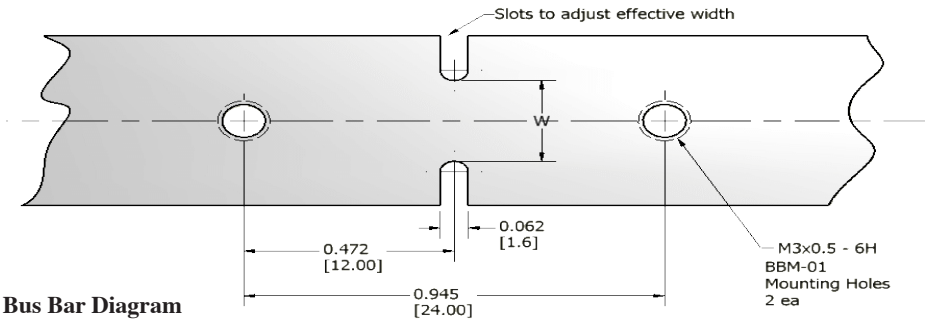
Ametes Bus Bar DC Current Sensor. Design Guide AN_BBM-01

This AN_BBM-01 provides guidance in sizing bus bars to obtain the desired BBM-01 Bus Bar Module sensitivity for DC currents. The BBM-01 determines the current in the bus bar by measuring on both sides of the bus bar, the magnetic field generated from the current through the bus bar. The magnitude of the magnetic field at the sensor is a function of the width and thickness of the bus bar as well as the current through the bus bar. This guide provides the output Sensitivity in mV/A for the BBM-01 as a function of bus bar width and thicknesses for various standard Imperial dimensioned bus bars.

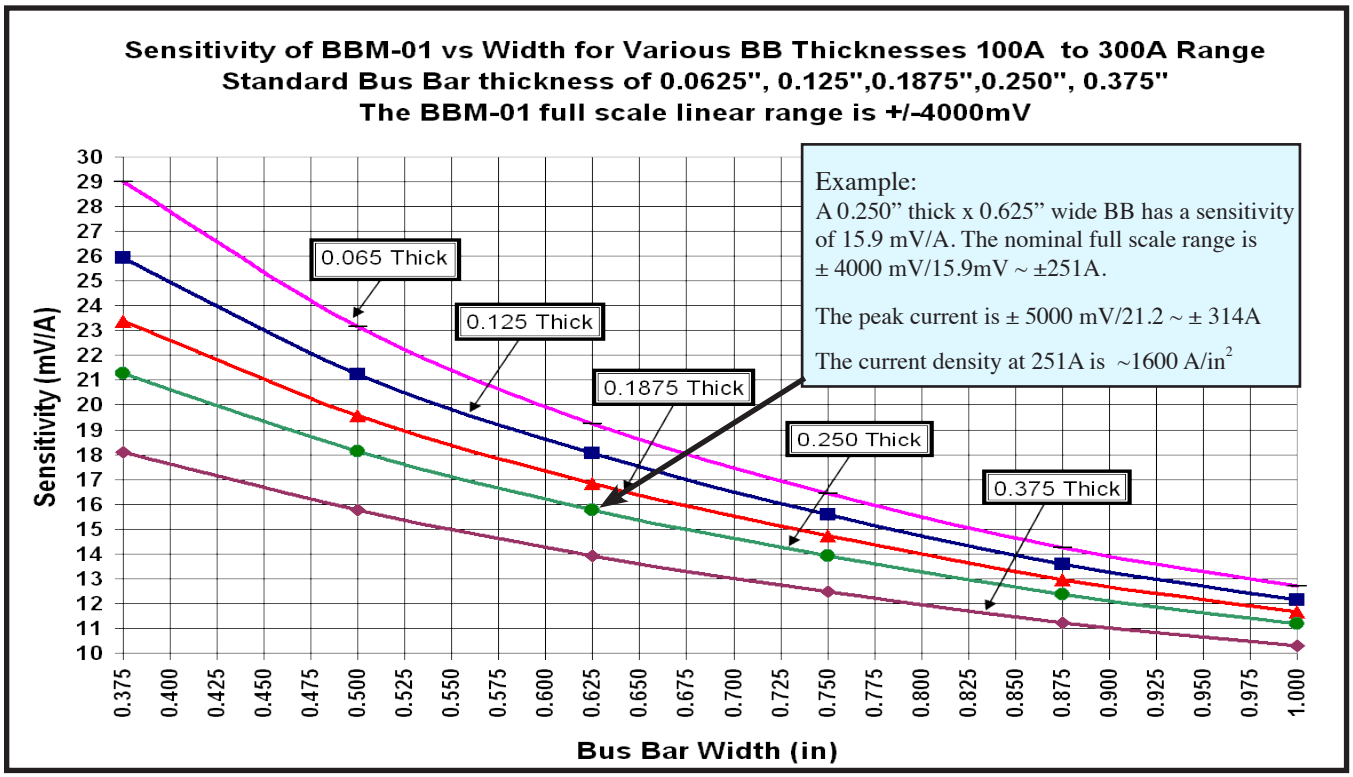
There are three sets of curves to cover bus bar widths ranging from 0.375 to 4.0 inches wide. The industry standard widths are included in the curves and highlighted by the markers.

If BBM-01 output sensitivities higher than achieved with the standard widths are desired, they can be obtained by incorporating slots in the bus bar to reduce the effective width "W" accordingly. See the bus bar figure below.

Another consideration in selecting the correct bus bar, is the current density in the bus bar. A number of factors determine this rating which include ambient temperature, mounting and desired maximum temperature rise. GMW recommends a conservative current density of $< 2000 A/in^2$ ($3 A/mm^2$). Higher current densities can be achieved by using heat sinks or forced cooling



Bus Bar Diagram



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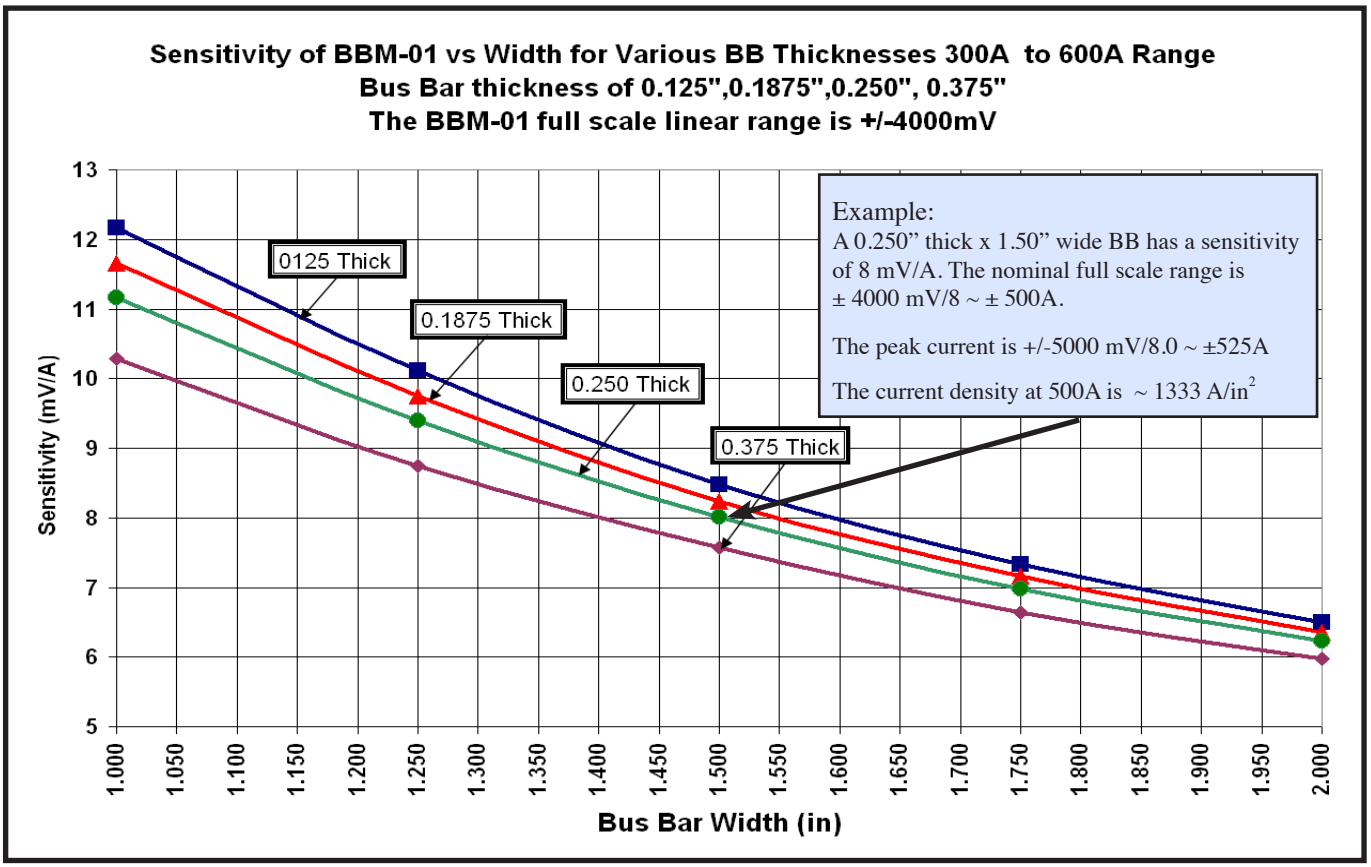

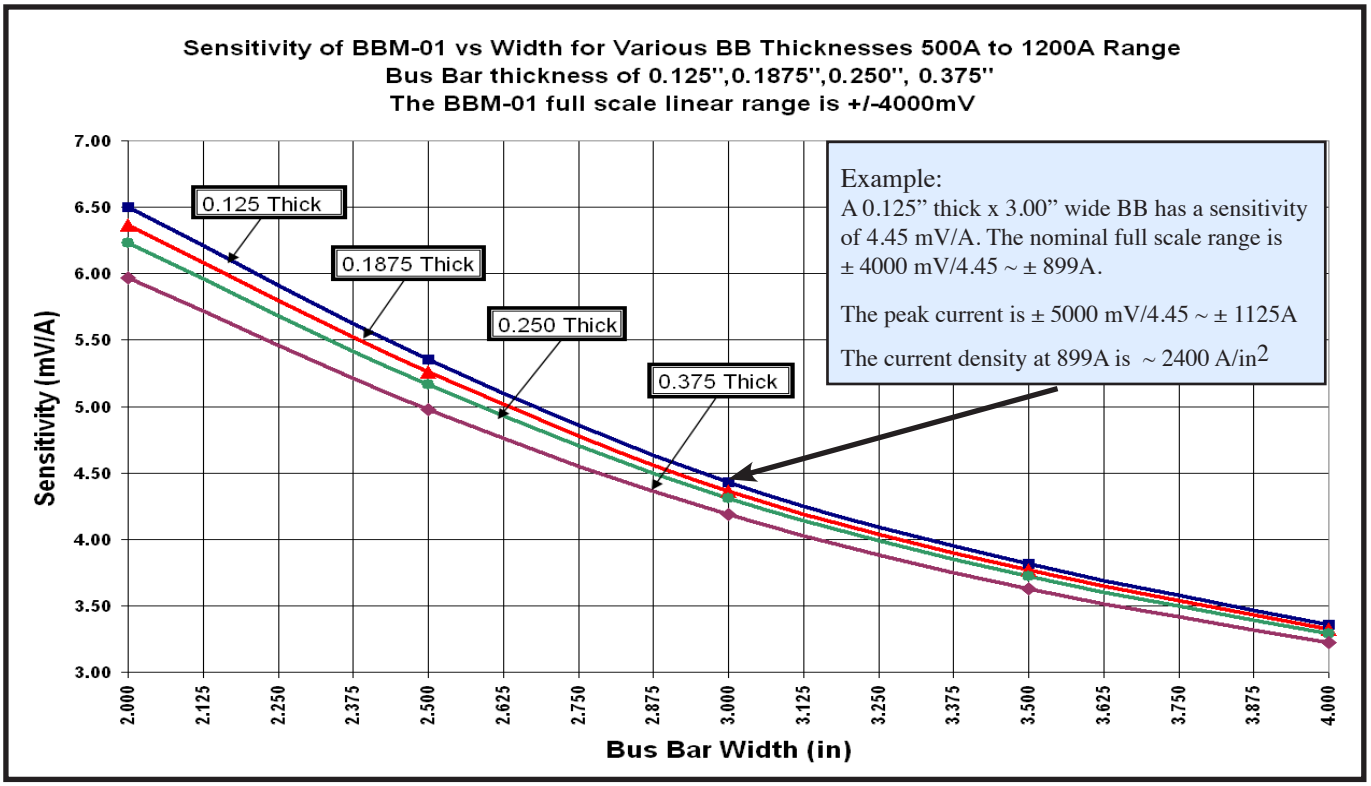

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