

# SCA110 and SCA111 Series

## Stand Alone Accelerometer



### FEATURES

- Stand alone accelerometer in zinc housing
- Available ranges  $\pm 1.2g$ ,  $\pm 2g$
- Accurate over a wide temperature range  $-40^{\circ}\text{C}$  ...  $+125^{\circ}\text{C}$  without any compensation
- Electrical connection through the moulded-in PUR cable
- Standard analogue output
- Acceleration in the direction of the arrow will increase the output voltage

### BENEFITS

- Long term stability
- Excellent overload durability
- Zinc housing (IP66) with overload protection make the accelerometer durable enough to stand a drop from 2 meters onto a concrete floor
- Meet typical automotive EMC requirements
- Easy to use

### APPLICATIONS

- Acceleration measurement
- Inclination measurement
- Vibration measurement
- Motion measurement

### ELECTRICAL CHARACTERISTICS

Parameter	Comment	SCA110-C12H1W	SCA111-C12H1W	SCA111-CC4H1W	Units
Sensitivity error <sup>(6)</sup>	@ room temperature	$\pm 2$	$\pm 2$	$\pm 2$	%
	$-20 \dots 85^{\circ}\text{C}$	$\pm 3$	$\pm 3$	$\pm 3$	
	$-40 \dots 125^{\circ}\text{C}$	$\pm 4$	$\pm 4$	$\pm 4$	
Typ. Non-linearity <sup>(7)</sup>	Deviation from $\pm 1g$ line	$\pm 20$	$\pm 20$	$\pm 60$	mg
Frequency response	-3dB point <sup>(8)</sup>	$400 \pm 150$	$400 \pm 150$	$115 \pm 55$	Hz
Output load	resistive (min.)	20	20	20	k $\Omega$
	capacitive (max.)	20	20	20	nF
Supply voltage effect	Offset	$\pm 35$	$\pm 25$	$\pm 50$	mg
Cross-axis sensitivity <sup>(9)</sup>		$\pm 4$	$\pm 4$	$\pm 4$	%
Typ. Output noise	V(AC)RMS (DC ... 4 kHz)	5	5	5	mV
Ratiometric error <sup>(11)</sup>	V <sub>dd</sub> =4.75...5.25V	$\pm 2$			%
Supply voltage effect	Offset		$\pm 25$	$\pm 50$	mg

### PERFORMANCE CHARACTERISTICS

Parameter	Comments	SCA110-C12H1W	SCA111-C12H1W	SCA111-CC4H1W	Unit
Supply voltage	Ratiometric <sup>(1)</sup>	$5 \pm 0.25$	7 - 27	7 - 27	V
Supply current	Typical, without load	2	2	2	mA
Measuring range <sup>(2)</sup>		$\pm 1.2$	$\pm 1.2$	$\pm 2$	g
Measuring direction <sup>(3)</sup>		Horizontal	Horizontal	Horizontal	
Zero point <sup>(9)</sup>	Nominal value	$0.5 * V_{dd}$	2.5	2.5	V
Sensitivity <sup>(4)</sup>	Nominal value	$0.3 * V_{dd}$	1.5	1	V/g
Offset error <sup>(5)</sup>	@ room temperature	$\pm 50$	$\pm 50$	$\pm 75$	mg
	$-20 \dots 85^{\circ}\text{C}$	$\pm 80$	$\pm 80$	$\pm 130$	
	$-40 \dots 125^{\circ}\text{C}$	$\pm 120$	$\pm 120$	$\pm 195$	

Note 1 SCA110 (5V) Accelerometers are ratiometric; Offset and Sensitivity are proportional to supply voltage.

Note 2 Output swing 0.5 - 4.5 V with nominal supply voltage.

Note 3 Measuring direction is perpendicular to the mounting plane (see Note 10). Zero is defined with no acceleration and the device mounted in the prescribed mounting plane (see Note 10 and pictures page 2).

Note 4 Sensitivity specified as  $[V_{out}(+1g) - V_{out}(-1g)] / 2 [V/g]$ .

Note 5 Zero point error specified as  $(V_{out}(+0g) - V_{dd}/2) / V_{sens} [g]$  (room temp. error included);  $V_{sens}$  = Nominal sensitivity.

Note 6 Sensitivity error specified as  $\{ [V_{out}(+1g) - V_{out}(-1g)] / 2 - V_{sens} \} / V_{sens} \times 100\%$   $V_{sens}$  = Nominal sensitivity.

Note 7 Relative to the straight line between  $\pm 1g$ .

Note 8 Output has true DC (0Hz) response.

Note 9 The cross-axis sensitivity determines how much acceleration, perpendicular to the measuring axis, couples to the output. The total cross-axis sensitivity is the geometric sum of the sensitivities of the two axes, which are perpendicular to the measuring axis.

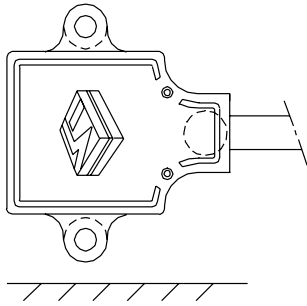
Note 10 Offset measuring direction in figures (see picture page 2)

Note 11 Supply voltage noise also couples to the output, due to the ratiometric (output proportional to supply voltage) nature of the accelerometer.

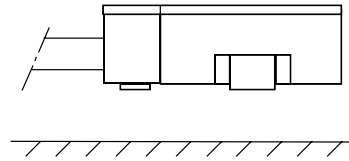
The ratiometric error is specified as:

$$RE = 100\% \times \left( 1 - \frac{V_{out}(@V_x) \times \frac{5.00V}{V_x}}{V_{out}(@5V)} \right)$$

Horizontal



Vertical

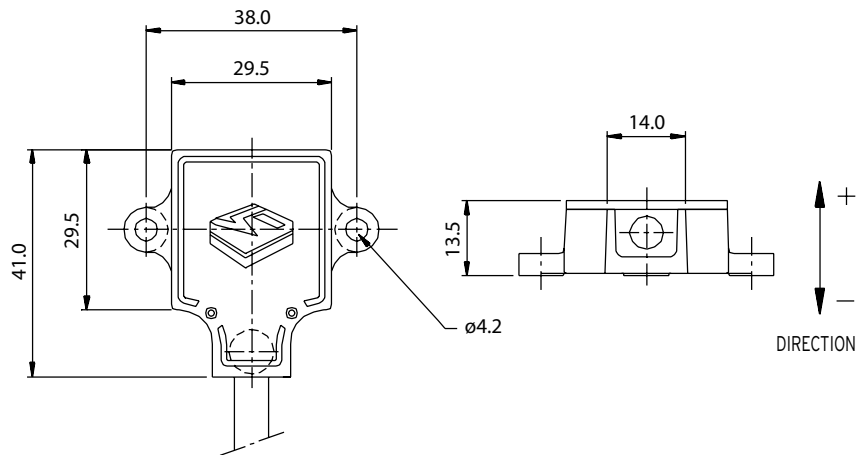


## DIMENSIONS

The accelerometer weighs approximately 60g with a standard 30cm PUR cable (3 x 0.5 mm<sup>2</sup>), excluding connector.

### WIRING INFORMATION

Red = Supply voltage  
White = Ground  
Yellow = Output



Recommended mounting screw size: M4