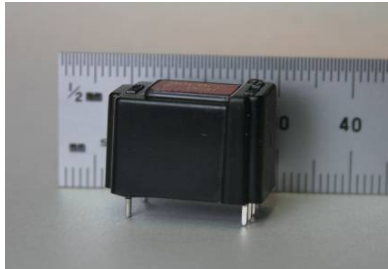


80 Amp I²C serial current transducer RAZ3-803H range



This new Hall Effect Current Transducer retains the excellent linearity and low hysteresis of our 2nd Generation parts, but adds laser-trimmed calibration accuracy, a convenient machine-insertable package, and an I²C serial interface.

Features –

- Small-footprint UL94-V0 rated package
- Line voltage isolated
- Pure digital interface – a 12-bit ADC is incorporated in the package
(Protected by Patent Application NZ #546713)
- Remains within published tolerance for $\pm 5\%$ change from 5.0V supply
- Calibrated in engineering units – 1 lsb = 0.1A nominal
- Highly accurate null-trimming for current-control applications
- 5% gain accuracy
- Evaluation kit available – please enquire

Maximum Ratings ($T_A = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Operating Temperature	T _A	-40 to +85	°C
Storage Temperature	T _{stg}	-65 to +150	°C
Supply Voltage	V _S	7	V
Maximum measuring-circuit current	I _{max}	100	A

Characteristics (TA = 25 °C, Vsupply = 5V ± 5%, except where stated)

Parameter	Symbol	Lower Limit	Typical	Upper Limit	Unit
Minimum measurement time delay with 400kHz (fast mode) I ² C protocol			50		µs
Measured current range (-40 to +85 °C)	I _P		±80		A
Measuring Circuit insertion resistance (excluding PCB tracks)	R _p		0.06		mΩ
Measuring Circuit insertion inductance (excluding PCB tracks)	L _p		40		nH
Resolution (= least-significant bit magnitude)	δI		0.1		A
Supply Current	I _s		7*	10	mA
Supply Voltage	V _s	4.75	5.0	5.25	V
Digital output range For zero input current	Tolerance code F Tolerance code G Tolerance code J	2044 2042 2036	2048	2052 2054 2060	(code)
Transfer Function	Tolerance Code F = 1% Tolerance Code G = 2% Tolerance Code J = 5%	9.9 9.8 9.5	10.0	10.1 10.2 10.5	lsb/A
Non-linearity (±80A, -40 to +85 °C)			1	1.5	%
Hysteresis (0 to 50A)	Hys		0.2	0.5	A
Null drift due to temperature change (as equivalent current)	Continuous Cal. [†] Pulsed Calibration	TC _{ΔI/ΔT}	±0.005 ±0.02	±0.02 ±0.05	A/K
Gain Change due to temperature change	TC _G		±0.05		%/K

Standards

EN50178 (1997) etc.

* Supply current can be much reduced by using Pulse-calibrated transducers with low duty cycle and fast-mode (400kHz) I²C protocol, e.g. 250µA at 162 Hz sampling, <20uA at 10 Hz sampling.

† Continuously calibrated recommended for most applications, Pulse Calibrated for battery powered applications.

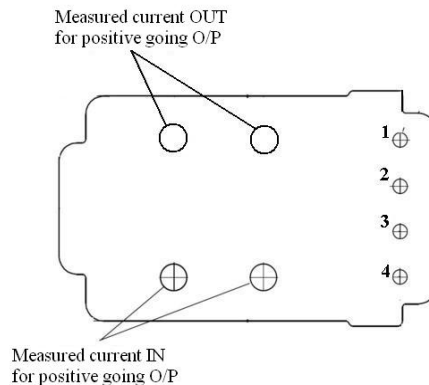
Characteristics ($T_A = 25^\circ\text{C}$, $V_{\text{supply}} = 5\text{V} \pm 5\%$, except where stated) Continued

Parameter	Symbol	Lower Limit	Typical	Upper Limit	Unit
Permissible power supply variation (ripple) during I ² C read transaction.				20	mV
Pulsed supply – source switching ON resistance				0.5	Ω
Effect of Primary dv/dt on Measured Current			10^{-9}		AV^{-1}s
Noise - Current Equivalent	I_{nrms}			0.25	Arms
Creepage/Clearance Distance		6.5			mm
Mass			6.5		g
Fire Resistance rating			UL94-V0		

Standards

EN50178 (1997) etc.

Connections –



Footprint looking onto mounting surface

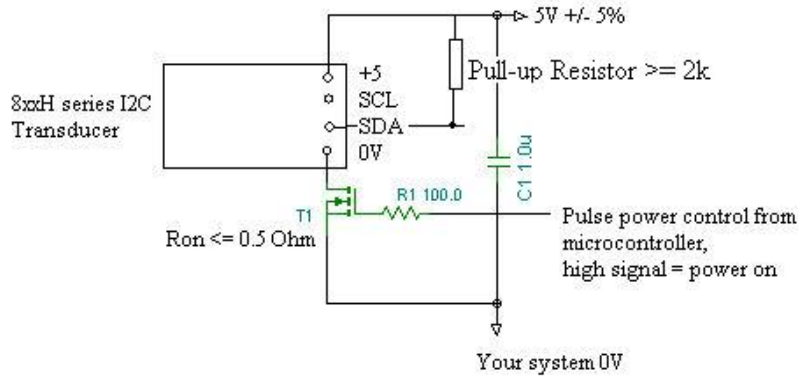
Secondary Pins -

- 1 +5V $\pm 5\%$ supply
- 2 SCL
- 3 SDA
- 4 0V common (switched in pulse-calibrated units)

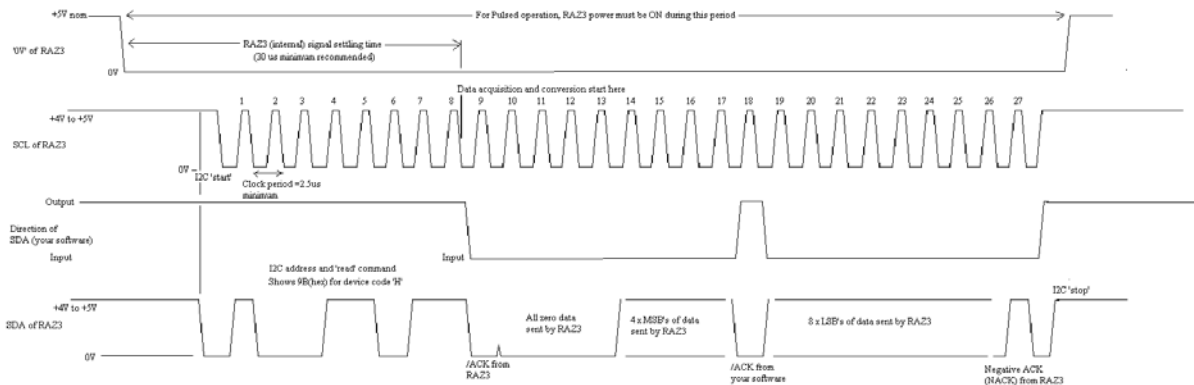
Options

- Pulsed supply version (see 'Battery applications' below)

Battery applications – pulse mode operation (see parts number system for ordering code)



I²C interface timing - single read instruction



Note: Non-pulsed power timing is identical, except the 1st plot is irrelevant – 5V power is constantly applied between pins 1 and 4.

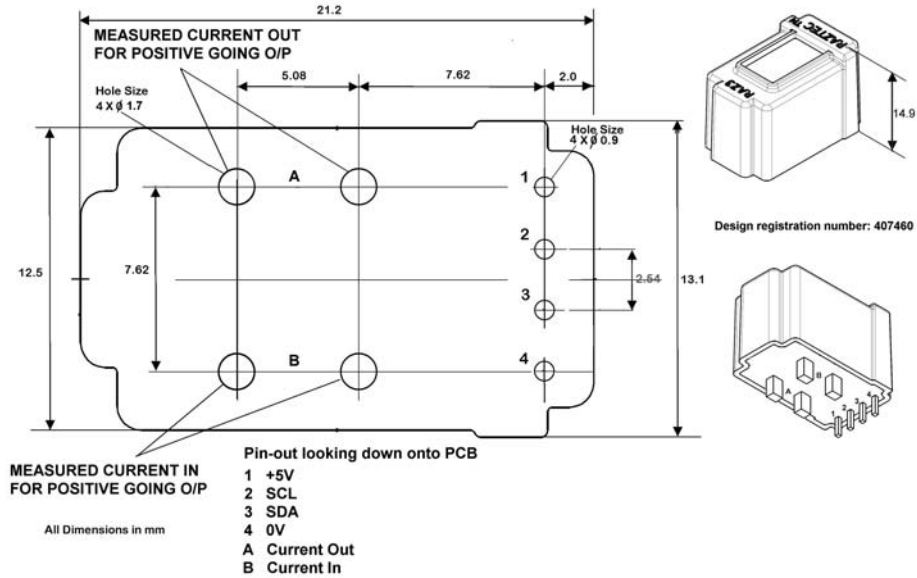
I²C addresses

Raztec I ² C address code	Hex read-address	Hex write (=identify) address
G	99	98
H (standard)	9B	9A
I	9D	9C
J	9F	9E

I²C device identification

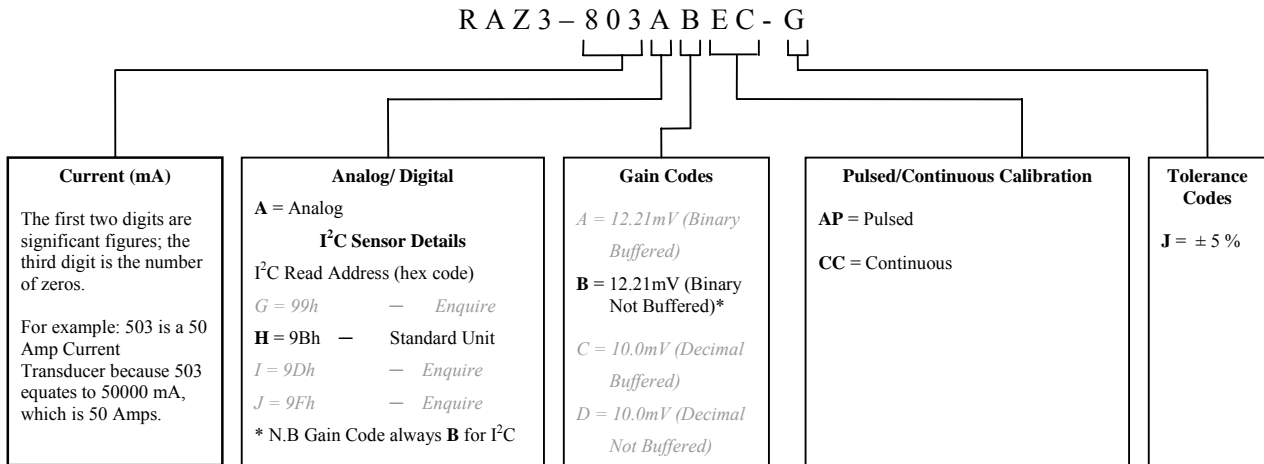
After the Identify address byte is written (8 bits) the SDA line is changed to input (read) and the status (Device present = LOW) is returned on the SDA line during the next SCL clock.

Mechanical



Footprint looking onto mounting surface – dimensions in mm

Part Numbering System



Options – enquire with factory prior to order

Standard order codes –

Continuously powered - RAZ3-803HBCC-<tolerance code>

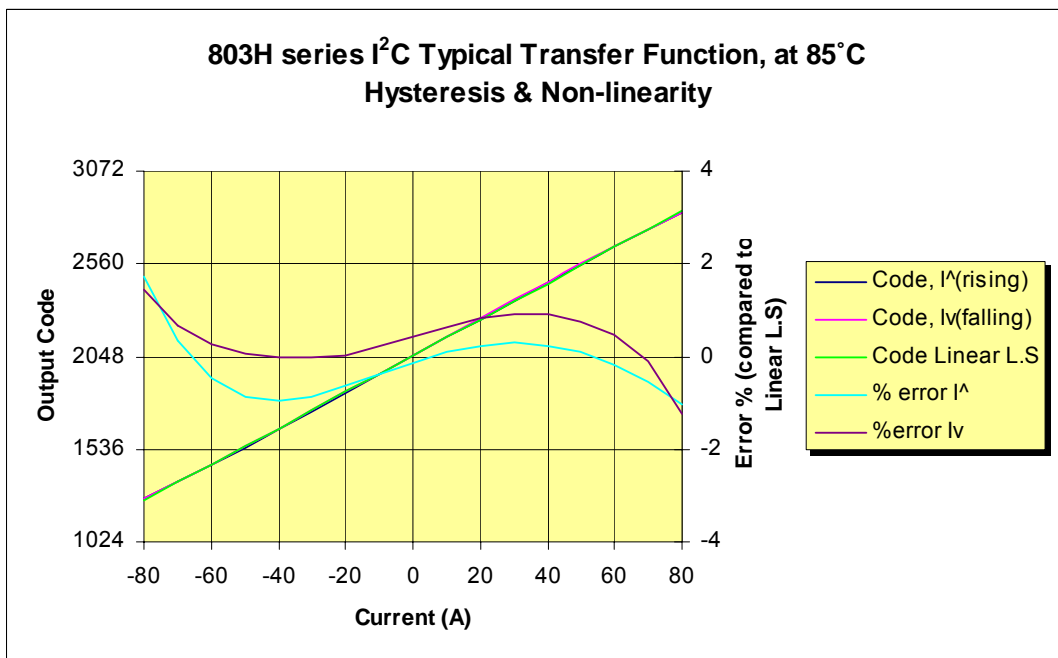
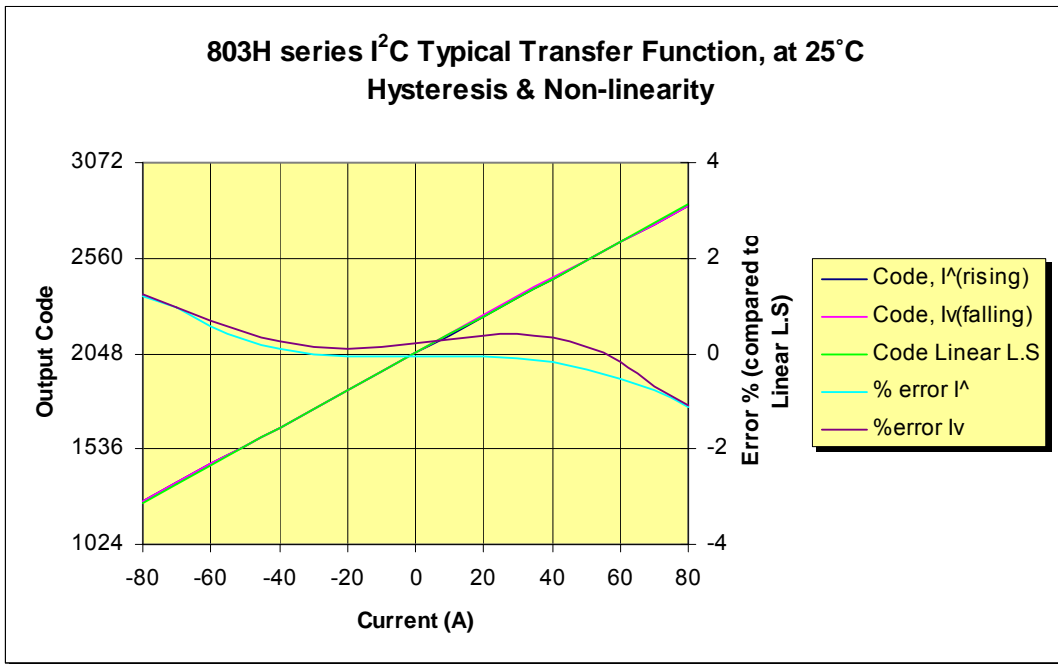
Pulse Powered - RAZ3-803HBAP-<tolerance code>

For other I²C addresses see Parts Number system, above – subject to variable lead-time

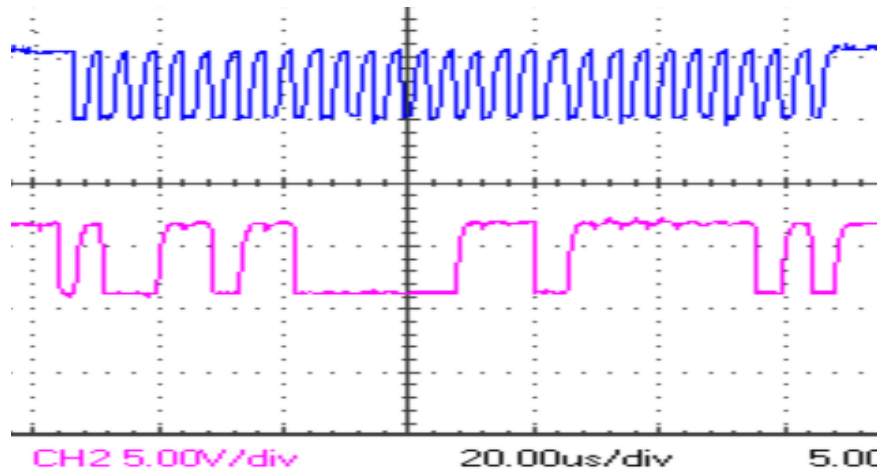
Performance characteristics

Nominal Output Code = (I_{measured}(A) x 10) + 2048

Or I_{measured} (A) = (Output code - 2048) x 0.1



Appendix – Typical I²C read operation at 200 kHz, oscilloscope trace –
SCL waveform at top
SDA waveform below
Both approx 0-5V signals



Raztec (NZ) Ltd operate a continuous product improvement program, therefore information contained in our datasheets may not reflect all current features. For clarification please contact sales@raztec.co.nz