

## TEMPERATURFØLERE



**TRÅDLØSE  
TEMPERATURFØLERE**

# YOUR SPECIALIST FOR TEMPERATURE PROBES AND RTDS

H. Heinz Meßwiderstände GmbH has enjoyed more than 25 years of dynamic growth. Since the company has been founded in 1991, we have continuously expanded our product spectrum according to the changing market requirements.

Today we produce a variety of different types of sensors, probes and measurement systems for the temperature measuring technology.



## PASSIVE WIRELESS PROBES 260°C BASED ON THE SAW ELEMENT

### CORE TEMPERATURE PROBE FOR OVENS

This thermometer is particularly eligible for wireless temperature measurements in which the ambient temperature of the sensor is above the functional range of conventional semiconductor devices and batteries.

The passive wireless thermometer consists of a passive, nonwired temperature sensor and an evaluation unit. The sensor element of the temperature sensor is on passive SAW resonator.

The evaluation unit determines from the Impulse response of the surface wave temperature sensor, the resonant frequency of the resonator and calculates the temperature of the measuring point.

The maximum range of the passive wireless thermometer depends on the transmit power used, the antenna design and the electromagnetic environment conditions. Currently ranges of 0 - 5 m can be reached.

- 1** Funkfühler mit Silikongriff  
für Lebensmittel geeignet  
*Wireless sensor with silicone grip  
suitable for food*
- 2** Funkfühler mit T-Silikongriff  
für Lebensmittel geeignet  
*Wireless sensor with T-silicone grip  
suitable for food*
- 3** Einstechfühler mit 1 ... 3 Sensoren  
für den Temperaturbereich von –40 °C bis +120 °C  
*Penetration probe with 1 ... 3 sensors  
for the temperature range from –40 °C to +120 °C*
- 4** Einstechfühler mit 1 ... 3 Sensoren  
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Technische Daten <i>Parameters</i>	Wert <i>Value</i>
Messgenauigkeit nach Kalibrierung <i>Measurement accuracy after calibration</i>	±1,0 °C
Temperaturmessbereich <i>Temperature measuring range</i>	120 °C
Umgebungstemperatur des Griffes <i>Ambient temperature of the handle</i>	260 °C
Arbeitsfrequenz des passiven Resonators <i>Operating frequency of the passive resonator</i>	433 MHz
Reichweite <i>Reach</i>	0 – 5 m
Ohne Batterie <i>Without battery</i>	ja <i>yes</i>
Spülmaschinengeeignet, lebensmittelecht <i>Dishwasher safe, food safe</i>	ja <i>yes</i>
Möglich mit 1, 2 oder 3 Sensoren <i>Possible with 1, 2 or 3 sensors</i>	ja <i>yes</i>

# WIRELESS TEMPERATURE PROFILING WITH SAW TECHNOLOGY



The sensor assembly, consisting of a SAW sensor and a corresponding antenna, is activated by a high-frequency pulse. The response signal, as a measure of the temperature, is converted by means of an evaluation and corresponding characteristic to a temperature value. Here, up to 4 sensors can be queried simultaneously.

# FOOD PROBES

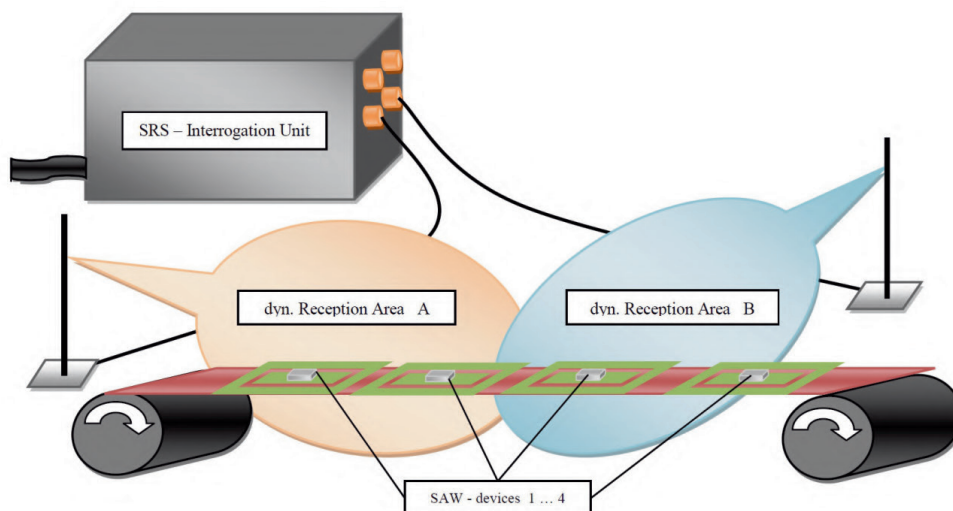
## ADVANTAGES OF THE WIRELESS TEMPERATURE PROFILING:

- Batteryless
- Wireless
- No cable to the sensor
- No energy source required (passive system)
- Operating temperatures up to 260 °C
- Up to 4 sensors simultaneously
- No heat protection is needed
- Low thermal mass
- No disturbance of the temperature profile
- Good reproducibility and stability
- Robust against chemical and mechanical influences
- Data transfer to various process and control systems customizable

## APPLICATION:

Continuous ovens for

- Electrical industry
- Food industry
- Plastic processing
- Pharmaceuticals
- Drying
- Various mechanical installation options
- Probe end optionally loose or clamped



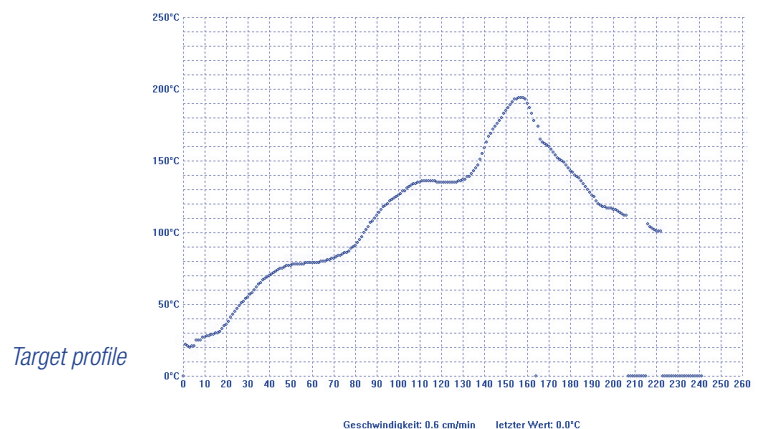
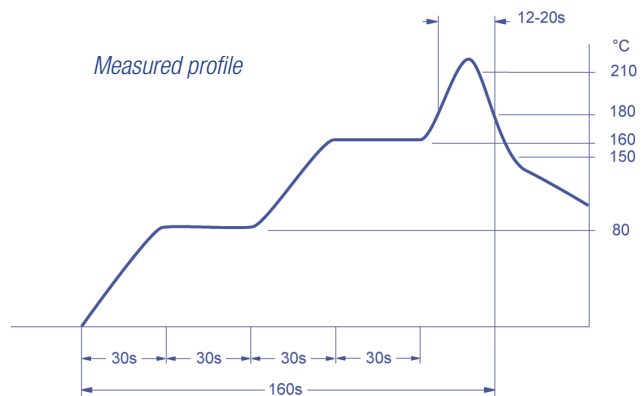
*Principle construction*



Technische Daten <i>Parameters</i>	Wert <i>Value</i>
Einsatztemperatur <i>Operating temperature</i>	−40 °C ... +260 °C
Sensoranzahl <i>Sensor number</i>	max. 4
Genauigkeit <i>Accuracy</i>	±1 K
Auflösung <i>Resolution</i>	<0,1 K
Funkfrequenz <i>Radio frequency</i>	432,5 ... 437,5 MHz*
Reichweite <i>Reach</i>	max. 10 m
Sendeleistung <i>Transmission power</i>	norm. 10 mW max. 500 mW*
Schnittstellen <i>Interfaces</i>	RS232, Ethernet, CAN.2.0, Analog (0 ...10 V, 4 ... 20 mA)

**\* USER NOTE OF THE MULTIPOINT SAW  
TEMPERATURE MEASURING SYSTEM**

- The multipoint SAW temperature measuring system, developed and sold by the company Heinz Meßwiderstände GmbH is outside the standard EN300 220-2 V3.1.1
- Transmission power: 100mW
- Working frequency: from 432.5 up to 437.5MHz
- Therefore, we point out that this temperature measuring system can be used only in aradio technical shielded area, such as bakery or industrial ovens.
- The user of the 3-point SAW temperature measuring system is obliged to take suitable activities so that no violation of standards outside the furnace can be detected.

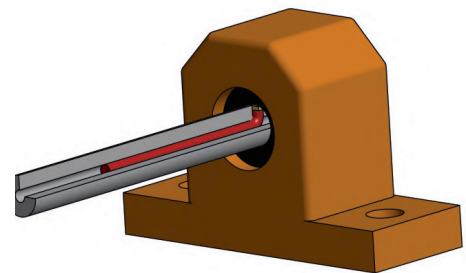


# WIRELESS TEMPERATURE MEASUREMENT ON ROTATING PARTS IN MECHANICAL ENGINEERING

- Suitable for high rotating speeds
- Resistant to various oils and fats
- Low mass

## FINDS APPLICATION IN:

- Motor shafts
- Transmission
- Conveyors
- Bearing
- Mechanical engineering
- Drive shafts



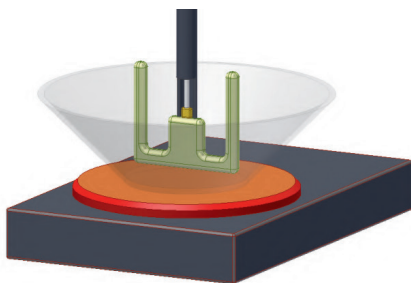
*Sensor in sectional view*

# WIRELESS TEMPERATURE MEASUREMENT ON ROTATING PARTS IN PROCESS ENGINEERING

- Use in closed process systems
- Easy to integrate
- Food safe

## FINDS APPLICATION IN:

- Chemistry
- Pharmacy
- Food industry
- Stirrers in reactors and tanks
- Biological equipments



*Sensor in sectional view*





# WLT 310 WIRELESS LORA TRANSMITTER



## THE CONFIGURABLE, ENERGY EFFICIENT LORA 868 MHZ (EU) TRANSMITTER FOR INDUSTRIAL GRADE WIRELESS MEASURING AND IOT SYSTEMS USING LORAWAN PROTOCOL

- Three configurable sensor inputs
- Self adjusting transmit power
- Battery or external power supply
- Self diagnostics including battery monitoring
- Configurable measurement intervals and alarm limits

WLT 310 transmitter has two inputs for temperature and Lin.R measurements. The third analog input can be configured as voltage or current input, or as humidity sensor input. Main power supply is a C size Lithium primary cell battery, 3.6 V nominal 8.5 Ah. The device operates also on external 12 or 24 V DC power supply.

## TEMPERATURE SENSOR INPUTS

### PT 100 INPUT

One or two of the temperature sensor inputs can be configured as Pt 100 inputs. The connection type can be configured to 2, 3 and 4 wires.

- Pt 100 temperature measurement range:  $-200\text{ }^{\circ}\text{C}$  to  $+800\text{ }^{\circ}\text{C}$
- Pt 100 temperature measurement accuracy:  $\leq \pm 0.3\text{ }^{\circ}\text{C}$
- Temperature coefficient:  $\leq \pm 0.01\text{ }^{\circ}\text{C} / ^{\circ}\text{C}$
- Wire break and short circuit monitoring possible by Pt 100 input

### Technische Daten *Parameters*

Gewicht <i>Weight</i>	39 g
Höhe <i>Height</i>	25 mm
Durchmesser <i>Diameter</i>	57 mm
Kabelgröße <i>Wire size</i>	1 x 1,0 mm <sup>2</sup> Litzen draht <i>stranded wire</i>

### LoRaWAN zertifiziert *LoRaWAN certified*

Einhaltung der EMV-Normen <i>EMC standards compliance</i>	EN 61326-1:2013, EN 301489
RF-Einhaltung <i>RF compliance</i>	EN 300 220-1 v2.4.1
Vibration <i>Vibration</i>	EN 60068-2-6

**ADVANTAGES OF THE WIRELESS TEMPERATURE PROFILING:**

One or two of the temperature sensor inputs can be configured as Pt 1000 inputs. The connection type can be configured to 2, 3 and 4 wires.

- Pt 1000 temperature measurement range:  $-200\text{ }^{\circ}\text{C}$  to  $+800\text{ }^{\circ}\text{C}$
- Pt 1000 temperature measurement accuracy:  $\leq \pm 0.3\text{ }^{\circ}\text{C}$
- Temperature coefficient:  $\leq \pm 0.01\text{ }^{\circ}\text{C} / ^{\circ}\text{C}$
- Pt 1000 inputs can also detect short and open sensor

**THERMOCOUPLE INPUT:**

One or two of the temperature sensor inputs can be configured as thermocouple sensor inputs.

- Supported thermocouple types: J, K, N, R, S, T, B, L, U
- Measured temperature range depending on the thermocouple type:  $-200\text{ }^{\circ}\text{C}$  to  $+1820\text{ }^{\circ}\text{C}$
- Measurement accuracy for types: E, J, K, N, T, U, L is  $\leq \pm 1\text{ }^{\circ}\text{C}$
- Temperature coefficient:  $\leq \pm 0.05\text{ }^{\circ}\text{C} / ^{\circ}\text{C}$
- Measurement accuracy for types: B, R and S is  $\pm 2\text{ }^{\circ}\text{C}$
- Temperature coefficient:  $\leq \pm 0.2\text{ }^{\circ}\text{C} / ^{\circ}\text{C}$
- Cold junction temperature:  $-40\text{ }^{\circ}\text{C}$  to  $+80\text{ }^{\circ}\text{C}$ , accuracy:  $\leq \pm 1\text{ }^{\circ}\text{C}$
- Wire break monitoring possible by TC input

**LIN. R INPUT**

- The analog input can be configured: 0 - 3757 ohm
- The measurement accuracy is:  $\leq \pm 0.1\text{ \%}$  of span
- Temperature coefficient:  $\leq \pm 0.01\text{ \%}$  of span /  $^{\circ}\text{C}$

## **CONFIGURABLE ANALOG INPUT**

### **CURRENT / VOLTAGE INPUT**

The analog input can be configured as voltage or current input, or as humidity sensor input.

- Current measurement range: 0 to 20 mA (0 - 23mA)
- Accuracy:  $\leq \pm 0.5$  % of span
- Temperature coefficient:  $\leq \pm 0.01$  % of span / °C
- Voltage measurement range: 0 to 10 V (0 - 11 V)

### **HUMIDITY SENSOR INPUT**

The analog input connector can be configured as humidity sensor input. Supported humidity sensors are any voltage outputs sensors with up to 10 V output voltage. There is a supply voltage output for 5 V and 10 V sensors.

- Humidity measurement range: 0 to 100 % RH
- Input voltage range : 0 to 10 V
- The accuracy of the input is similar to the analog voltage input

### **SUPPLY FOR HUMIDITY SENSOR**

- Supply for humidity sensor: 5 V and 10 V
- Output voltage accuracy:  $\pm 5$  %
- Maximum current: 1 mA
- The supply generation circuit is switched on only during the humidity measurement (under SW control)

## **POWER SUPPLY**

### **BATTERY**

- Main power supply is a C size Lithium primary cell battery, 3.6 V nominal 8.5 Ah
- The battery input is polarity protected
- Battery life time depends on configuration (typically min. 1 – 2 years)

### **EXTERNAL POWER SUPPLY**

- The device operates on external nominal 12 or 24 V DC supply
- The operating voltage range is 9 to 40 V (12 – 24 V more than  $\pm 30\%$ )

The power supply is isolated from the inputs. The isolation between the power supply / inputs is 1500 Vrms. Inputs are not isolated from each other.

### **THE INPUT PROTECTIONS ARE**

- Polarity protection
- EFT protection

## **ENVIRONMENTAL SPECIFICATIONS**

- The operating temperature range is  $-25\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$  when battery powered
- The operating temperature range is  $-40\text{ }^{\circ}\text{C}$  to  $+80\text{ }^{\circ}\text{C}$  when powered by external DC supply
- The device is encapsulated into a plastic case providing IP20 protection
- Vibration resistance according to DNV standard for Certification No 2.4 class B

### **HUMIDITY**

- RH for device: 90 % max
- RH for WSB-Sensor: 90 % max
- Storage: 95 %
- Transportation: 95 %

### **ENDURANCE**

- The life time expectancy is more than 10 years in  $-40\text{ }^{\circ}\text{C}$  to  $+80\text{ }^{\circ}\text{C}$  temperature range

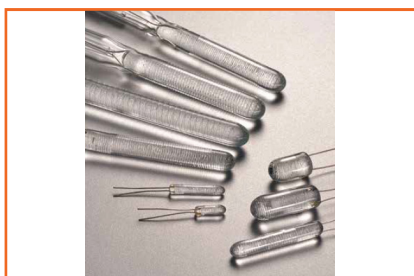


**ELVARME**

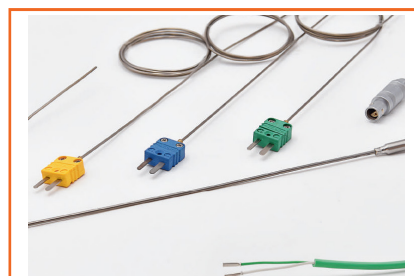
## **VORES PRODUKTSORTIMENT INKLUDERER:**



**RØRVARMELEGEMER**



**TEMPERATUR SENSORS**



**TERMOFØLERE**



**AIR DUCT HEATERS**



**HTSD**



**TEMPERATURFØLERE**

## **VI FØRER PRODUKTER INDENFOR KATEGORIERNE:**



**AUTOMATIK**



**HVAC & BYGNINGS-  
AUTOMATIK**



**KØLEPROFILER**

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