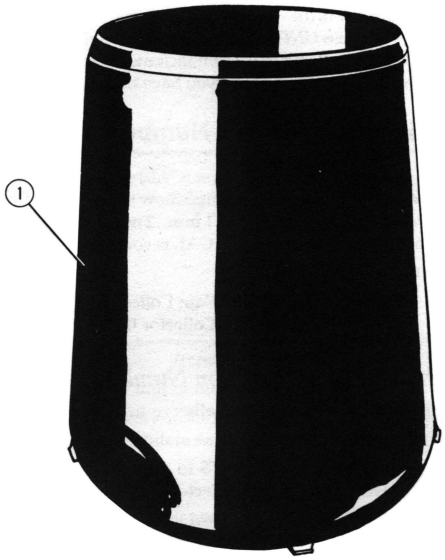
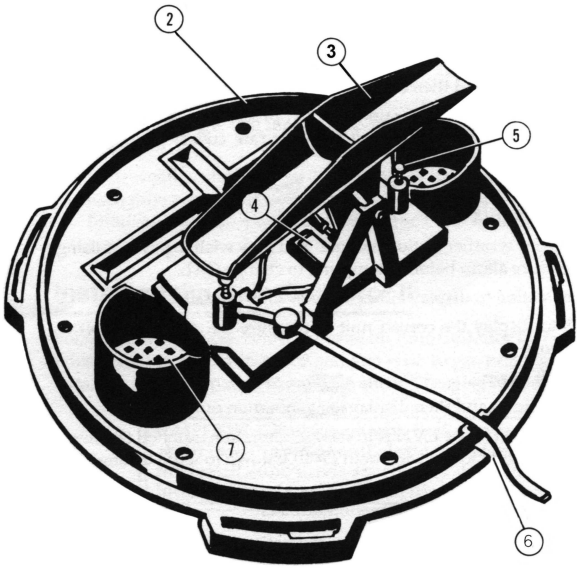
Precipitation Sensor

GROUP 7	RAIN
NO.	**7041.0000**
VERSION / DATE / NAME	10/ 08..2015 / KI





Description

Precipitation sensor type 7041 is designed to measure the amount and intensity of rain by using the tipping bucket rain gauge system. The optional type with built-in heating is -in a limited range- able to measure solid precipitation (snow, hail) as well.
The orifice of this instrument is approx. 200 cm², approaching the rules of the German Meteorological Service. The corresponding bucket content is 4 cm³, featuring a resolution of 0.2 mm per m² precipitation (version 7041.0000 and .1000).
Precipitation events can be recorded by means of a built-in datalogger (versions 7041._100).

Construction

The instrument consists of collecting funnel (1), base plate (2), tipping bucket (3), Reed switch (4), stop screws (5), cable outlet unheated version (6) and grids (7). A heating, controlled by thermostat, is optionally available (version 7041.1000); in this case the collecting funnel is insulated.
The data logger (version 7041._100) is placed in a separate housing, accessible after removing the collecting funnel. The interface is built as an USB connector. Power supply is achieved by means of a Li-battery on the data logger's print plate.

THEODOR FRIEDRICHS & CO. | Meteorologische Geräte und Systeme GmbH
KONTAKT | **P** +49. (0) 40. 839 600 - 0 | **F** +49. (0) 40. 839 600 - 18 | **E** info @ th-friedrichs.de

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Technical Data

Orifice:	approx. 200 cm² (211 cm²)
Bucket content:	approx. 4 cm³
Resolution:	0.2 mm per m² precipitation
Operating range:	0...15 mm/min
Accuracy:	± 4 % for 0…25 mm/h ± 5 % for 0…50 mm/h
Output:	Reed switch Recommended load 12 V DC / 10 mA max.
Heating:	Type 7041.1000 / 7041.1100 24 V AC / 24 W thermostat controlled
Dimensions:	∅ 165 x 241 mm
Weight:	approx. 1.3 kg
Connection cable:	unheated versions: 10 m cable heated versions : terminal bar

Data logger

Memory capacity:	approx. 16 K data sets
Length of data set:	8 bit
Storage interval:	1 s up to 10 d (selectable)
Power supply:	Li-battery 3.7 V; 1/2 AA
Operating period:	approx. 2 years
Refer to separate brochure for further details (1032.0000).	

Ordering Code

Precipitation sensor with Reed contact, 0.2 mm resolution:	**7041.0000**
As above, incl. data logger:	**7041.0100**
Precipitation sensor with Reed contact, 0.2 mm resolution, with built-in heating:	**7041.1000**
As above, incl. data logger:	**7041.1100**
Configuration- and evaluation software:	**1032.0000**
RS 232 interface cable for data read-out:	**1032.1100**
USB interface cable for data read-out:	**1032.1200**
Power supply, suitable for type 7041.1000 and 7041.1100	**1732.0000**

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Installation

1. Selection of measuring site:
   Following hints have to be considered:
   - Larger obstacles, like trees and buildings should not be close to the site, as they would cause shadowing.
   - A plain surface has to be used as a base (for example socket type 9012). Take care that the base plate is correctly aligned horizontally (use a water level).
   - Make sure that the rainwater can flow off freely.
   - Items made of steel or iron should have a distance of at least 4 cm from the unit.
   - Choose a site which is easily accessible for cleaning and which is as little polluted by dust, seeds etc. as possible.
2. Open the instrument by turning the collecting funnel counter clockwise. Screw down the base plate on its socket. Screws should be tightened carefully (not too tight).
3. Connect the cable to a suitable data acquisition unit (for example datalogger COMBILOG 1022), optionally to a suitable power supply (for example type 1732).
4. Check the function by moving the tipping bucket manually. One pulse corresponds 0.2 mm.
5. Place the collection funnel onto its base plate again, by clockwise turning (bayonet). Take care, that the cable remains in its correct position in the outlet groove.
6. Place the collecting grid in its position in the centre of the collecting funnel.
7. Fix the cable.

Maintenance

The instrument has frequently to be cleaned from leaves, dust or other pollution. Once or twice a year, it should be cleaned by means of a warm soap solution. Take care that the grids are not blocked.

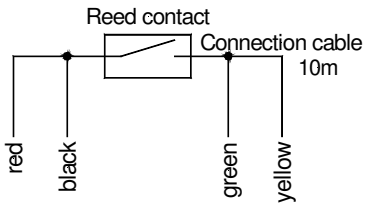
Recalibration

The instrument is adjusted for tipping point at exactly 0.2 mm rain. If ever a deviation is detected and a correction is necessary, this point can be changed by means of the stop screws (5), underneath the tipping bucket. On the base plate there is an engraved scale showing the equivalent amount of change, caused by one screw revolution.
Turning the screws in positive (+) direction results in a more frequent tipping.

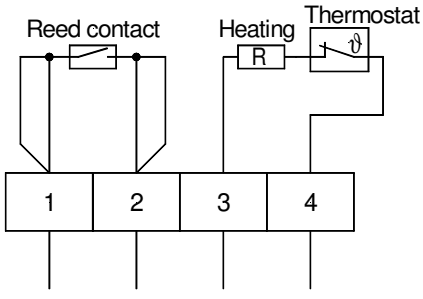
Please note that both screws have to be changed by the same degree!

Connection plan

Type 7041.0000



Type 7041.1000



Terminal strip

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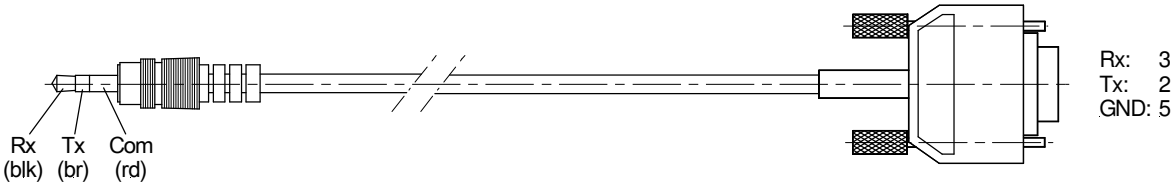
Data Logger Version

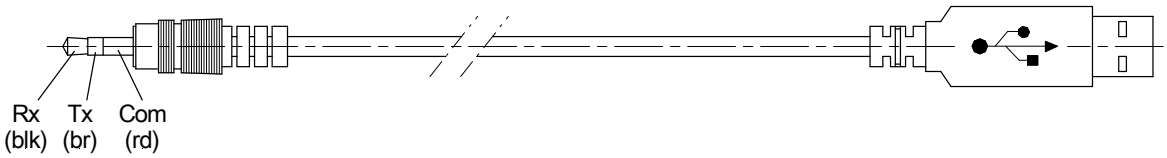
Interface Cable

RS 232 Type 1032.1100, for types 7041.-1 - -
USB Type 1032.1200, for types 7041.-1 - -

Data logger: Coaxial plug PC Sub-D, 9 p.



Data logger: Coaxial plug PC: USB



Logger side Computer side

ATTENTION: Always connect interface cable to datalogger, first!

WARNINGS!

- If the equipment is installed or used in a manner not specified by the manufacturer then the protection provided by equipment may be impaired.
- This equipment contains a lithium battery. Danger of explosion if the battery is incorrectly replaced. Do not cut open, incinerate, expose to temperatures above 85°C (185°F) or recharge. Dispose of in accordance with local regulations.
- The battery should be replaced by a trained technician using the battery supplied in the appropriate manufacturer's service pack.
- This equipment should only be interfaced to equipment which is powered by a Safety Extra Low Voltage Supply. The maximum voltage levels are to be 30 V rms, 42 V peak or 60 V dc and separated from hazardous voltages by double or reinforced insulation. For the United States consider a Safety Extra Low Voltage Supply to be Class 2 source as defined in the National Electrical Code. If the unit is connected to a computer outdoors the computer must also comply.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause any harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For data readout always use Th. Friedrichs type 1032.1100 cable, only!

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