

# Application Note

## Data Loggers for Soil Moisture Measurements

Digital Soil Moisture & Temperature  
Sensor DKSM100:  
Ideally suited for use with data  
loggers made by Driesen + Kern



DK3XX  
ruggedPlus



DK65X  
ruggedVisual



DCXP  
(with optional GPRS modem)





# Soil Moisture & Temperature Sensor

Type DKSM100



- Soil Moisture
- Soil Temperature
- Permittivity and more

## Bad Bramstedt, August 2019

Driesen + Kern GmbH expands their data logger's versatility by adding new options for soil moisture measurements.

From now on, data logger series ruggedPlus, ruggedVisual and DCXP will optionally be available with new hardware and software which support type DKSM100 combined, digital soil moisture & temperature sensors

The DKSM100 is designed to measure not only volumetric water content and temperature, but also

permittivity which is an important parameter in many scientific surveys.

Due to its digital output the sensor requires only one slot allowing you to additionally connect several sensors to a single data logger, e. g. additional probes for humidity/temperature, rainfall or solar radiation.

**Learn more about our data logger series ruggedPlus, ruggedVisual and DCXP on our website:**

**[www.driesen-kern.com/products/data-loggers/](http://www.driesen-kern.com/products/data-loggers/)**

## Typical Applications:



Irrigation of crops



Scientific surveys & research in desert regions



Irrigation of recreational facilities & green spaces



Moisture monitoring in different soil layers

DKSM100 Sensor Features	
Precise measurement of soil moisture & temperature - for all types of soil!	
Easy installation	
Good value	
Operating temperature range -40°C...+80°C	
Requires only a single input	
High accuracy: $\pm 3\%$ volumetric water content / $0.2^\circ\text{C}$	
Additionally measures permittivity	
D+K - Data Loggers	
Robust, shock-proof data loggers	
Connectable probes for humidity, bedewing, temperature, amount of rainfall etc.	
ASCII Stream Mode - Conveniently integrate the logger into your measurement system	
Standard software InfraLog Basic included in delivery, or Light/Enhanced with tools for comprehensive graphical analysis and charts	

## DKSM100 Sensor Specifications:

### Soil Moisture

Alongside the gravimetric analysis, measuring the volumetric water content in soil is the most popular method of measurement since it produces reliable long-term results with substantially less effort. The sensor analyses the quantity of water contained in the soil at its location at the time of measurement. Volumetric water content is expressed as a ratio ranging from 0 to 1 or in percentage by volume (%). The sensor is maintenance-free and frost-resistant.

Measuring range: 0...100% volumetric water content (VWC)  
 Accuracy: up to  $\pm 3\%$  (VWC) at factory calibration in mineral-rich soils with a medium degree of salinity and between 0...50% VWC  
 Resolution: 0.1% VWC

### Soil Temperature

Measuring range: -40...+80°C  
 Accuracy: typically  $\pm 0.2^\circ\text{C}$  ( $\pm 0.4^\circ\text{C}$  for entire measuring range)  
 Resolution: better than  $0.01^\circ\text{C}$

Cable length: 10m  
 Sensor dimensions: ca. 18.2cm x 3cm x 1.2cm

**Order code for the DKSM100 Combination Probe with 10m cable & DK3xx/6xx/DCXP-R connector:**  
 DKSM100-10000-4

## More compatible probes for D+K data loggers:

Surface temperature/  
 Universal temp. probe  
 EU-325



CM-325



Radiation sensors

Air humidity/temperature



DKRF315

RFT-XXS

RFT325



ARG100 Rain gauge

