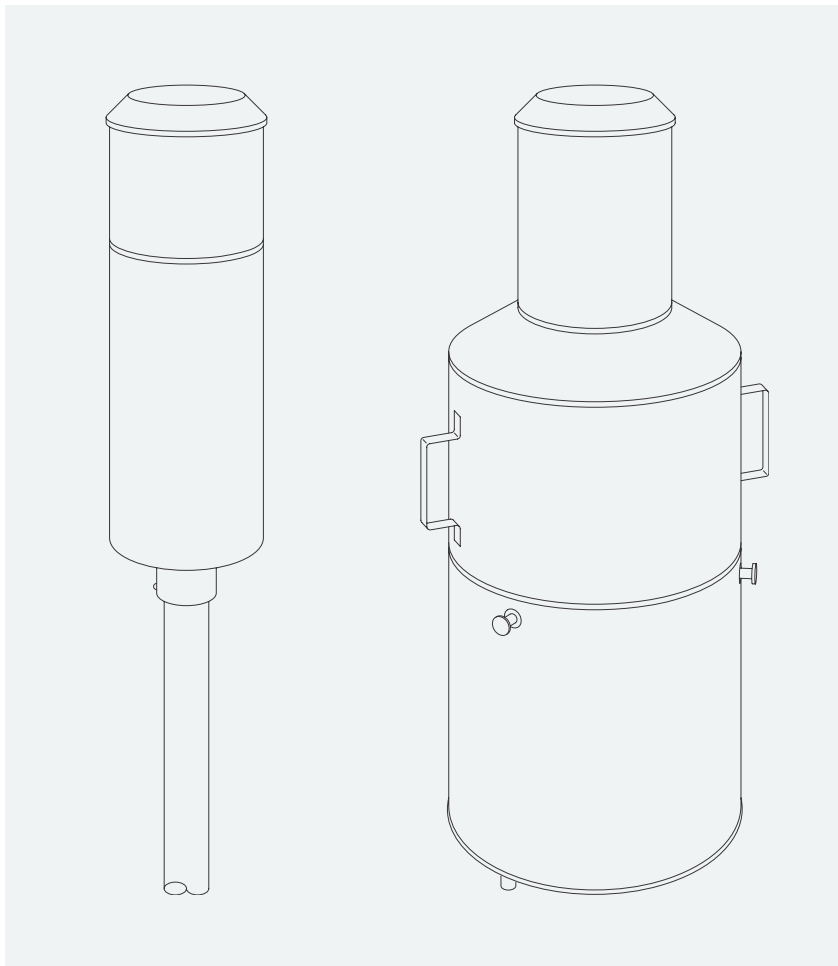


Technical Description
Rain Gauge
Pluvio with Pulse Output



We reserve the right to make technical improvements!

The rain gauge PLUVIO is available in **two basic versions**:

1. version with PLUVIO input board and **data logger OTT-LOG**
2. version with **pulse output**

Pulse output

The version with pulse output is lower-priced than the data-logger type. Use of this version is planned for external data acquisition systems. The increases in precipitation that are stored are output in the form of pulses.

Design

The basic device (weighing mechanism and housing) does not differ from the other version of the device. Instead of the OTT-LOG printed board the pulse-output board, which has the same size, is installed. A PLUVIO input board is not required.

Normally, the external connection is effected with two integrated lightning-protection modules that are situated on the back side of the device. In case of particularly short connection cables, a version with connecting terminals without lightning protection is available.

Internal powering with storage batteries has not been arranged for. It is more useful to power PLUVIO directly via the external data acquisition system.

Function

An internal timer unit automatically and constantly fixes the **measuring interval** to one minute. The timer module is always power-supplied.

The measuring and evaluation electronic systems are activated every minute and carries out one complete measurement. All weight increases are recognised as precipitation and are output directly after the measurement in the form of a pulse packet.

The measuring weight of the weighing cell is re-treated by a software signal filter, which causes a **four-minutes delay in the output** of all precipitation values.

Minimum precipitation below an intensity of 0.006 mm/min can be delayed by up to 25 minutes by using another filter algorithm.

These delay times are necessary in order to ensure the reliable elimination of wind influences.

All measuring devices are calibrated in the factory. The **calibration factor** is permanently stored in the EEPROM. Therefore, it is recommended not to use the printed boards of one device in another device.

By means of a **housing contact switch** the evaluation-electronic unit recognises whether the device it is in automatic mode or in operating mode. During operation with open housing pulse output is inhibited. After the housing has been closed again, a security period of two minutes has to elapse before the measuring operation is resumed.

Outputs

The stored increases in precipitation are output in the form of pulses. Output of the **pulses** in one block is effected immediately after measurement of weight and evaluation of precipitation took place. The time until data output can amount to as much as 50 seconds (15 mm/min).

Two electrically isolated output wirings and two levels of resolution are available at will.

Wiring: Relay contact (make contact)
Power source (impressed current 20 mA, no analogue output)

Resolution: 0.01 mm per pulse, output frequency 30 Hz balanced
0.1 mm per pulse, output frequency 3 Hz balanced

Each precipitation event is output simultaneously in "tenths" and in "hundredths". Both the two output wirings and the resolution levels are discretionary. Contact is made at ten separate connection terminals.

The outputs are equipped with relay contacts. Their bouncing time is < 3 ms.

For connection examples cf. drawing
"PLUVIO pulse output: Configuration terminal of strip terminal".

Power failure

In case of power failure only the timing unit and the RAM data memory of the evaluation processor are buffered for approximately two days by a gold cap, no measurements are taken during that time.

When the distribution voltage is recovered, the measuring operations are automatically resumed. The device-specific calibration is preserved (EEPROM).

If the device is re-operated within the first two days after the power failure, the entire amount of precipitation that was measured in the meantime is output immediately afterwards.

If the distribution voltage is only recovered after a longer period of time, the amount of precipitation that has fallen during the power failure is irretrievably lost.

Technical data:

- Model designation: PLUVIO pulse output
Printed board: No. 70.010.101.3.8
Firmware: PLU_IMP.HEX
- Power supply: 8 to 16 V (filtered direct-current voltage)
- Current consumption: active mode < 25 mA, standby mode < 50 μ A
with activated power source: < 50 mA
- Measuring interval: 1 min
- Duration of measurement: approx. 4 s
- Temperature range: -30 to +70 °C
- Measuring range: 0 to 15 mm precipitation per minute
- Resolution: 0.1 mm and 0.01 mm per pulse

Pulse output:

- Power source: 10 to 20 mA, power supply: 8 to 24 V
- Current-carrying capacity of contacts: 60 VA, 110 V, 1 A
- Insulation: 1,500 V
- Line impedance: < 25 Ω per wire / lead
- Maximum line length: approx. 1 km

- Dimensions: 160 x 100 x 32 mm

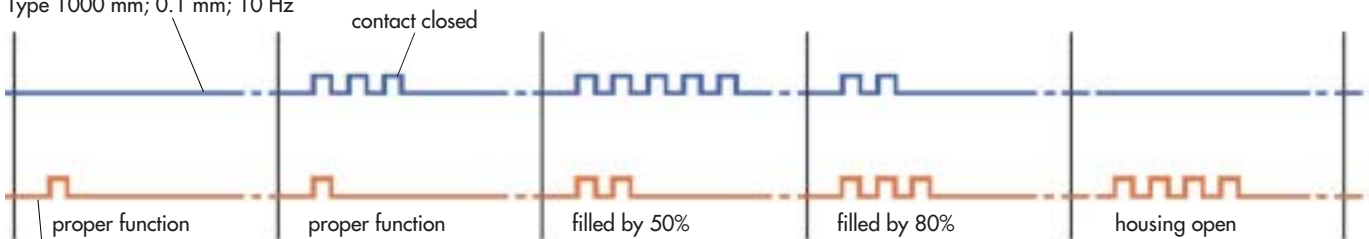
Description Status Output

The status signal consists of 1 to 5 symmetric pulses and is given per minute after completion of the measurement. A pulse takes 50 ms. For the output of the control pulses per minute the existing second output of 0.1 mm (type 250 mm) or 1.0 mm (type 1000 mm) is used. Here the "contact output 0.1 mm (1.0 mm)" and also the "current source output 0.1 mm (1.0 mm)" can be used.

Number of pulses	Meaning of the status pulses
1	proper function
2	proper function and content of vessel 50%
3	proper function and content of vessel 80%
4	proper function and housing open

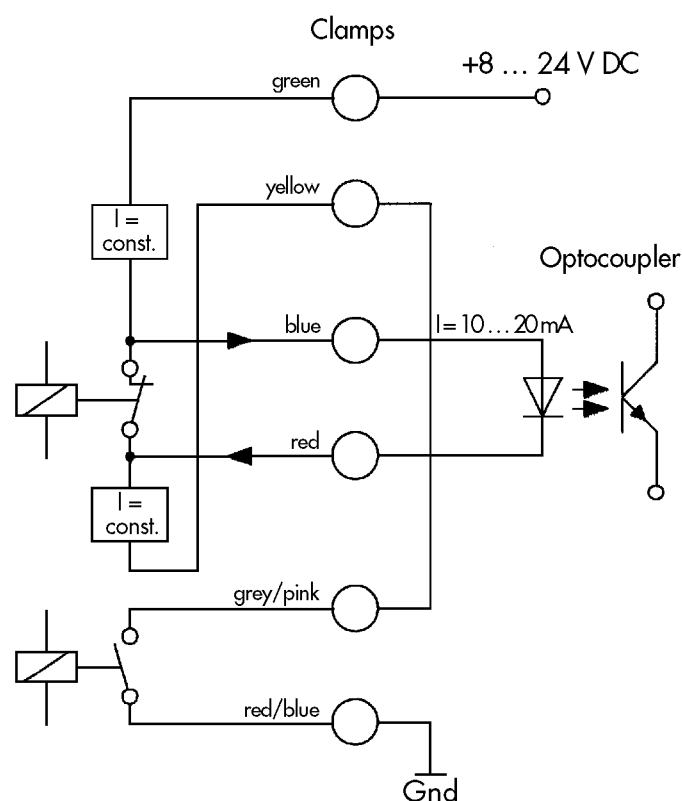
Example:

Output of precipitation
 Type 250 mm; 0.01 mm; 30 Hz
 Type 1000 mm; 0.1 mm; 10 Hz

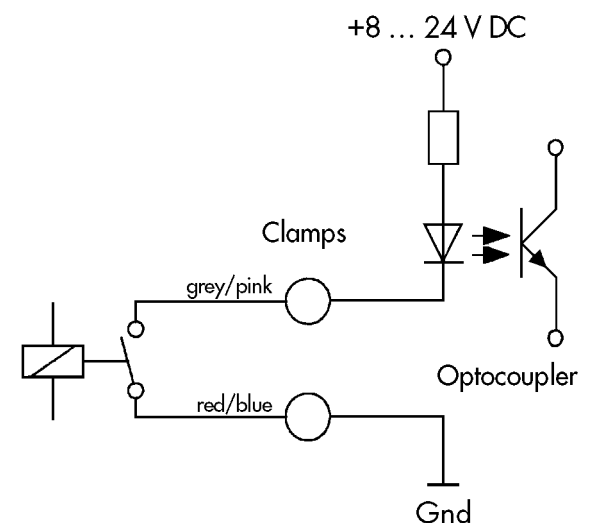


Status signal
 Type 250 mm; 10 Hz
 Type 1000 mm; 10 Hz

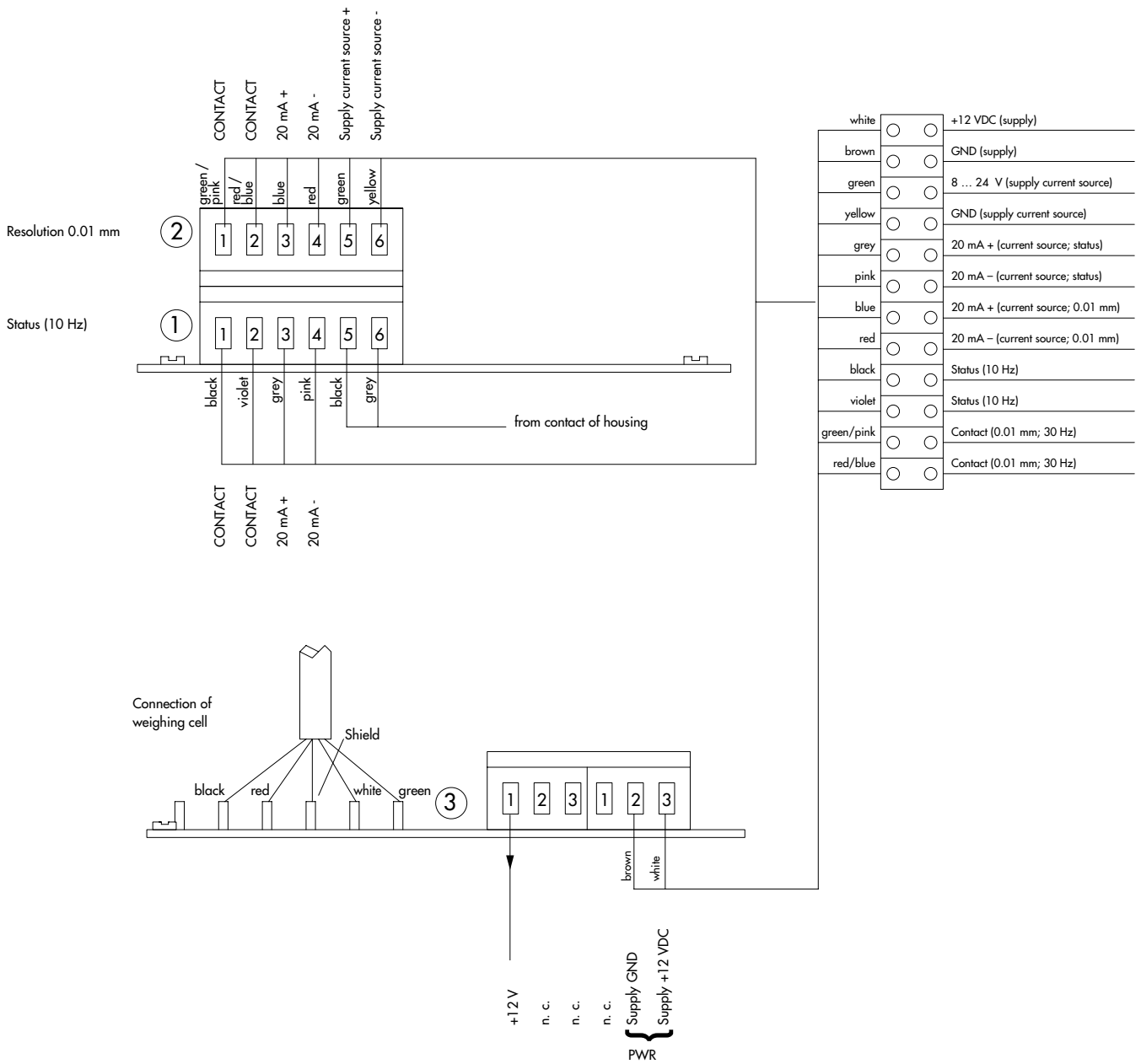
Example of connection 1: Current source 0.01 mm; f = 30 Hz



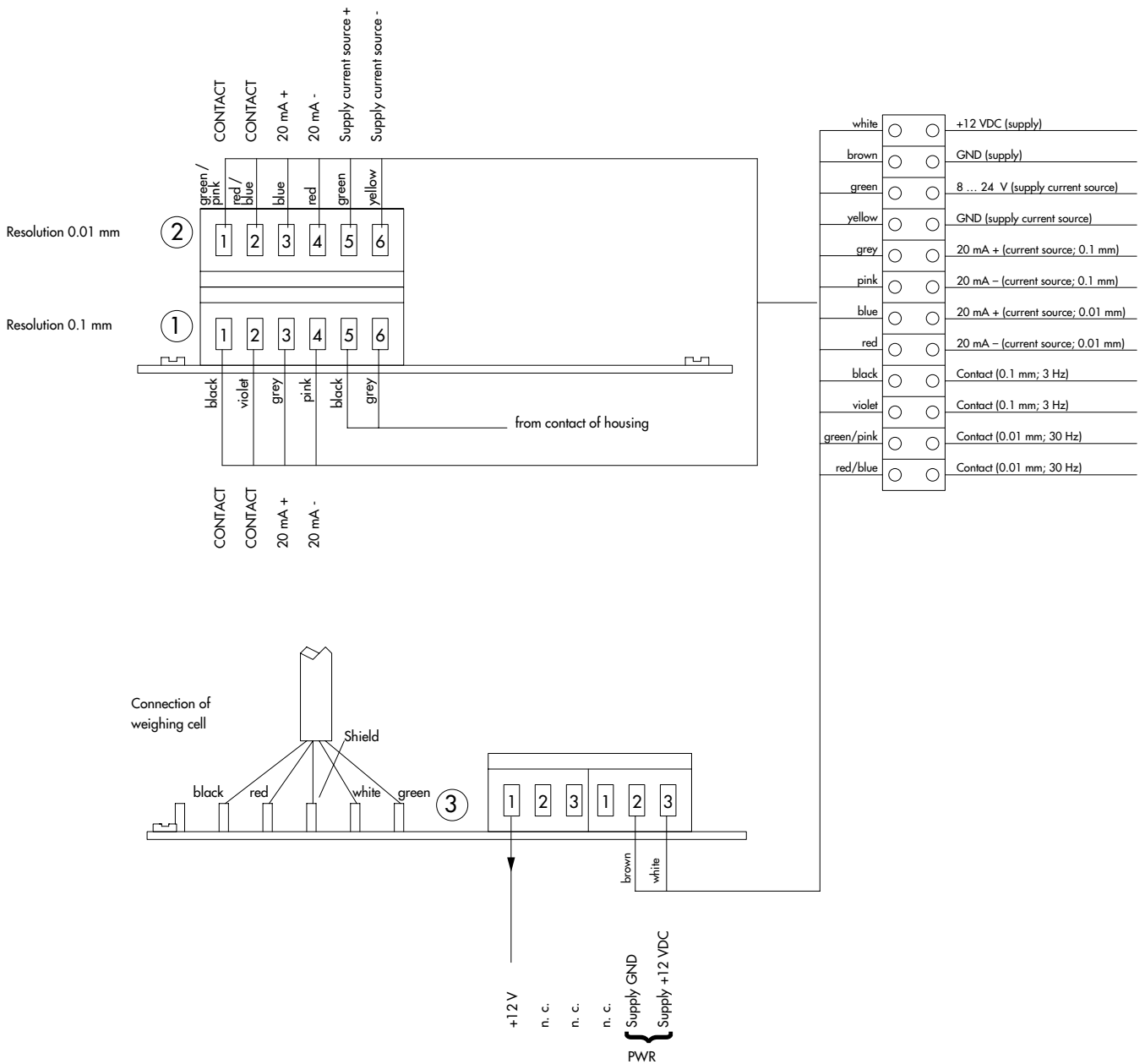
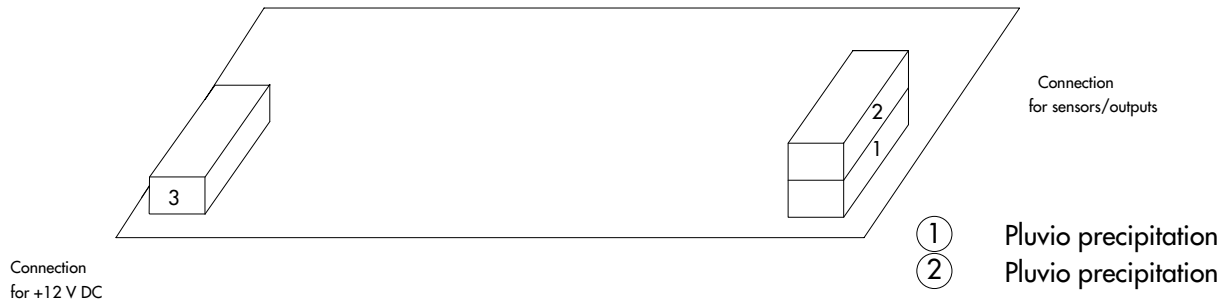
Example of connection 2: Contact assignment 0.01 mm; f = 30 Hz



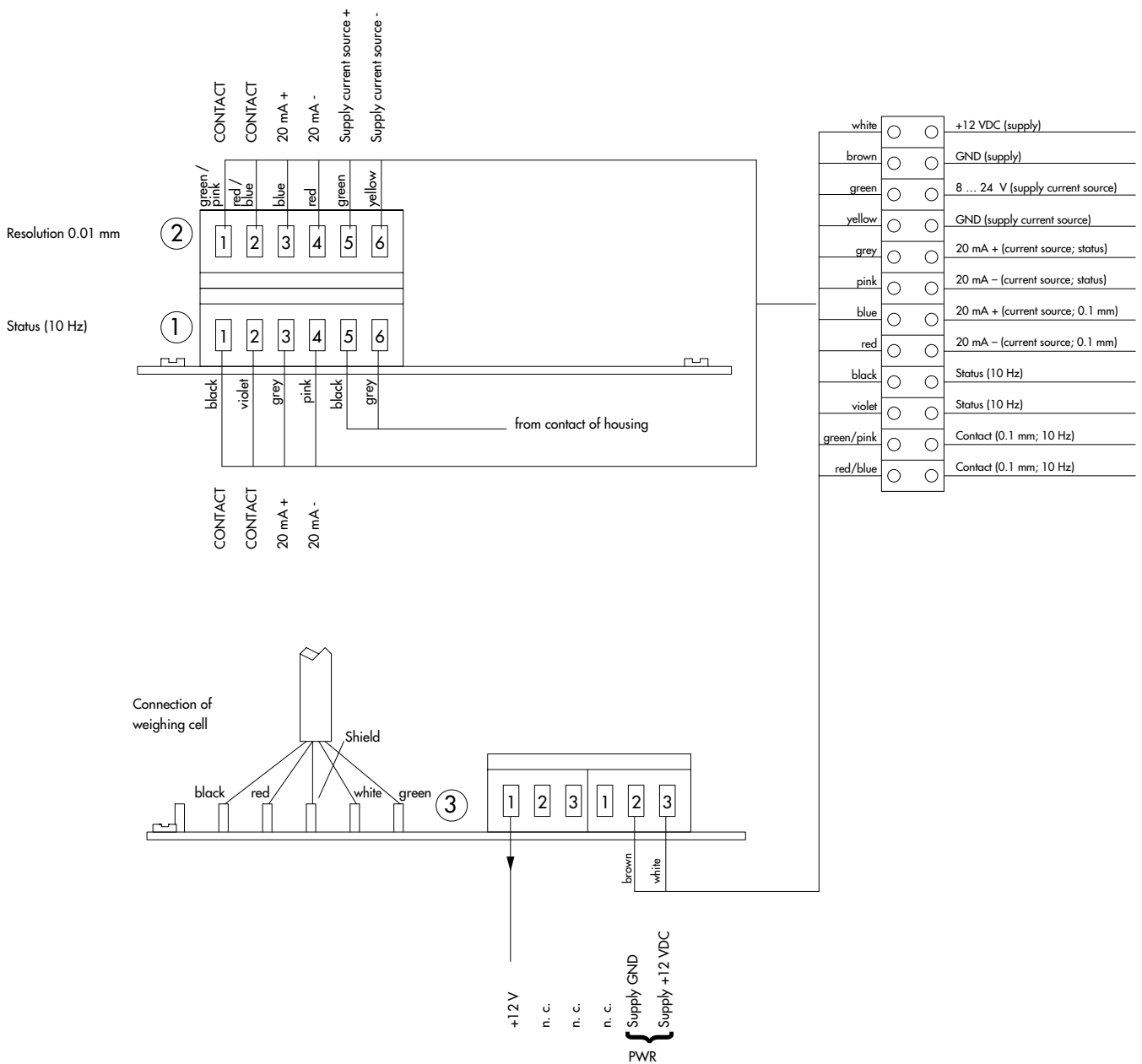
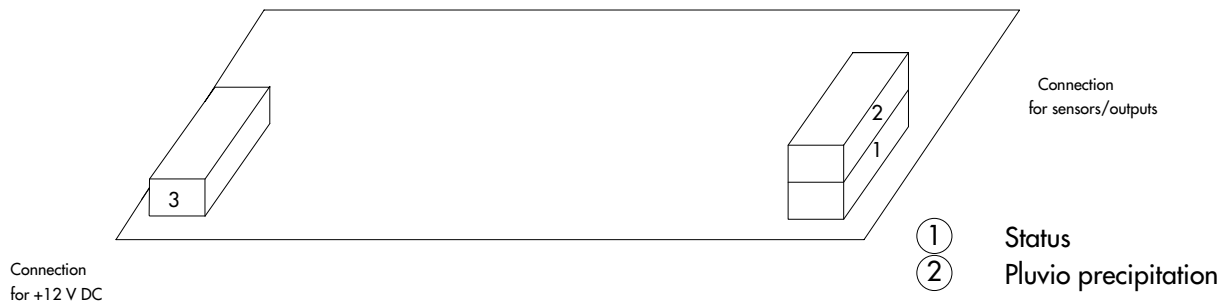
Pluvio type 250 with status output



Pluvio type 250 without status output



Pluvio type 1000 with status output

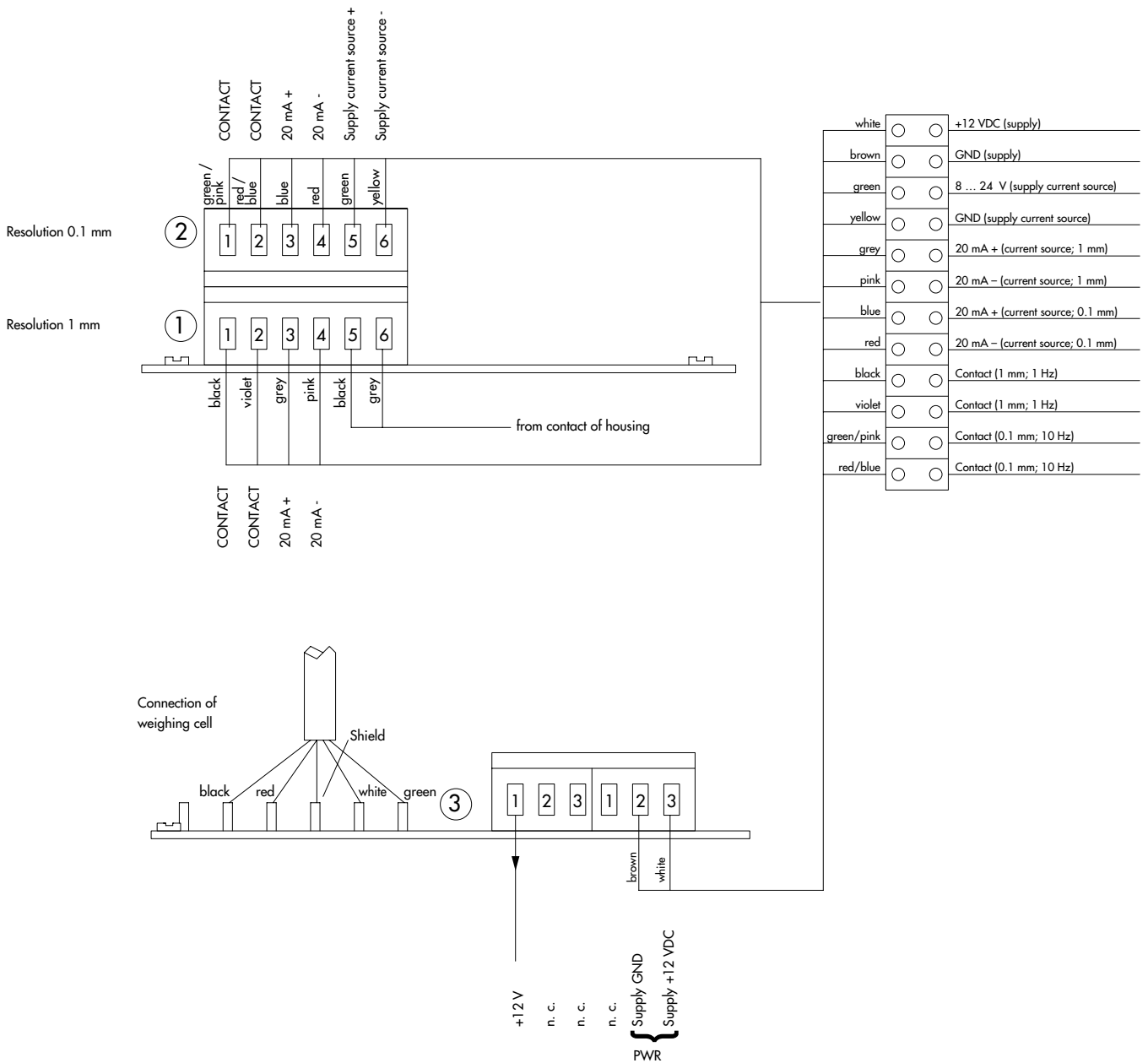
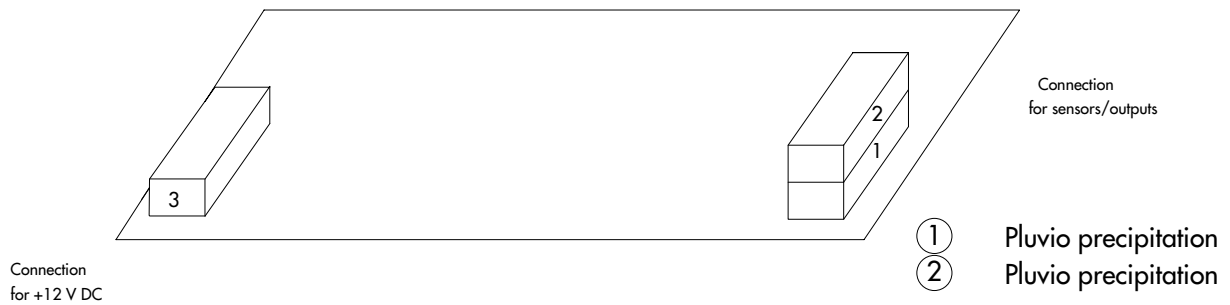


ATTENTION

Resolution: 0.1 mm per pulse, output frequency 10 Hz symmetric
1.0 mm per pulse, output frequency 1 Hz symmetric

Range: 0 to 30 mm precipitation per minute

Pluvio type 1000 without status output



ATTENTION

Resolution: 0.1 mm per pulse, output frequency 10 Hz symmetric
1.0 mm per pulse, output frequency 1 Hz symmetric

Range: 0 to 30 mm precipitation per minute

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