

Meteo-42 Data Logger

Improved grounding for measurement systems



The new improved grounding system of the Meteo-42 features a center-design offering

1. a more accurate measurement of analog voltage sensor signals and
2. a minimization of cross influence between sensors.

The new Meteo-42 grounding system is slightly different from the previous Meteo-40 design and might require more OVP modules and thus a little more space in the electrical cabinet.

The new, improved grounding can be implemented at a later stage and is not mandatory. It is still possible to use the previous electrical design of the Meteo-40.

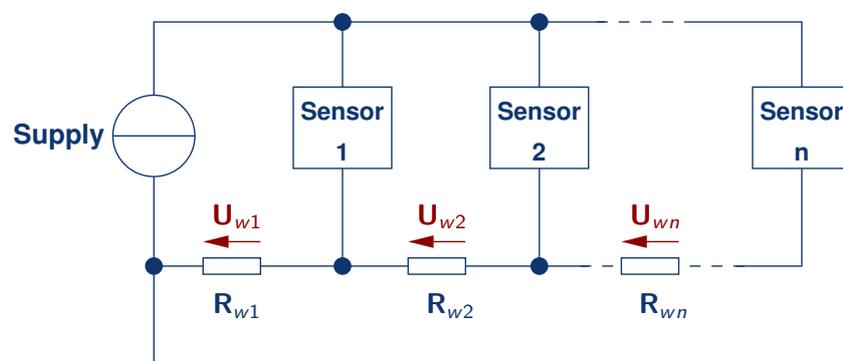
However, we recommend implementing this improved grounding in the short term in order to enjoy the two advantages mentioned above.

Background:

In the previous electrical design for the Meteo-40 measurement system, a continuous line is used for the negative pole (busbar).

Each sensor generates a small voltage drop U_{wv} on the line, which influences the signals of the following sensors. (See the electrical diagram below.) Further sensors with pulsed signals (anemometers, sensors with digital communication interfaces) can influence the signal of other sensors.

This small voltage drop is not significant for sensors with a medium voltage signal, but might be relevant for sensors with a small voltage signal (like pyranometers).



→ Signal of Sensor k is influenced by: $\sum_{\nu=1}^{k-1} U_{w\nu}$

→ Keep wiring resistance as low as possible.

In detail: New improved grounding of the measurement system

In order to keep the influences of the individual sensor groups as small as possible, a division of the minus lines takes place in

- Analog sensors
- Sensors with pulse signals
- Digital sensors

These three sensor groups have their own GND busbars, which are connected at a central point (GND). The negative pole of the supply is also connected to this point.

Important:

- The lower connection of the supply socket is the connection for the lightning protection earth (identification on the connection socket: "Earth"). This line must be routed separately and connected to the central point GND with a single connection.
- **WARNING: A missing Earth-GND connection may result in the destruction of the device.**
- The "Earth" terminal on the data logger must not be used as a connection of the negative pole of the power supply.

