imperix

±50 A DIN RAIL-MOUNTABLE CURRENT SENSORS

GENERAL DESCRIPTION

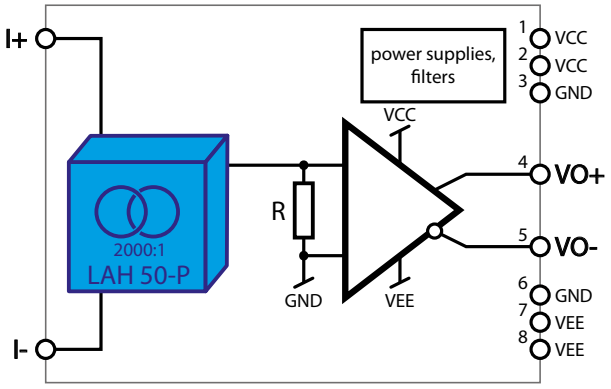
The ModuLink ±50A isolated current sensors are easy-to-use devices, tailored for power electronics applications. When employed with imperix's BoomBox control platform, the sensors provide plug&play connectivity and can be directly powered by the control platform.

The devices produce a balanced full-differential output signal, proportional to the current voltage. For best EMC performance, the output signal is typically meant to be carried by a shielded twisted pair embedded in RJ45-type cables.

Modulink sensors can be easily clipped on 35mm DIN rails and are compatible with up to 6 mm2 wires. They guarantee the galvanic isolation of the sensing circuit up to 1 kV_{RMS}

KEY FEATURES AND SPECIFICATIONS

- ± 50 A measuring range
- 0.2-6mm^2 conductor cross-section (AWG 10-24)
- Minimum 200 kHz measurement bandwidth
- Balanced full-differential signal output
- Typical sensitivity of 99.0 mV/A
- 1.0 kV_{PK} galvanic isolation (permanent)
- ± 0.45 % typical precision
- Compatible with standard ± 15 V power supplies
- Mountable on 35 mm DIN rails



BOOMBOX CONFIGURATION

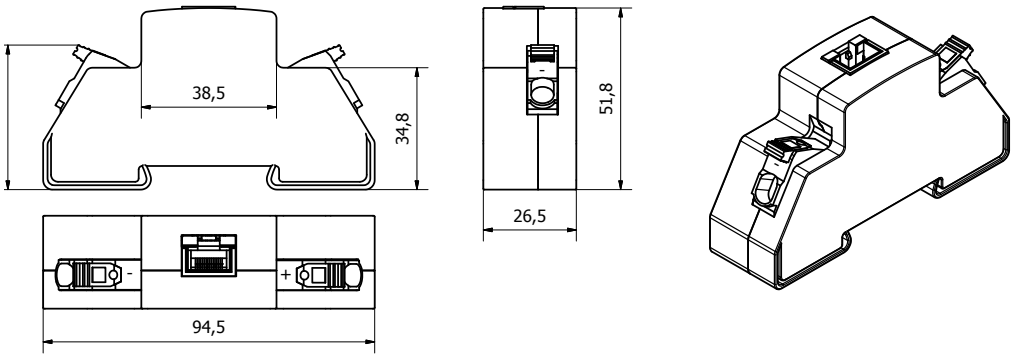
The recommended configuration for the BoomBox is shown in Table 1:

Sensitivity	Filter	Gain	Input
99.0 mV/A	*Filter = NONE*	*G=2*	*High-impedance*

Table 1. **Suggested configuration of the BoomBox**

Imperix recommends to consider calibrating each sensor for improved accuracy. When difficult, at least the offset shall be compensated for.

MECHANICAL DIMENSIONS



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Maximum tolerable input current	$I_{in,max,abs}$		-	*50*	-	*A*
Maximum working isolation voltage	V_{IORM}		-	*1.0*	-	kV_{PEAK}
Highest allowable short-term isolation voltage (60s)	V_{IOTM}		-	*4.0*	-	kV_{PEAK}
Power supply voltages	*±VCC*		*±12.0*	*±15.0*	*±16.0*	*V*

SENSOR PARAMETERS

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Input current range – peak	$I_{in,nom,peak}$		-	*±50*	-	*A*
Input current range – rms	$I_{in,nom,rms}$		-	*±41*	-	*A*
Nominal sensitivity	*G*		-	*99.0*	-	*mV/A*
Uncalibrated sensitivity error [6]	G_{ERR}	$T_A = 25°C$	-	*±0.45*	*±2.35*	*%*
Sensitivity error over temperature	$G_{ERR,t}$	$T_A = 25°$to *85 °C*	-	*±0.4*	-	*%*
Input-referred offset	I_O	$T_A = 25°C$	-	*±0.05*	*±0.4*	*A*
Input-referred offset over temperature	$I_{O,t}$	$T_A = 25°$to *85 °C*	-	*±0.2*	*±0.6*	*A*
Measurement bandwidth	f_{3dB}		-	*200*	-	*kHz*
Settling time	t_d	*10%, -45A to +45A input step*	-	-	*2.0*	*µs*
Input impedance	R_{IN}	$T_A = 25°C$	-	-	*2.1*	*mΩ*
Input-referred noise	I_n		-	*0.05*	-	*A*
Output voltage range	$V_{o,max}$		-	*±4.95*	*± VCC*	*V*
Output current (short circuit)	I_{OUT}		-	*±85*	-	*mA*
Power consumption	P_{DD}	*On ±15V power supplies,* $I_{in} = 0$	-	*450*	-	*mW*

[6] Valid only for sensors sold after January 2017.

CONNECTOR PINOUT

Pin	Color	Description	Pin	Color	Description
1	*orange stripe*	*+15 V*	*5*	*blue stripe*	*Signal negative output*
2	*orange solid*		*6*	*green solid*	*0 V*
3	*green stripe*	*0 V*	*7*	*brown stripe*	*-15 V*
4	*blue solid*	*Signal positive output / current output*	*8*	*brown solid*	

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ABOUT US

Imperix SA (Ltd.) is a company established in Sion, Switzerland. Its name is derived form the Latin verb imperare, which stands for controlling and refers to the company's core business: the control of power electronic systems. Imperix SA commercializes hardware and software solutions dedicated to the fast and secure implementation of pilot systems and plants in the field of power conversion, energy storage and smart grids.

NOTE

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