



Name: **±5A Linear Current Sensor**
 Code: **MR003-006.1**

This board carries the Allegro's ACS714ELCTR-05B-T hall effect-based linear current sensor, which offers a low-resistance (~1.2mΩ) current path and electrical isolation up to 2.1kV RMS.

The sensor operates at 5V and its analog voltage output has a sensitivity of 185mV/A centered at 2.5V with a typical error of ±1.5% and a 80kHz bandwidth.

Optimized bidirectional current range is from -5A to +5A, but its robustness allows survival of the device at up to 5× overcurrent conditions. Top silkscreen shows the direction that is interpreted as positive current flow.

The IC has an internal filter resistance of 1.7kΩ, and the carrier board includes a 1nF filter capacitor, which produces a low-pass RC filter with a 93,6kHz cutoff frequency.

You can improve sensing system accuracy for low-frequency sensing applications by adding a capacitor in parallel with the integrated 1nF capacitor across the component pads labeled as CF.

The frequency F that the filter will attenuate to half its original power is given by:

$$F = 1 / (2\pi RC) = 1 / (10.68k\Omega * (1nF + CF))$$

where CF is the value of the capacitor added to the filter pads.

CONNECTIONS

OUT	Analog output
GND	Ground
+5V	Supply power (+5V)

Tab.1 – Connections

SPECIFICATIONS

Supply voltage	+5V
Supply current	10mA typ. (13mA max.)
Current range	from -5A to +5A
Internal resistance	1.2m Ω
Sensitivity	185mV/A
Typical output error	$\pm 1.5\%$
Interface	Analog
Operating temperature	-40 / +85°C
Dimensions	1.1" x 0.8" (27.9 x 20.3 mm)
Weight	0.12 oz (3.5 g)

Tab.2 – Specifications

