Hukseflux
Thermal Sensors

Surface energy balance measurement

State-of-the-art sensors for the global meteorological / fluxnet community

Hukseflux manufactures a range of sensors for surface energy flux measurements. NR01 is the market leading 4-component net radiometer. HFP01 and HFP01SC measure soil heat flux. STP01 offers an accurate temperature profile measurement. TP01 is the leading sensor for soil thermal conductivity.

Introduction

Hukseflux offers a range of sensors for surface energy balance measurements. All have proven reliability.

Reference users

The National Ecological Observatory Network (NEON) of the USA is the world's largest network employing 4-component net radiometers*. After extensive testing, NEON released a list of sensors. We are proud that model NR01 is on it. Also, the Centre for Ecology and Hydrology (CEH) of the UK included NR01, STP01 and HFP01SC in its measurement network*.

The best 4-component net-radiometer

Since its introduction in 2007, NR01 4-component net radiometer has become widely applied. Reasons for its popularity:

- lowest price level at top performance level
- heated pyrgeometers, best night-time data quality
- high accuracy short-wave calibration
- low weight, low mounting costs
- modular design
- practical levelling
- practical recalibration

Figure 1 *NR01 4-component net radiometer, including two pyranometers, two pyrgeometers, a heater and a 2-axis levelling assembly.*

*NOTE: the fact that a sensor is used in a network does not constitute a formal endorsement by the network owner.

Figure 2 *NR01 4-component net radiometer in use in a typical meteorological station.*

Unique feature: pyrgeometer heating

In order to prevent condensation of water on the pyrgeometer windows, NR01 has internal heating close to the pyrgeometers. This keeps the instrument above dew point. As water blocks longwave radiation, heating will improve the reliability of longwave radiation measurement, in particular at night, when the risk of condensation is highest. Heating is a good, low cost and low power alternative to ventilation.

Market leading heat flux sensors

HFP01 heat flux plate and its self-calibrating equivalent HFP01SC are the de-facto standards for soil heat flux measurement. In high-accuracy flux measurement a typical station is equipped with two or more sensors for good spatial averaging.

Figure 3 *HFP01SC offering on-board calibration, which is a benefit for sensors that remain buried for many years.*

STP01: accurate soil temperature profile

STP01 soil temperature profile sensor offers highly accurate temperature gradient measurement, including a reliable fixed distance between five measurement points at 2, 5, 10, 20 and 50 x 10^{-2} m below the soil surface.

Figure 4 *STP01 soil temperature profile sensor is applied in many large-scale networks.*

Datalogger compatibility

Sensors made by Hukseflux are designed for compatibility with most common datalogger models. For many models we have example programs and wiring diagrams available. Read more about data logger selection.

TP01: soil thermal conductivity

TP01 is a simple, robust sensor to measure soil thermal conductivity. In combination with STP01 and HFP01SC it offers a redundant measurement and allows users to verify the measurement accuracy of soil heat flux. In addition, TP01's capability to perform a crude measurement of soil thermal diffusivity offers an independent possibility to verify performance of soil moisture content sensors.

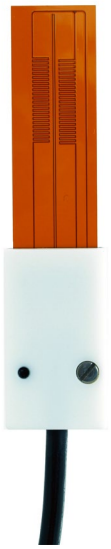

Figure 5 *TP01 soil thermal conductivity sensor offers redundancy for heat flux and soil moisture content.*

About Hukseflux

Hukseflux is the leading expert in measurement of energy transfer. We design and manufacture sensors and measuring systems that support the energy transition. We are market leaders in solar radiation- and heat flux measurement. Customers are served through the main office in the Netherlands, and locally owned representations in the USA, Brazil, India, China, Southeast Asia and Japan.

Would you like more information?
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