

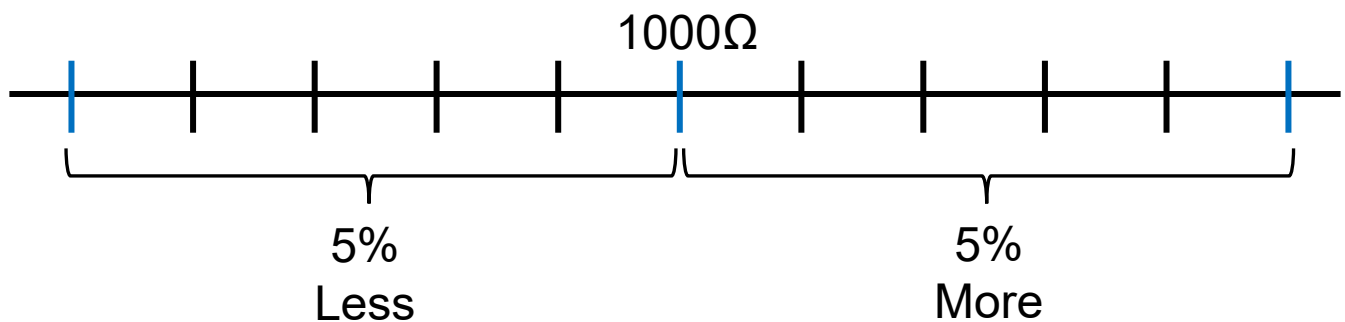
What Does Tolerance Mean?



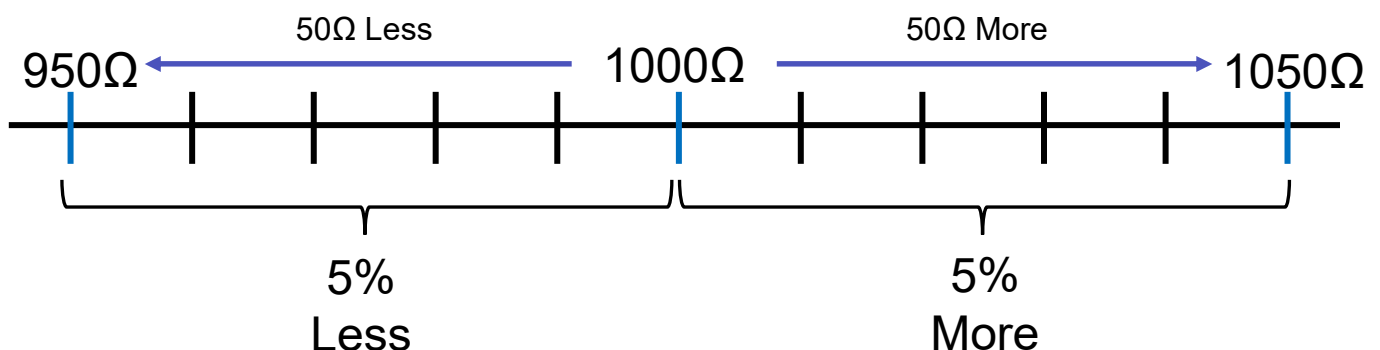
1KΩ
Resistor

The **Rated Resistance Value** for this resistor is 1KΩ with a **±5% Tolerance**.

Resistors have tolerance ratings given as a percentage. A tolerance of ±5% means that the rated resistance value, when measured with a multimeter, can fall within a range that can be 5% *less* than the stated value or 5% *more* than the stated value.



Resistor's tolerance percentage can also be turned into a numeric value. In the instance of the 1000Ω resistor, a tolerance of ±5% translates to a ±50Ω range.



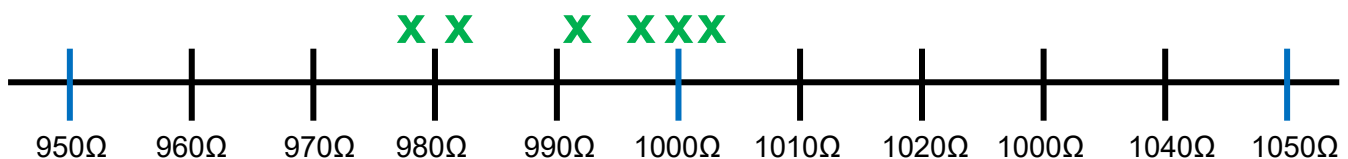
What Does Tolerance Mean?

When using the multimeter to measure a $1\text{K}\Omega \pm 5\%$ resistor we can expect to see a value between 950Ω and 1050Ω



Resistor Values	
Rated Resistance Value	Measured Resistance Value
$1\text{K}\Omega \pm 5\%$	1003Ω
$1\text{K}\Omega \pm 5\%$	992Ω
$1\text{K}\Omega \pm 5\%$	998Ω
$1\text{K}\Omega \pm 5\%$	1000Ω
$1\text{K}\Omega \pm 5\%$	982Ω
$1\text{K}\Omega \pm 5\%$	978Ω

In this example, six $1\text{K}\Omega$ resistors were measured using a multimeter. The results are graphed on the line plot below. As you can see, they all fall within the expected $\pm 5\%$ ($\pm 50\Omega$) tolerance range.



What Does Tolerance Mean?

Measure the resistance of six $1\text{K}\Omega$ resistors. Record in the data table above and graph your data in the line plot below. Do your measurements fall inside the $\pm 5\%$ range?



Resistor Values

Rated Resistance Value	Measured Resistance Value
$1\text{K}\Omega \pm 5\%$	
$1\text{K}\Omega \pm 5\%$	
$1\text{K}\Omega \pm 5\%$	
$1\text{K}\Omega \pm 5\%$	
$1\text{K}\Omega \pm 5\%$	
$1\text{K}\Omega \pm 5\%$	

