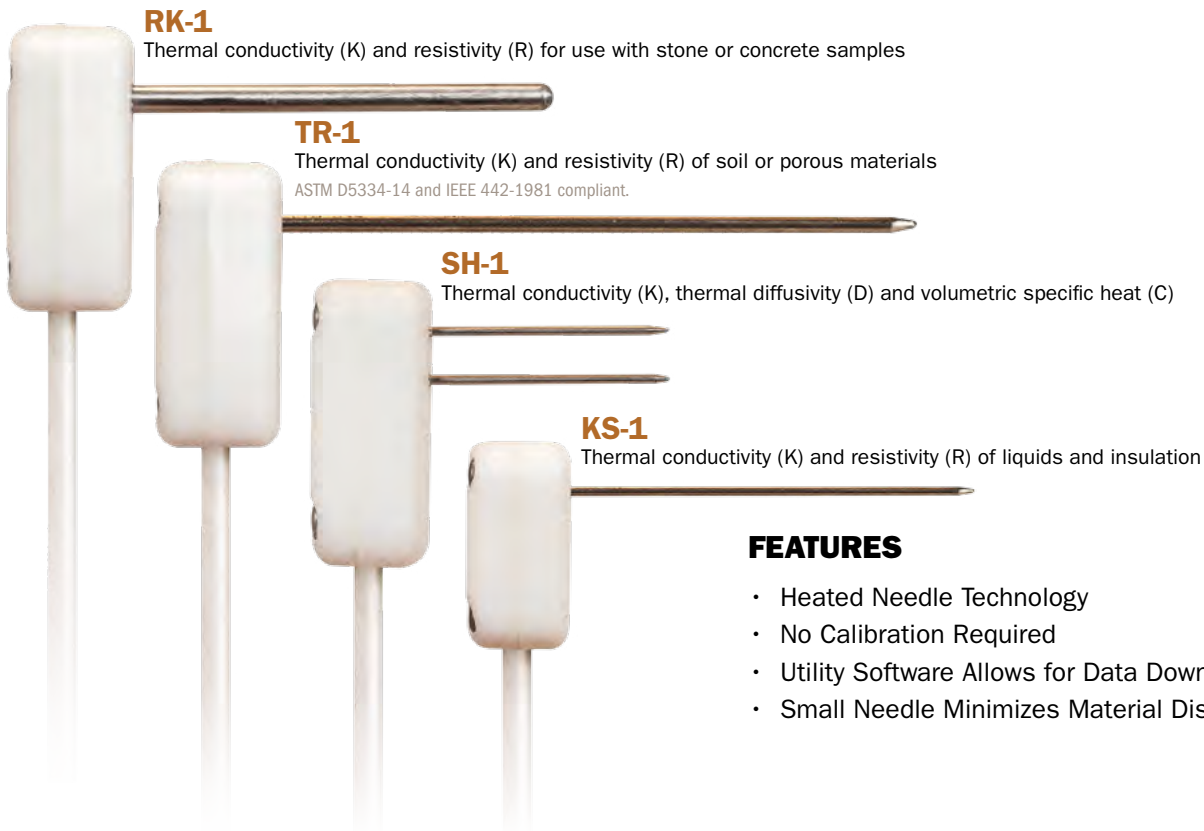


# MEASURE THERMAL PROPERTIES

Measure thermal properties of soil and other materials with the KD2 Pro Thermal Properties Analyzer. The KD2 Pro has four interchangeable sensors which measure thermal conductivity, thermal diffusivity, thermal resistivity ( $\rho$ ) and volumetric heat capacity. Over 4,000 readings can be stored manually or automatically and downloaded for analysis.

KD2 Pro comes factory calibrated and includes performance verification standards

## KD2 Pro



### FEATURES

- Heated Needle Technology
- No Calibration Required
- Utility Software Allows for Data Downloads
- Small Needle Minimizes Material Disturbance

### Thermal Properties of Soil Materials (T is Celsius Temperature)<sup>1</sup>

Material	Density ( $\text{g cm}^{-3}$ )	Specific Heat ( $\text{J g}^{-1}\text{K}^{-1}$ )	Thermal Cond. ( $\text{W m}^{-1}\text{K}^{-1}$ )	Thermal Resistivity ( $\text{m C W}^{-1}$ )
Soil Minerals	2.65	0.87	2.5	0.40
Granite	2.64	0.82	3.0	0.33
Quartz	2.66	0.80	8.8	0.11
Glass	2.71	0.84	1.0	1.00
Organic Matter	1.30	1.92	0.25	4.00
Water	1.00	4.18	0.56+0.0018T	1.65 at 25 °C
Ice	0.92	2.1+0.0073T	2.22-0.011T	0.45 at 0 °C
Air (101 kPa)	(1.29-0.0041T x 10 <sup>-3</sup> )	1.01	0.024+0.00007T	38.8 at 25 °C

### KD2 Pro Specifications

**Measurement Time:** 90 seconds to 10 minutes. **Accuracy\*:**  $\pm 5$  to  $\pm 10\%$  Conductivity/Resistivity,  $\pm 10\%$  Thermal Diffusivity,  $\pm 10\%$  Specific Heat. **Ranges\*:** K: 0.02 to 6  $\text{Wm}^{-1} \text{C}^{-1}$ , D: 0.1 to 1.0  $\text{mm}^2\text{s}^{-1}$ , R: 0.25 to 50  $\text{mC W}^{-1}$ , C: 0.5 to 4  $\text{MJ m}^{-3} \text{C}^{-1}$ . **Data Storage:** 4095 readings. **Sensor Environment:** -50 to 150 °C. **Case Size:** 15.5 x 9.5 x 3.5 cm. **Power:** 4 AA Batteries **Cable:** 1 m.

\*Accuracy and measurement range vary with sensor type.

1. Campbell, G. S. and J. M. Norman. 1998. *An Introduction to Environmental Biophysics*, 2nd Ed. Springer Verlag, New York.