

1. Description

The fully calibrated advanced sensor module IMC-A-R0001 has been designed for all applications in which high currents, voltages and temperatures have to be measured. It contains a precision resistor with 100 $\mu\Omega$, the ISA-ASIC and all analogue circuits for a complete 4-channel 16bit data acquisition system. The internal μC is supplying the clock and controls the measurements and communication with the ISA-ASIC. The module contains a RS232 interface which allows a simple integration into an external system.

2. Measurement functions

Current – by using the voltage drop over the shunt
Voltage – by using an internal voltage divider

3. Electrical characteristics

Power supply	Min.	Max.
Supply voltage	3.3 V	5.2 V
Supply current	15 mA	25 mA
Current measurement		
resistance value of the shunt	100 $\mu\Omega$	
nominal current range ¹⁾	± 300 A	
sampling rate (Dual mode)	900 S/sec	
error ²⁾	$\pm(0.05\% + 20$ mA)	
resolution ³⁾	10 mA	
temperature coefficient ⁴⁾	75 ppm/K	
max. current ⁵⁾	1500 A for 1 sec.	
Voltage measurement		
voltage range	± 30 V	
error ¹⁾	$\pm(0.05\% + 15$ mV)	
resolution ³⁾	1 mV	
max. input-voltage	80 V	
temperature coefficient ⁴⁾	50 ppm/K	
Interface: RS232		
baud rate: 250000 bits/sec, parity: none		
data bits: 8, stop bits: 1		
data format: ASCII		
number format: decimal		

Notes:

- ¹⁾ absolute maximum current range ± 390 A
- ²⁾ at room temperature and external averaging over 100 values, at 900 S/sec the noise contribution is 100 mA resp 75 mV
- ³⁾ measuring resolution
- ⁴⁾ without TC calibration
- ⁵⁾ for max. load capacity of shunt

4. Start-up and operation of the module

After the connection of the module acc. to the following table 5 the module automatically starts to sent the following string via the RS232 :

'firmware version=1.02'&CR&LF&'IHM-A-1500 serial number = xxxxxxx'

After this message the IMC-A-R0001 continually transmits the measurement results:

Current value in mA&Tab&voltage value in mV&CR&LF&
Current value in mA&Tab&voltage value in mV&CR&LF&
Current value in mA&Tab&voltage value in mV&CR&LF ...

Remark: It is very important that the buffer of the serial interface is big enough to store the data for the selected time frame.

5. Pin configuration (left to right)

SIL-type connector
14 PINs, spacing 1.27 mm
solder pads with through connections

PIN number	function
1	unused
2	unused
3	V_x ¹⁾
4	GND
5	VCC ²⁾
6	TxD ^{3,4)}
7	RxD ^{3,5)}
8	NC
9	unused
10	unused
11	unused
12	unused
13	unused
14	RESET

Notes:

- ¹⁾ input for the unknown voltage V_x with reference to GND
- ²⁾ supply voltage input +3.3 V or +5 VDC
- ³⁾ RS232, +3.3 V or +5 V level (depending on power supply voltage)
- ⁴⁾ output / ⁵⁾ input

All pins which are unused should be connected to GND.

6. Additional information

For special applications other resistance value resp. other current and voltage ranges as well as temperature and differential voltage measurement in the mV-range can be offered. For these applications special firmware versions are available to allow very flexible parameter settings for sampling rate, gain and the selection of the measurement functions.

IMC-A-R0001	ISABELLENHÜTTE Heusler GmbH & Co. KG	Dillenburg, 15.12.2008, jh/he/bs
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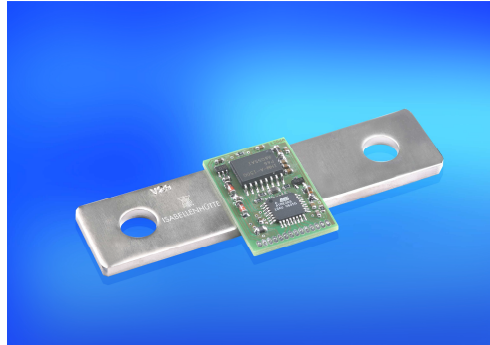
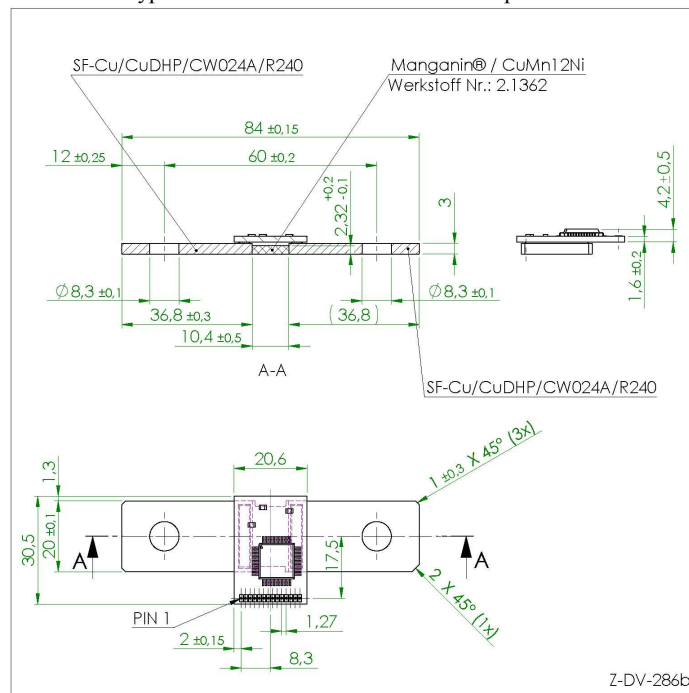
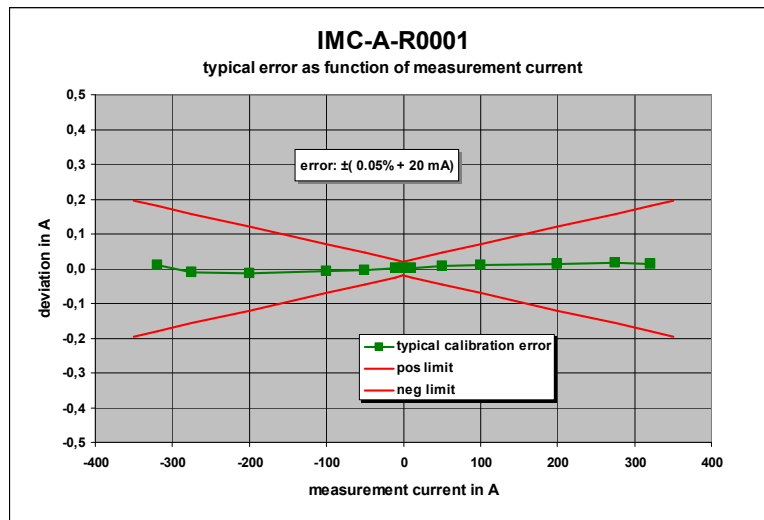


photo of the IMC-A-R0001



shunt drawing

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