

BBM-03-LV SERIES

Low/Medium Bus Bar Current Sensor

DESCRIPTION:

The **SENISENS Bus Bar DC Current Sensor** locates two magnetic field sensors on each side of current bus bar. Two precision Hall ICs sense the magnetic field as a function of current on both sides. This allows to effectively cancel external magnetic fields without magnetic cores or shielding, thus avoiding non-linearity and hysteresis effects. The differential hall voltage between the upper and the lower sensor provides a full scale output of $0\pm4.0V$. DC current ranges that can be sensed depend on the geometry of the bus bar. The BBM-03-LV is supplied with a shielded cable connected to a RJ45 plug. It comes in 2 different mounting variants: BBM-03-LV-N (N: Normal, sensor is placed parallel to the current flow) and BBM-03-LV-R (R: Rotated, sensor is placed perpendicular to the current flow)

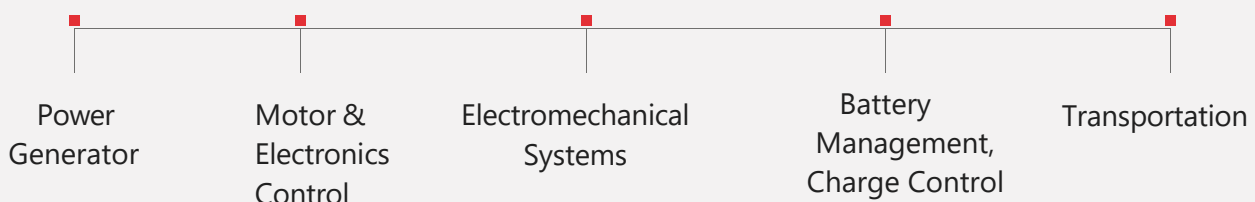


Figure 1:
BBM-03-LV Bus Bar Current
Sensor

KEY FEATURES:

- Very compact, low profile package
- Custom design bus bar geometries possible, 2 different mounting options available
- Single +5V Power Supply at less than 25mA
- High Level $0\pm4V$ linear differential output signal
- Signal output insulated from Bus Bar
- DC Currents
- Clean recovery from very high overload (up to 100x nominal current)

TYPICAL Applications



PRODUCT DIMENSIONS AND CHARACTERISTICS:

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Typ	Max	Units
Tstg	Storage Temperature	0	20	40	°C
VBB	Busbar Operation Voltage	0	600	800	Vdc
VD	Dielectric Breakdown (housing and cable) ¹	>2.2	3		kV
B	Magnetic Field		8		mT

¹Voltage for AC Isolation Test (LV version) refers to the entire module including connection cables.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Typ	Max	Units
Ta	Operating Temperature	-30	25	80	°C
Vcc	Supply Voltage	4.5	5	5.5	Vdc
Isup	Supply Current	20	25	30	mA

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Units
Sdiff	Output Sensitivity (A1-A2)	520	560	600	V/T
BL	Linear Magnetic Range	-7		+7	mT
B _{FS}	Full scale Magnetic Field Range	-8		+8	mT
Voff	DC offset voltage @ T=23°C	-30	0	+30	mV
V0Diff	Differential linear output	-4	0	4	V
XL	Non Linearity (% of full scale)	-2	0.5	2	%
Tcs	Temp. coefficient of sensitivity	-300	0	+300	ppm/K
Toff	Temp. coefficient of offset	-0.3	0	0.3	mV/K
tr	Response time	2	4	6	μs
r	Magnetic resolution		5		μT

DIMENSIONS AND WEIGHT

Symbol	Parameter	Min	Typ	Max	Units
WR	Width of busbar	15		160	mm
CL	Interconnecting cable length		100		mm
CT	Module connector type		RJ45		
IL	Module cable length ²		200		mm
M	Weight including cable		25		g

² The output cable length can be customized on customer request.

OUTLINE DIMENSIONS:

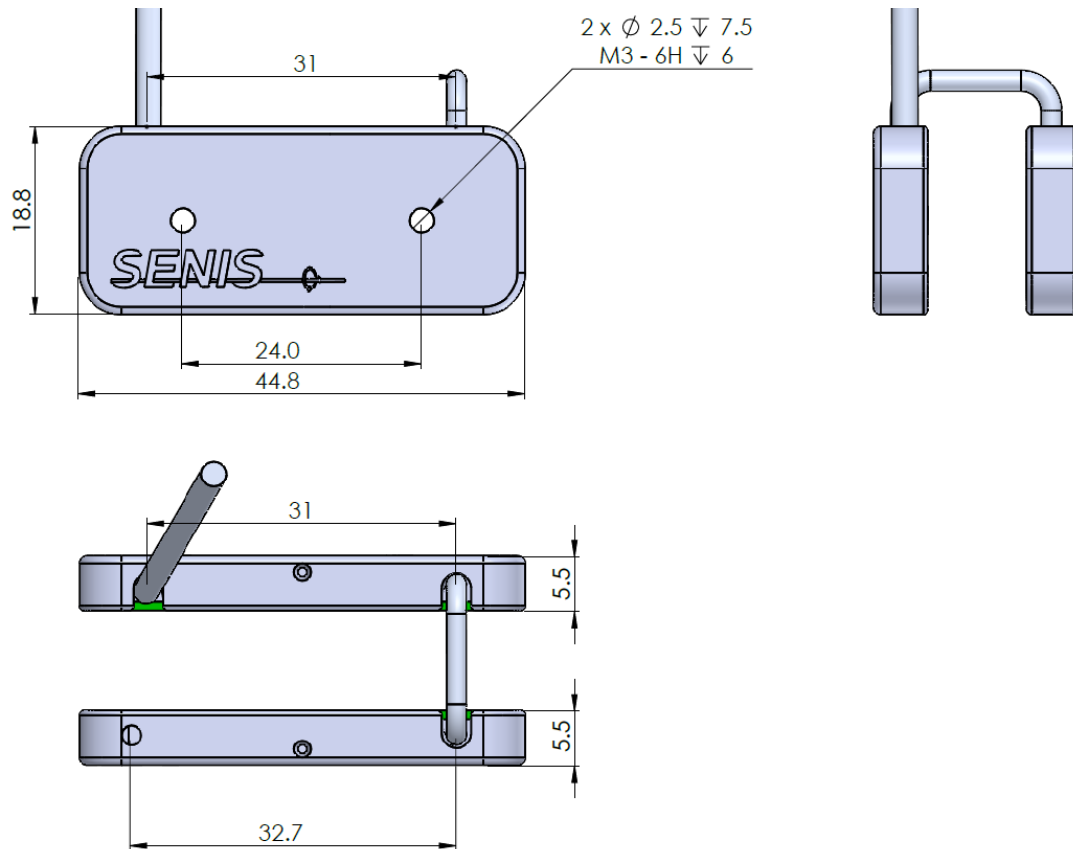


Figure 2: Mechanical dimensions (all dimensions are in millimeters).

* Customized geometries can be engineered on request.

FSV position:

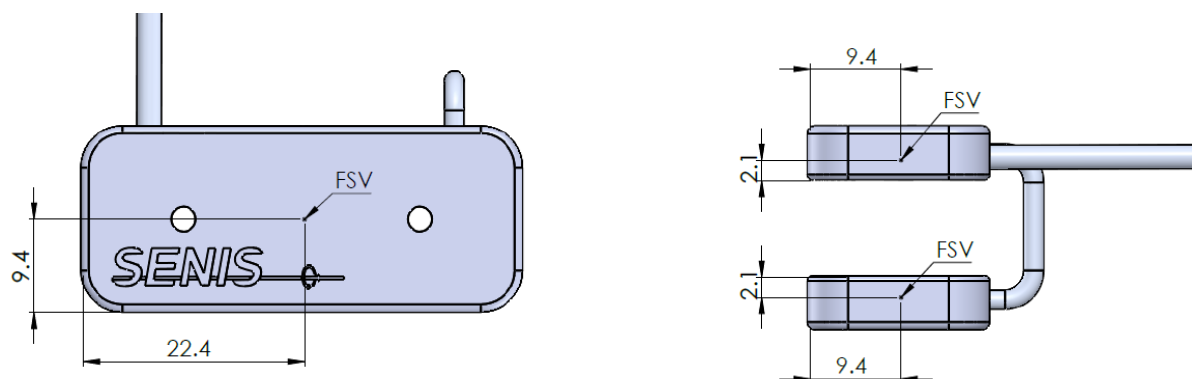


Figure 3: Field Sensitive Volume position (all dimensions are in millimeters).

WIRING DIAGRAM:

SIGNAL WIRES COLOR CODE

Senisens BBM-03 has power and signal connections color code like shown on figure 4.:

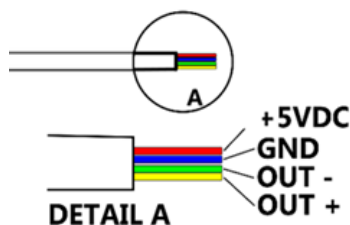


Figure 4: BBM-03 wires color scheme

Senisens produces BBM-03 modules with main cable length 200mm, terminated with standard RJ-45 connector. Standard length interconnection cable is 100mm. Senisens doesn't provide recipient mating connector.

Per customer request, we can deliver BBM-03 modules without RJ-45 connector at the end of the main cable (free wires), in case customer's clump-on system terminal application.

RJ-45 CONNECTOR PINOUT

Senisens BBM-03 is terminated by standard RJ-45 connector, product number SS-39100-039, and corresponding table with signal-pin position is next:

BBM-03 TO RJ-45 PIN MAPPING		
BBM-03 SIGNAL	BBM-03 WIRE COLOR	RJ-45 PIN #
+5VDC	RED	6
GND (COMMON)	BLUE	5
OUT (-)	GREEN	4
OUT (+)	YELLOW	3

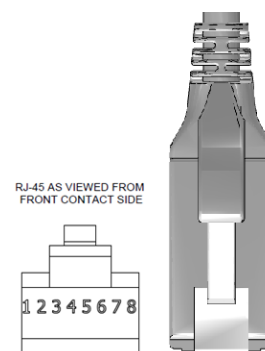


Figure 5: RJ-45 Pins positions

BBM-03 MOUNTING ON BUSBAR:

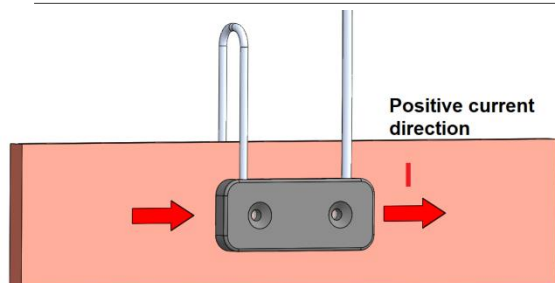


Figure 6:
BBM-03-LV-N mounting position
and busbar positive current direction

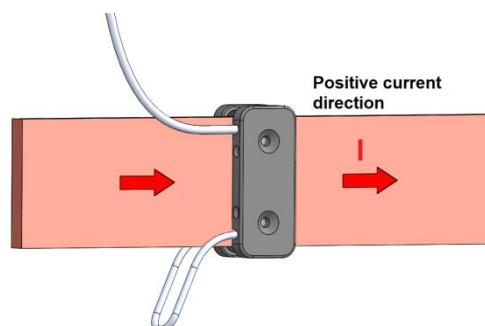


Figure 7:
BBM-03-LV-R mounting position
and busbar positive current direction