ranges: 100.000 mV, 1.00000 V, 10.0000 V, 100.000 V, 750.00 V. Range is based on the voltage level of the signal, not frequency.
- Measurement Method: Reciprocal counting technique.
- Signal level: 10% of range to full scale input on all ranges
- Gate Time: 0.1 second or 1 period of the input signal, whichever is longer.
- Input Protection: 750V rms on all ranges (HI terminal)
Testing Continuity

- Measurement Method: 0.83 mA ± 0.2% constant current source, < 5 V open circuit voltage.
- Response Time: 70 samples/second with audible tone
- Continuity Threshold: 10 Ω fixed
- Input Protection: 1000 V (HI terminal)

Checking Diodes

- Measurement Method: Uses 0.83 mA ± 0.2% constant current source, < 5 V open circuit voltage.
- Response Time: 70 samples/second with audible tone
- Input Protection: 1000 V (HI terminal)
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Measuring Capacitance

- Eight ranges: 1nF, 10nF, 100nF, 1µF, 10µF, 100µF, 1000µF, 10,000µF and autorange
- Measurement Method: Computed from constant current source charge time. Typical 0.2V - 1.4V AC signal level
- Input Protection: 1000 V (HI terminal)

Typical Display:

![Capacitance Display]

Measuring Temperature

- -80.0°C to 150.0 °C, -110.0°F to 300.0 °F
- Auto-ranging measurement, no manual range selection
- Measurement Method: 2-wire Ohms measurement of 5 kΩ thermistor sensor (E2308A) with computed conversion
- Input Protection: 1000 V (HI terminal)

Typical Display:

![Temperature Display]
Selecting a Range

You can let the multimeter automatically select the range using autoranging, or you can select a fixed range using manual ranging. Autoranging is convenient because the multimeter automatically selects the appropriate range for sensing and displaying each measurement. However, manual ranging results in better performance, since the multimeter does not have to determine which range to use for each measurement.

- The ManRng annunciator is on when manual range is enabled.
- Autoranging is selected at power-on and after a remote reset.
- Manual ranging – If the input signal is greater than can be measured on the selected range, the multimeter provides these overload indications: OL from the front panel or "±9.9E+37" from the remote interface.
- For frequency measurements, ranging applies to the signal’s input voltage, not its frequency.
- The range is fixed for continuity (1 kΩ range) and diode (1 VDC range).
- The multimeter remembers the selected ranging method (auto or manual) and the selected manual range for each measurement function.
- Autorange thresholds – The multimeter shifts ranges as follows:
  - Down range at <10% of current range
  - Up range at >120% of current range
- For remote operation, refer to the MEASure Subsystem in the Agilent 34405A Online Programmer’s Reference online help.
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Setting the Resolution

You can select either 4½ or 5½-digit resolution for the DCV, DCI, resistance, ACV, ACI and frequency measurement functions.

- 5½-digit readings have the best accuracy and noise rejection.
- 4½-digit readings provide for faster readings.
- The continuity and diode test functions have a fixed, 4½-digit display.
- Capacitance and temperature have a fixed 3½-digit display.

Selects 4½-digit mode.

Selects 5½-digit mode.

- For remote operation, refer to the MEASure Subsystem in the Agilent 34405A Online Programmer’s Reference online help.