

Temperature measurement technology for agriculture and landfill



LK-System 

armatherm

LoRa® Radio transmission

Model LK30

The LK30 Insertion Thermometer is a battery-powered thermometer with digital display and LoRaWAN radio signal output. The measured values can be read on site via the 4 1/2-digit digital display and are simultaneously sent via the radio module to a gateway, which provides the data via an IIoT platform. The transmission rate can be set via the IIoT platform. It is also possible, for example, to trigger an alarm when a temperature limit is exceeded or to save the data for later evaluation.

Technical Details

Function	Display and record temperature. Transmit measurement data via LoRaWAN radio network
Housing	Stainless Steel AISI 304
Degree of protection	Fixed antenna: IP68/IP69 according to EN 60529/IEC 529 Antenna with connection cable: IP65 according to EN 60529/IEC 529
Stem	1800 mm long, 18 mm dia. with insertion lace and handle
Measuring range	-50 ... +550 °C
Measuring insert	cable probe
Measuring element	PT1000 acc. DIN EN 60751
Measuring rate	settable, 1 minute to 20 days
Display	4 1/2-digit LCD-Display Number height 10 mm
Accuracy	Display: <0,5% FS +/- 1 Digit Sensor: +/- 0,3 K bei 0 °C; +/- (0,3 + 0,005* t)
Radio module	LoRaWAN® - Version 1.0.2 Band: LoRa® 868MHz EU Transmitting power: 14 dBm
Transmission rate	settable, 1 minute bis 20 days
Supply	AA Lithium-battery, 3,6 V DC, max. 0,2 W Typical lifetime: 5 years, at: measuring rate 2 min, transmission rate 1 h Spreading factor 7, T _{amb} 20 °C
EMC Directive	2014/30/EU, EN 61326 Emission (Group 1, Class B), Interference immunity (industrial range)
Permissible Temperatures	Operating temperature -20 ... +70 °C



LoRaWAN MTCAP - IP30 and MTCTIP - IP67

Technical data at a glance - MTCAP-JP30



Function	Gateway indoor use
Housing	PC-ABS 165 x 135 x 35 mm
Degree of protection	IP30 nach EN 60529/IEC 529
Connections	Versorgung: 2,5 mm, 5-V-Buchse Ethernet: RJ45 Ethernet Buchse Antenne: RP-SMA Buchse (LoRa®)
Radio	LoRa®-Specifications: Frequency band: 868 MHz Channel plan: EU868 (EU863 - 870) Channels: 8 channels (half duplex) maximum output power: 14 dBm - 27 dBm LTE-Specifications: 4G - LTE Category 4 Fallback: 3G - HSPA+, 2G - GPRS Data packets: up to 150 Mbps downlink, up to 50 Mbps uplink, connector: 3FF Micro SIM
Supply	5 VDC 2.5 A
Permissible temperatures	Operating temperature 0 ... +70 °C Storage temperature -40 ... +85 °C

Gateway MTCTIP - IP67



Function	Gateway outdoor use
Housing	Aluminium 262 x 91 x 257 mm
Degree of protection	IP67 acc. to EN 60529/IEC 529
Connections	Ethernet: RJ45 Ethernet jack (PoE) USB: USB 2.0 Type A Antenna: N-Typ jack (cellular, LoRa, GPS)
Radio	LoRa®-Specifications: Frequency band: 868 MHz Channel plan: EU868 (EU863 - 870) Channels: 8 channels (half duplex) maximum output power: 14 dBm - 27 dBm LTE-Specifications: 4G - LTE Category 4 Fallback: 3G - HSPA+, 2G - GPRS Data packets: up to 150 Mbps downlink, up to 50 Mbps uplink, connector: 3FF Micro SIM GPS/GNSS: Simultaneous GNSS connections: 3 Supported GNSS systems: simultaneous GPS/QZSS/SBAS and GLONASS
Supply	37 - 57 VDC, from a POE injector rated at 25 W or more, PoE standard: IEEE 802.3at
Permissible temperatures	Operating temperature -40 ... +70 °C Storage temperature -40 ... +85 °C

Insertion thermometer with data logger

Modell DK logg

The DK logg plunge thermometer is a good choice when it comes to recording temperature trends and the user does not need constant monitoring. The data logger is connected to the PC via a USB interface to configure the measuring interval and to transfer the recorded measured values to the PC. The memory of the data logger offers space for 16,000 measured values, which can be recorded in an interval of one second up to 5 hours. Due to the aluminum head, the data logger is protected against shocks as well as splash water during recording. The hinged lid makes it possible to remove the data logger at any time without having to remove the insertion tube from the measuring material.

Technical details at a glance

Function	Display and record temperature
Housing	Aluminium connection Head
Degree of protection	IP65 acc EN 60529/IEC 529
Handle	Alublock with plastic handle
Protection tube	1000, 1500 or 2000 mm long, Ø 16 mm, with insertion lace, SS AISI 316Ti
Measuring range	-30,0 to +120,0 °C
Measuring element	1 x NTC, 2-wire
Measuring insert	PTFE-cable probe
Measuring rate	settable from 2s to 5 h
Display	4-digit LCD, digit height 10 mm
Accuracy	+/- 0,5 °C FS
Resolution	0,1°C
Memory	16.000 Records
Supply	1 x round cell battery CR2032 Battery lifetime: > 3 years
Permissible temperatures	Ambient temperature: -30 bis +60 °C

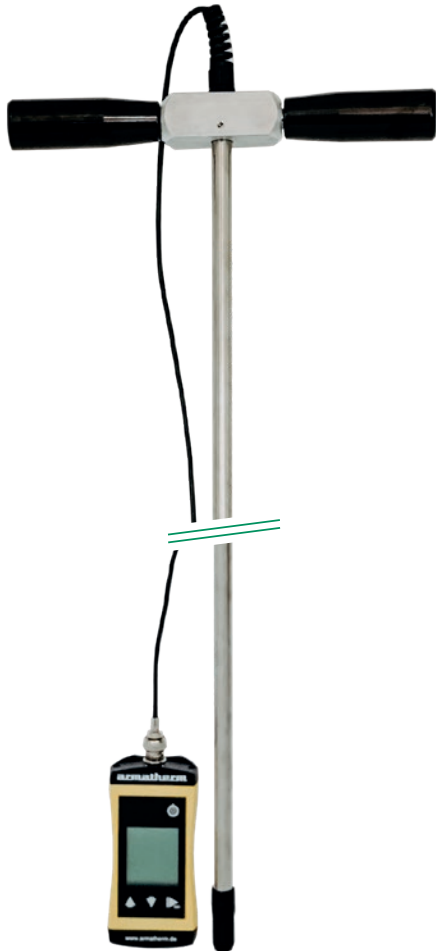


Insertion thermometer with handheld measuring

Modelle DK-TE40

The TE40 temperature measuring device impact probes are characterized by their precision, speed and reliability.

The new handheld measuring devices also impress with their ergonomic design, the dust and water-protected design according to IP65 and the illuminated display. The display can be rotated 180 ° via the menu, making overhead reading possible.



Technical details at a glance - TE40

Function	Display temperature
Measuring range	-70,0 to +199,9 °C
Connector	BNC-Plug
Display	3½-digit LCD, digit height 13 mm
Accuracy	± 0,5 °C ± 1 digit
Resolution	0,1 °C
Supply	2x AA 1,5 V battery Battery lifetime: approx. 200h Low battery indicator: LCD Displays „BAT“
Permissible temperatures	Ambient temperature -30 to +45 °C
Dimensions	approx. 142 x 71 x 26 mm (H x W x D)

Einstoßsonde DK

Degree of protection	water proof acc. to IP65
Handle	Plastic, screwable
Protection tube	1500 x Ø 12 mm,
Measuring range	-70 to 150 °C
Measuring element	Pt1000, 2-wire, with insertion lace



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Insertion thermometer with digital and analog display

Modell DK30 und Modell BK23

The insertion bimetal thermometers are a cost-effective way of local temperature monitoring for all agricultural goods. The thermometer is inserted into the measured material and after approx. 2 minutes the exact temperature can be read. The stainless steel housing meets the requirements of IP65.

Technical details at a glance

Function	Display temperature
Housing	SS AISI 304
Degree of protection	IP65 acc. EN 60529/IEC 529
Handle	Alublock with plastic handle
Protection tube	1000, 1500 or 2000 mm long, Ø 16 mm, with insertion lace, SS AISI 316Ti

Digital thermometer DK30

Housing	Ø 100 mm
Protection tube	1500 x Ø16 mm
Measuring range	-10 to +110 °C
Display	3 1/2 digit LCD, digit height 13 mm
Accuracy	± 1,5 °C
Resolution	0,1 °C
Supply	1,5V Mignon (AA) Battery lifetime: approx. 3 - 5 years

Bimetal thermometer BK23

Housing	Ø 63 mm und Ø 100 mm
Measuring range	0 to +100 °C
Accuracy	Class 1,0
Measuring element	Bimetal spring



DK30



BK23



DK30



BK23

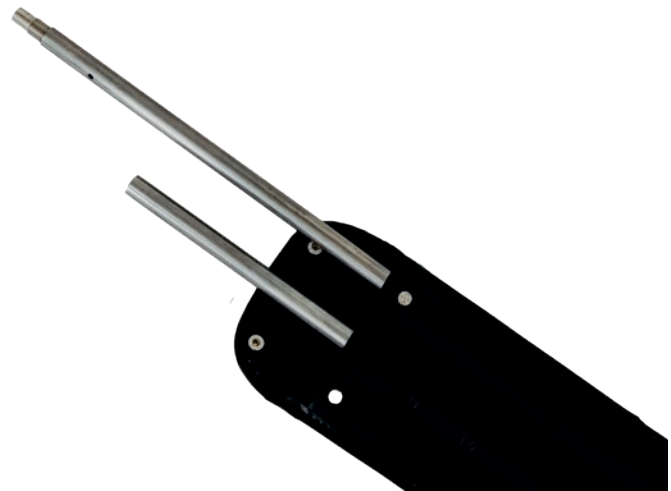
Insertion thermometer with glass thermometer

Modell MK

The insertion probes with glass thermometer are a cost-effective way of local temperature monitoring for all agricultural goods. The thermometer is inserted into the material to be measured and after about two minutes the exact temperature can be read. The measuring tube consists of three parts, each one meter long, which can be screwed together as required.

Technical details at a glance

Function	Display temperature
Handle	Beech wood, glazed
Protection tube	1.4301, stainless steel each 1000 x Ø 16 mm 3 pieces á 1000 mm, screwable
Measuring range	0 to +100 °C
Measuring element	Glassthermometer
Display	above the piercing tip
Accuracy	± 1 °C
Resolution	1 °C



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