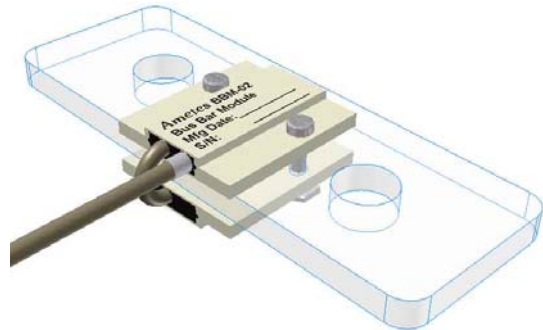


Ametes Bus Bar Modules for Current Sensing

07 March 2006

The Ametes Bus Bar Current Module locates two magnetic field sensors on each side of an electric current Bus Bar. Two Sentron CSA-1V precision Hall Effect IC's sense the magnetic field as a function of current on both sides of the Bus Bar. This enables effective cancellation of external magnetic fields without magnetic cores or shielding which can give rise to non-linearity and hysteresis effects. Offset and Sensitivity are factory calibrated to a fixed magnetic sensitivity. Current ranges that can be sensed will be dependant on the physical parameters of the Bus Bars. There are three versions of the BBM's that are configured to accommodate various widths and thicknesses of bus bars.



Applications

- Power Electronics
- Motor & Generator Control
- Electromechanical Systems
- Battery Charging
- Transit & Off Road Vehicles

Features

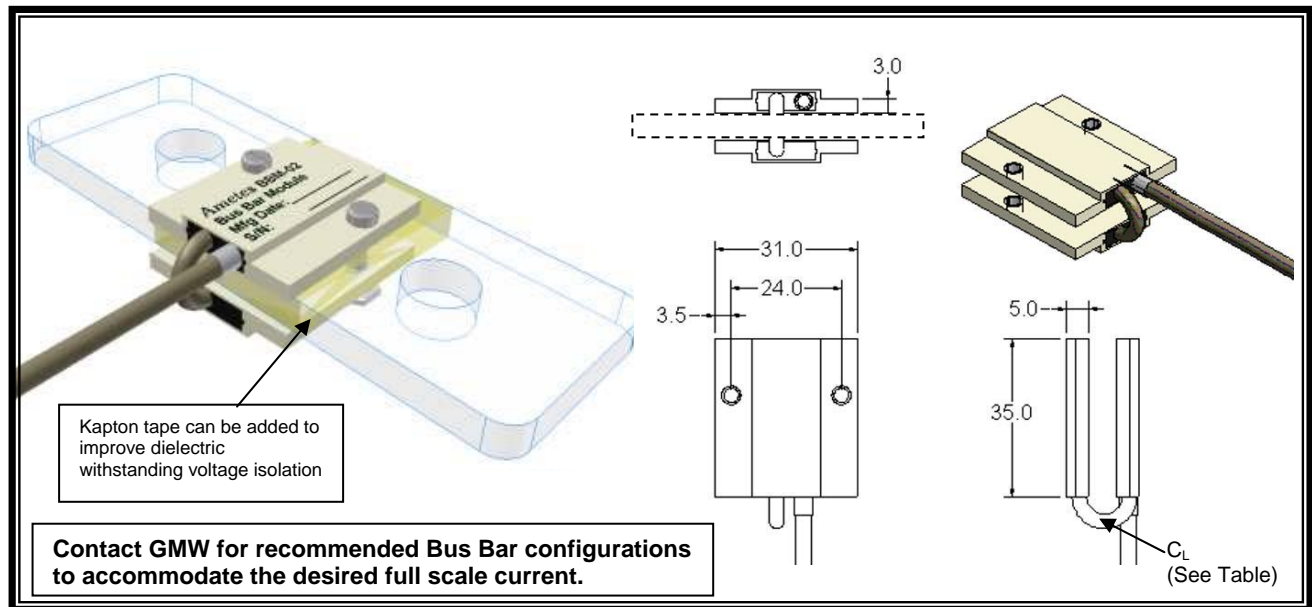
- Very compact and low profile mechanical package
- Custom design bus bar geometries possible
- Single + 5V to 16V Power Supply at less than 25 mA
- High Level $2.5 \pm 2V$ linear signal output
- Signal output electrically isolated from primary Bus Bar (5kV rms)
- Low Insertion loss
- DC & AC Currents.
- Clean recovery from very high overload (to 100x nominal current)

Preliminary Specifications

| Electrical | | Units | BBM-02 | BBM-03 | BBM-04 |
|--------------------|---|--------|---------------------|---------------------|---------------------|
| S | Output Sensitivity | mV/mT | 280 | 280 | 280 |
| B _L | Linear Magnetic Field Range | mT | +/- 5 | +/- 5 | +/- 5 |
| B _{FS} | Full Scale Magnetic Field Range | mT | +/- 8 | +/- 8 | +/- 8 |
| V _M | Output Voltage @ B = 0 | V | 2.5 ± 2.0 | 2.5 ± 2.0 | 2.5 ± 2.0 |
| V _O | Output Offset Voltage @ B= 0 | mV | < 10 | < 10 | < 10 |
| V _C | Supply Voltage, dc | V | 5-16 | 5-16 | 5-16 |
| V _D | Voltage for AC Isolation Test | kVrms | 5 | 5 | 5 |
| X | Accuracy @ B _{FS} | % | < 1 | < 1 | < 1 |
| X _L | Non-Linearity, B< B _L | % | < 0.2 | < 0.2 | < 0.2 |
| TCV _O | Temperature Coefficient, V _O | mV/°C | < 0.2 | < 0.2 | < 0.2 |
| TCV _S | Temperature Coefficient, V _S | ppm/°C | < 200 | < 200 | < 200 |
| tr | Response Time* | µs | 6 | 6 | 6 |
| f | Frequency Bandwidth* | kHz | dc to 100 (-3dB) | dc to 100 (-3dB) | dc to 100 (-3dB) |
| r | Resolution, B | mT | 0.005 | 0.005 | 0.005 |
| Temperature | | | | | |
| T _A | Ambient Operating Temperature | °C | -40 to 85 | -40 to 85 | -40 to 85 |
| T _S | Ambient Storage Temperature | °C | -40 to 125 | -40 to 125 | -40 to 125 |
| Mechanical | | | | | |
| W _R | Range in width of Bus Bar | mm | 12-40 | 40-80 | 80-160 |
| C _L | Interconnecting cable length | mm | 15 | 70 | 185 |
| M | Mass including cable | g | 35 | 36 | 37 |

* Bus Bar geometry may degrade response and high frequency performance

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In North America: GMW, 955 Industrial Road, San Carlos, CA 94070, www.gmw.com, +1 (650) 802-8292



BBM- Bus Bar Modules Outline

Pricing

| BBM Model | BBM-02 | BBM-03 | BBM-04 |
|-----------------------------|--------|--------|--------|
| Unit Price (Quantity of 10) | \$40 | \$40 | \$40 |

These Preliminary Specifications are offered for discussion and customer comment. Production samples can be made available within three months of order. Production versions available approximately six months after order depending on required specifications. Not all specifications have been tested and they are subject to change.