

Tri-axial Whole-Body MEMS Accelerometers

SV151, SV38 and SV38V are MEMS technology accelerometers dedicated to whole-body measurements. Advantages of MEMS accelerometers such as shock resistance, no DC offset effect, very low power consumption and frequency response down to DC have been already proven over the years of practise.

The multichannel input of SV106 allows simultaneous measurement with 2 tri-axial seat accelerometers where one of them is usually placed on the seat and the second on the seat-rest or on the passenger seat. For placing seat-

pads on the seat or seat-rest the set of mounting belts is provided. For the seat transmissibility measurements the small size SV 151 is placed on the vehicle floor in accordance to ISO2631-1 requirements.

All accelerometers have built-in TEDS memory that keeps information about accelerometer sensitivity that is transferred to the vibration analyser at the start-up.

A full ISO8041 in-situ check for before and after measurement is possible using the SV111 portable vibration calibrator and dedicated adaptors.

SV 151

SV 38V

SV 38 IEPE

Performance:

Number of axis	3	3	3
Sensitivity ($\pm 5\%$)	5.81 mV/(m/s ²) at 15.915 Hz	50 mV/(ms ⁻²) at 15.915 Hz, HP1	100 mV/(ms ⁻²) at 15.915 Hz, HP1
Measurement range	160 ms ⁻² PEAK	0.01 ms ⁻² RMS \div 50 ms ⁻² PEAK	0.01 ms ⁻² RMS \div 50 ms ⁻² PEAK
Frequency response (± 3 dB)	1 Hz \div 500 Hz	4 Hz \div 125 Hz	0.1 Hz \div 100 Hz
Resonant frequency	5.5 kHz (MEMS transducer)	5 kHz (MEMS transducer)	5 kHz (MEMS transducer)
Electrical noise	< 0,066 ms ⁻² RMS, BL Wb weighting	< 230 μ V RMS, HP1 weighting	< 316 μ V RMS, HP1 weighting

Electrical:

Supply current	< 5.0 mA	< 5.0 mA	1 mA \div 10 mA (2.5 mA typ.) per channel (IEPE)
Supply voltage	3.3 V \div 5.5 V	5.2 V \div 16 V	22 V \div 30 V (28 V typ.)
Bias voltage	1.5 V \pm 0.1 V	2.5 V \pm 0.05 V	15.3 V \pm 0.5 V
Output impedance	51 Ohms	51 Ohms	51 Ohms
Charge / discharge time constant	30 sec. typ	30 sec. typ	30 sec. typ
TEDS memory	installed (power supply pin)	installed (power supply pin)	Installed (Channel 1)

Environmental Conditions:

Maximum vibration	10 000 m/s ² shock survival for MEMS	10 000 ms ⁻² shock survival for MEMS	100 000 ms ⁻² shock survival for MEMS sensor
Temperature coefficient	<+/-0.01 %/ C	<+0.012 dB/°C	<+0.012 dB/°C
Temperature	from -10 C to +50 C	from -10 °C to +50 °C	from -10 °C to +50 °C
Humidity	up to 90 % RH, non-condensed	up to 90 % RH, non-condensed	up to 90 % RH, non-condensed

Physical:

Sensing element	MEMS	MEMS	MEMS
Cable	1.4 meters long	integrated 1.4 meters long	integrated 1.4 m
Connector	LEMO 5-pin plug (SV 106 compatible)	LEMO 5-pin plug (SV 106 compatible)	LEMO 4-pin plug (SVAN 958A compatible)
Dimensions	15.5mm x 15.5 mm x 15.5mm	236 mm diameter; thickness from 3.6 mm to 12 mm	236 mm diameter; thickness from 3.6 mm to 12 mm
Weight	20 grams (without cable)	550 grams (including cable and cushion)	550 grams (including cable and rubber cushion)

Accessories:

Calibration adapter	SA 40 (option)	SA 38 (option)	SA 38 (option)
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