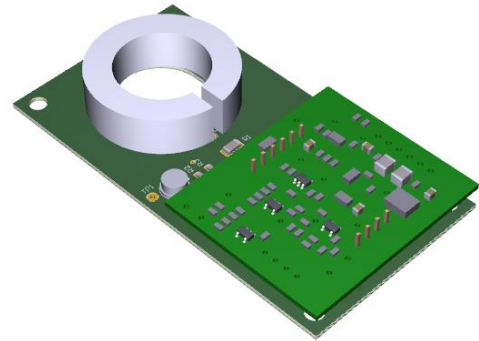


# Current Sensor Modules



## AS055

TT Electronics have developed a modular approach to the manufacture of current sensors for use with electrical systems in harsh environments. The modular design allows a customer to select key sensor parameters so that TT Electronics can build a product to meet the customer's requirements



The devices feature a range of Hall and Rogowski sensors, amplifiers and digital converters, and together these modules enable economical solutions that are high in quality and performance.

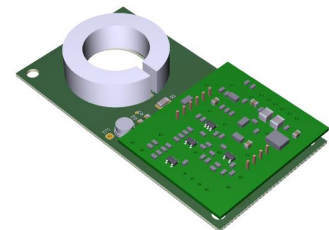
Circuit boards have been developed to TRL5 standard ready for use in relevant harsh environments, especially aerospace applications such as electrical systems, generators and motor drives.

The modules are of a generic single phase configuration, ready to be customised as part of an on-going development programme or an upgrade/retro-fit programme. The circuit boards can be coated, fully potted, built into a housing, or re-configured into multi-phase products by TT Electronics.

### List of Modules:

Part Type	Description
HEC005	Hall sensor, range 400A to 1200A
HEC006	Buffered Hall sensor, range 30A to 1200A
HEC001	Hall sensor amplifier
LCR011	Rogowski coil sensor 400Aac to 2000Aac
LCR012	Rogowski amplifier (di/dt)
LCR013	Rogowski integrator and amplifier
LCR014	Rogowski integrator and dual amplifier (e.g. 400Aac, 2000A transient)
DOS001	12bit ADC, one or two channel, SPI interface

A typical sensor might be a 600A Hall Sensor made up from a HEC005 and a HEC001:  
See application notes for performance and user interface information.



#### General Note

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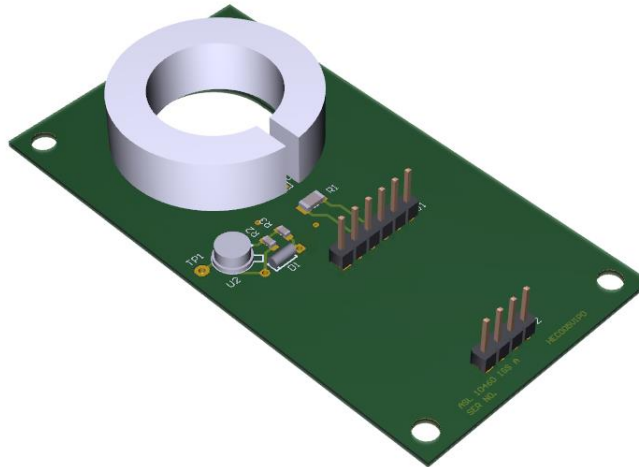
22/05/2019 Rev A Page 1

## AS055

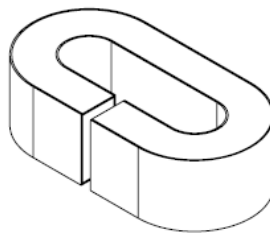
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### HEC005

- Hall Sensor, stable constant current drive
- Gapped core, dimensions to suit measurement range
- Measurement range 400A to 1200A
- Power supply 5Vref
- Bandwidth DC to 1MHz
- Temperature sensor for thermal compensation of scaling
- Temperature, ambient range -55 to 125°C
- Note that the Hall sensor and core can operate between -100 and 180°C if extended operation is a requirement. This would be a special customisation.
- PCB dimensions 82x44mm. Height depends on core and connector requirements



- Cores can be designed to suit different conductors. For example, this is a 1000A core for a rectangular bus bar.



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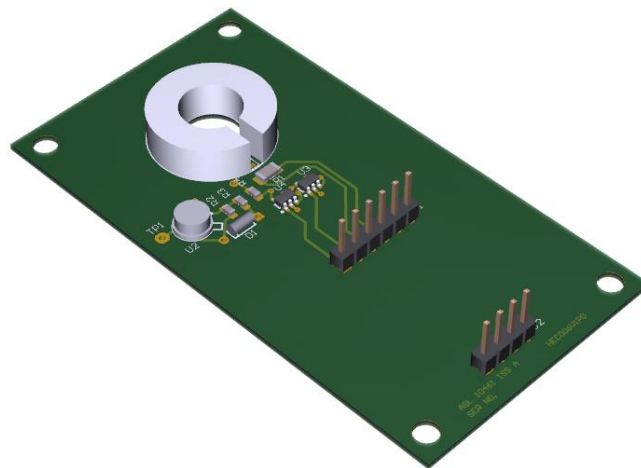
22/05/2019 Rev A Page 2

## AS055

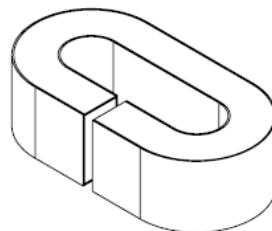
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### HEC006

- Buffered Hall Sensor, stable constant current drive
- Gapped core, dimensions to suit measurement range
- Measurement range 30A to 1200A
- Power supply 5Vref
- Bandwidth DC to 1MHz
- Temperature sensor for thermal compensation of scaling
- Temperature, ambient range -55 to 125°C
- Note that the Hall sensor and core can operate between -100 and 180°C if extended operation is a requirement. This would be a special customisation.
- PCB dimensions 82x44mm. Height depends on core and connector requirements



- Cores can be designed to suit different conductors. For example, this is a 1000A core for a rectangular bus bar.

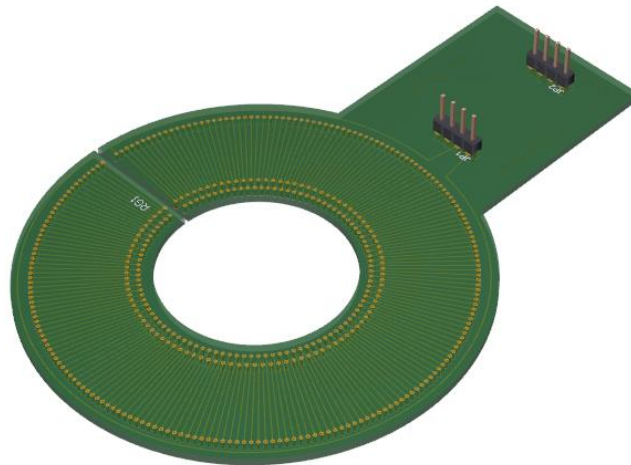


## AS055

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### LCR011

- Rogowski Coil, air cored
- Coil is tracked on a PCB and covered with an insulated outer layer
- Measurement range 400Aac to 2000Aac (unlimited transient, no saturation)
- Bandwidth 5MHz
- AC measurement with di/dt output
- Sensitivity 0.0424uV/A/Sec
- Temperature, ambient range -55 to 125°C
- PCB dimensions 124x84mm. Inner hole diameter 35mm.



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#### General Note

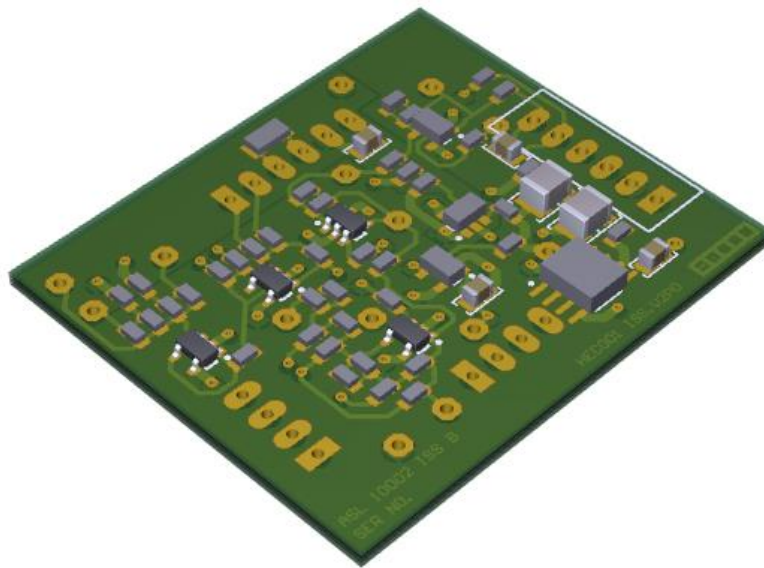
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### HEC001

- Hall Sensor Amplifier
- Compatible with HEC005 and HEC006 Hall Sensors
- Power supply 6V to 16V, 5Vref output for sensor
- Analogue voltage signal output,  $\pm 2V$  differential
- Bandwidth DC up to 1MHz. Nominally limited to 36kHz
- Thermal compensation of scaling
- Factory calibration of scale and offset
- Temperature, ambient range -55 to 125°C
- PCB dimensions 38x44mm. Height depends on connector requirements

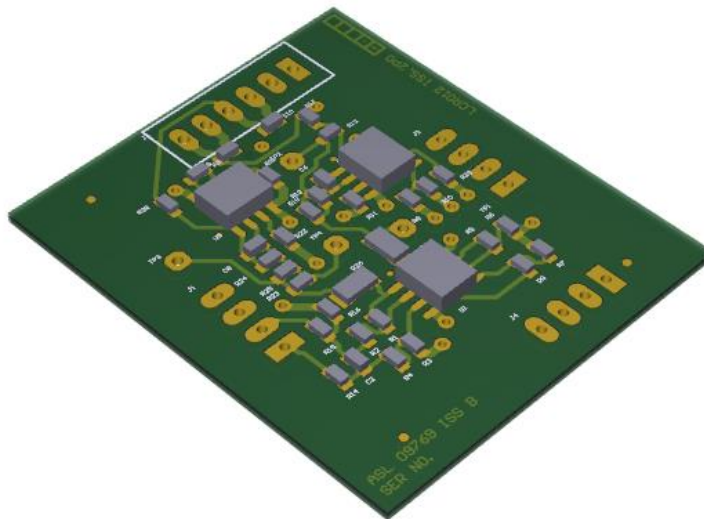


## AS055

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### LCR012

- Rogowski Sensor Amplifier
- Compatible with LCR011 Rogowski Coil Sensor
- Power supply 6V to 16V
- Amplified di/dt,  $\pm 2V$  differential
- Bandwidth 30Hz up to 1MHz.
- Factory calibration of scale and offset
- Temperature, ambient range -55 to 125°C
- PCB dimensions 38x44mm. Height depends on connector requirements



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#### General Note

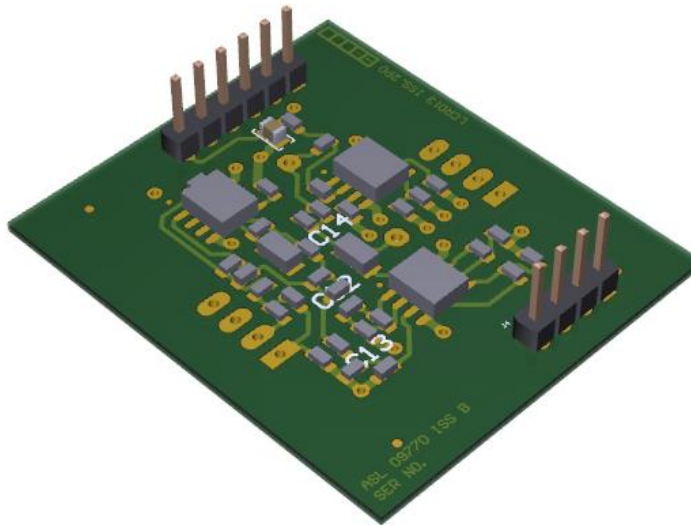
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### LCR013

- Rogowski Sensor Integrator and Amplifier
- Compatible with LCR011 Rogowski Coil Sensor
- Power supply 6V to 16V
- Amplified current signal output,  $\pm 2V$  differential
- Bandwidth 50Hz to 36kHz
- Factory calibration of scale and offset
- Temperature, ambient range -55 to 125°C
- PCB dimensions 38x44mm. Height depends on connector requirements



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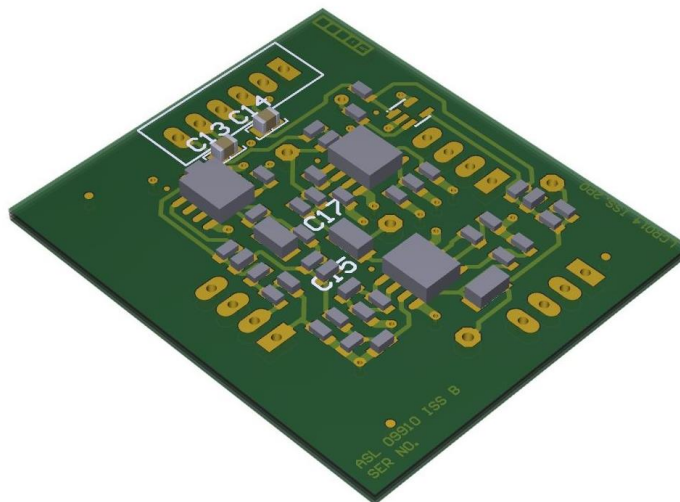
22/05/2019 Rev A Page 7

## AS055

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### LCR014

- Rogowski Sensor Integrator and Amplifier
- Compatible with LCR011 Rogowski Coil Sensor
- Power supply 6V to 16V
- Amplified current signal output,  $\pm 2V$  differential
- Dual output. For example one channel can be 600A normal current and the second channel 2000A transient.
- Bandwidth 50Hz to 36kHz
- Factory calibration of scale and offset
- Temperature, ambient range -55 to 125°C
- PCB dimensions 38x44mm. Height depends on connector requirements



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22/05/2019 Rev A Page 8



## AS055

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### DOS001

- Digitisation Board
- Compatible with amplifiers HEC001, LCR012, LCR013, LCR014
- Digital power supply 3.3V to 5V. Analog power supply 6V to 16V
- Single or Dual 12 Bit ADC with SPI bus
- Sample rate up to 1MSPS
- Factory calibration of scale and offset
- Temperature, ambient range -55 to 125°C
- PCB dimensions 38x44mm. Height depends on connector requirements

