



REOVIB For Vibratory Feeder Systems

SWM 4000

Handheld measuring instrument for vibratory feeder

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Technical Information for the User

This description contains the necessary information for the correct application of the product described below. It is intended for use by technically qualified personnel.

Qualified personnel are persons who, because of their training, experience and position as well as their knowledge of appropriate standards, regulations, health and safety requirements and working conditions, are authorised to be responsible for the safety of the equipment, at all times, whilst carrying out their normal duties and are therefore aware of, and can report, possible hazards (Definition of specialist according to IEC 364).

Safety Instructions

The following instructions are provided for the personal safety of operators and also for the protection of the described product and connected equipment.



Warning!

Hazardous Voltage

Failure to observe can kill, cause serious injury or damage

- Isolate from mains before installation or dismantling work, as well as for fuse changes or post installation modifications.
- Observe the prescribed accident prevention and safety rules for the specific application.
- Before putting into operation check if the rated voltage for the unit conforms with the local supply voltage.
- Emergency stop devices must be provided for all applications. Operation of the emergency stop must inhibit any further uncontrolled operation.
- **Electrical connections must be covered**
- **Earth bonding must be tested prior to operation**

Prescribed Use

The units described herein are electrically powered for use in industrial applications and are not suitable for domestic use

Do not open, modify or repair the device.

Changes or modifications to the device will invalidate the warranty.

For example, when the battery should be replaced, contact the manufacturer or supplier.



Warning!

Use only the delivered charger, battery and cable.

Different chargers or cables can cause the battery to explode or damage the device.

Declaration of Conformity:

We declare that these products conform with the following standards and directives:

Directives:

2014/30/EU EMC
2014/35/EU LVD
2011/65/EU RoHs

Standard:

EN 61000-6-4:2007 +A1:2011; EN 61000-6-2:2005
EN 50178:1997



REO AG, D-42657 Solingen

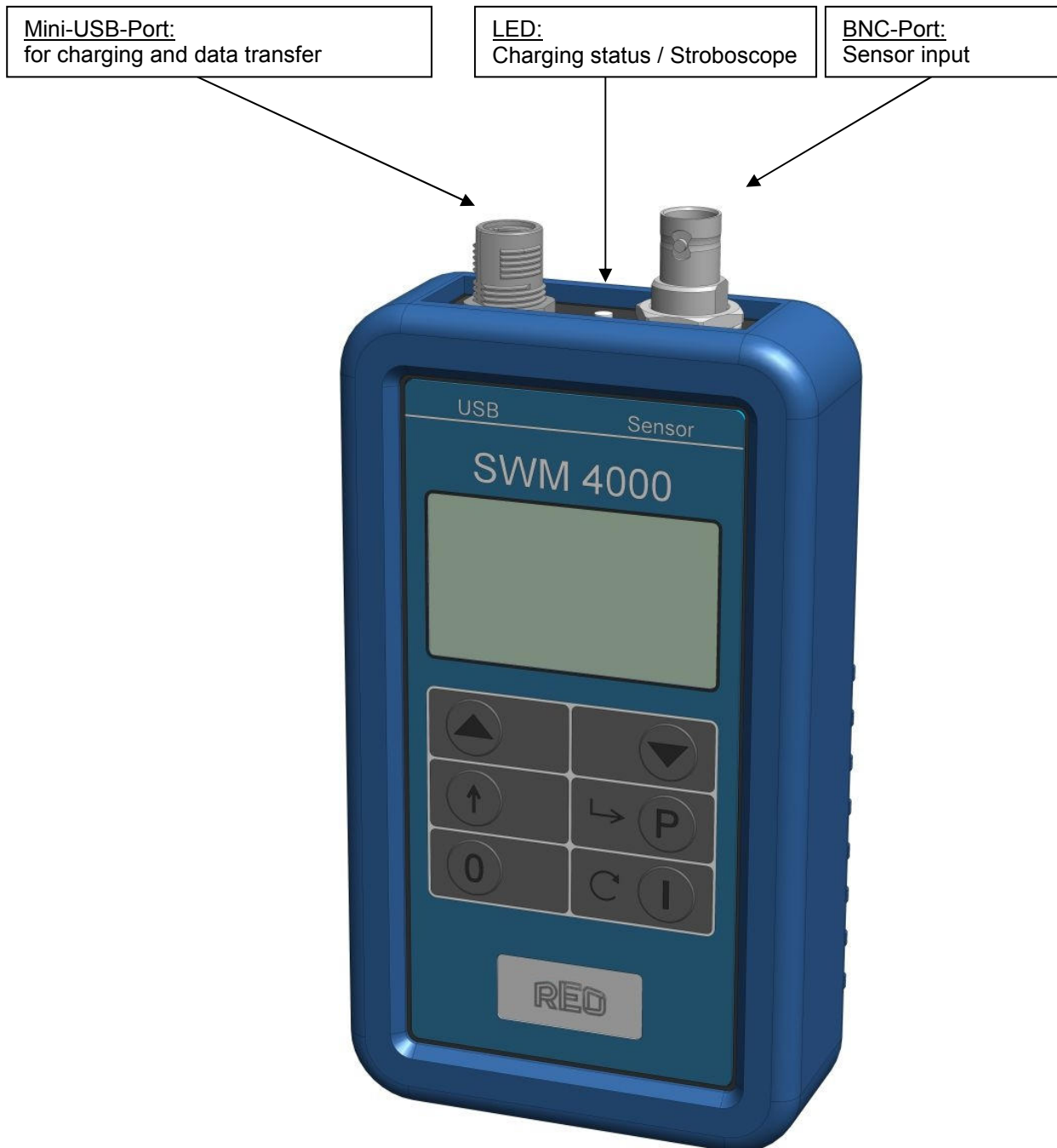
1.0 General

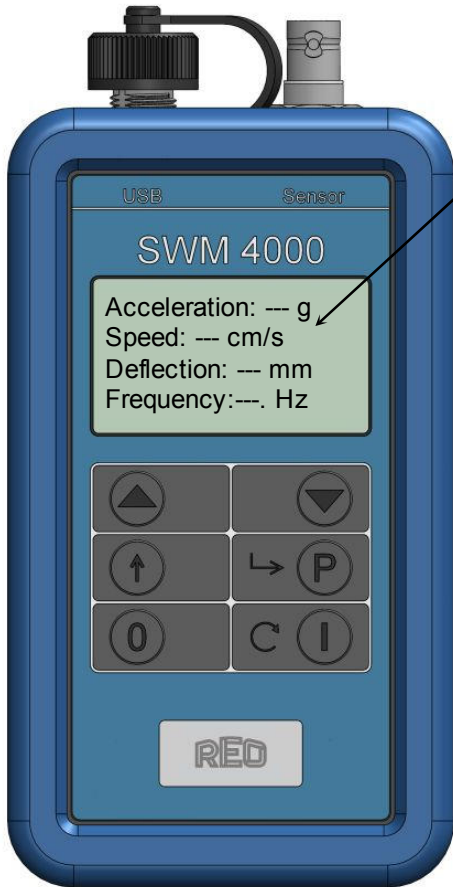
Reliable and accurate instrument for the installation, testing and servicing of vibratory conveyor equipment. This unit supersedes REO's popular SWM3000 unit and incorporates many new features. When combined with an appropriate accelerometer, the unit displays, acceleration, speed, vibration amplitude and frequency. It can store up to 125 instantaneous values and transfer these as an .XLS file to a PC via USB connection. The stroboscope function generates light flashes with the built-in LED to make the movements of the feeder visible and to analyse them. The language may be set to allow worldwide use and the screen is backlit to allow easy viewing in all ambient conditions. The unit is housed within a robust rubber casing and the integrated lithium-ion battery, can be charged easily via a USB interface to allow versatile operation. Optimization of the design, display and internal battery, means that the unit is faster, more reliable and yet is smaller and more convenient to use. The REOVIB SWM4000 instrument is supplied with a comprehensive list of accessories, consisting of USB cable and charger (traveler), protective cover, 100mV/g accelerometer, sensor mounting bracket and sturdy carry case.

2.0 Technical Data

Unit type	REOVIB SWM 4000
Supply voltage	USB Travel Charger / Power Supply, 115/230V , 50/60 Hz , +/-10% min. 0,9A / 5V
Charging time	about 6 hours
Effective value input	Sensor 10 / 100 / 500 mV/g +/-20% difference adjustment (8 – 600mV/g)
Sensor supply	Constant current 14mA
Frequency	6...600Hz
Amplitude	0...30mm
Measuring range	0,2...150g
Measuring error	1,5%
Enclosure protection	IP 40
Dimensions- (HxWxD)	81 x 159,5 x 35 mm
Operating temperature	0...45 °C
Storage temperature	-20...+45 °C
Rel. Humidity	93 % without dew or condensation
Environment protection	Class 1 (IEC 664)
Power rating	0,8 VA

3.0 Connections / Control Elements / Display Messages





Display
Acceleration in g
Speed in cm/sec
Deflection in mm
Frequency in Hz

Indicates that there is no measurement signal and the sensor is connected

Acceleration: --- g
Speed: --- cm/s
Deflection: --- mm
Frequency: --- Hz

Indicates that the Sensor is not connected or Sensor fault

▲ Acceleration: --- g *blinking*
Speed: --- cm/s
Deflection: --- mm
Frequency: --- Hz

① ON

② OFF

① ▲ Select menu

② (P) Open / Close Menu

③ ▲ Select parameters

④ (P) Enable Parameterisation

⑤ ▲ change Parameters / set value

⑥ (P) Finish Parameterisation

⑦ ⬆ backwards each level or return to Operation mode

example: parameterisation

black background: Selected menu / parameters

Operation mode

Acceleration: 5.00 g
Speed: 7.5 cm/s
Deflection: 0.23 mm
Frequency: 105 Hz



4.0 Menu Structure

No.	Symbol	Menu option	Meaning	Adjustment
1		Storage		
1.1		Record	Save record	0-124
2		Records		
2.1		Record	Load record	0-124
2.2		Acceleration	Acceleration	
2.3		Speed	Speed	
2.4		Deflection	Deflection	
2.5		Frequency	Frequency	
2.6		Clear Record	Delete selected record	Execute
3		Info		
3.1		No	(Only for service purposes)	View only
3.2		20151201-130154	Software version	View only
3.3		Battery	Battery status in percent	View only
4		Stroboscope		
4.1		Dead Centre	Amplitude will be visible (Min. and Max. of Oscillation)	1 / 0
4.2		Slow Motion	Vibration is in slow motion (motion blur will be removed)	1 / 0
4.3		Tempo	"Slow Motion" rate	0,01 Hz...2,00 Hz
4.4		Phase Locked	Phase shift on / off	1 / 0
4.5		Phase	Phase shift	-180° ...0° ...+180°
5		Service		
5.1		Clear All Records	Clear All Records	Execute
5.2		Cal	Acceleration sensor calibration	8-600 mV/g
5.3		Language	Select the menu language	Select
5.4		Back Light	Backlight off / on	1 / 0
5.5		Factory Settings	Restoring factory settings	Execute
5.6		Code	Menus enabling or disabling (see section 9.0 and 10.0)	
5.7		User Params	Load customers parameter settings	Execute
5.8		Auto Off	<u>Auto Off: 1 = Energy saving mode On</u> (the backlight turns off after 30 seconds and SWM4000 turns after 2 minutes off) <u>Auto Off: 0 = Energy saving mode off</u> (the backlight (if Backlight: 1) and SWM4000 remain permanently switched on)	1 / 0
5.9		Hold	The last measured value is displayed (after switching off the feeder)	1 / 0
5.10		Effective Value	Acceleration is displayed in RMS	1 / 0

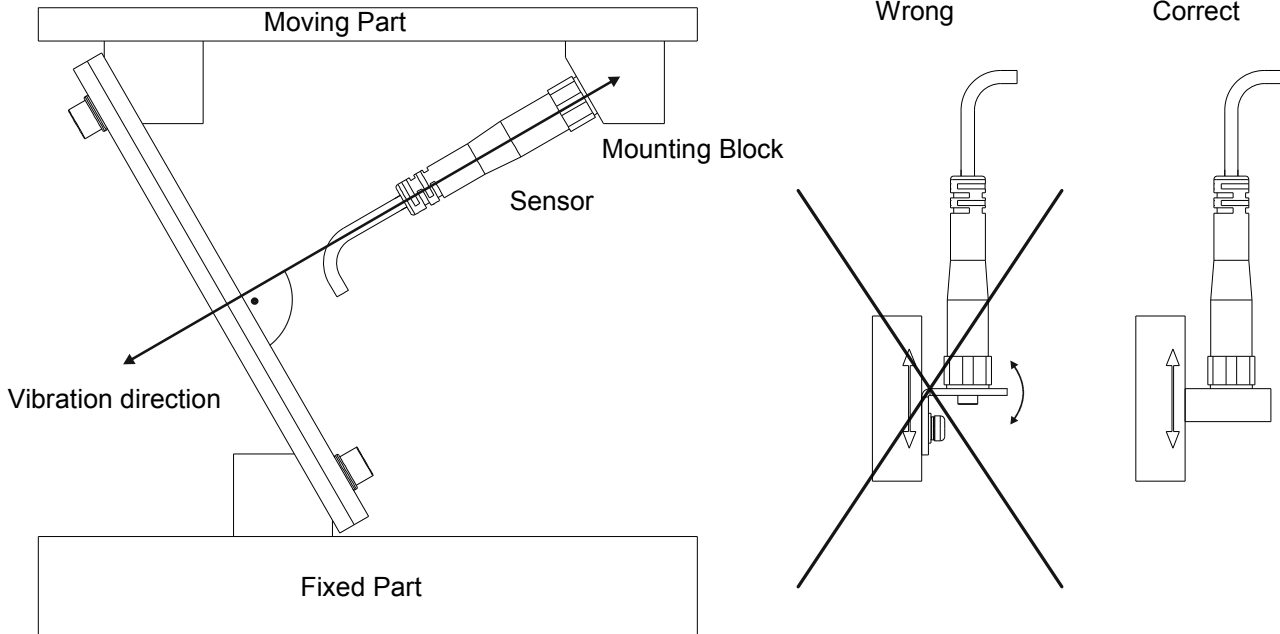
5.0 Mounting the accelerometer

Important!

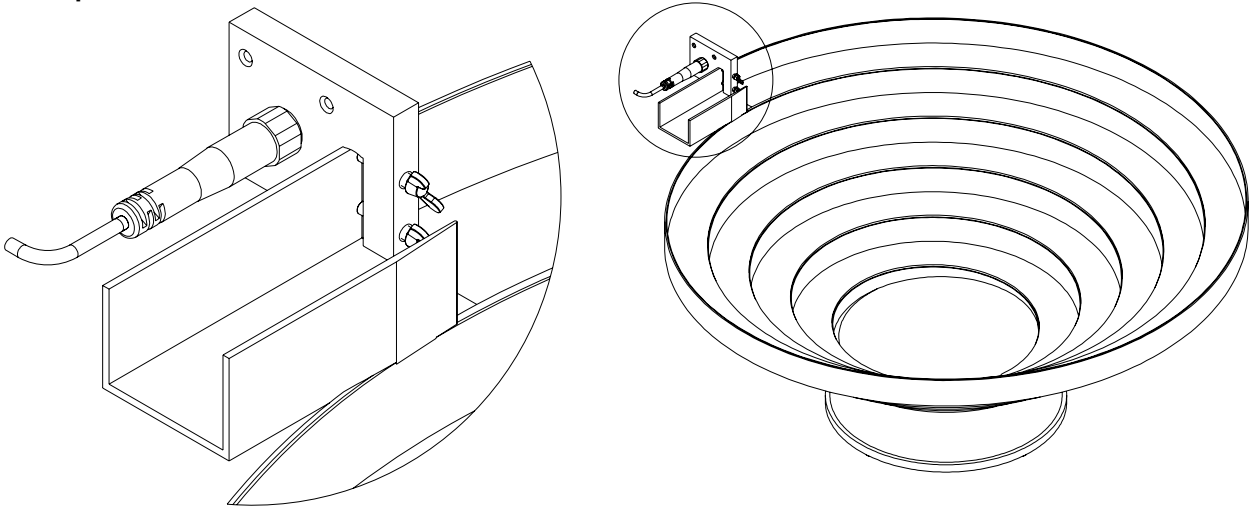


Sensor mounting:

The accelerometer should generate signals for the movement and acceleration of the feeder, which are fed back to the regulator circuit of the control unit. Therefore it is very important that no other extraneous vibration signals are picked up by the sensor



Example:



6.0 Calibrating the sensor input

Important!



The sensor constants deviating from the indicated sensor voltage (mV/g) must be set once on the measuring unit!

A calibration certificate is provided with each sensor supplied. This certificate shows the exact value of the sensor output voltage, for example 95 mV/g. This value must be entered in the **Menu: Service with Parameter "Cal"**.

The sensor input is factory-set to 100 mV/g. It is possible to set deviations up to +/- 20 %.

7.0 Saving the measured values

All four values (acceleration, speed, deflection / amplitude, frequency) are saved.
Press the arrow key to select the no. of the set to start the storage with.

In Menu: Storage, Parameter: Record

8.0 Read measurements

This menu serves to control the data sets stored. The individual data sets may be viewed and cleared (if necessary) by pressing the arrow keys.

In Menu: Records, Parameter: Record

9.0 Saving your own parameter

You can save your own settings of the unit.

Save:

In Menu: Service, Parameter: Code: 143 → Set User Params

Load:

In Menu: Service, Parameter: User Params

10.0 Function „only measure“ or enable and disable Parameter/Menus

With this parameter you can protect the saved data sets and unit settings against unauthorised modifying.

In Menu: Service, Parameter: Code: 117 → Lock Menues: 1

Enabling parameter / Menus:

In Menu: Service, Parameter: Code: 117 → Lock Menues: 0

11.0 Factory setting

With this parameter you can restore the factory settings.

In Menu: Service, Parameter: Factory Settings

12.0 Readout the saved data sets into a PC

At this unit it is possible to load the saved data sets via the USB interface into a PC.
For the coupling you need Microsoft EXCEL

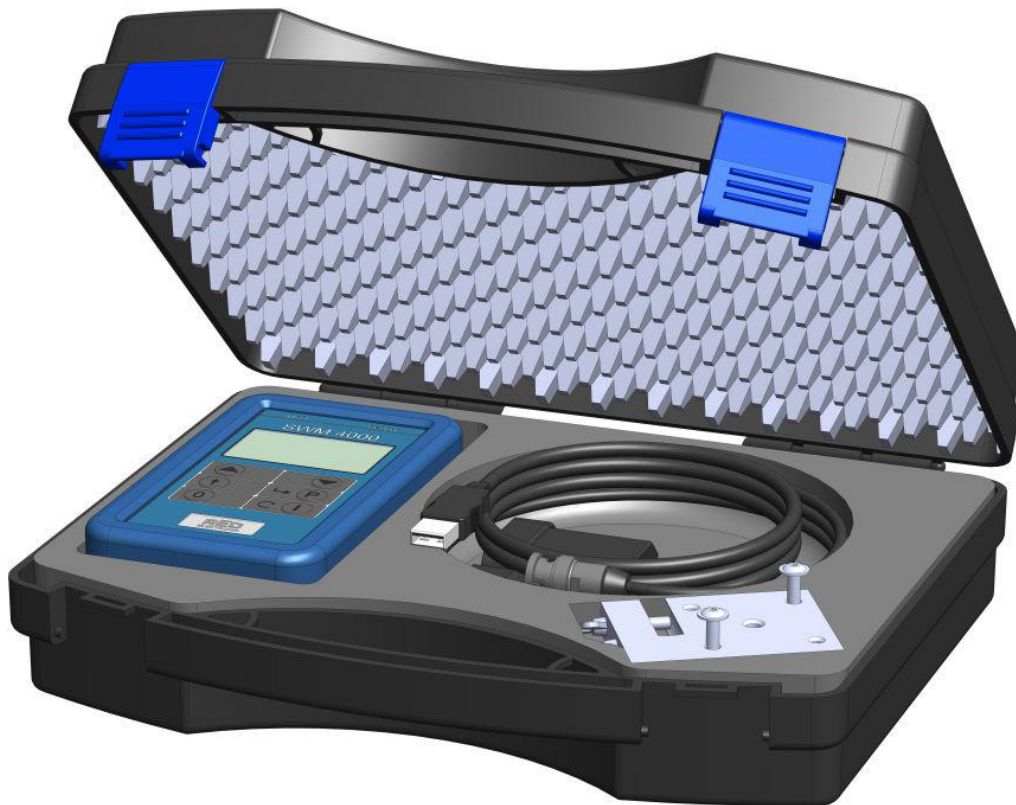
Approaching:

1. Connect measurement device with the data cable to the PC.
2. Switch on the SWM 4000
3. Load data file „SWM4000_usb32.xls“
4. Use button „receive “. After the sweep the data sets must be displayed.

13.0 Delivery contents

The measuring instrument "SWM 4000 Set" consists of:

Designation	Order Number
Measuring instrument SWM 4000	677401
USB-charger/power Supply (traveler) incl. USB data/charging cable	
Silicone protective cover for SWM 4000	
Sturdy carry case	
Sensor mounting bracket	
Accelerometer (100mv/g) incl. mounting magnet	



14.0 Spare Parts / Single components

Designation	Order Number
Measuring instrument SWM 4000 with USB-charger/power Supply (traveler) incl. USB data/charging cable	677411
USB-charger/power Supply (traveler) incl. USB data/charging cable	090611
Silicone protective cover for SWM 4000	090612
Sturdy carry case	090613
Sensor mounting bracket	090614
Accelerometer (100mv/g) incl. mounting magnet	084430

15.0 Battery pack



Warning!

Use only the delivered charger, battery and cable.
Different chargers or cables can cause the battery to explode or damage the device.

- Upon delivery, the battery is not fully charged. Recharge the battery before using.
- The battery may only be changed by the manufacturer.

Disposal

The battery and the device should not be disposed of with household or industry waste. They should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling waste electrical and electronic equipment and batteries and accumulators.

16.0 Declaration of Conformity



EG-Konformitätserklärung
EC-Declaration of Conformity
Certificat de conformité CE



Der Hersteller: REO AG
The Manufacturer: Brühler Straße 100
Le Fabricant: D-42657 Solingen
Germany

erklärt hiermit, dass die folgenden Produkte
certifies that the following products
par la présente certifie que les produits suivants

Produktbezeichnung Messgerät für Schwingförderer
Product designation: Measuring instrument for vibratory feeder
Désignation du produit: Mètre pour alimentateurs

Typenreihe: REOVIB SWM 4000
Type code:
Série de modèles:

den Bestimmungen der folgenden Richtlinien entsprechen:
are in conformity with the following requirements:
correspondent aux exigences de la Directive :

EG-Niederspannungsrichtlinie 2014/35/EU.

EC Low Voltage Directive 2014/35/EU

Directive Basse Tension 2014/35/EU

EG-Richtlinie Elektromagnetische Verträglichkeit 2014/30/EU

EC "Electromagnetic compatibility" 2014/30/EU.

Directive européenne sur "Compatibilité électromagnétique" 2014/30/EU.

EG-Richtlinie RoHS 2011/65/EU zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (RoHS).

Directive RoHS 2011/65/EU on the Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)

Directive européenne RoHS 2011/65/EU relative à la limitation de l'utilisation de certaines substances dangereuses (RoHS) dans les équipements électriques et électroniques

Folgende Normen sind angewandt:

The following standards are in use:
Les normes suivantes sont appliquées:

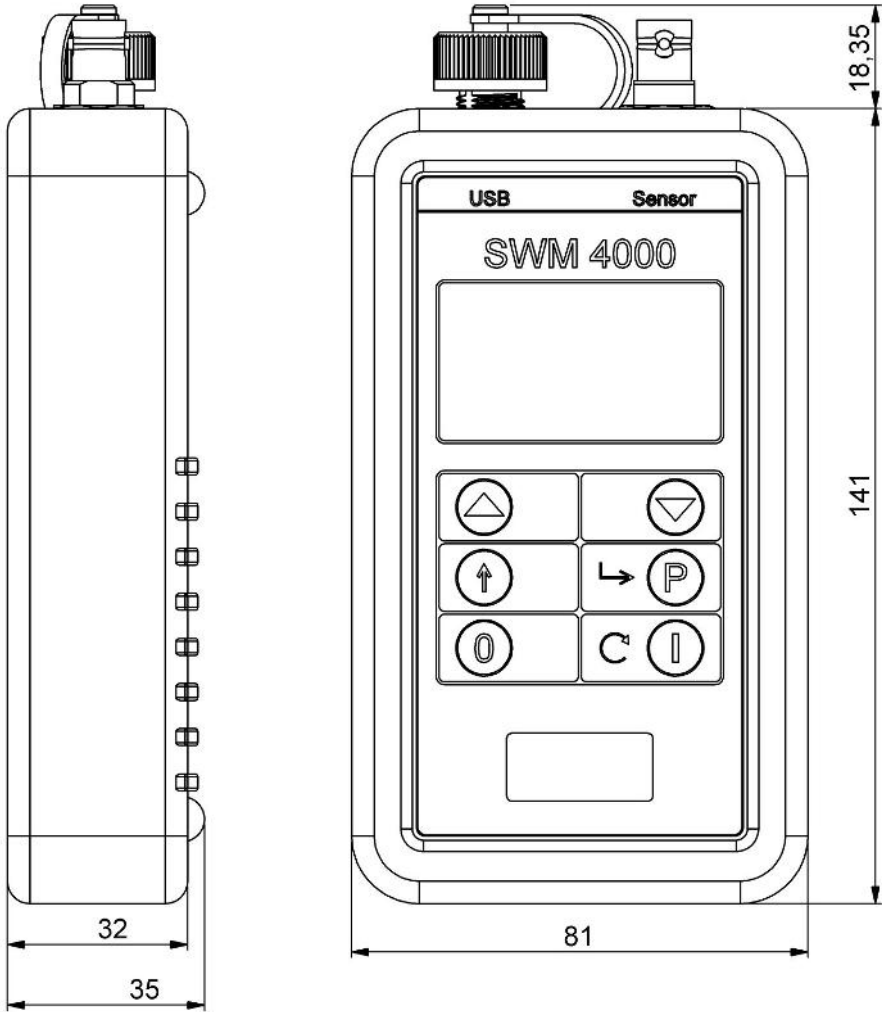
EN 50178 1997	Ausrüstung von Starkstromanlagen mit elektronischen Betriebsmitteln Electronic equipment used in power installations Utilisation d'équipements électroniques dans les installations de puissance.
EN 61000-6-2 2005	Fachgrundnorm Störfestigkeit Industriebereich Technical Basic Standard – Resistance to Interference. Industrial field Norme générique-Immunité pour les environnements industriels
EN 61000-6-4 2007+A1:2011	Fachgrundnorm Störaussendung Industriebereich Technical Basic Standard – Noise Emission Industrial field Norme générique-sur l'émission pour les environnements industriels

Solingen, 18.11.2015
(Ort, Datum der Ausstellung)
(Place, Date of issue)
(Lieu et date d'établissement)



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Signature of authorised person
Signature de la personne autorisée

17.0 Dimensions



Dimensions in [mm]





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