Appendix C. TECHNICAL SPECIFICATIONS

C1. Specification of the SV106

System configuration

The meter measured simultaneous in six channels with independent set of filters and detector constants. The **SV106** instrument meets requirements of the **ISO 8041:2005**, and **ISO 5349**.
Thus SV106 I s a convenient instrument for tests according to the ISO 2631-1,2&5

The configuration of the complete instrument and its normal mode of operation for Whole-Body measurements::

- **SV 106** vibration meter,
- **SV 38V** seat accelerometer (see Chapter C4 for specification),
- **SV 39A/L** seat accelerometer (optional, see Chapter C4 for specification),

The configuration of the complete instrument and its normal mode of operation for Hand-Arm measurements::

- **SV 106** vibration meter,
- **SV105** triaxial accelerometer with set of adapters (see Chapter C4 for specification),
- **SV 50** triaxial accelerometer (SV3023M2) with set of adapters (optional, see Chapter C4 for specification),

Accessories included

SA 61	MicroSD card 4GB,
SC 56	USB 1.1 cable,
SC 118	Integrated connector LEMO 5-pin plug to LEMO 4-pin socket,

Accessories available

Power supply unit with USB Connector

SV 38V	Whole-Body seat accelerometer,
SV 105	Hand-Arm adapter with triaxial accelerometer,
SV 111	Vibration calibrator for HVM 1 m/s2 @ 16 Hz, 10 m/s2 @ 80 Hz,
SA 47	Carrying bag,
SA 54	Power supply unit by USB interface using cables SC 56 (cables not included),
SA 105	Calibration adapter for SV 105
SA 146	Carrying case,
SA 50	Hand-Arm measurement adapter, "shaped base" (for SV 3023M2 acceler.)
SA 51	Hand-Arm measurement adapter, "flat base" (for SV 3023M2 acceler.)
SA 52	Hand-Arm measurement adapter, "direct" (for the SV 3023M2 acceler.)
SC 14	LEMO 5 pin to LEMO 5 pin extension cable (10 m)
SC 38	Cable used to connect the triaxial accelerometer with the SV106 (4 pin Microtech to LEMO 4 pin (typical 2.7 m))
SV 39A\L	Seat Accelerometer (including SV 3143M1 and SC 38 cable)
SV 3023M2	Hand-Arm accelerometer

Notice: *System conforms to the* ***ISO 8041:2005*** *and* ***ISO 5349*** *standards.*

Measured quantities

The measured quantities in the vibration meter mode are **RMS**, **VDV**, **CRF, OVL, PEAK**, **P–P**, **MTVV, MAX, VECTOR, A(8), ELV, EAV.** The definitions for mentioned parameters are given in Appendix D.

Mounting for vibration tests

The accelerometer should be connected with SV106 using proper cable provided by the manufacturer.

The accelerometer can be mounted on the plate in various ways:

- using threaded stud onto a flat, smooth surface,
- using proper adapter provided by manufacturer.

Notice: *Maximum length of the extension cable between the accelerometer and the instrument is 10m. Recommended length of the cable is 2.7 m.*

Linear operating ranges for the acceleration

The linear operating ranges for the distance from noise > 10 dB

Values of the measured acceleration using the accelerometer with the nominal sensitivity equal to 50 mV / ms^{-2} (e.g. the **SV38V** seat accelerometer):

Table C.1. Linear operating ranges with SV38V accelerometer (RMS values for the sinusoidal signals)

Filter	type **SV38V** nominal sensitivity 50mV/ms^{-2} (calibration factor = -14 dB)	
	from	to
HP	94.0 dB (50 mm/s^2)	151.0 dB (35.5 m/s^2) 153.8 dBpeak (49 m/s^2 peak)
Wf	70.0 dB (3.16 mm/s^2)	
Wc, Wk, Wh, Wb Wd, Wm, Wg BL – Wf	**80.0 dB (10.0 mm/s^2)**	
Wj	85.0 dB (17.8 mm/s2)	
BL- Wb, BL- Wc, BL- Wm, BL- Wj, BL- Wd, BL- Wg, BL- Wk	90.0 dB (31.6 mm/s^2)	

Table C.2. Linear operating ranges with SV39A/L accelerometer (RMS values for the sinusoidal signals)

Filter	type **SV39A/L** nominal sensitivity 10mV/ms^{-2} (calibration factor = 0 dB)	
	from	to
HP	94.0 dB (50 mm/s^2)	161.0 dB (112 m/s^2) 164.0 dBpeak (159 m/s^2 peak)
Wc, Wk, Wh, Wb Wd, Wm, Wg	**80.0 dB (10.0 mm/s^2)**	
BL- Wb, BL- Wc, BL- Wm, BL- Wj Wj, BL- Wd, BL- Wg, BL- Wk	90.0 dB (31.6 mm/s^2)	

Values of the measured acceleration using the accelerometer with the nominal sensitivity equal to 28 mV / ms^{-2} (e.g. the **SV105** accelerometer):

Table C.3. Linear operating ranges with SV105 accelerometer (RMS values for the sinusoidal signals)

Filter	type **SV105** nominal sensitivity 10mV/ms^{-2} (calibration factor = 0 dB)	
	From	to
Wh	**110 dB (320 mm/s^2)**	162.0 dB (125 m/s^2) 165.0 dBpeak (177 m/s^2 peak)

Values of the measured acceleration using the accelerometer with the nominal sensitivity equal to 1 mV / ms^{-2} (e.g. the **3023M2** accelerometer):

Table C.4. Linear operating ranges with 3023M2 accelerometer (RMS values for the sinusoidal signals)

Filter	type **3023M2** nominal sensitivity 1mV/ms^{-2} (calibration factor = +20.0 dB)	
	From	to
Wh	**110 dB (320 mm/s^2)**	181.0 dB (1122 m/s^2) 184.0 dBpeak (1587 m/s^2 peak)
BL-Wh	**120.0 dB (1 m/s^2)**	

Frequency range for the acceleration measurement (+/- 10%) **0.02 Hz ÷ 2 kHz**

Basic error for the acceleration measurement: **< ± 0.5 dB**

Electrical substitute for accelerometer

In order to obtain an electrical input, an accelerator must be replaced by electrical impedance **SV48/106**.

Calibration

Direct: by the measurement of the standard signal generated by the external vibration calibrator.
Indirect: by the declaration of the transducer's sensitivity (according to the calibration chart).

Notice: *Calibration procedure is given in Chapter 4 of the Manual.*

Accelerometer input

Connector	**2 x LEMO 5 -pins**: six channels IEPE type or Direct and two channels for force transducers
Impedance	**130 kΩ / 20 pF** (typical)
Vibration transducers powering	**IEPE type: 28 V / 1.5 mA** current source **Direct type: 5.15 V DC @ 20 mA** power supply, 150 mA short current limit
Range of the measured voltage	**5 V_{Peak} (indication 174 dB_{Peak} for the calibration factor 0.0)**
Maximum input voltage	

The **SV106** is the instrument with the II security class according to the international standard IEC 348. The input voltage should be within the 30 V Peak – Peak

RMS detector

- Digital "**True RMS**" **with Peak detection**
- Resolution **0.1 dB**
- Range **327.7 dB**
- Crest Factor **unlimited** for signals within 20 kHz band
- Time weighting filters: **100 ms, 125 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s and 10 s**

PEAK and P–P detectors:

Digital with 0.1 dB sampling step

Overload detector

The instrument has the built-in overload detectors. The overload in the measurement channel (in its analogue part) and the overload of the analogue / digital converter are both detected. The "overload" indication is when the input signal amplitude **is 0.5 dB above** the declared "Peak measurement range".

Underrange detector

The instrument has the built-in underrange detector. The "underrange" indication appears when the minimum value of the RMS detector output goes below the specified lower linear operating range.

Analogue/Digital conversion **6 x 16 bits resolution** (IEPE or Direct channels)

Antialiasing filter

Built-in antialiasing filter. Second-order analogue filter, active type, combined with on-chip FIR digital filter of the analog-to-digital converter, ensuring correct sampling of the measured signal.

Pass band(-1 dB)	**2500 Hz**,
Pass band(-3 dB)	**2900 Hz**,
Stop band	**5600 Hz**,
Attenuation in the stop band	**> 70 dB**.
Sampling frequency	**6 kHz** (internal only).

Reference conditions

- Reference frequency **15.915 Hz** or **79.580 Hz** ,
- Reference temperature **+23°C**,
- Reference relative humidity **50 %**,

Pre-heating time **1 minute** (for 0.1 dB accuracy).

Typical stabilization time after change in environmental conditions is 1 minute.

Notice: *When the instruments are moved from a warm environment with high humidity, to a colder environment, care should be taken not to produce condensation inside the instruments. In this case, much longer stabilization periods may be necessary.*

Digital filters

High-pass filter

HP filter (see part C.2 for the filter characteristics).

Frequency weighting filters
All filters include Band Limiting filters.
Band Limited filters are listed and available separately.
(See part C.2 for the filters characteristics).

- **Wk, BL-Wk** from **0.1 Hz to 400 Hz**
- **Wd, BL-Wd** from **0.1 Hz to 400 Hz**
- **Wc, BL-Wc** from **0.1 Hz to 400 Hz**
- **Wj, BL-Wj** from **0.1 Hz to 400 Hz**
- **Wm, BL-Wm** from **0.1 Hz to 400 Hz**
- **Wb, BL-Wb** from **0.1 Hz to 400 Hz**
- **Wg, BL-Wg** from **0.8 Hz to 100 Hz**
- **Wh, BL-Wh** from **0.8 Hz to 2000 Hz**
- **Wf, BL-Wf** from **0.02 Hz to 2 Hz**

Filters Noise Level

Typical noise level from the combination of the vibration transducer and the SV106 for the frequency-weighted response:

Table C.5 Typical noise level of the SV106 with accelerometers (for each axis)

Filter	type **SV39A\L** nominal sensitivity 10mV/ms^{-2}		type **SV38V** nominal sensitivity 50mV/ms^{-2}		type **SV105** nominal sensitivity 10mV/ms^{-2}		type **3023M2** nominal sensitivity 1mV/ms^{-2}	
Wk	**1.8 mm/s^2**	**65.0 dB**	**2.5 mm/s^2**	**68.1 dB**	-	**-**	-	**-**
BL-Wk	**3.2 mm/s^2**	**70.0 dB**	**7.9 mm/s^2**	**77.9 dB**	-	**-**	-	**-**
Wd	**1.8 mm/s^2**	**65.0 dB**	**2.7 mm/s^2**	**68.6 dB**	-	**-**	-	**-**
BL-Wd	**3.2 mm/s^2**	**70.0 dB**	**8.1 mm/s^2**	**78.2 dB**	-	**-**	-	**-**
Wc	**2.0 mm/s^2**	**66.0 dB**	**2.8 mm/s^2**	**68.9 dB**	-	**-**	-	**-**
BL-Wc	**3.2 mm/s^2**	**70.0 dB**	**11.7 mm/s^2**	**81.4 dB**	-	**-**	-	**-**
Wj	**3.0 mm/s^2**	**69.0 dB**	**4.4 mm/s^2**	**72.8 dB**	-	**-**	-	**-**
BL-Wj	**3.3 mm/s^2**	**70.4 dB**	**11.5 mm/s^2**	**81.2 dB**	-	**-**	-	**-**
Wm	**1.6 mm/s^2**	**64.0 dB**	**1.3 mm/s^2**	**65.3 dB**	-	**-**	-	**-**
BL-Wm	**3.2 mm/s^2**	**70.0 dB**	**7.9 mm/s^2**	**77.9 dB**	-	**-**	-	**-**
Wh	**1.6 mm/s^2**	**64.0 dB**	-	-	**25.1 mm/s^2**	**88 dB**	**11.1 mm/s^2**	**80.9 dB**
BL-Wh	**7.4 mm/s^2**	**77.4 dB**	-	-	**89.1 mm/s^2**	**99.0 dB**	**42.2 mm/s^2**	**92.5 dB**
Wg	**1.3 mm/s^2**	**62.5 dB**	**2.9 mm/s^2**	**69.1 dB**	-	**-**	-	**-**
BL-Wg	**3.1 mm/s^2**	**69.6 dB**	**6.5 mm/s^2**	**76.3 dB**	-	**-**	-	**-**
Wb	**1.5 mm/s^2**	**63.5 dB**	**2.0 mm/s^2**	**66.1 dB**	-	**-**	-	**-**
BL-Wb	**3.1 mm/s^2**	**69.8 dB**	**7.6 mm/s^2**	**77.6 dB**	-	**-**	-	**-**
Wf	**-**	**-**	**1.5 mm/s^2**	**63.2 dB**	-	**-**	-	**-**
BL-Wf	**-**	**-**	**2.4 mm/s^2**	**67.8 dB**	-	**-**	-	**-**

Environmental, electrostatic and radio frequency criteria

Notice: In the measurement conditions with the strong electromagnetic disturbances *(e.g. near the high-voltage transmission lines)* ***the lower measurement limit can be drastically shifted as the result of the external field influence on the measurement cables.*** *In such cases,* ***the careful shielding of the measurement cables is strongly recommended.*** *It is worth to underline that the estimation of the external influence can be performed in-site by the observations of the measurement signal spectrum.*

Effect of humidity **< 0.5 dB** (for 30% < RH < 90% at 40°C and 1000 Hz)

Effect of radio frequency fields (meets requirements of the ISO 8041:2005)

The greatest susceptibility (the least immunity) is achieved when in the SV106 the **HP** filter is selected and the RMS measurements are considered.
The greatest susceptibility is achieved when the SV106 and accelerometer with cable is placed along field and the cable is coil as solenoid.

Effect of electrostatic discharge (meets requirements of the ISO 8041:2005)

During electrostatic discharge, the influence of the displayed results could be observed.
No changes in instrument operation state, configuration or stored data corruption were found out.

Operating range	from **-10°C to + 50°C**
Storage and Transportation	from **-20°C to + 60°C**
Effect of temperature	**< 0.5 dB** (from -10°C to + 50°C)
Effect of Vibration	**< 0.1 dB** (measured at the instrument vibration 1m/s2 in the 2 kHz band)

Effect of Acoustic Signal.

Typical effect measured noise level from the combination of the vibration transducer and the SV106 for the “Human Vibration” frequency-weighted response Wb, Wd, Wk and Wh. Measured with accelerometer exposed to the acoustic sinusoidal signal of 100 dB

The effect for the SV38V transducer is marginal and can be neglected!

The effect for the SV105 transducer is marginal and can be neglected!

Table C.6 Typical effect of acoustic signal perpendicular to the z axis of 3023M2 accelerometer

filter	Wb			Wd		
	channel 1	channel 2	channel 3	channel 1	channel 2	channel 3
Typical effect of acoustic signal [mm/s^{-2}]	8,29	15,94	6,56	28,81	23,68	38,56
filter	Wk			Wh		
	channel 1	channel 1	channel 1	channel 1	channel 2	channel 3
Typical effect of acoustic signal [mm/s^{-2}]	2,38	2,38	2,38	1,28	1,18	0,65

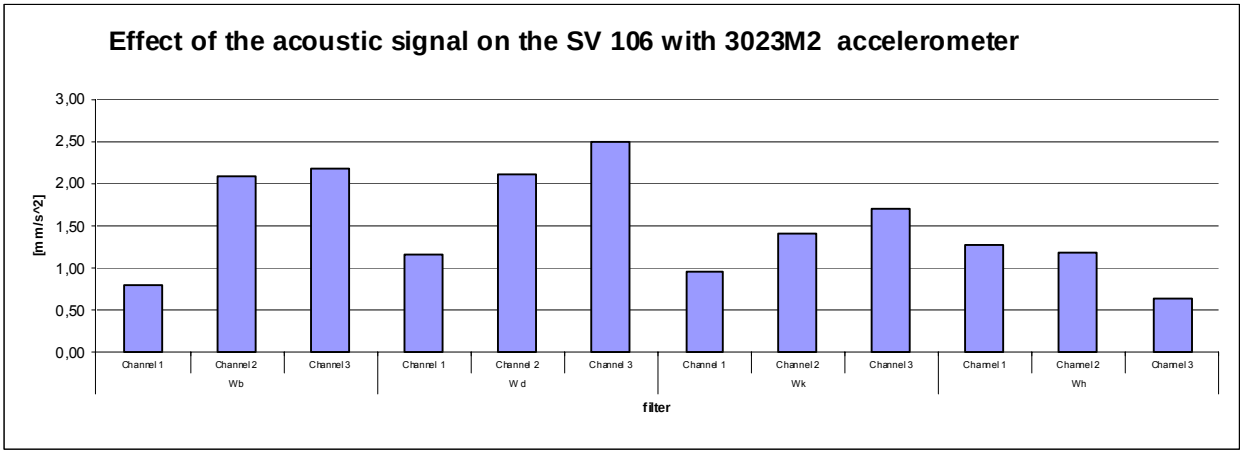
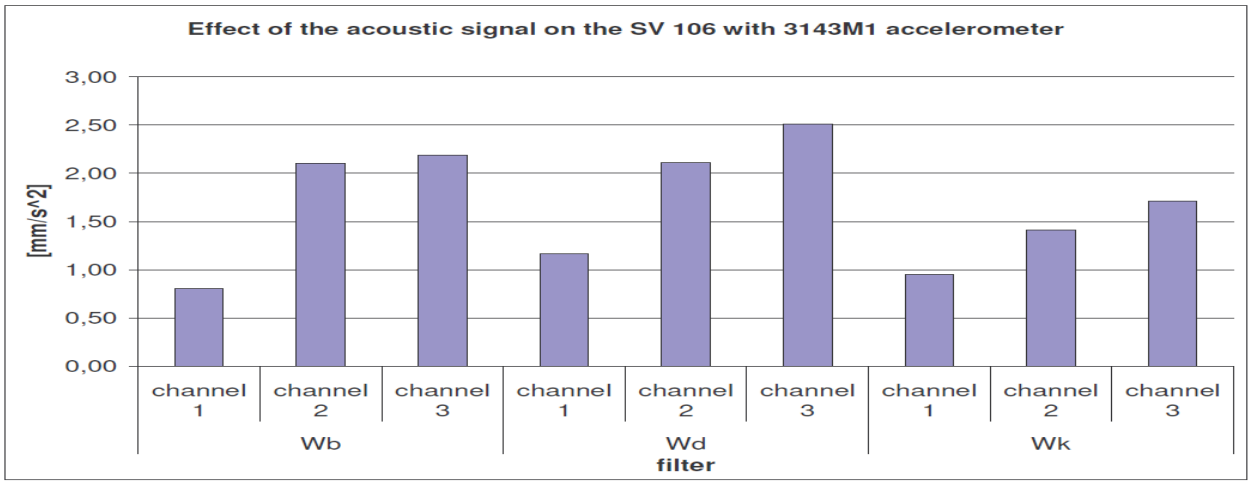


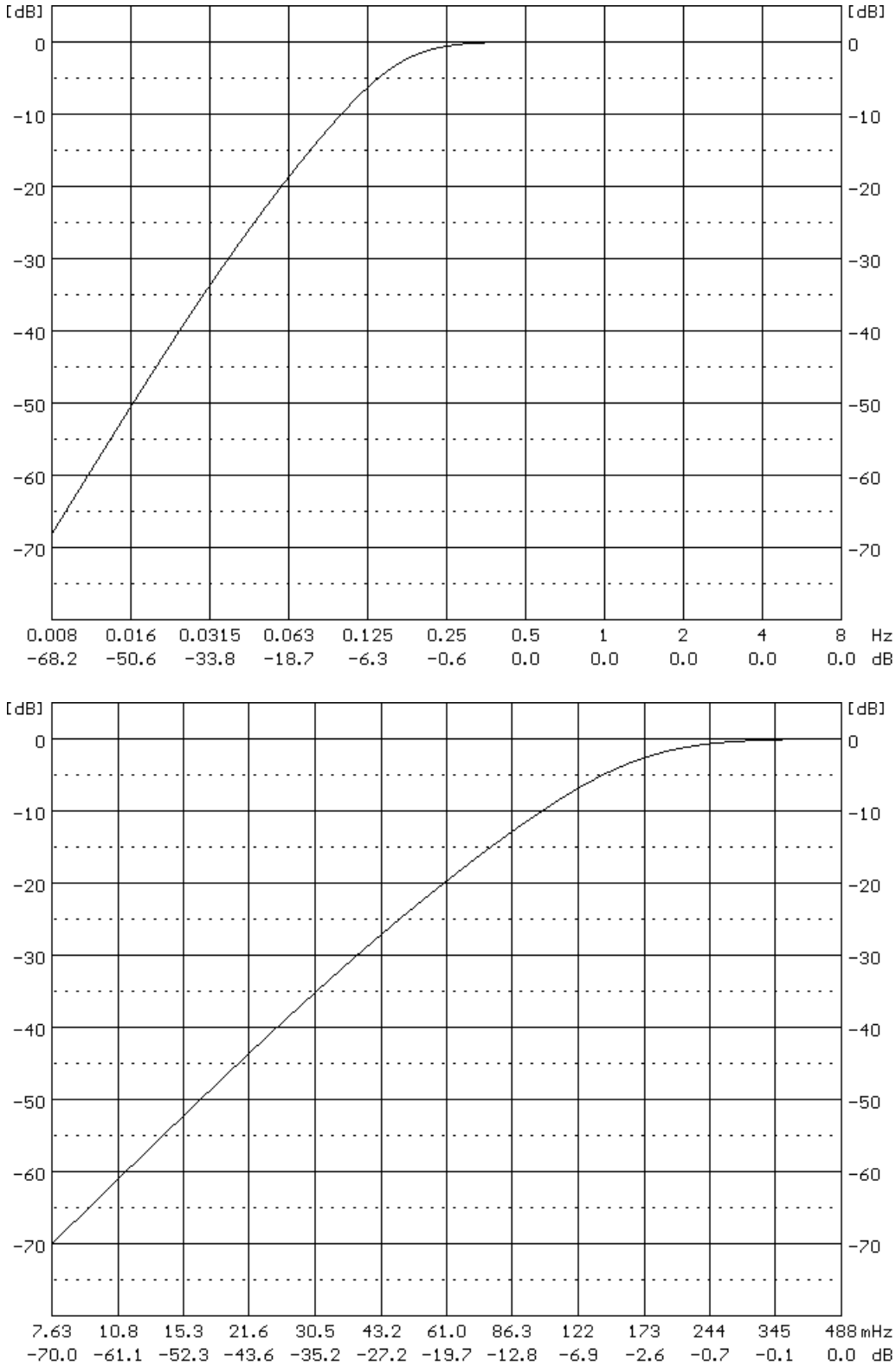
Table C.7 Typical effect of acoustic signal perpendicular to the z axis of the SV39A/L (3143M1) accelerometer

Filter	Wb			Wd			Wk		
	channel 1	channel 2	channel 3	channel 1	channel 2	channel 3	channel 1	channel 2	channel 3
Typical effect of acoustic signal [mm/s^{-2}]	0,80	2,10	2,19	1,17	2,11	2,51	0,95	1,41	1,71



C2. Frequency characteristics of the implemented digital filters

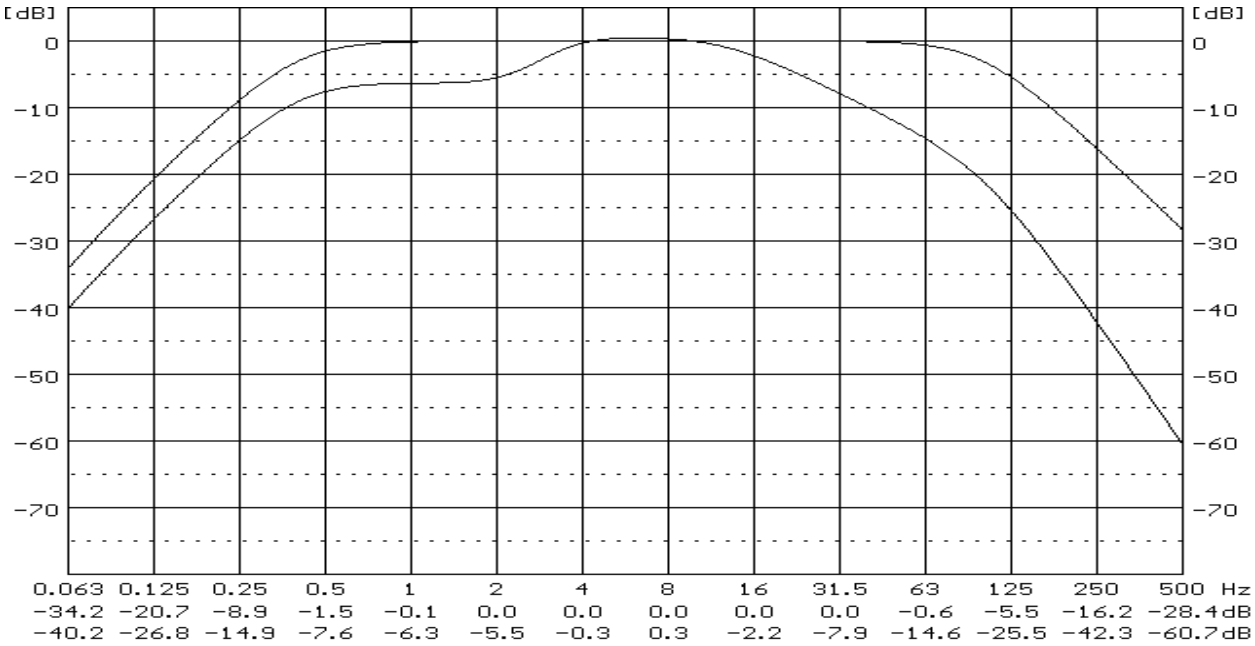
The **HP** filter is used for the acceleration measurements (the vibration signal) in the frequency range from 0.2 Hz to 2 kHz.



Characteristics of the HP digital filter implemented in the VM

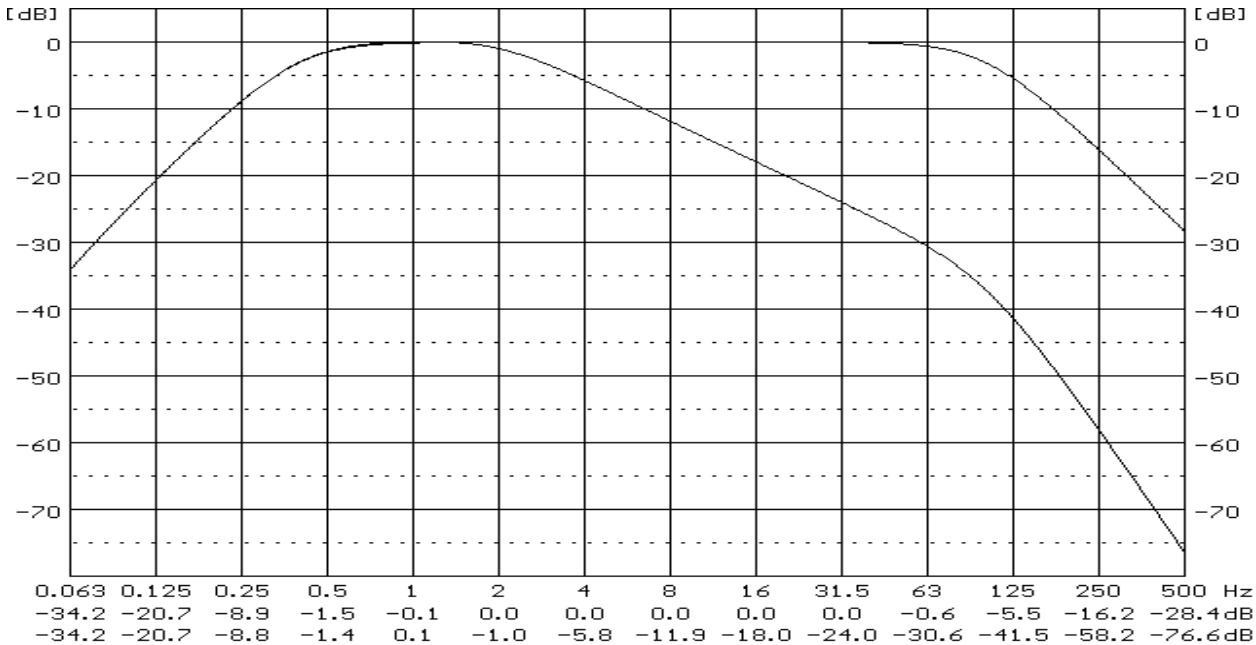
In the **SV 106** instrument there are various filters conforming to ISO 8041:2005 standards (**Wk**, **BL-Wk**, **Wd**, **BL-Wd, Wc**, **BL-Wc, Wj**, **BL-Wj, Wm**, **BL-Wm, Wh**, **BL-Wh, Wg, BL-Wg, Wb, BL-Wb, Wf,** and **BL-Wf**).

. The **Wk** filter is used for the assessment of the influence of the vibration signal on the human body in the ***z*** direction and for vertical recumbent direction. It conforms to the ISO 2631-1-97 and ISO 8041:2005 standard.



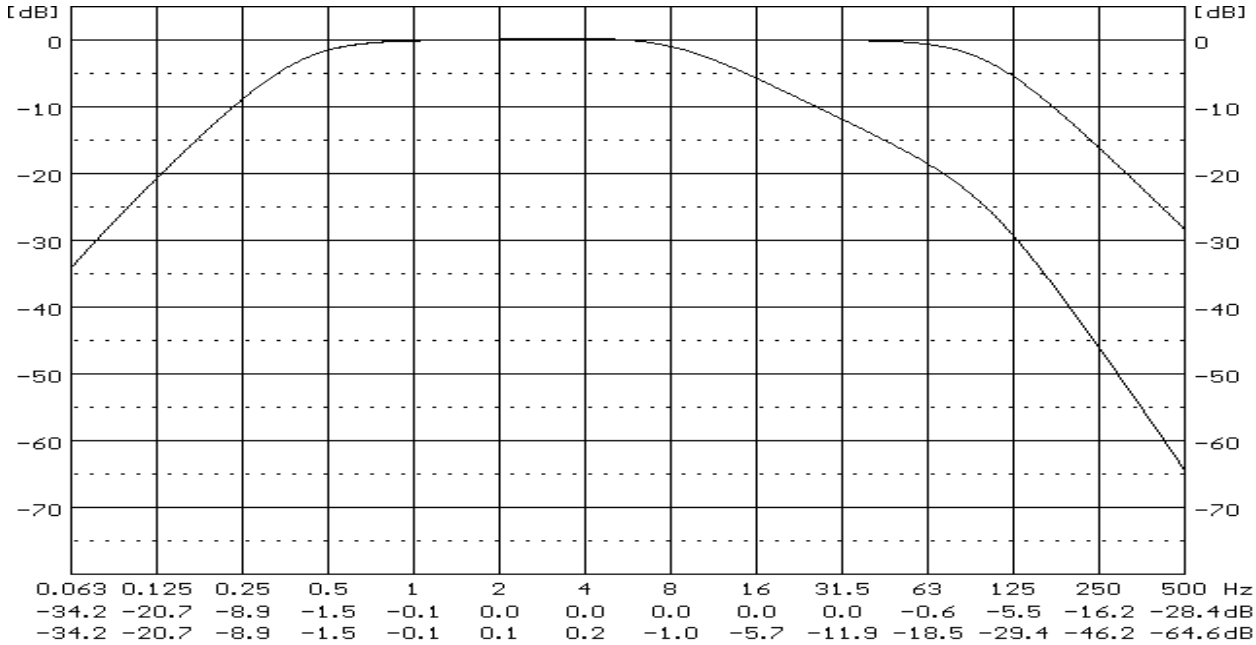
Characteristics of the BL-Wk and Wk digital filters implemented in the instrument

The **Wd** filter is used for the assessment of the influence of the vibration signal on the human body in the x and y directions and for horizontal recumbent direction. It conforms to the ISO 2631-1-97 and ISO 8041:2005 standards.



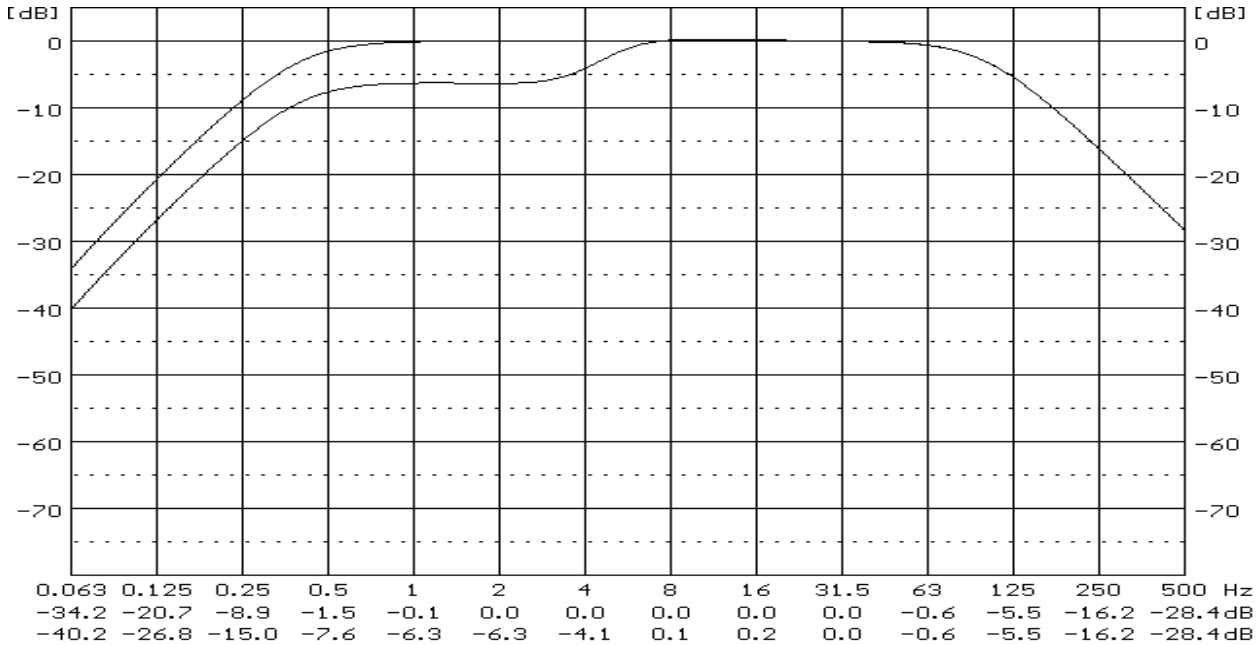
Characteristics of the BL-Wd and Wd digital filters implemented in the instrument

The **Wc** filter is used for the assessment of the influence of the vibration signal on the human body during the seat-back measurements. It conforms to the ISO 2631-1-97 and ISO 8041:2005 standards.



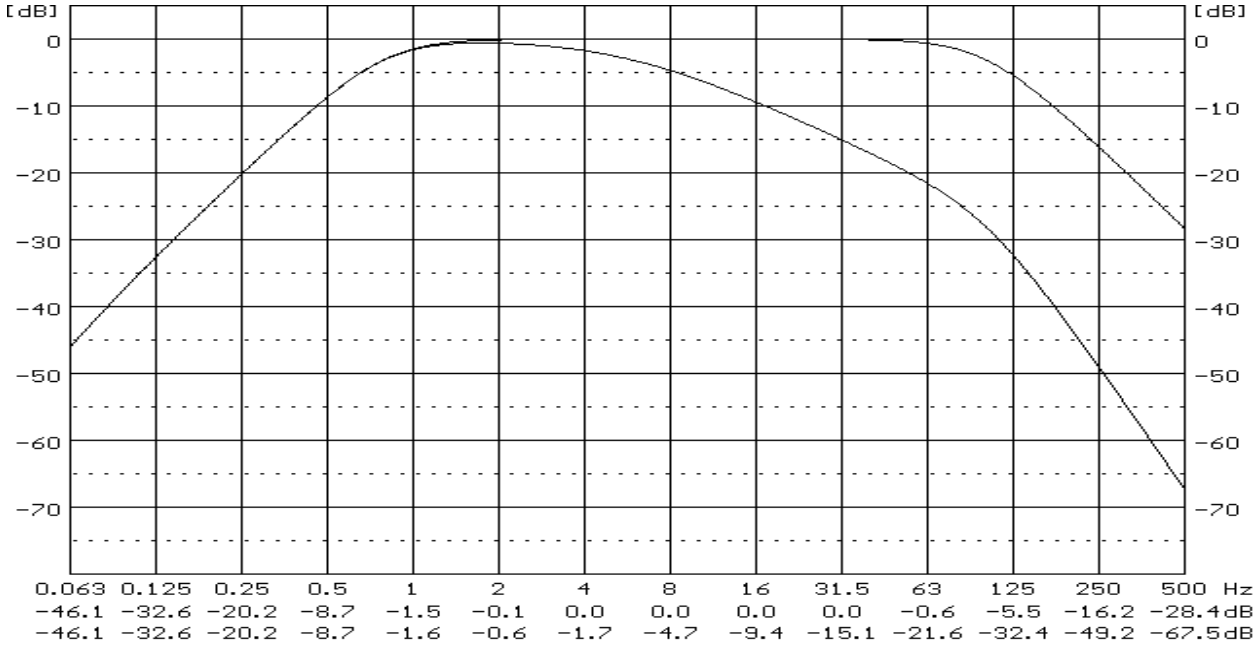
Characteristics of the BL-Wc and Wc digital filter implemented in the instrument

The **Wj** filter is used for the assessment of the influence of the vibration signal under the head of the recumbent person. It conforms to the ISO 2631-1-97 and ISO 8041:2005 standards.



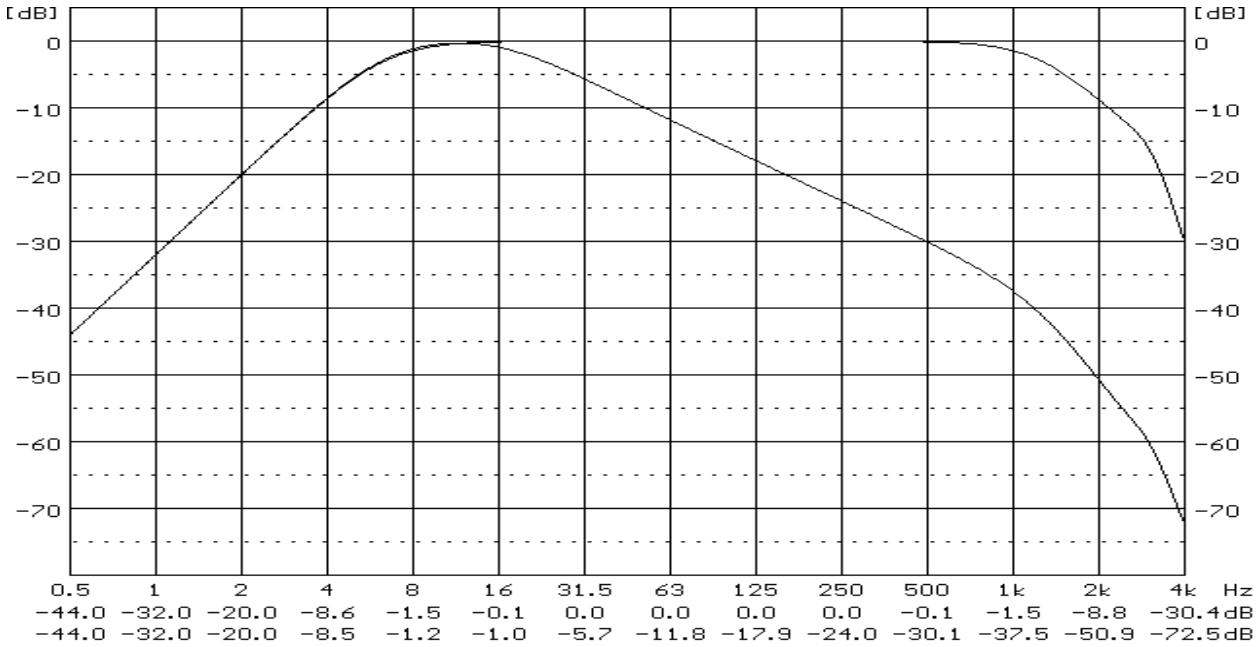
Characteristics of the BL-Wj and Wj digital filter implemented in the instrument

The **Wm** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the ISO 2631-1-97 and ISO 8041:2005 standards.



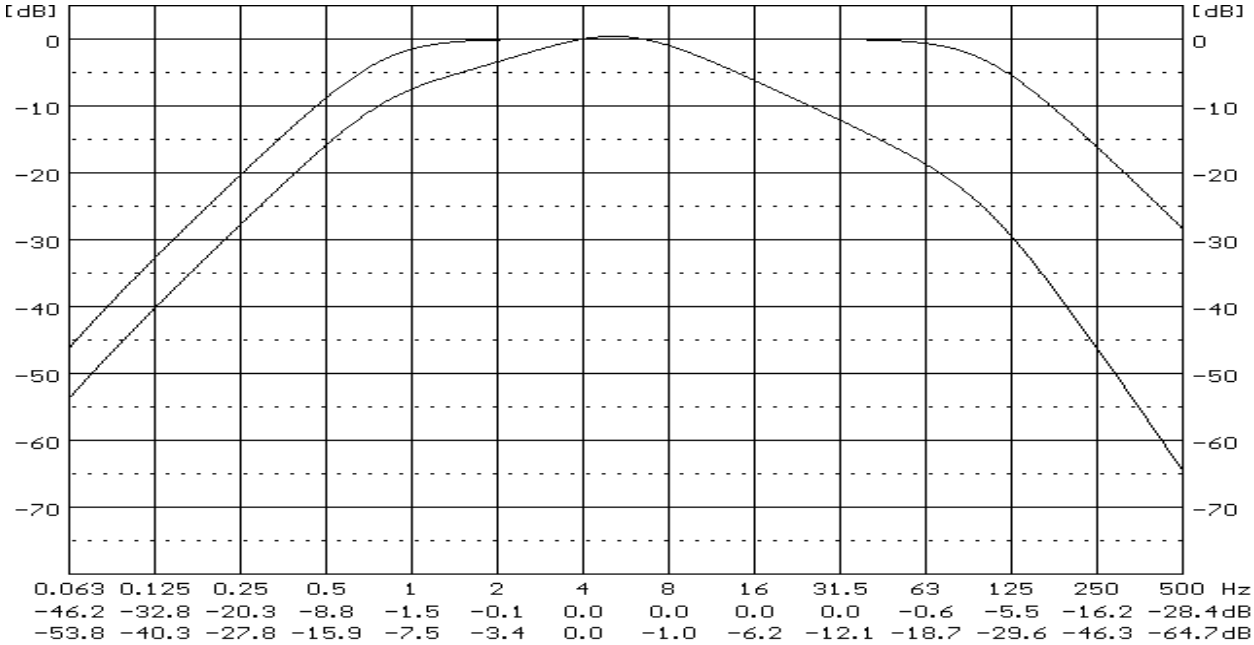
Characteristics of the BL-Wm and Wm digital filter implemented in the instrument

The **Wh** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the ISO 2631-1-97 and ISO 8041:2005 standards.



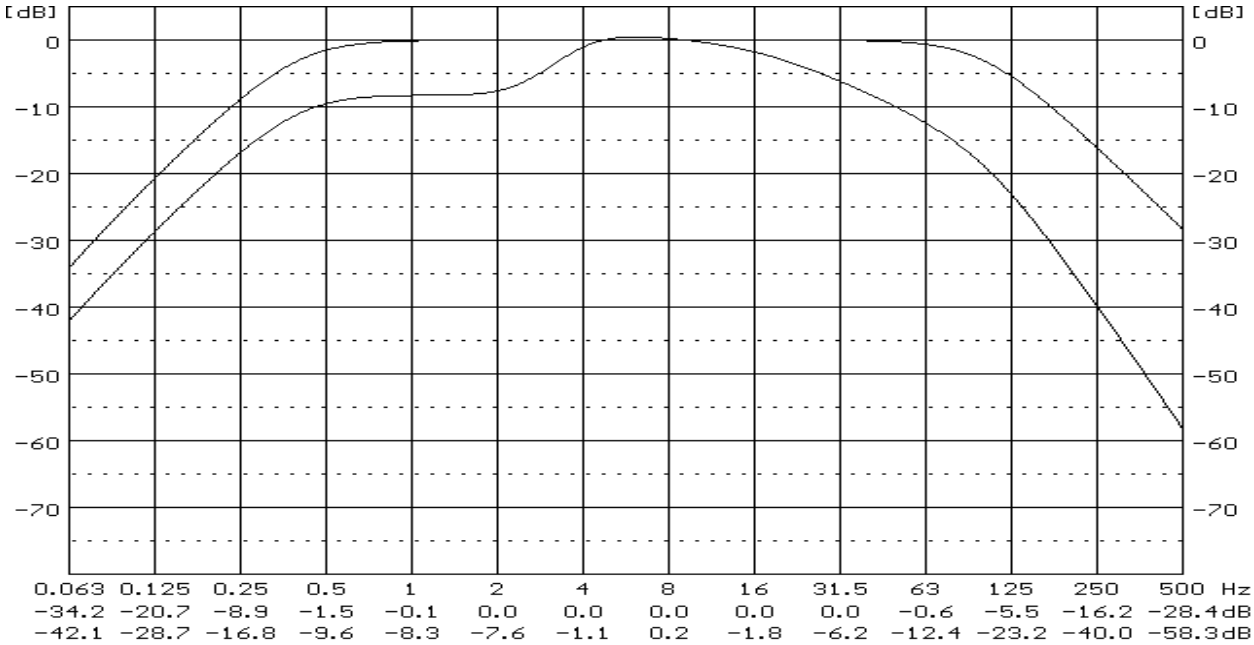
Characteristics of the BL-Wh and Wh digital filter implemented in the instrument

The **Wg** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the BS 6841:1987 standard.



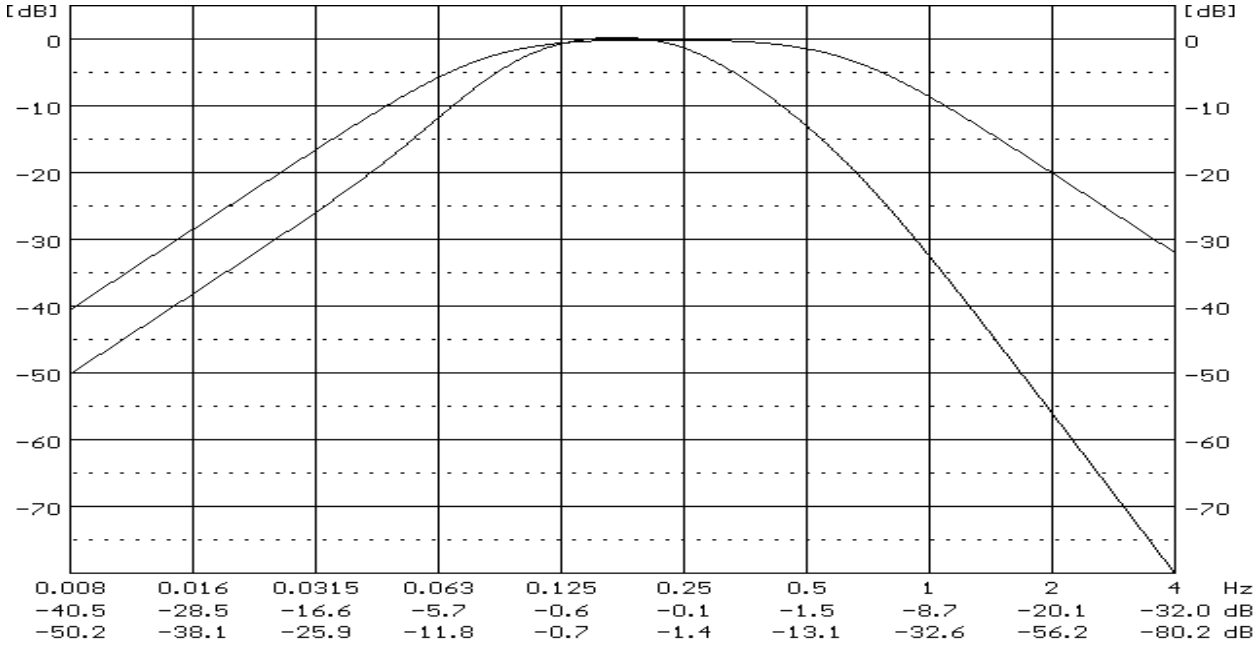
Characteristics of the BL-Wg and Wg digital filter implemented in the instrument

The **Wb** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the ISO 8041:2005 standard.



Characteristics of the BL-Wb and Wb digital filter implemented in the instrument

The **Wf** filter is used for the assessment of the influence of the vibration signal on the human body. It conforms to the ISO 8041:2005 standard.



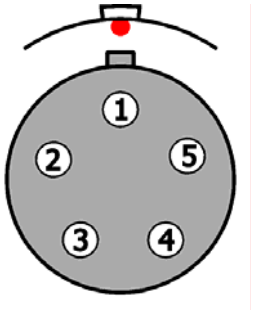
Characteristics of the BL-Wf and Wf digital filter implemented in the instrument

C3. Miscellaneous specification of the SV106

Signal input

The input of the measured signal (taken form the vibration transducer):

2 x LEMO 5-pin: six channels IEPE type or Direct and two channels for force transducers.



LEMO 5-pin connector (external view)

Table C.8 Pin out of the LEMO 5-pin (ENG.0B.305.CYM) connector

Pin number	ENG.0B.305.CYM
1	Input for channel 1 or 4
2	Input for channel 2 or 5
3	Input for channel 3 or 6
4	Input for force measurement, channels 1-3 or 4-6
5	+5.15V Supply Voltage
Shield	Signal Ground / Supply Ground, channels 1-3 or 4-6

Display

Colour OLED 2.4”, 320 x 240 pixels, super contrast 10000 : 1

Notice: The manufacturer of the color displays specify defective display. In case of defective display the number of dark dots is more than 4.

Definition of dark dots: dots appear dark and unchanged in size in which module is displaying under pure red, green, blue picture.

Memory

16 MB non-volatile flash memory and 256 kB of the RAM memory.
FLASH-disk for storing the measurement data files - **4GB MicroSD Card**

Keyboard

Nine pushbuttons – see manual for detailed description

Power supply

Instrument is dedicated for the operation from the internal exchangeable batteries.

SV 106 should be powered from the 4 x AA Type rechargeable batteries or dry alkaline cells

Typical operating time from AA NIMH 2.5 Ah rechargeable batteries with one SV 38V accelerometer is ca. 12 hours, connection second SV 38V reduce operational time about 5 %.

Notice: For the temperatures below 0℃ operating time can decrees (depending on the batteries) !

Notice: *Using of the MicroSD card (memory card) for the continuous time domain recording will increase power consumption.*
In such a case battery operating time will be reduced to approx. 8 hours!

Instrument can be also powered from the external mini USB source with the **DC Voltage from 4.5 V to 5 V.**

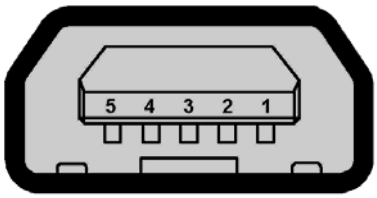
Voltage ripple should not exceed ± 5%.
External Power requirement for 5 V:

- 150 mA DC without accelerometers,
- 155 mA DC with one SV38V accelerometer,
- 180 mA DC with one IEPE 3-channel accelerometer,
- 185 mA DC with one IEPE 3-channel accelerometer and one SV38V.

Interface USB

The **SV 106** USB interface enables remote control of the instrument and data transfer with the speed up to that attainable with 12 MHz clock.

The USB interface can work as external power source of the meter.

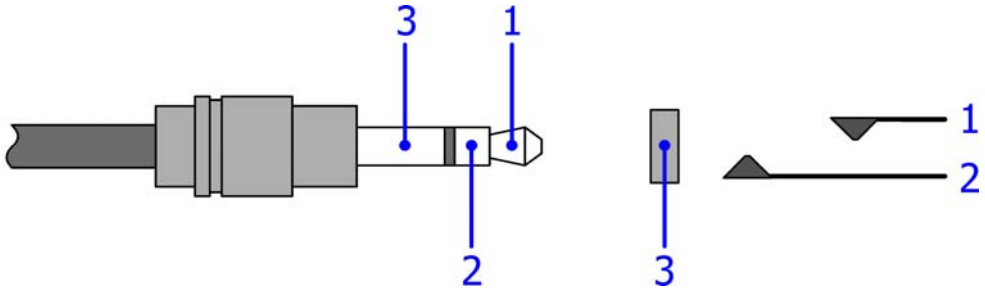


Mini USB socket (external view)

Table C.9 Pin-out of the USB-Device connector

Pin number	USB
1	Vbus
2	D-
3	D+
4	ID
5	GND
Shield	Ground

I/O – User programmable Analogue Outputs, Digital Input / Output connector



3.5 mm Mini Stereo Jack type (cable plug and instrument socket are shown)

Table C. 10 Pin out of the 3.5 mm Mini Stereo Jack

Pin Number	Function
1	Analog Output
2	Digital Input / Output
Chassis (3)	Ground

*depending on instrument set-up

The user may set-up in window *MENU / INSTRUMENT / EXTENDED I/O* one of MODES, which are available in the instrument: **ANALOG**, **DIGITAL IN**, **DIGITAL OUT**

1. **ANALOG** , in this mode analogue signal from the instrument is fed to it's **IO** connector, with following user-selectable options:

   1.1 **Analog** – when this option is selected, the measured signal from the select channel is fed to the terminal [1] of the **I/O** connector. Output voltage, frequency band and the output impedance are following:

   a) Output Voltage:

   Tthe output voltage is equal to 1.0 V_{RMS} (± 5 %) at 170 dB indication of the instrument, on measurement range, when calibration factor is set to 0.0 dB.

   b) Frequency Band (-3 dB): 0.02 Hz ÷ 4 kHz.

   c) Output Impedance: 51 Ω / 5%

2. **DIGITAL IN**, when the **EXT. TRIGGER** function is activated, the external triggering of the instrument may be provided. In order to do that the user has to select **TRIGGER** and to set **SOURCE: EXT. IO** (*path: MENU / MEASUREMENT / TRIGGER / MEASURE TRIGGER*). The external signal for triggering is specified as follows:
   2.1. Trigger voltage threshold level is set to +1 V
   2.2. Trigger voltage slope (*path: MENU / MEASUREMENT / TRIGGER / MEASURE TRIGGER / TRIGGER:*) set by the user as **SLOPE+** (uprising as default) or **SLOPE–** (falling, auxiliary)
   2.3. Minimal duration of the trigger impulse: 10 µsec.
   2.4. 100 µsec. release time after previous measurement is necessary before next trigger
   2.5. Recommended trigger voltage should not exceed ± 5 V
   2.6. Input impedance in this **DIGITAL IN** mode - ca. 10 kΩ / 100 pF, ESD type safety
   2.7. When the instrument is switched-off in the **DIGITAL IN** mode, the voltage impulse on the pin [1] will be able to switch-on the instrument, however in this case the minimal duration of the trigger impulse of 100 msec is necessary, with uprising voltage slope

3. **DIGITAL OUT** - two different functions are available in this mode:
   3.1. **FUNCTION: TRIG. PULSE**, when this function is selected, the terminal [1] is set as output, which enables one to trigger another instrument (one instrument or more with trigger inputs connected together in parallel), output trigger impulse meets specification given below:

a) trigger impulse is generated before every measurement
b) output voltage range from 0 V or 3 V
c) triggering slope: uprising
d) output impedance: 51 Ω
e) duration of the impulse: ca. 30 μsec.

3.2. **FUNCTION: ALARM PULSE**, when this function is selected, the terminal [1] is set as an output, which changes its output level, when current result of measurement exceeds user-programmable threshold level. In this case the terminal [1] output operates as an output of analogue comparator with user-programmable threshold. This feature enables one to control an external device as alarm-indicator or similar
   a) electrical specification of this output are as follows: 0 V to 3 V voltage range, 51 Ω output impedance
   b) output produces a voltage level (not impulse)
   c) **ACTIVE LEVEL** setting may be selected by the user in menu as **LOW** or **HIGH**. If **HIGH** is selected, the output alternates from 0 V to 3 V till measurement result is greater than threshold value
   d) **SOURCE** setting selects source of measurement result to be compared with the threshold value. One of three results sources may be selected **RMS(1)**, **VEC13** or **VEC46**
   e) **LEVEL** enables one setting-up threshold value

Real Time Clock

Accuracy better then **1 minute/month.**

Weight with the battery

390 g (without accelerometer).

Dimensions

140x83x33 mm (without accelerometer).

Electromagnetic Compatibility (EMC)

The product described above is compliant with the following EMC standards:

1. For the EMC emissions specification:
   according to EN ISO8041: 2005 (Chapters 7.5, 12.20.7), applying test methods in accordance with CISPR 22: 2003, Clause 10 and CISPR 16-1-1,
2. For the EMC immunity specification:
   according to EN ISO8041: 2005 (Chapters 7.4, 7.6, 12.20.6, 12.20.8), applying test methods in accordance with IEC 61000-4-2:2001, IEC 61000-4-3:2002 and IEC 61000-4-8.

Notice: EMC compatibility is guaranteed only with the original accessories supplied by SVANTEK!

Safety

The product described above is compliant with following standards:
EN 61010-1:2001 and IEC 61010-1:2001

Compliance with EU Directives

CE mark indicates compliance with EMC Directive 89/336/EEC and Low Voltage Directive 2006/95/EC.

Environmental parameters

- Working temperature range -10°C ÷ +50°C
- Storing temperature range -20°C ÷ +50°C
- Humidity up to 90% RH (non-condensed)

C4. Transducers specification

Whole-Body "Seat" Accelerometer SV 38V specification:

Performance:

Number of axis	3
Sensitivity (± 5 %)	50 mV/(m/s2) at 15.915 Hz, HP1
Measurement range	0.01 ms^{-2} RMS ÷ 50 ms^{-2} PEAK
Frequency response (by design guideline, ± 3 dB)	0.01 Hz ÷ 100 Hz
Frequency response (factory tested, ± 3 dB)	4 Hz ÷ 125 Hz
Resonant frequency	5 kHz (MEMS transducer)
Electrical noise	< 25 µV RMS, Wd weighting < 60 µV RMS, Wk weighting < 230 µV RMS, HP1 weighting

Electrical:

Supply current	< 5,0 mA
Supply voltage	5,2 V ÷ 16 V
Bias voltage	2,5 V ± 0.05 V
Output impedance	51 Ohms
Charge / discharge time constant (start-up time)	30 sec. typ.
TEDS memory	installed (power supply pin)

Environmental Conditions:

Maximum vibration	980 m/s^2 shock survival
Temperature coefficient	<+0.012 dB/°C
Temperature	from -10°C to +50°C
Humidity	up to 90 % RH, non-condensed

Physical:

Sensing element	MEMS
Cable	integrated 1.4 meters long
Connector	LEMO 5-pin plug (SV 106 compatible)
Dimensions	236 mm diameter; thickness from 3.6 mm to 12 mm
Weight	550 grams (including cable and rubber cushion)

Accessories:

SA 38 (option)	Calibration adapter

Whole Body "Seat" Accelerometer SV 39A/L specification:

(SV 106 supports SV 39A/L only in IEPE mode of input channels; SC 118 Integrated connector is required)

Physical:

Weight	16 Grams
Size, L X W X H	.82 x .82 x .34 Inches
Mounting provision, thru hole	4mm x 0.7
Connector, radially mounted	4-PIN
Material, housing & connector	TITANIUM

Performance:

Number of axis	3
Sensitivity, ± 5%	100.0 mV/g
Range F.S. FOR ± 5 VOLTS OUTPUT	± 500 g's
Frequency range, ± 5%	0.5 to 3000 Hz
Resonant frequency, NOM.	25 kHz
Equivalent electrical noise floor	.0007 g's RMS

Linearity	± 1% % F.S.
Transverse sensitivity, MAX.	5 %
Strain sensitivity	.012 g's/μσ @ 250 μσ

Environmental:

Maximum vibration/shock	600/1500 ± g's/g's PEAK
Temperature range, OPERATING	-60 to +185 °F
Temperature range, survival	-100 TO +225 °F
Seal,	(welded, glass-to-metal connector) Hermetic
Coefficient of thermal sensitivity	.03 %/oF

Electrical:

Supply current range	2 to 20 mA
Compliance voltage range	+18 to +30 Volts
Output impedance, typ.	100 Ohms
Bias voltage range	+11 to +13 VDC
Discharge time constant range	0.8 to 1.2 Sec
Output signal polarity for acceleration in direction of toward top	Positive
Electrical isolation, case ground to mounting surface	10 Mohm, min.

Hand-Arm triaxial Accelerometer SV105 specification:

Performance:

Number of axis	3
Sensitivity (± 5 %)	10 mV/(m/s2) at 79..915 Hz,
Measurement range	0.01 ms-2 RMS ÷ 50 ms-2 PEAK
Frequency response	0.1 Hz ÷ 2000 Hz
Resonant frequency	5 kHz (MEMS transducer)
Electrical noise	< 316 μV RMS, HP weighting

Electrical:

Supply current	< 5 mA ÷ per channel
Supply voltage	5.2 V ÷ 16 V
Bias voltage	2.5 V +/- 0.2 V
Output impedance	51 Ohms
Charge / discharge time constant (start-up time)	30 sec. typ.
TEDS memory	installed (power supply pin)

Environmental Conditions:

Maximum vibration	100 000 m/s2 shock survival for MEMS sensor
Temperature coefficient	<+0.012 dB/°C
Temperature	from -10°C to +50°C
Humidity	up to 90 % RH, non-condensed

Physical:

Sensing element	MEMS
Cable	integrated 1.4 meters long
Connector	LEMO 5-pin plug
Dimensions	236 mm diameter; thickness from 3.6 mm to 12 mm
Weight	550 grams (including cable and rubber cushion)

Accessories:

SA 105 (option)	Calibration adapter

Hand-Arm triaxial Accelerometer 3023M2 (SV 50 included accelerometer) specification:
(SV 106 supports 3023M2 only in IEPE mode of input channels; **SC 118 Integrated** connector is required)

Physical:

Weight 4 grams	
Size	(height x width x depth) 0.49 x .36 x .36 inch
Mounting	10-32 TAPPED HOLE IN BASE
Connector	4-PIN
Material	HOUSING/CONNECTOR TITANIUM ALLOY

Performance:

Sensitivity,-10 +15%	1mV / ms^{-2}
Range	F.S. (each axis) +/- 500 g
Frequency response	-5 / +15% Axis 1 & 2 1.5 to 5000 Hz Axis 3 1.5 to 10000 Hz
Element natural frequency	NOM. 40 kHz
Equivalent electrical noise	0.0095 g rms
Linearity	1 %F.S.
Transverse sensitivity	MAX, 5 %
Signal polarity	Positive for motion in direction of arrows on housing

Environmental:

Maximum vibration	+/- 600 gpk
Maximum shock	5000 gpk
Temperature range	-60 to +320 °F
Environmental seal	HERMETIC:
Coefficient of thermal sensitivity	0.03 %/°F

Electrical:

Supply current range, (each axis)	2-to 20 mA
Compliance (supply) voltage range	+18 to +30 VDC
Output impedance, TYP	100 OHMS
Output bias voltage, NOM.	+10 VDC
Discharge time constant, NOM.	0.3 SEC
Ground isolation	Case grounded