

# Instruction Manual

## Measurement Device Rain Gauge



Type: RM 200 / 202  
Original Manual: German

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#### **Note**

*This instruction manual may exclusively - even in parts - be copied or translated in any other way with the express written consent of NIVUS GmbH*

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#### **Translation**

If the device is sold to a country in the European Economic Area (EEA) this instruction handbook must be translated into the language of the country in which the device is to be used.

Should the translated text be unclear, the original instruction handbook (German) must be consulted or the manufacturer contacted for clarification.

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## General



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**Note**

*READ CAREFULLY BEFORE USE!  
KEEP IN A SAFE PLACE FOR LATER REFERENCE*

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This instruction manual is an original instruction for the NIVUS Rain gauge and is for the intended use of the device. This manual is oriented exclusively to qualified expert personnel.

Read this instruction manual carefully and completely prior to installation and connection since it contains relevant information on this product.

If you should have problems to understand information contained within this instruction manual either contact the manufacturer or one of the distributors for further support. The manufacturer cannot be held responsible for damage to persons or material due to incorrectly understood information in this instruction.

## 1 Applicable documentation

For the installation and operation of the complete system extra instruction manuals or technical descriptions may be required apart from this manual.

- Instruction manual for data logger NivuLog Easy V3




These manuals are provided with the unit.

## 2 Required Tools

For installing the Rain gauge you will need the following tools:

- Wench, spanner width 13
- Hexagonal key size 3

### 3 Signs and definitions used

Image	Meaning	Remark
	(action) step	Action to be performed by you. Note the numbering of action steps. Observe the order of the working steps!
	Cross-reference	Reference to further or detailed information
>Text<	Parameter or Menu	Indicates a parameter or a menu that is select or described
	Reference to document	Refers to an accompanying documentation

### 4 Abbreviations used

#### Measurement principle

**WMO** World Meteorological Organization

Colour code for wires, single conductors and components.

The abbreviations of colours, wire and components follow the international colour code according to IEC 757.

BK black	GN green	YE yellow
WH white	BN brown	GNYE green/yellow

## Safety Instructions

### 5 Used symbols and signal words



Das allgemeine Warnsymbol kennzeichnet eine Gefahr, die zu Verletzungen oder zum Tod führen kann. Im Textteil wird das allgemeine Warnsymbol in Verbindung mit den nachfolgend beschriebenen Signalwörtern verwendet.

**DANGER**

**Warnings in high degree of risk**



*Indicates a high-risk, imminently hazardous situation which will result in death or serious injury if not avoided.*

**WARNING**

**Warnings in medium degree of risk**



*Indicates a possible danger with medium risk which may result in a life-threatening situation or (severe) bodily injury if it is not avoided*

**CAUTION**

**Warnings in low-risk or property damages**



*Indicates a possible danger with moderate risk which may result in minor or moderate personal injury or material damage if not avoided.*

### Other signs and definitions

**WARNING**

**Danger by electric voltage**



*Indicates a hazard with a high risk of electric shock which may result in a life-threatening situation or (severe) bodily injury if it is not avoided.*



**Important Note**

*Contains information that should be highlighted.*

*Indicates a potentially damaging situation which can result in a damage of the product or an object in its environment.*



**Note**

*Contains information and facts.*



## 5.1 Safeguards and Precautions

**WARNING**



**Germ contamination**

*Please note that due to the operation in the waste water field the measurement system and cables may be loaded with dangerous disease germs. Respective precautionary measures must be taken to avoid damage to one's health.*

*Wear protective clothing.*

**WARNING**



**Observe occupational safety regulations**

*Before starting installation work, observing the work safety regulations need to be checked. Disregarding may lead in personal injury.*

**WARNING**



**Danger by electric voltage**

*Maintenance, cleaning and/or repairs (by qualified personnel only) may only be performed when deenergised.*

*Disconnect the systems from mains.*

*Disregarding may lead to electric shocks!*



**Important Note**

*Before starting installation work, observing the work safety regulations need to be checked. It is strictly prohibited to disable the safety devices or to change the way they work.*

## 6 Intended use



**Note**

*The instrument is intended solely for the purpose described below. Modifying or using the instruments for any other purposes without the manufacturer's written consent will not be considered as use in accordance with the requirements. The manufacturer cannot be held responsible for any damage resulting from improper use.*

*The user alone bears any risk..*

The Rain gauge is designed for the detection of precipitation in liquid or solid form (snow or hail).

The Rain gauge is engineered and manufactured according to the current state of the art as well as to recognised safety regulations. Danger to persons or material, however, cannot be completely ruled out.

Strictly observe the maximum permissible limit values as specified in chapter „9 Specifications“. Any case varying from these conditions which is not approved by NIVUS GmbH in written form is left at the owner's risk. Modifications must be released in written form by NIVUS GmbH.



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**Note**

Observe the following points for installation and initial start-up:

- Declaration of Conformity
  - Test certificates issued by the respective authorities
  - Valid national regulations
- 

## 6.1 User's Responsibilities



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**Important Note**

*In the EEA (European Economic Area) national implementation of the framework directive 89/391/EEC and corresponding individual directives, in particular the directive 2009/104/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work, as amended, are to be observed and adhered to.*

*In Germany the Industrial Safety Ordinance must be observed.*

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Make sure to have a local operating permit available and observe the associated conditions. In addition to this you must observe environmental requirements and local laws on the following points:

- Personnel safety (accident prevention regulations)
- Safety of work materials and tools (safety equipment and maintenance)
- Disposal of products (laws on wastes)
- Disposal of materials (laws on wastes)
- Cleaning (cleansing agents and disposal)
- Environmental protection

**Connections:**

Operators shall make sure prior to operating the instrument that during installation and initial start-up the local regulations (such as regulations for electrical connection) are observed.

### 6.1.1 Store instructions

Keep this manual in a safe place and make sure it is available for the users of this product at any time.

### 6.1.2 Provide instructions

In case of selling the instrument this instruction manual shall be provided to the purchaser since it is a part of the standard delivery.

## 6.2 Personnel requirements

Installation, commissioning and maintenance shall be executed only by personnel meeting the demands as follows:

- Expert personnel with relevant training and appropriate qualification
- Personnel authorised by the plant operator



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### **Qualified personnel**

*within the context of this documentation or the safety notes on the product itself are persons who are sufficiently familiar with installation, mounting, starting up and operation of the product and who have the relevant qualifications for their work; for example.*

- I. Training, instruction or authorisation to activate/deactivate, isolate, ground, and mark electric circuits and devices/systems according to the safety engineering standards.*
  - II. Education and instruction according to the standards of safety engineering regarding the maintenance and use of adequate safety equipment.*
  - III. First aid training*
- 

## 7 Liability disclaimer

The manufacturer reserves the right to change the contents of this document including this liability disclaimer without prior notice and cannot be held responsible in any way for possible consequences resulting from such changes.

For connection, initial start-up and operation as well as maintenance of the unit the following information and higher legal regulations of the respective country (e.g. VDE regulations in Germany) such as applicable Ex regulations as well as safety requirements and regulations in order to avoid accidents shall be observed.

All operations on the device which go beyond installation or connection measures in principle shall be carried out by NIVUS staff or personnel authorised by NIVUS due to reasons of safety and guarantee.

Operate the Radar sensor only in technically perfect working order.

### **Improper Use**

Not being operated in accordance with the requirements may impair the safety.

The manufacturer is not responsible for failures resulting from improper use.

## Product specification

### 8 Product construction and overview

All parts of the rain gauge are corrosion resistant. The rain gauge head is made of stainless steel (V2A).



- 1 Rain gauge head Type RM200 (without heating) or Type RM202 (with heating for a trouble-free winter operation)
- 2 Data logger (optional)
- 3 Supply unit with plug (optional)
- 4 Stand ZMS 156 for field use; (alternatively ZMS 155 with base plate)

**Fig. 8-1** Rain gauge components

8.1 Dimensions

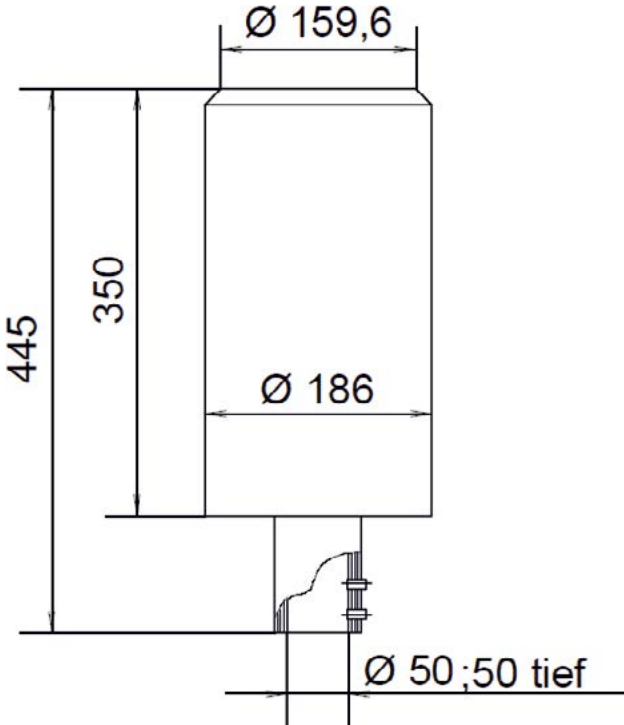


Fig. 8-2 Rain gauge dimensions (enclosure)

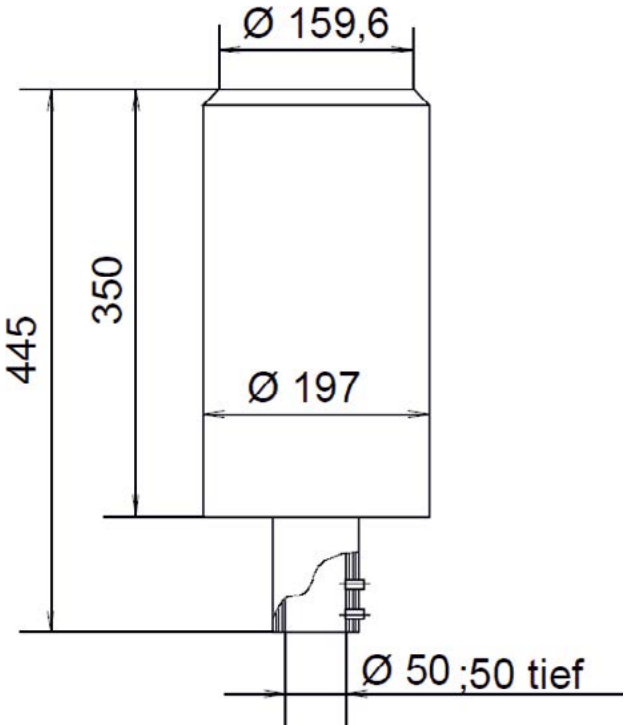


Fig. 8-3 Dimensions Rain gauge with heating (enclosure)

## 8.2 Device Identification

The instructions in this manual are valid only for the type of device indicated on the title page. The nameplate is fixed on the bottom of the device and contains the following:

- Name and address of manufacturer
- CE label
- Type and serial number
- Year of manufacture

It is important for queries and replacement part orders to specify type, year of manufacture and order number. This ensures correct and quick processing.



### Note

*Check the device nameplate to ensure that the device is delivered according to your order. Check if the correct supply voltage is printed on the nameplate.*



You can find the declaration of conformity at the end of this manual.

### Nameplates

 Im Täle 2 D-75031 Eppingen Tel.: +49 (0) 7262 / 9191 0	 Art.Nr. RMT0200  Ser.Nr. RMT00000000
Regenmesser mit Kippwaage	   Made in Germany

Fig. 8-4 Nameplate - Rain gauge, type 200 without heating

 Im Täle 2 D-75031 Eppingen Tel.: +49 (0) 7262 / 9191 0	 Art.Nr. RMT0202  Ser.Nr. RMT00000000
Regenmesser mit Kippwaage und Heizung	   Made in Germany

Fig. 8-5 Nameplate - Rain gauge, type 202 with heating

## 9 Specifications

Collection area	200 cm <sup>2</sup>
Volume of tipping bucket	2 cm <sup>3</sup>
Intensity	max. 11 mm/min
Solution	0.1 mm NS
Accuracy output 1 at 0 - 11mm/min	±3 % *
Ambient temperature (without heating)	0 - 60 °C
Ambient temperature (with heating)	-25 - 60 °C
Dimensions Rain Gauge	ø160 x 350 mm
Mounting onto mast tube	ø50 mm
Weight	3.3 kg
<b>Output signal 1</b>	
Pulse length	125 ms
Pulse frequency	0 - 2 Hz
Power supply	5 - 24 VDC
Standing current (no precipitation/rainfall)	50 µA
Pulse current	80 mA
R <sub>a</sub> Max (R <sub>a</sub> im Interface (V <sub>cc</sub> =5V)	10 kOhm
R <sub>v</sub> (re-resistance in the rain gauge)	100 Ohm
<b>Output signal 2</b>	
Pulse length	50 ms
Pulse frequency	0 - 2 Hz
Contact load	0.5 W
Contact voltage (V <sub>cc</sub> )	42 V
<b>Heating (optional) - Type RM202</b>	
Power supply	24 V
Heating power	48.5 W
Starting temperature	5 °C
Hysteresis	2 °C
<b>Data logger (optional) - Type NivuLog Easy V3</b>	
Power supply for power pack	3.75 V Power pack: 13,6 Ah
Heating - switch-on temperature	IP 66
Data transmission	By GSM/GPRS Quad band modem to the respective "Device to Web"-Server
Data storage	Internal Flash for up to 42.000 measurement cycle
<b>Power adapter for RM 202 - Type RMT0ZNT01</b>	
Primary	85 - 265 VAC
Secondary	24 VDC
Power consumption	48.5 W (heating); ca. 10 W (data logger)
Enclosure protection	IP 65

\* under laboratory conditions

### Storage

Strictly observe the storing conditions below:

- max. temperature: +60 °C
- min. temperature: - 25 °C
- max. humidity: 80 %, on-condensing

When storing, protect the instrument from corrosive or organic solvent vapours, radioactive radiation and strong electromagnetic radiation

## 10 Configuration

### 10.1 Device Types

The Rain gauge is available in two different versions. From this article key the type of device can be specified.

The article key can be found on the nameplate (see page 14).

Rain gauge with tipping bucket	RMT0 200
Rain gauge with heating for winter operation	RMT0 202

### 10.2 Delivery

The standard delivery of the Rain gauge contains:

- The instruction manual including the certificate of conformity and approvals. It contains any relevant information on how to operate the Rain gauge.
- One Rain gauge, type RMT0 200 or 202, according to delivery paper.

Check extra accessories depending on your order and by using the delivery note.

#### 10.2.1 Receiving inspection

Check if your delivery is complete. Check the packaging for visible damage immediately after receipt. Any possible damage in transit shall be instantly reported to the carrier. Furthermore a written report shall be sent to NIVUS GmbH in Eppingen.



#### Note

*Incomplete deliveries shall be reported in writing either to your local representative or directly to the NIVUS head office in Eppingen within 2 weeks.*

*Complaints received later shall not be considered!*

#### 10.2.2 Transport

Protect the Rain gauge from heavy shocks or vibrations. Use the original packaging for transport.

#### 10.2.3 Return

The units shall be returned at customer cost to NIVUS Eppingen using the original packaging. Insufficiently franked shipments will not be accepted.



### **10.3 Installation of spare parts and parts subject to wear and tear**

We herewith particularly emphasise that replacement parts or accessories not supplied by NIVUS moreover are not certified and approved by NIVUS too. Installation and/or the use of such products hence may negatively influence predetermined constructional characteristics of the measurement system or even lead to instrument failures.

NIVUS cannot be held responsible for any damage resulting due to the use of non-original parts and non-original accessories.



You can find original manufacturer spare parts or accessories on page 34.

## Functional Principle

The rain gauge is a measuring device direct measurement of precipitation. There are two ways to install the Rain gauge:

- Field use with thorns to stick them in the ground
- Base plate to screw into concrete

The rain gauge head is made of stainless steel and therefore suitable for use in different environments. The Rain gauge is optional equipped with data storage.

Each device is calibrated per default in the range of intensity of 0-11 mm/min, with a capacity of 200 cm<sup>3</sup>.

## 11 Field of application

The Rain gauge records following sizes:

- Precipitation height
- Rainfall
- Precipitation intensity

The measurement principle is based on interpretation of Guide to Meteorological Instruments No 8 of WMO (World Meteorological Organization).

## 12 Measurement principle

### Information

A precipitation height of 1 mm corresponds to a water volume of 1 litre on 1 m<sup>2</sup> ground area.

The Rain Gauge detects following liquid precipitation (rain) falling on the ground:

- Rain
- Snow
- Hail

The precipitation is conducted on the tipping bucket principle. After having collected a precipitation of 2 cm<sup>3</sup> the bucket tips over and provides the other half of the tipping bucket.

These processes are repeated under constant precipitation.

2 cm<sup>3</sup> tipping bucket volume = 1 tipping bucket pulse = 0,1 mm precipitation

From the 200 cm<sup>2</sup> collecting area the precipitation flows through an influent sieve into the rocket. This influent sieve prevents the drop conduit from being polluted by bird excrements or foliage.

This tipping procedure is detected by a Reed-switch. The Reed-switch generates an output pulse for 0.1 mm of precipitation.

## Output signal as an pulse

These are the following output signals:

- Output signal with 125 ms pulse length to connect downstream PLC.
- Output signal with 50 ms as Reed contact.

The output signal can optionally be stored on a data logger.

## Process collected data

The impulses from the tipping bucket are sent to a (optional) Data logger. The internal electronics store the data in the measurement cycle according to date, time and height.

The Rain gauge transmits the measured data via GPRS to the NIVUS Internet portal Device to Web >D2W<.

There are following functions in the NIVUS Internet portal Device to Web >D2W<:

- Measurement data evaluation
- Status checking
- Data forwarding
- Alarm setting



*Information to data logger maintenance are described in the NivuLog Easy V3 manual.*

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## Rain gauge for winter operation

The Rain gauge, type RM 202 is designed for trouble-free winter operation. This type of Rain gauge is equipped with an electronically controlled heating system. To operate the device an external 24 VDC power supply with min. 60 W power is necessary.

The heating can be operated optional via external 230 VAC power supply.



The optional power supply is listed in chapter 21.

## Setup and connection

### Basic Setup rules

☞ Consider the following instructions regarding ESD and installation site:

1. Ensure proper installation
2. Follow applicable legal or operational guidelines!

Improper handling can result in damage to the equipment!

## 13 Site selection

The accuracy of the precipitation measurement depends on clean measurement equipment as well as a correct installation site. Depending on the wind velocity, a certain amount of the precipitation particles are blown away over the deposit area. Therefore, avoid an installation in a completely open area as well as at the immediate proximity of an object. Gardens e.g., where hedgerows or similar objects offer protection against the wind, are more suitable. Precipitation measurement is a spot measurement. Select an installation location which has representative measurement values for as wide a surface as possible .

### The World Meteorological Organization (WMO) recommends for installation:

Distance = min. height of the next obstacle x 4.

Observe an elevation angle of  $<45^\circ$  towards the surrounding plants, buildings etc.

## 14 Setup



---

### Note

*Install the Rain gauge free of vibration.*

---

Install the Rain gauge in a way, that the collection area is horizontal.

Check the horizontal alignment via the level indicator which is placed in the housing base.

⇒ Level indicator position see Fig. 15-1.

The distance between the upper edge of the Rain gauge and the ground should be 1 m at least. If snowfall is to be expected regularly within the area of the measuring instrument this distance should be increased respectively. If Necessary, place the Rain gauge in an elevated position.

## 15 Installation



### Important Note

- Electrical work must be carried out by specialised staff.
- The device may only be opened in dry environment.
- Exposed electronics must not be damaged.

### 15.1 Mechanical installation

#### Required tools:

- Ring or fork spanner (width over flats 13)
- Internal hex (width over flats 3)

The tool is not included in the scope of delivery.



### Important Note

Do not touch the inner surfaces of the tipping bucket, and do not deform the draining pins.



### Note

Please remove the inflow combination filter/plug of the collecting funnel during the winter period when it is snowing!

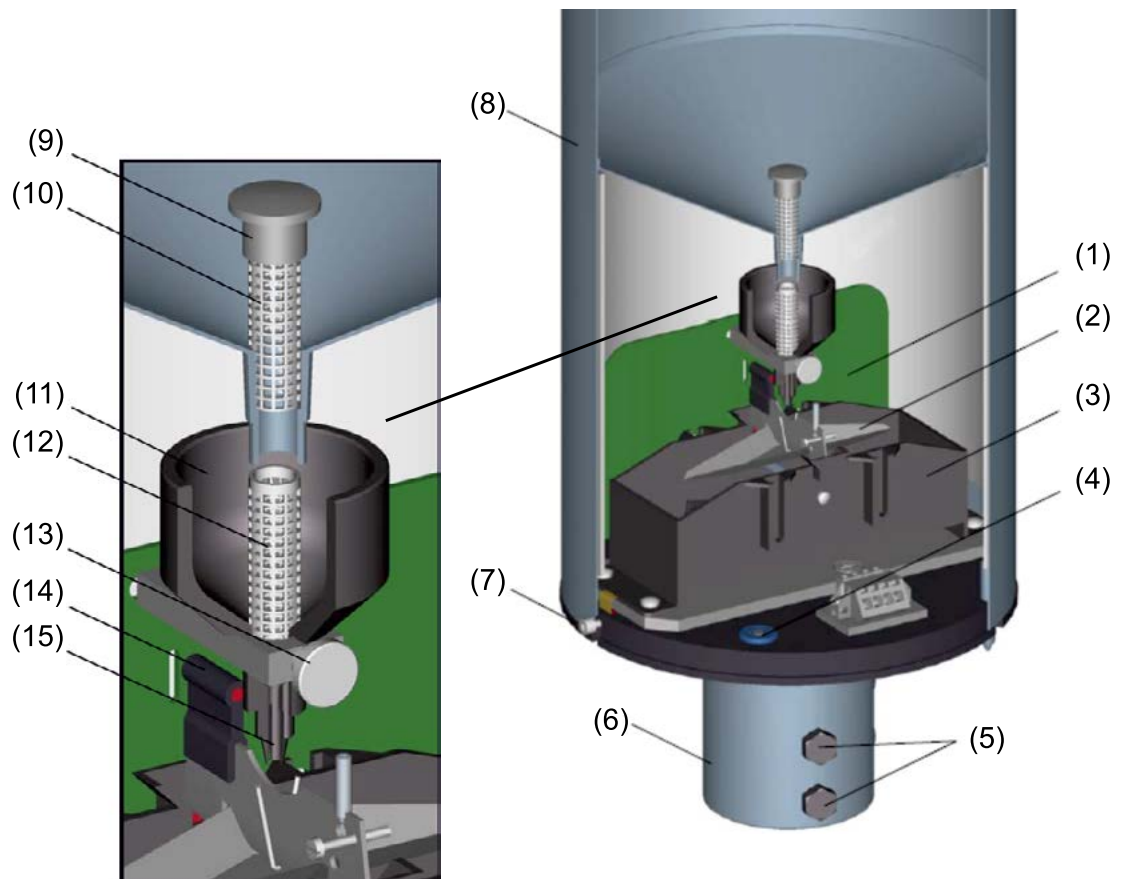


Fig. 15-1 Rain gaug construction

**Legend to illustration 15-1:**

- 1 Board
- 2 Tipping bucket
- 3 Run-off pan
- 4 Level indicator
- 5 Screw for the stand
- 6 Stand
- 7 Screws on the housing
- 8 Housing
- 9 Plug
- 10 Filter
- 11 Collector
- 12 Filter
- 13 Knurled screw
- 14 Magnet
- 15 Nozzle

The following steps describe installation (see illustration 15-1).

- Unpack rain gauge
  1. Take the Rain gauge from the box.
  2. Take the small box out of collecting funnel of the casing (8) .



---

**Note**

*Install the Rain gauge free of vibration.*

---

The tipping bucket is associated with the Rain gauge. Tipping bucket and Rain gauge have the same identification number.

This number located on a small sticker on the following components:

- Collecting funnel box
- Run-off pan
- Rain gauge base
  1. Unpack tipping bucket (1) and filter (12) and set aside.
  2. Remove bag from collecting funnel and set pre-assembled combination of the pieces (10 + 9) aside.
  3. Install Rain gauge onto an optional applicative ground plate or on a stand.
  4. Fix the Rain gauge with the screws (5) on the stand (6).

### ➡ Remove housing

1. Loosen the two screws (7) from housing.
2. Push the housing upwards and remove it.
3. Check if the rain gauge is placed horizontally by using the level indicator on the housing base and correct if needed by tightening or loosening the screws (5) in the stand (6).
4. Loosen knurled screw (13) and collector (11) and push it upwards.
5. Put collector back and fix it.
6. Insert the tipping bucket carefully into the bearing seat of the collector (3).
7. Check tipping bucket manually on undisturbed work.

### ➡ Reassemble Rain gauge

1. Replace the filter into the collector.
2. Put the collector (11) back into lower position and fix it.
3. Cover the housing carefully on the device. Tighten with two housing screws.
4. Insert the combination of filter and plug in the collector passage.

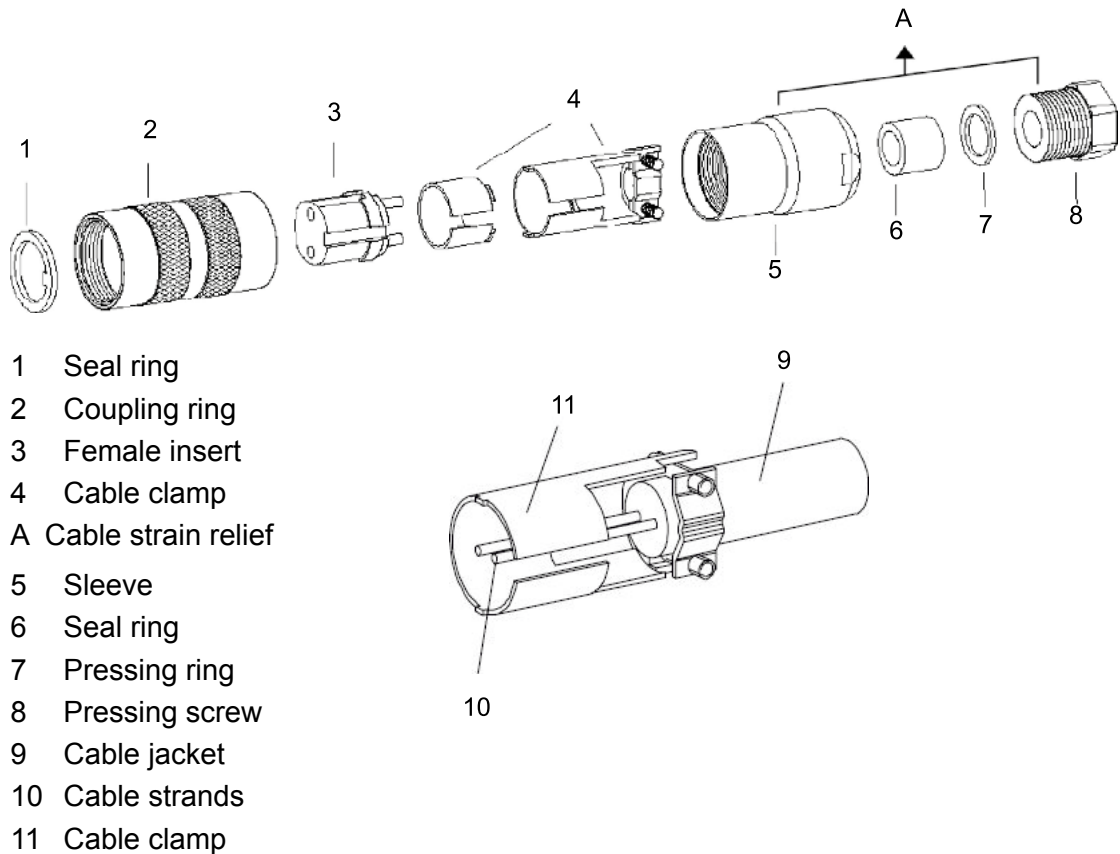
## 15.2 Electrical installation

### 15.2.1 Instruments with Plug

Solder a cable (e.g. LiYCY 0,5 mm<sup>2</sup>) to the attached connecting plug according to the respective connecting diagram.

#### Assemble connectors

Applies only to devices with connection type >plug<.



**Fig. 15-2 Connector assembly**

➡ Assemble the connector according to the following specifications:

1. Thread parts on the cable according to upper illustration
1. Strip cable jacket (9) 20 mm
2. Shorten exposed cable shield by 20 mm
3. Strip cable strands (10) 5 mm
4. Solder cable strand to female insert (3)
5. Position cable clamp (11)
6. Screw on cable clamp
7. Assemble remaining parts according to the illustration
8. Tighten cable strain relief (A) with wrench, size 16 and 17.

➡ Connect Rain gauge

If the rain gauge (type RM 202) is equipped with a heater, connect the power supply (optional).

➡ Heating see Accessories.



## 16 Connection

### 16.1 Connect Rain gauge head

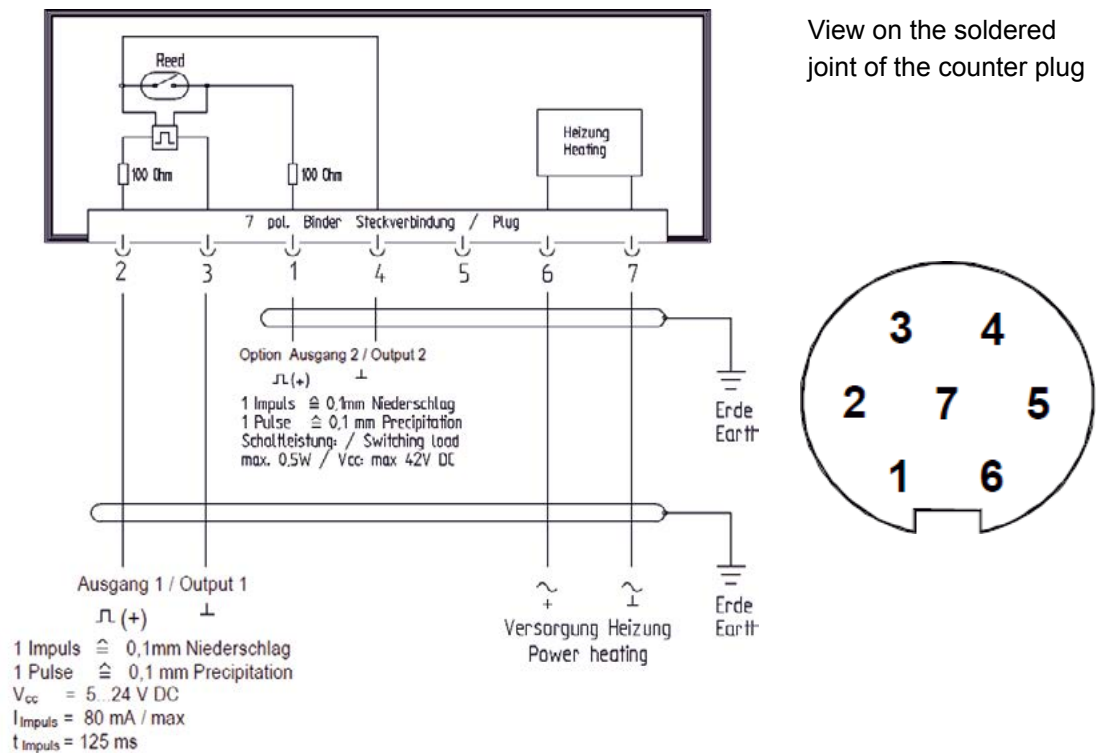
#### Instruments with terminal strip

Clamp a cable (for ex. LiYCY 0,5 mm<sup>2</sup>) to the built-in terminal strip acc. to the respective connecting diagram.



#### Note

Connections 5 and 6 of the terminal strip are not used at the Rain gauge without heating.



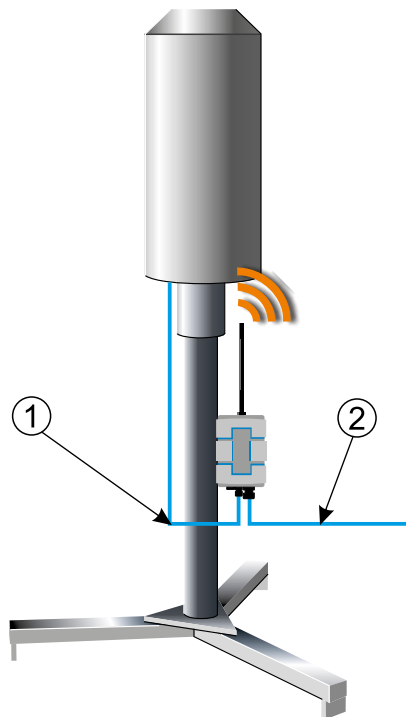
Nur Ausgang 1 oder Ausgang 2 beschalten

only Output 1 or Output 2 connected

**Fig. 16-1** Wiring diagram

## 16.2 Data logger connection

Rain gauge with data logger (with or without heating)



- 1 Connection cable between data logger and Rain gauge
- 2 Charging voltage rechargeable battery / Power supply heating

Fig. 16-2 Rain Gauge (with / without heating) with Data logger

### Wiring diagrams

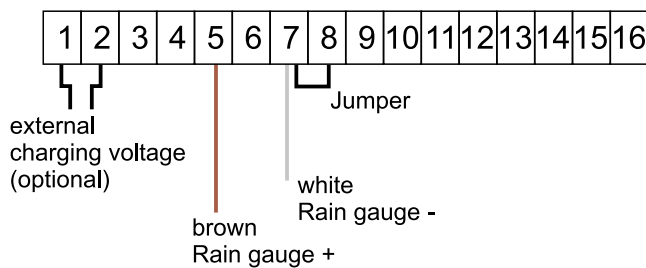


Fig. 16-3 Clamp assignment Data logger f. Rain Gauge without heating

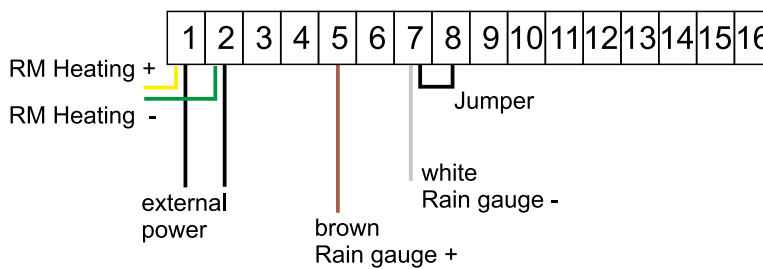


Fig. 16-4 Clamp assignment Data logger f. Rain Gauge with heating

Rain gauge with data logger and power supply unit for heating

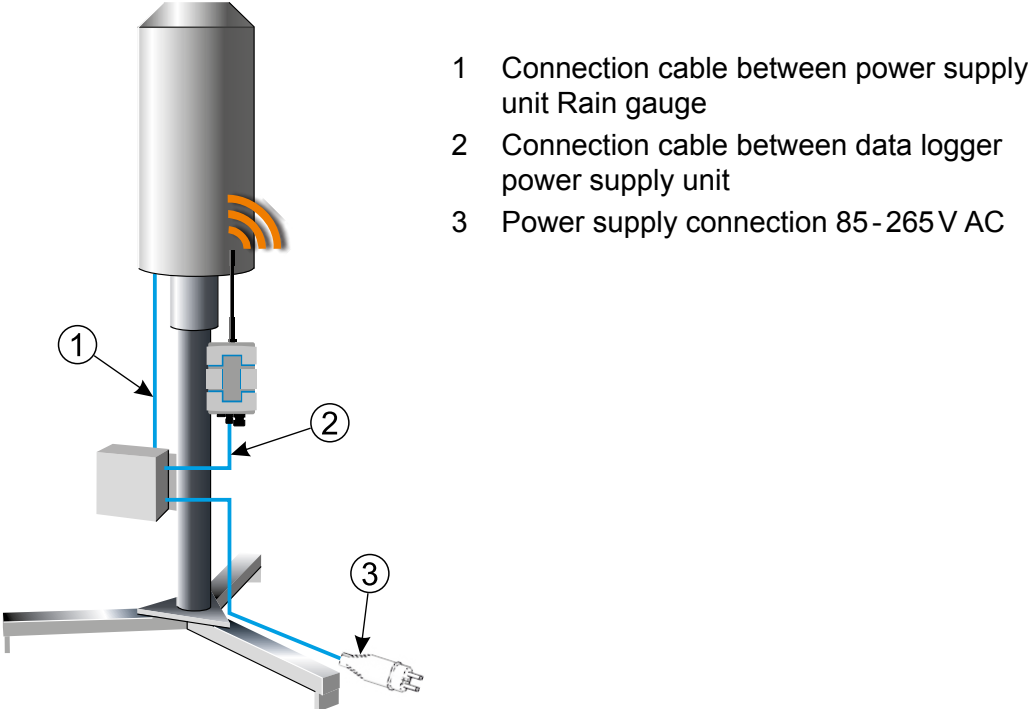


Fig. 16-5 Rain Gauge wit heating, data logger and power supply

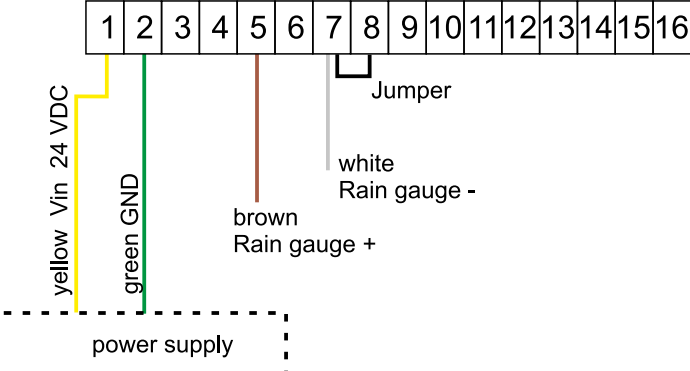


Fig. 16-6 Clamp assignment Data logger with power pack

### Pin assignment data logger

V IN	External power supply or charging voltage
GND	Earth (external power supply or charging voltage)
NO	Potential-free switch contact
CC	
V EXT	Switchable sensor supply (3.3V)
GND	Earth
UI1	Universal input 1
UI 2	Universal input 2
UI 3	Universal input 3
UI 4	Universal input 4
GND	Earth
V OUT	Switchable sensor supply
GND	Earth
RTD+	Clamps for external temperature sensor (2-wire or 3 wire)
RTD-	
TCOM	

Terminal 1 and 2 of the data logger are for:

- External power supply as charging voltage for rechargeable batteries
- Power supply for Rain gauge heating

#### Power values for charging voltage:

- 12 to 32V DC; max. 9W

#### Power values for Rain gauge heating:

- 24V DC; min. 60W

## 16.3 Connection via Output 1

The Rain gauge transmitter is supplied via the signal line (two-wire-circuit)

#### Example 1:

Therefore,  $R_a$  may be a maximum of 10 k $\Omega$  in the interface at a voltage of  $V_{cc} = 5V$ .

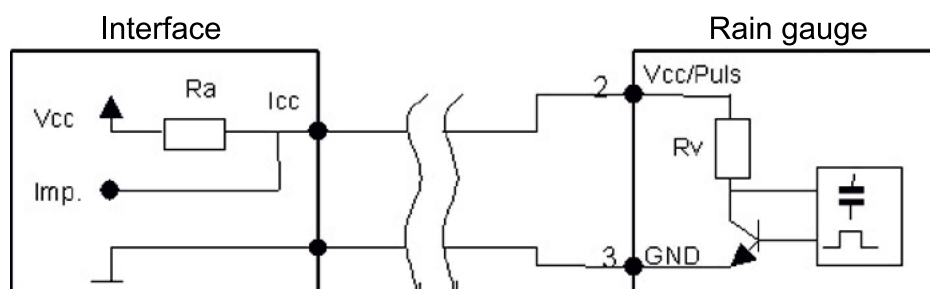


Fig. 16-7 Connection to an Interface

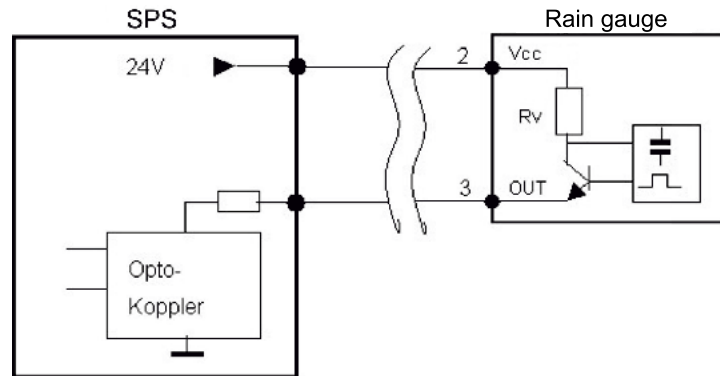
**Example 2:**

Connection to a SPS:

The maximum pulse current must not be exceeded.



See Specifications on page 15



**Fig. 16-8 Connection to a SPS**

## 16.4 Data logger power supply

The data logger is supplied by a rechargeable battery with 3.75 V and 13.6 Ah.



*How to connect the data logger may be found in the instruction manual for data logger NivuLog Easy V3.*

↻ Recharge battery:

1. Remove data logger from the holder.
2. Disconnect rechargeable battery pack



**Note**

*If the rain gauge is not in use for a long time we recommend to charge the battery every 3 months.*

## Initial start-up

### Notes to the user

Strictly follow the notes before you connect and operate the Rain gauge. To ensure a correct function of the Rain gauge this instruction manual must be read thoroughly! If any problems regarding installation, connection or programming should occur please contact our technical division or our service center.



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### **Important Note**

*Remove filter and plug of the collector for trouble-free winter operation.*

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## 17 Operation preparation

Place the device as described in chapter XXX.

Connect to power supply subsequently.

### **Rain gauge with heating**

Connect the Rain gauge to a 24 V DC power supply.

For 230 V AC use the optional power supply unit.

### **Rain gauge without data logger**

Connect the cable (LiYCY 0,5 mm<sup>2</sup>) using the included plug according to the **connection diagram**

The data logger saves the measured impulses and deliver is to the **internet portal Device to Web (D2W)** via GPRS.

## 18 Parameter setting data logger



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### **Important Note**

*For configuration of the measurement place in D2W, use only the template*

**>Regenmesser / Raingauge NIVUS Easy V3<**

---

The rain gauge with data logger only works in combination with the internet portal Device to Web (D2W) of NIVUS. Parameter settings of the data logger are via the internet portal.

Further information to the parameter setting is available in the following documents:

- Instruction manual NivuLog EASY V3
- User manual D2W – Device to Web



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*You can find the description of the measurement point configuration in the internet portal in >user manual for Device to Web data collection system (D2W)< of NIVUS.*

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*You can find information to the data logge parameter setting in the instruction manual for data logger NivuLog Easy V3.*

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## Maintenance

### 19 Rain gauge head maintenance



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**Important Note**

*All electrical work may only be executed by authorized qualified personnel*

- *Always open the instrument in a dry and clean environment.*
  - *Make sure to avoid damaging the exposed electronics.*
- 

For smooth operation results it is necessary to maintain the unit regularly.

The device is designed to have all parts requiring maintenance freely accessible after removing the enclosure shell (funnel).

#### 19.1 Maintenance interval Rain gauge head

The maintenance interval should depend on the degree of pollution of the instrument. It is advisable to make a visual inspection at short intervals as particles falling from above, such as foliage, bird dropping etc. can affect the measurement.

**Do not use any benzene, alcohol, or other cleansing agents**

#### 19.2 Maintenance interval data logger

The data logger needs regular maintenance work, but every 6 months at the latest.

Information regarding data logger maintenance can be found in the Instruction manual of NivuLog Easy V3.

If the rain gauge is not in use for a long time we recommend a maintenance cycle of 3 months. Maintenance of the system includes charging the battery and verification of the memory card inside of the data logger.



## 20 Rain gauge head cleaning



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### **Important Note regarding the cleaning**

- Do not use benzine, alcohol or other cleansing agents.
  - Never treat the inner surfaces of the tipping bucket with emery paper or something similar.
  - Do not touch the inner surfaces of the tipping bucket
  - Do not deform the draining pins
- 

The procedure of cleaning is shown below. Also refer to Fig. 15-1.

### **Usual cleaning practice**

- ➡ Turn of the power of heating and data logger.
- ➡ Remove the case of the rain gauge head.
  1. Pull the filter (10) upwards out of the housing (8)
  2. Clean filter under running water
  3. Pull second filter (12) out of the collector (11)
  4. Clean the second filter too
  5. Loosen knurled screw
  6. Remove collector (11) with nozzle(15)
- ➡ Clean the nozzle bore carefully by using a small bottle brush.



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### **Important Note**

*Be careful that the inner surface of the tipping bucket may not be dirty.  
Do not deform the draining pins*

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### **Tipping bucket cleaning**

1. Remove the tipping bucket (2) carefully from the bearing seat.
  2. Clean the inner surfaces with clear water. If heavily soiled (grease) clean with gentle soap water.
  3. Use soft brush for cleaning.
  4. If indicated, clean also the run-off pan (3).
- ➡ Once parts have been cleaned re-insert the parts in reversed order.

## 21 Accessories

RMT0 ZNTH 01	Mains adapter for RM 202 with heating; 85-265 V AC
NLM0 PSU 413D	Rechargeable battery pack for data logger; 3.75 V / 13.6 Ah, charging temperature 0...+40 °C
NLM0 PSU 413D+	Rechargeable battery pack for data logger; 3.75 V / 13.6 Ah, charging temperature -20...+60 °C
NLM0 LADPSU	Battery charger for rechargeable battery packs, 4,1 V for NLM0 PSU 413D or NLM0 PSU 413D+
ZUB0 KABRMEASY	Connection cable between data logger and Rain gauge or power supply unit
NLM0 ANTFMEMULT	Multi-band antenna
NLM0 HALEASY	Mounting bracket
ZUB0 KABUSB01	USB connection cable for SIM configuration
ZMS0 1550	Stand with ground plate and fastening tube 650 mm
ZMS0 1560	Stand for field use incl. tensioning system; fastening tube 650 mm

You can find more accessories in the current NIVUS price list.

## 22 Dismantling/Disposal

- ➡ Disconnect the Rain gauge from mains power.
- ➡ Dispose the Rain gauge according to applicable local regulations on environmental standards for electronic products.




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### **EC WEEE-Directive logo**

*This symbol indicates that the Directive 2002/96/EG on waste electrical and electronic equipment requirements shall be observed on the disposal of the equipment.*

*The unit contains a buffer battery (Lithium coin cell), which must be disposed separately.*

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## EU Konformitätserklärung

*EU Declaration of Conformity*

*Déclaration de conformité UE*

NIVUS GmbH  
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Telefax: +49 07262 9191-999  
E-Mail: info@nivus.com  
Internet: www.nivus.de

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

<b>Bezeichnung:</b>	<b>Regenmesser</b>
<i>Description:</i>	<i>Rain Gauge</i>
<i>Désignation:</i>	<i>Pluviomètre</i>
<b>Typ / Type:</b>	<b>RMT0...</b>

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

*we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:*

*nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:*

- 2014/35/EU
- 2014/30/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug die nachfolgend genannten anderen technischen Spezifikationen:

*The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:*

*L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:*

- EN 61000-6-2:2005
- EN 61010-1:2010
- EN 61000-6-3:2007-A1:2011

Diese Erklärung wird verantwortlich für den Hersteller:

*This declaration is submitted on behalf of the manufacturer:*

*Le fabricant assume la responsabilité de cette déclaration:*

**NIVUS GmbH**  
**Im Täle 2**  
**75031 Eppingen**  
**Allemagne**

abgegeben durch / *represented by / faite par:*

**Marcus Fischer** (Geschäftsführer / *Managing Director / Directeur général*)

Eppingen, den 20.04.2016

Gez. *Marcus Fischer*