Acceleration Transducer AccTRANS

Railway safety

GENERAL CHARACTERISTICS

Derailment protection by vibration analysis with electronics conform to railway standards in an extremly robust housing. A micro mechanical spring-mass-system continuously measures acceleration and converts the measured value to a standard 4-20mA analog current output. Vibration sensor according to railway standards DIN EN 50155 and ready to use with the voltage supply directly from the trainset. The sensor is designed for applications outside the vehicle or directly at the bogie. The extremely robust housing and special cable withstands harsh environments like impacts of stones, dust or weather and guarantees high reliability throughout its life time.

- *Measurement range ±4 g**
- *Current output 4-20 mA*
- *Sensitivity 2.0m A/g***
- *Frequency range 0.5-15 Hz**
- *Resistant stainless steel housing*
- *Protection class IP68*
- *Compliant to DIN EN 50155*
- *Operating temperature -40°C ... +70°C*
- *Wide supply voltage range*

* customizable
** dependent on measurement range

MICRO-SENSOR

TECHNICAL PARAMETERS

Physical parameters	
Axes	1 y-direction (2 axes on request)
Measurement range	±4g*
Sensitivity	2mA/g**
Sensitivity error	±2%
Noise	0,1% RMS of full scale
Frequency range (-3dB)	0.5Hz ... 15Hz*
Current output	4 ... 20mA
Zero signal	12mA
Max. error	±5,925%
Output impedance	max. 200 Ω
Housing	Stainless steel
Applied standard	DIN EN 50155
Connector	4-wire cable*
Bogie cable	RADOXTENUIS-TW 600V 4x0,5 mm diameter 8,35 mm length 3 m
Operating temperature range	-40°C...+70°C
Protection	IP68
Vibration & shock test	DIN EN61373:2011 Cat. 2

* customizable
** dependent on measurement range

Electrical parameters	Min.	Typ.	Max.	Unit
Supply voltage	70	110	160	V
Supply current		0.02		A
Consumption		max. 3		W
Insulation		>200M		Ω

All specifications at +25°C, unless otherwise defined.

CURRENT OUTPUT

Parameter			
Acceleration (vibration amplitude)	-4g	0g	+4g
Output current	4mA	12mA	20mA

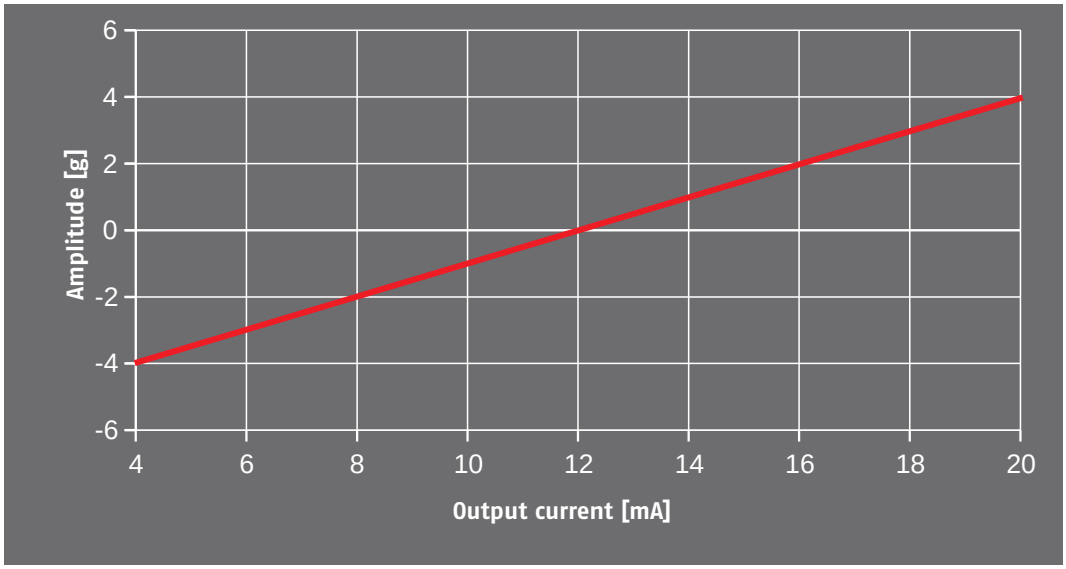

Figure 1: Output current

FILTER

Parameter	
Type and frequency range	bandpass 0.5 ... 15Hz
Gradient	≥24dB/octave

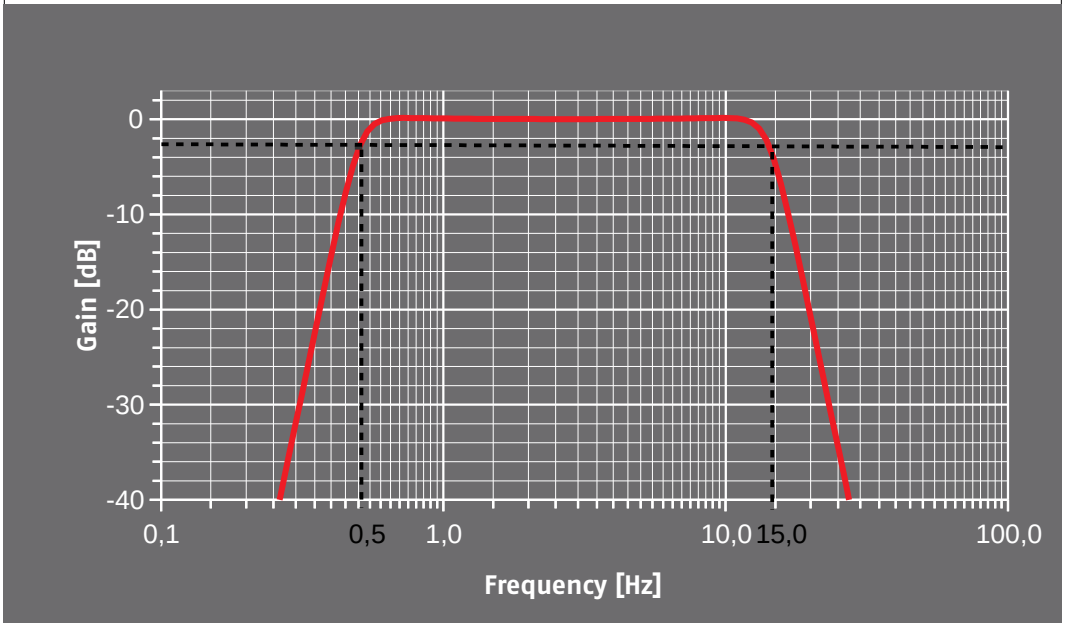

Figure 2: Band pass filter characteristics

MECHANICAL DIMENSIONS

Weight including cable: ~ 1,3Kg

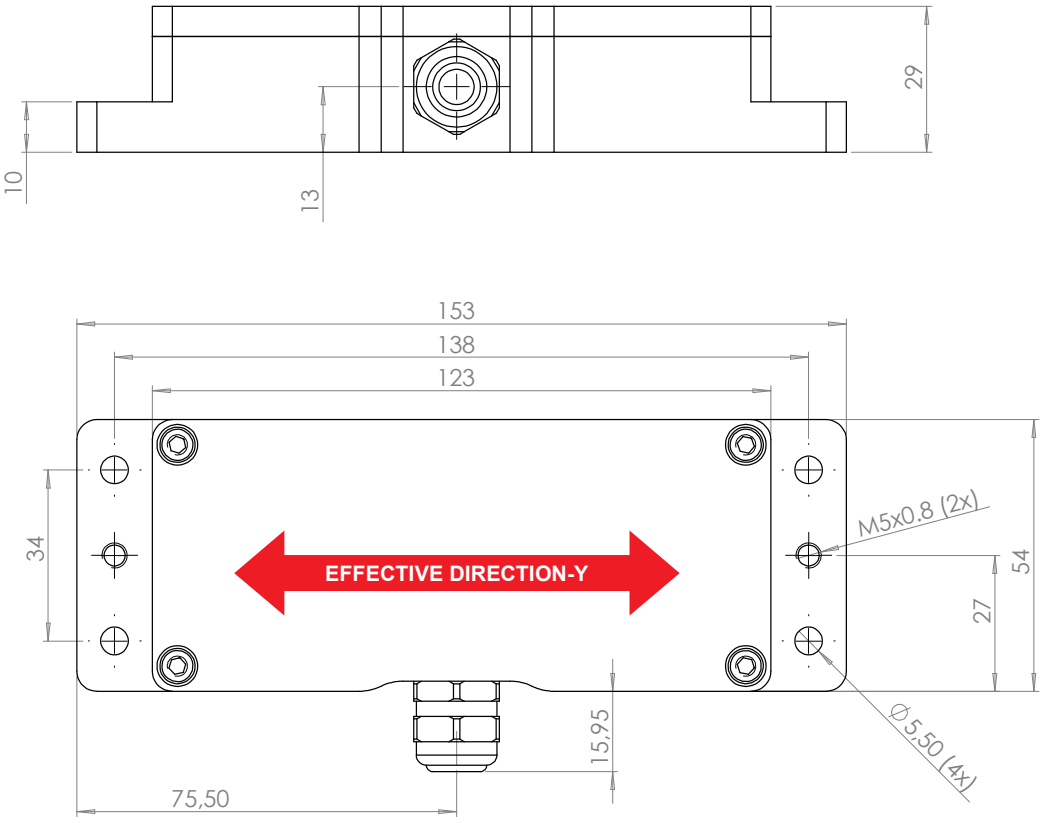

Figure 3: Mechanical dimensons [mm]

CABLE MARKINGS

No.	Assignment
1	Supply voltage
2	Supply ground
3	Signal output y-axis
4	Signal ground y-axis

Connector on request

CURRENT OUTPUT CONNECTION

Load resistance: max. 200 Ω
Connect a resistor to the signal output and signal ground as shown in figure 4.

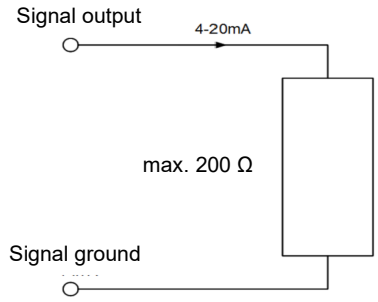

Figure 4: Current output connection

SHIELDING CONCEPT

The shield is not connected to the housing of the sensor. Connect the housing to train earth potential.

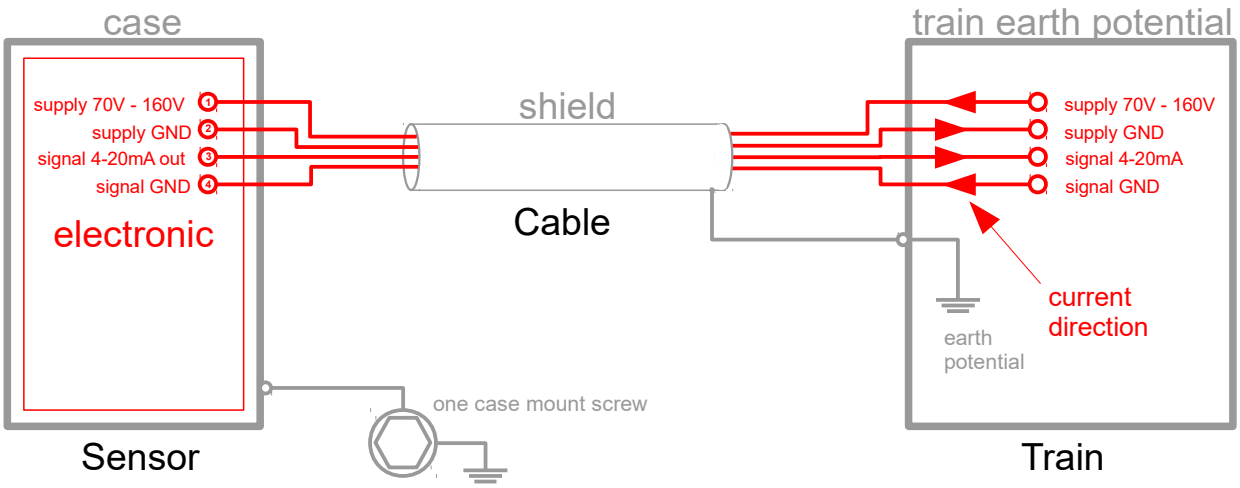

Figure 5: Shielding concept

APPLIED STANDARDS

Applied standards according to DIN EN 50155	
DIN EN 55011	Conducted emission
DIN EN 55011	Radiated emission electromagnetic field
DIN EN 61000-4-3	Immunity to electromagnetic field
DIN EN 61000-4-4	Immunity to electrical fast transient/burst
DIN EN 61000-4-5	Immunity to electrical slow transient/surge
DIN EN 61000-4-6	Immunity to conducted RF voltage
DIN EN 50155	Overvoltage at power supplies
DIN EN 61373	Shock and vibration tests
IEC60068-2-1 (Bd)	Dry heat test
IEC60068-2-30 (Db)	Damp heat, cyclic (2 x 24h cycle)
IEC60068-2-1 (Ad)	Cold test
DIN EN 45545	Fire protection on railway vehicles

AVAILABLE STANDARD CONFIGURATIONS

Product Key:

AccTRANS ###V#

Supply voltage:

110: 110 VDC

24: 24 VDC

Measurement range

2: ± 2 g

4: ± 4 g

5: ± 5 g

Further options on request