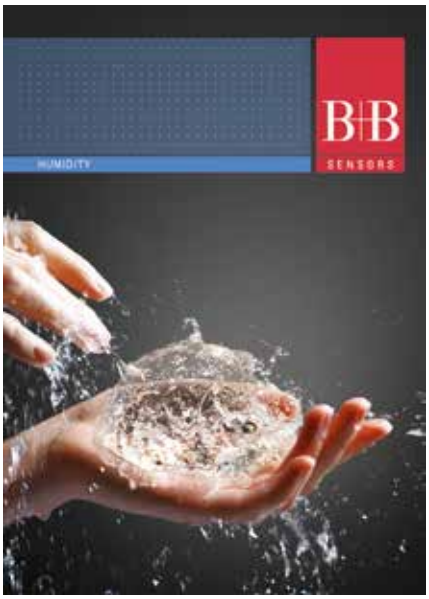
TEMPERATURE MEASUREMENT TECHNOLOGY FOOD INDUSTRY

B+B

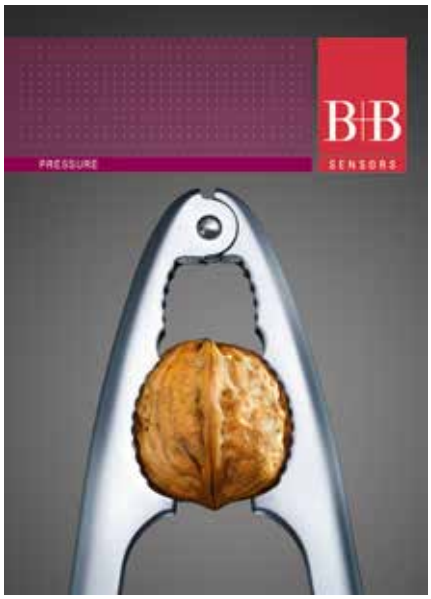
SENSORS

Our product range

TEMPERATURE SENSORS



HUMIDITY SENSORS



PRESSURE SENSORS

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info@bb-sensors.com

Our quality assurance

B+B Thermo-Technik has been manufacturing top-quality products since 1984.

Certificates

Certificate DIN EN ISO 9001 : 2008
Since April 2000 B+B Thermo-Technik is certified according to ISO 9001-2000 and has actualized the certificate according to ISO 9001 - 2008.
Therefore our customers are enabled to process more effective product audits in our house.

Certificate DIN EN ISO 13485 : 2010
Since 2003 B+B Thermo-Technik is certified according to DIN EN ISO 13485 : 2003 and has actualized the certificate in 2010 to DIN EN 13485 : 2010.

VDE
Since 2006 B+B Thermo-Technik GmbH is an approved place of manufacture for electronic controls for cooking ranges and ovens.

ESD Certificate
Since April 2013 B+B Thermo-Technik GmbH is also certified according to ESD (part of DIN EN 61340-5-1).

We constantly examine the quality of our products to meet the requirements of our customers.

FOOD INDUSTRY

B+B Thermo-Technik
has been developing and producing high-quality temperature probes since 1984. Temperature measurement is also closely associated with humidity and pressure measurement. As a result, B+B Thermo-Technik GmbH has complemented its temperature sensor range since 2011 with humidity and pressure sensors and measuring systems. Benefit from our many years of experience and expertise. B+B Thermo-Technik is based in the town of Donaueschningen, in the south west of Germany, from where B+B quality products are shipped worldwide.

Customer specific production
We supply the right product for your needs when measuring and monitoring temperatures, humidity and pressure during food processing, preparation or distribution. We set great importance in working closely with you to guarantee the best product development for your needs, with our role also being to come up with pioneering ideas and concepts.

Stainless steel screw-in probes

for the food industry

The B+B stainless steel srew-in probes, which are highly reliable, safe and easy to clean, are ideal for the food industry. The surface integrity complies to the strict requirements of the food industry. Screw-in probes are preferably used for measuring temperatures in liquid and gaseous media. They are vibration and shock resistant. The reliable tightness of this design at low pressure as well as over pressure is an important selection criteria. All B+B srew-in probes are water and steam proof and are made of high quality stainless steel. They are highly resistant to liquids, acids and oils. B+B screw-in probes are washable and easy to clean.

Applications

- Process control
- Food inspection
- Butcher machines
- Freezers
- Fermenting units
- Baking ovens
- Cook- and smoking units

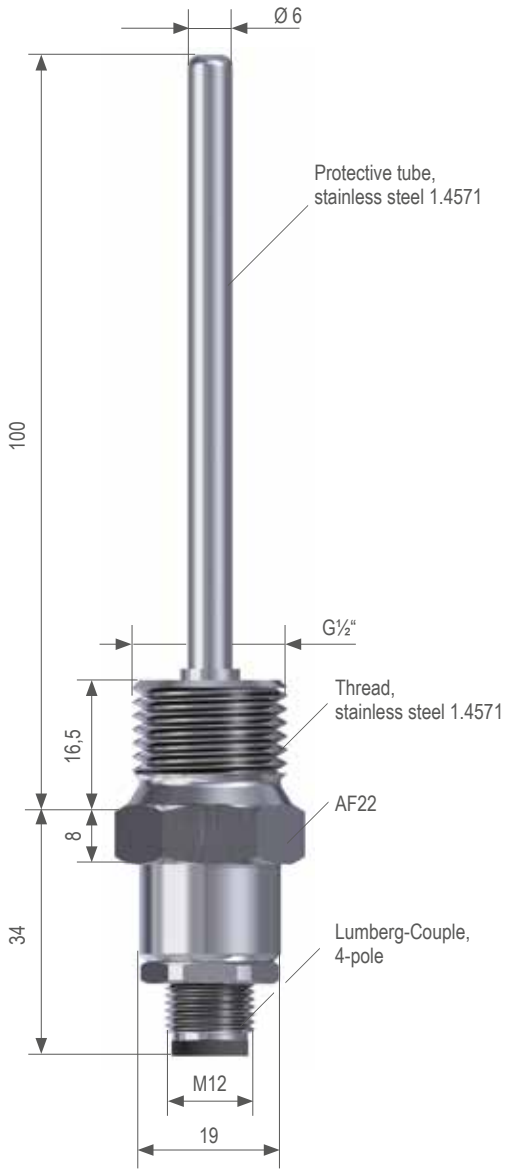
Benefits

- Water and steam proof
- Shock resistant
- Measuring range from -30 to +180 °C

Screw-in probe

Pt100, class A, 4-wires connection

Description



- Shock resistant
- Washable

Technical Data

Sensor	Pt100
Measurement range	-30...+180 °C
Accuracy	IEC 751 Class A
Measurement current	max. 1 mA
Connection type	4-wire connection
Nominal length	100 mm
Diameter	6 mm
Material	Stainless steel 1.4571
Process connection	G½"
Electrical connection	built-in M12x1-Lumberg-Couple, 4-pole
Ingress protection	IP65

Other lengths, diameters and different designs with transmitters are available on request.

Article	Art.-No.
Screw-in probe Pt100	0627 0616-100

Accessories	Art.-No.
4-pole M12-Connection couple with molded, shielded cable, straight version	
2 m	0409 3000
5 m	0409 3000-01
4-pole M12-Connection couple with with molded, shielded cable, angled version	
2 m	0409 3001
5 m	0409 3001-01

As accessories available:

Temperature probes with connection head BINOX

Robust and safe measurement technology for the food industry

The new design of the B+B temperature probes with connection head BINOX convinces through its essentially smaller and more compact installation dimension. The rounded edges and smooth surface allow a more hygienic usage. B+B temperature probes are made of high-quality materials. The connection heads are suitable for ambient temperatures up to +100 °C.

Applications

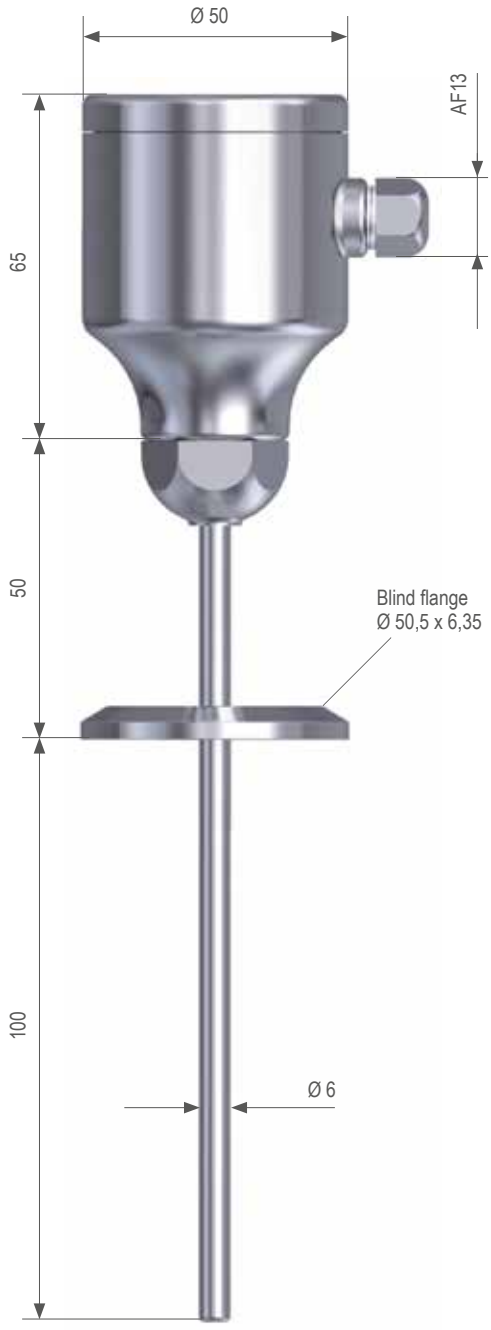
- Dairy
- Brewery
- Beverage industry
- Food processing

Benefits

- Washable
- Easy to clean
- Fast and maintenance-free installation

Temperature probe with connection head BINOX 1 and clamp flange

Description



- Sealing made of EPDM
- Blind flange for fitting flange Ø 50,5 x 6,35 mm
- For cable with diameter Ø 3 - 5 mm

Technical Data

Sensor	Pt100
Measurement range	-50...+400 °C
Accuracy	IEC 751 Class A
Measurement current	max. 1 mA
Connection type	3-wires connection
Nominal length	100 mm
Diameter	6 mm
Material	Stainless steel 1.4571
Process connection	Blind flange Stainless steel 1.4301
Electrical connection	for cable Ø 3 - 5 mm / AF13

Article	Art.-No.
Temperature probe with connection head BINOX 1	0628 0072-100

Accessories	Art.-No.
Fitting flange	0170 0726-02
Flange clampring	0170 0726-03
Sealing ring	0135 0099-01

As accessories available:

Flange clampring

Sectional view sealing ring

Fitting flange

Temperature probe with connection head BINOX 1

Description

Technical Data

Sensor	Pt100
Measurement range	-50 ...+400 °C
Accuracy	IEC 751 Class A
Measurement current	max. 1 mA
Connection type	3-wires connection
Nominal length	100 mm
Diameter	9 mm
Material	Stainless steel 1.4571
Process connection	G½"
Electrical connection	for cable Ø 3 - 5 mm / AF13

Other dimensions are available on request.

Article	Art.-No.
Temperature probe with connection head BINOX 1	0628 0037-10

- Sealing made of EPDM
- For cable with diameter Ø 3 - 5 mm

SUITABLE CABLES

HAVE A LOOK AT BB-SENSORS.COM

Temperature probes with connection head BINOX 3 und BINOX 4

Description

Technical Data

Sensor	Pt100
Measurement range	-50...+400 °C
Accuracy	IEC 751 Class A
Measurement current	max. 1 mA
Connection type	3-wires connection
Nominal length	100 mm
Diameter	6 mm
Material	Stainless steel 1.4301
Electrical connection	for cable Ø 3 - 5 mm / SW13

Description

- Sealing made of EPDM
- For cable with diameter Ø 3 - 5 mm

Article	Art.-No.
Temperature probe with connection head BINOX 3	0628 0037-100
Temperature probe with connection head BINOX 4 with thread G½"	0628 0037-101

Other dimensions are available on request.

Connection head BINOX 1

Description

- Sealing made of EPDM
- All components of the connection heads form B can be used
- For cable with diameter Ø 3 - 5 mm

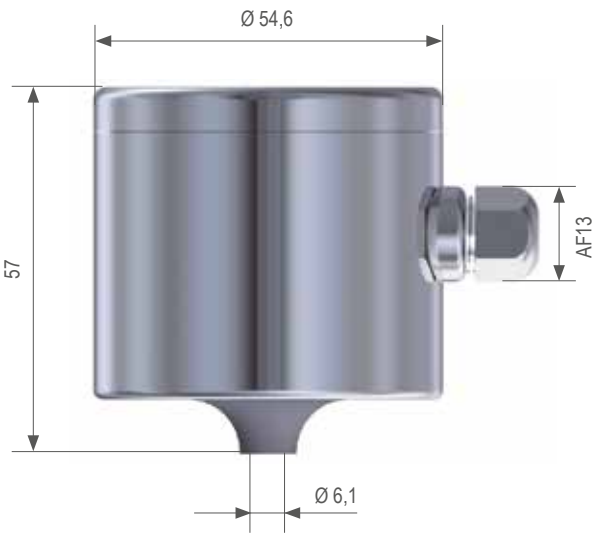
Technical Data	
Height of head	65 mm
Head diameter	50 mm
Process connection	M24 x 1,5
Material	Stainless steel 1.4571
Electrical connection	for cable Ø 3 - 5 mm / SW13

Article	Art.-No.
Connection head BINOX 1	0400 0128-03

Accessories	Art.-Nr.
Terminal base 2-pole	0400 0087-50
Terminal base 4-pole	0400 0087
Terminal base 6-pole	0400 0087-60
Terminal base 8-pole	0400 0087-10

Connection head BINOX 2

Description



- Sealing made of NBR
- All components of the connection heads form B can be used
- For cable with diameter Ø 3 - 5 mm

Technical Data	
Height of head	57 mm
Head diameter	54,6 mm
Process connection	Ø 6,1
Material	Stainless steel 1.4571
Electrical connection	for cable Ø 3 - 5 mm / SW13

Article	Art.-No.
Connection head BINOX 2	0400 0421-101

Accessories	Art.-No.
Terminal base 2-pole	0400 0087-50
Terminal base 4-pole	0400 0087
Terminal base 6-pole	0400 0087-60
Terminal base 8-pole	0400 0087-10

Connection head BINOX 3

Description

- Sealing made of EPDM
- All components of the connection heades form MA can be used
- For cable with diameter Ø 3 - 5 mm

Technical Data	
Height of head	52 mm
Head diameter	34 mm
Inner bore for protective sleeve	6,1 mm
Material	Stainless steel 1.4301
Electrical connection	for cable Ø 3 - 5 mm / SW13

Article	Art.-No.
Connection head BINOX 3	0400 0099-11

Accessories	Art.-No.
Terminal base 2-pole	0400 0090
Terminal base 4-pole	0400 0090-10

Connection head BINOX 4

Description

- Sealing made of EPDM
- All components of the connection heades form MA can be used
- For cable with diameter Ø 3 - 5 mm

Technical Data	
Height of head	63 mm
Head diameter	34 mm
Process connection	G½“
Inner bore for protective sleeve	6,1 mm
Material	Stainless steel 1.4301
Electrical connection	for cable Ø 3 - 5 mm / SW13

Article	Art.-No.
Connection head BINOX 4	0400 0099-05

Accessories	Art.-No.
Terminal base 2-pole	0400 0090
Terminal base 4-pole	0400 0090-10

Temperature penetration probes

Temperature measurement

The special construction of these robust waterproof penetration temperature probes makes them ideal for the control of cooking and baking processes in all domains of the food and beverage industry. The protection tube is made of stainless steel and is available with centric or bevelled penetration tip. All the types are vibration and shock resistant. The ergonomic handles and the cables are easy to clean as well acid resistant. The probes are distinguished by a high mechanical robustness.

Applications

- Food inspection
- Butcher machines
- Freezers
- Fermenting units
- Backing ovens
- Cook- and smoking units
- Quality control in the food industry
- In the kitchen

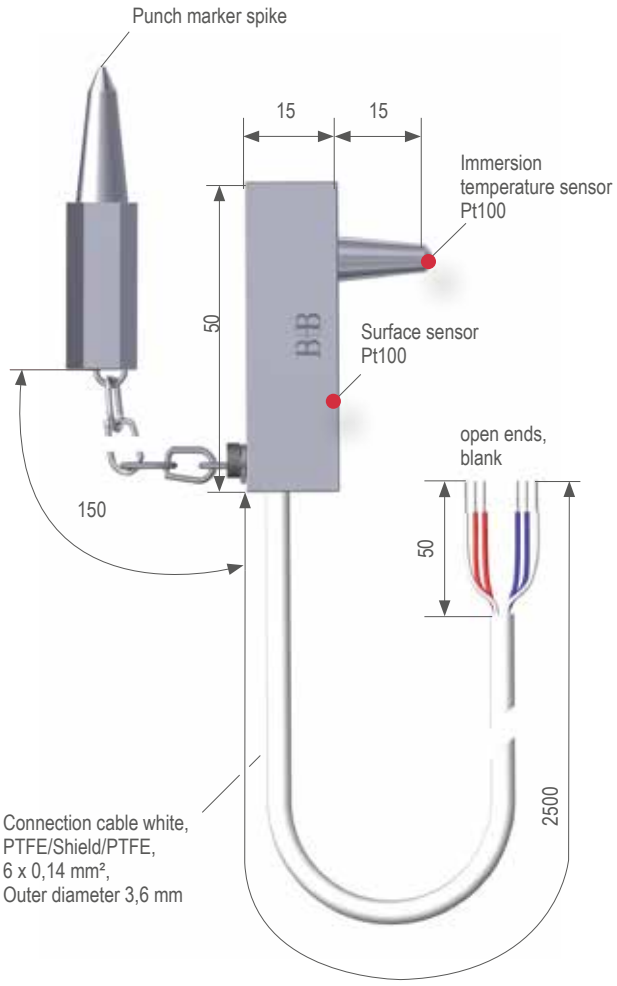
Benefits

- Vapor-on waterproof grouted
- Ergonomic handles
- Shock resistant
- Measuring range from -50°C to +260°C
- Available with centric or bevelled penetration tip

Solid ice probe

with 2 sensors and punch marker spike

Description



The probe has been conceived to allow the simultaneous temperature measurement inside and on the surface of frozen goods. The punch marker is used to prepare a hole for the immersion temperature measurement. The continuous and steady temperature of the frozen measuring goods can be controlled by comparing the immersion and surface temperature.

Technical Data

Sensor		2 x Pt100
Measurement range		-40...0 °C
Accuracy		IEC 751 Class B
Measurement current		max. 1 mA
Connection type		3-wires connection
Probe dimensions		15 x 20 x 50 mm
Probe material		stainless steel 1.4301
Electrical connection		open ends, 50 mm
Connection cable	Length Cross section Insulation	2500 mm. 6 x 0,14 mm² PTFE/shield/PTFE
Ingress protection		IP65
Features		Surface-/Immersion measurement approx. 15 mm in depth

Article	Art.-No.
Solid ice probe	0627 0835

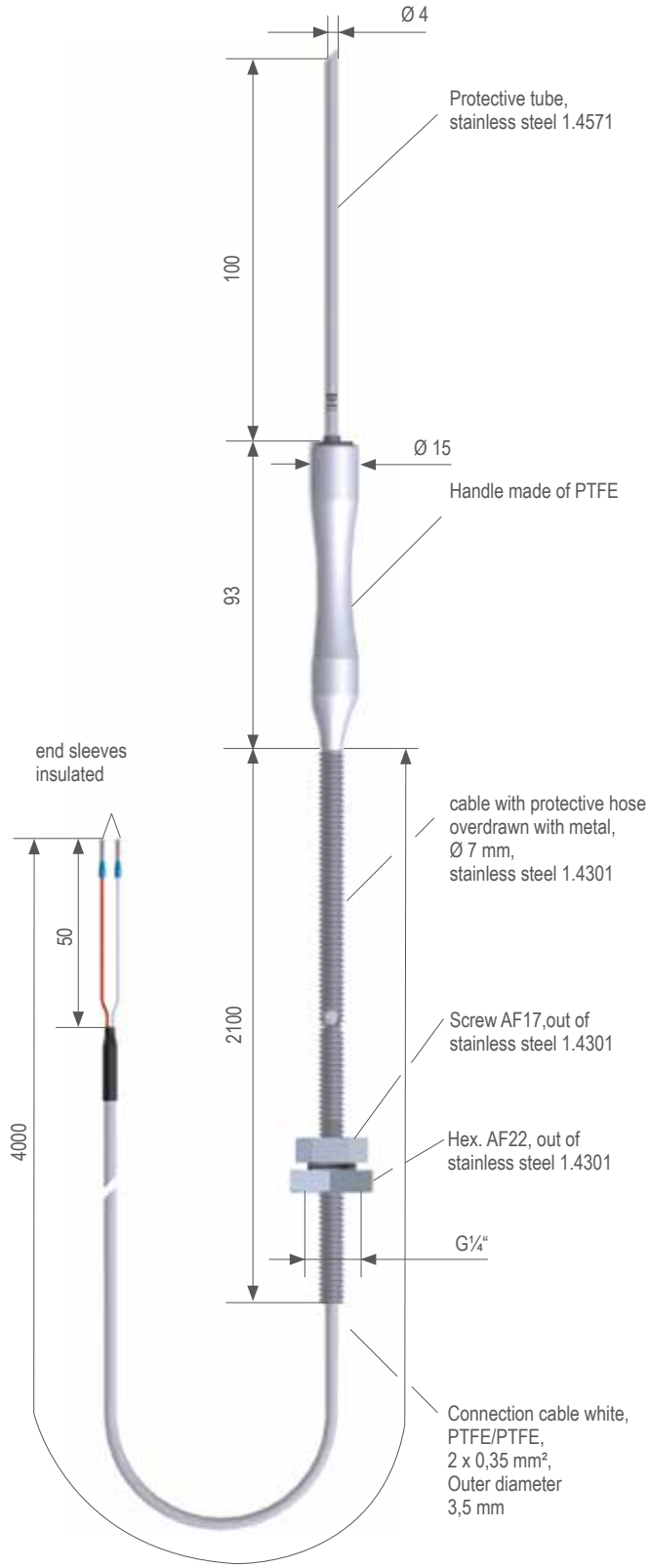
- 2 x Pt100 sensors for comparative measurement:
  1. Surface measurement
  2. Immersion measurement approx. 15 mm in depth incl. punch marker spike

TEMPERATURE CONTROL FOR FROZEN PRODUCTS

Penetration temperature probe

bevelled penetration tip, with fitting for permanent and safe assembly

Description



Technical Data

Sensor		Pt100
Measurement range		-50...+260 °C
Accuracy		IEC751 Class B
Measurement current		max. 1 mA
Connection type		2-wires connection
Nominal length		100 mm
Diameter		4 mm
Material	Probe Handle	Stainless steel 1.4571 PTFE white
Electrical connection		open ends 50 mm, end sleeves insulated
Connection cable	Length Cross section Insulation	4000 mm 2 x 0,35 mm^2 white, PTFE/PTFE

Article	Art.-No.
Penetration temperature probe Pt100	0600 0028-10

- Ergonomic handle out of PTFE (Teflon®)
- Resistant to liquids and acids
- 4000 mm long and flexible PTFE connection cable with the possibility of a permanent installation through thread G¼“, for example in cooking oven
- Cable protected with a flexible, corrugated metallic tube (L=2100 mm)

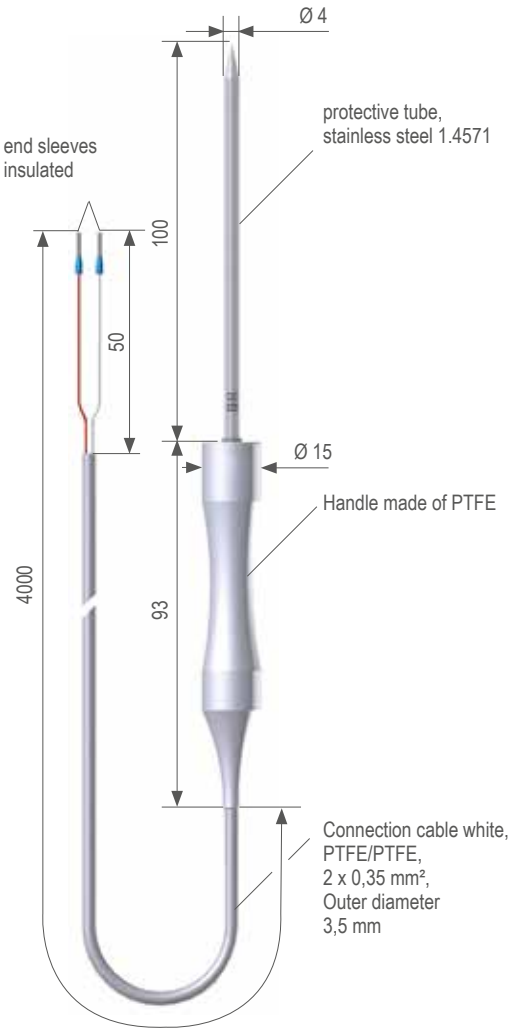
DONE TO PERFECTION

WITH B+B PROBES

Penetration temperature probe

centric penetration tip

Description

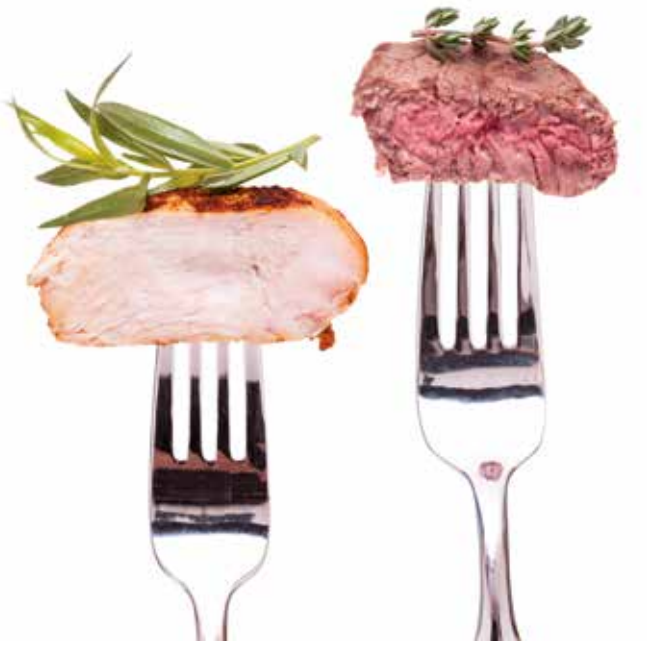


- Ergonomic handle out of PTFE (Teflon®)
- Resistant to liquids and acids
- 4000 mm long and flexible PTFE connection cable

Technical Data

Sensor		Pt100
Measurement range		-50...+260 °C
Accuracy		IEC751 Class B
Measurement current		max. 1 mA
Connection type		2-wires connection
Nominal length		100 mm
Diameter		4 mm
Material	Probe Handle	Stainless steel 1.4571 PTFE white
Electrical connection		open ends 50 mm, end sleeves insulated
Connection cable	Length Cross section Insulation	4000 mm 2 x 0,35 mm^2 white, PTFE/PTFE

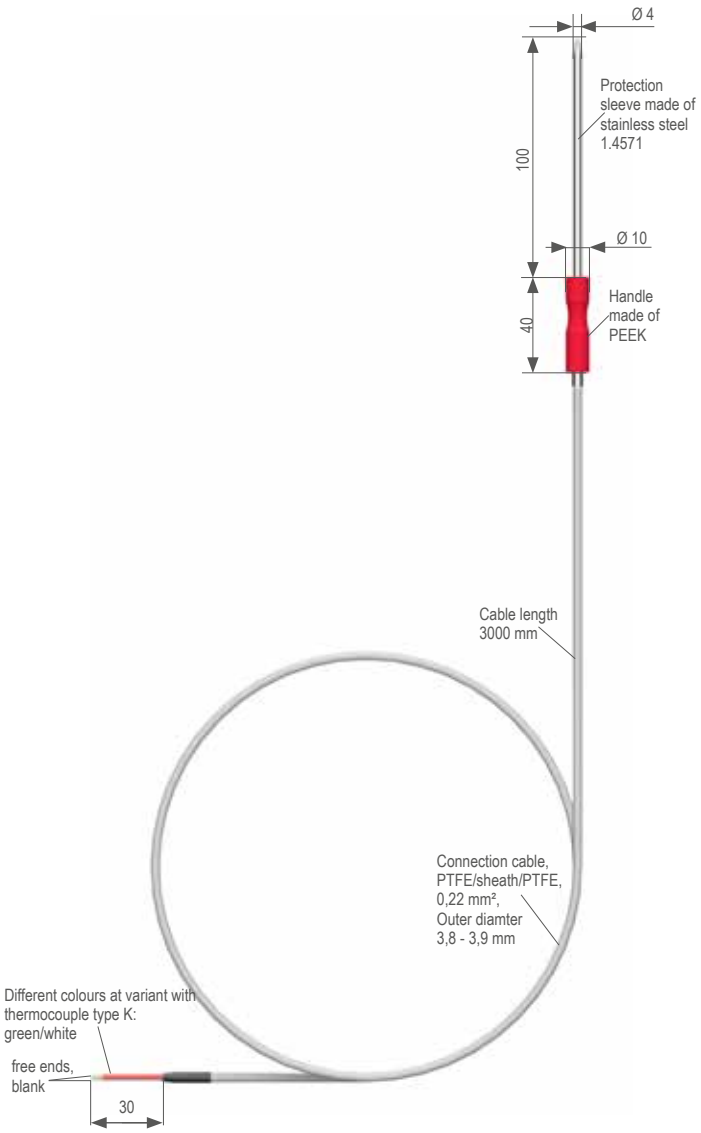
Article	Art.-No.
Penetration temperature probe Pt100	0600 0007-11



Penetration temperature probe

centric or bevelled penetration tip

Description



Technical Data

Sensor		Thermocouple type K Pt100, Pt1000
Measurement range		-50...+260 °C short-time up to +300 °C
Accuracy	Thermocouple type K Pt1000 Pt100	DIN EN 60584, Class 1 Class F 0,3 (Class B) DIN EN 60751 compliant Class F 0,3 (Class B) DIN EN 60751 compliant
Measurement current	Pt1000	max. 0,3 mA
	Pt100	max. 1 mA
Connection type	Thermocouple type K Pt1000, Pt100	2-wires connection 4-wires connection
Nominal length		100 mm
Diameter		4 mm
Material	Probe Handle	Stainless steel 1.4571 PEEK
Electrical connection		open ends 30 mm, blank
Connection cable	Length Cross section/color Insulation	3000 mm Thermocouple type K: 2 x 0,22 mm² / green Pt1000, Pt100: 4 x 0,22 mm² / white PTFE/shield/PTFE
Ingress protection		IP67

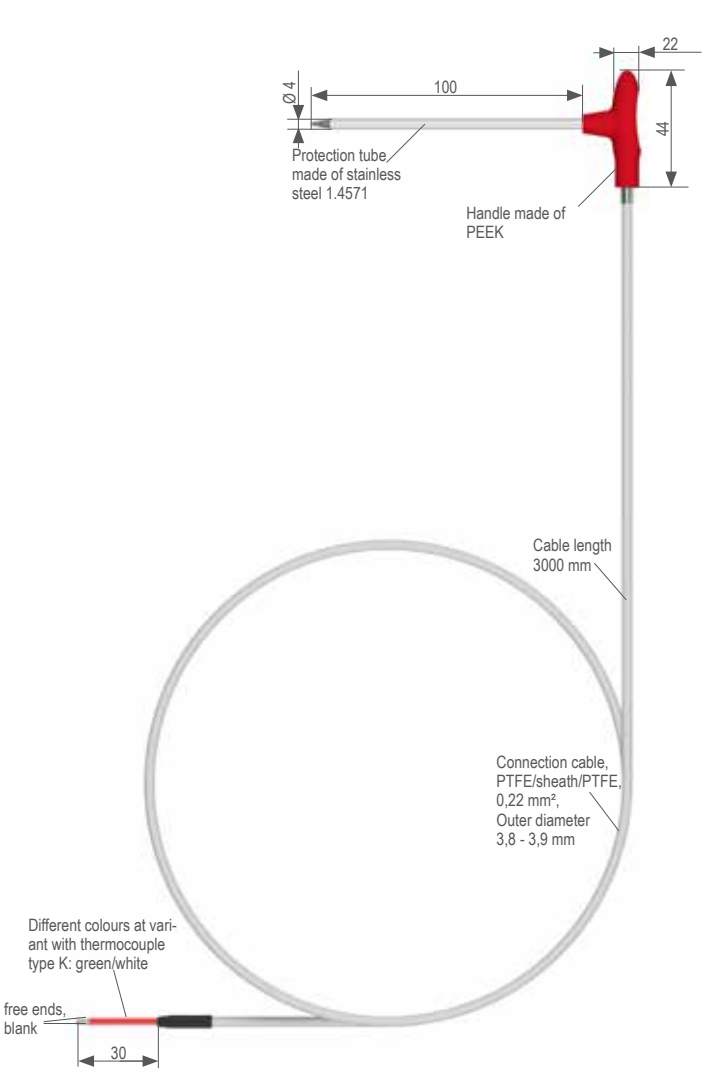
Several measuring points on request.

Article	Art.-No.
Penetration temperature probe thermocouple type K, bevelled measuring tip	0600 1112-100
Penetration temperature probe Pt1000, bevelled measuring tip	0600 0066-100
Penetration temperature probe Pt100, bevelled measuring tip	0600 0065-100
Penetration temperature probe thermocouple type K, centric measuring tip	0600 1112-101
Penetration temperature probe Pt1000, centric measuring tip	0600 0066-101
Penetration temperature probe Pt100, centric measuring tip	0600 0065-101

Penetration temperature probe

offset handle, centric or bevelled penetration tip

Description



Technical Data

Sensor		Thermocouple type K Pt1000
Measurement range		-50...+260 °C short-time up to +300 °C
Accuracy	Thermocouple type K	DIN EN 60584, Class 1
	Pt1000	Class F 0,3 (Class B) DIN EN 60751 compliant
Measurement current	Pt1000	max. 0,3 mA
Connection type	Thermocouple type K Pt1000	2-wires connection 4-wires connection
Nominal length		100 mm
Diameter		4 mm
Material	Probe Handle L x B x H	Stainless steel 1.4571 PEEK 44 x 12 x 22 mm
Electrical connection		open ends 30 mm, blank
Connection cable	Length	3000 mm
	Cross section/color	Thermocouple type K: 2 x 0,22 mm² / green Pt1000: 4 x 0,22 mm² / white
	Insulation	PTFE/shield/PTFE
Ingress protection		IP67

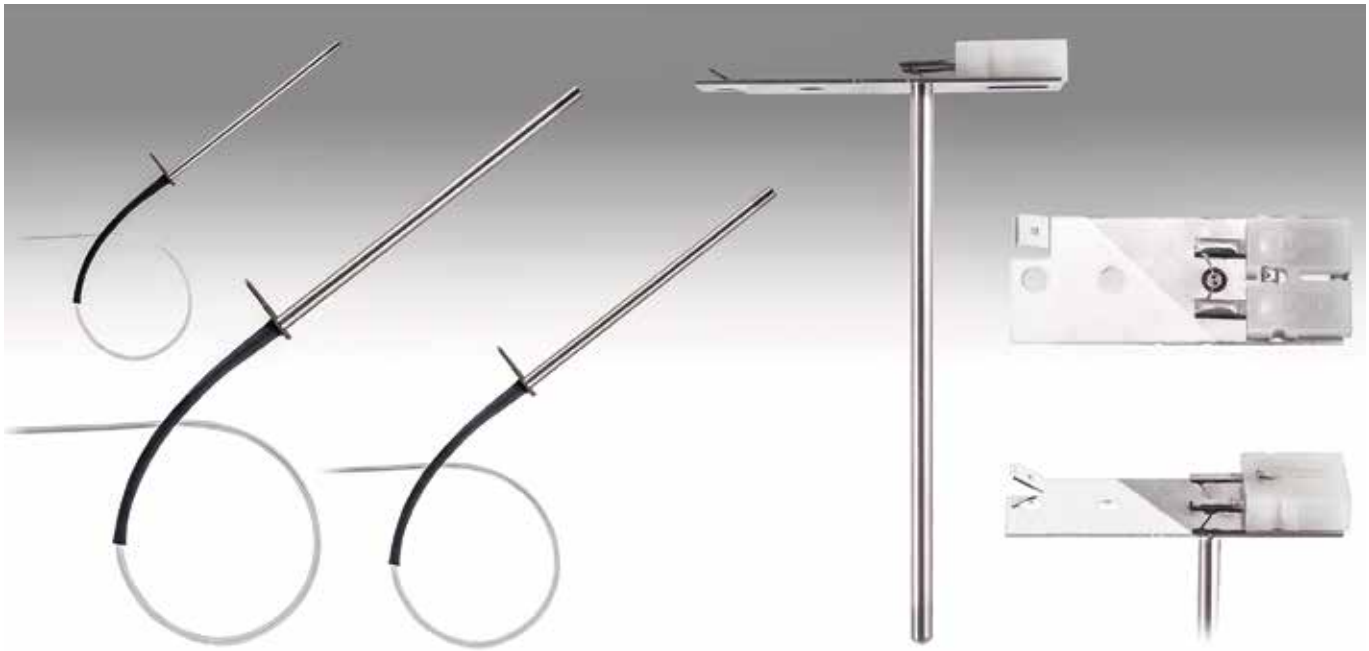
Several measuring points on request.

Article	Art.-No.
Penetration temperature probe thermocouple type K, bevelled measuring tip	0600 1114-100
Penetration temperature probe Pt1000, bevelled measuring tip	0600 0067-100
Penetration temperature probe thermocouple type K, centric measuring tip	0600 1114-101
Penetration temperature probe Pt1000, centric measuring tip	0600 0067-101

- Ergonomic angled handle made of PEEK
- Angled handle for close or abstructed environments

ERGONOMIC HANDLE

Temperature probes for the consumer electronic



Temperature probes for the consumer electronic are durable, sturdy and easy to assemble. These temperature probes are particularly designed for the use in ovens and coating chambers. Therefore we take highly care in a very close cooperation with our customers to achieve all requirements in our designs.

Applications

- Ovens
- Cooking chambers

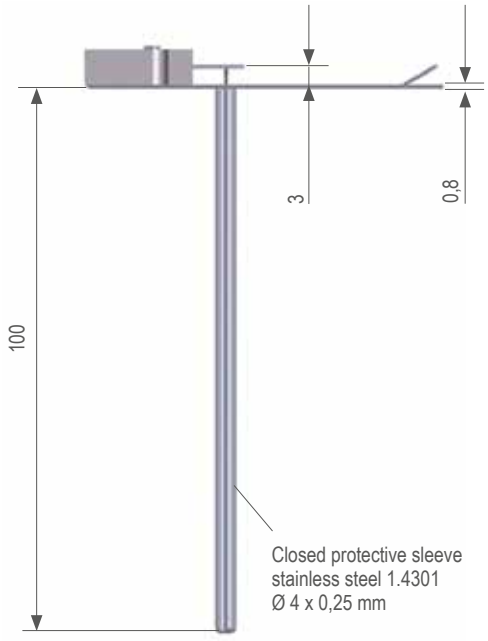
Benefits

- Washable
- Easy to clean
- Fast and maintenance-free assembly
- Suitable for pyrolysis

Temperature probe

Pt500, Pt1000, Class B, 2-wires connection

Description

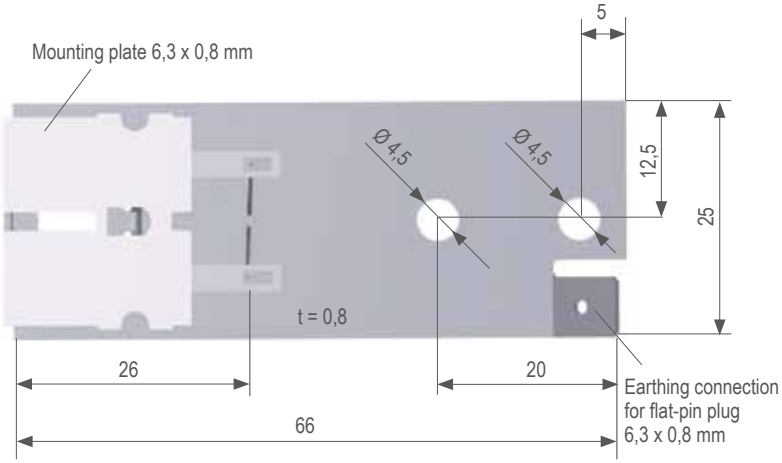


Technical Data

Sensor		Pt500, Pt1000
Measurement range		0...+200 °C
Accuracy		IEC 751 Class B
Measurement current Pt500		max. 0,5 mA
Measurement current Pt1000		max. 0,1 mA
Connection type		2-wires connection
Nominal length		100 mm
Diameter		4 mm
Material	Protective sleeve, Mounting Plate	Stainless steel 1.4301
Electrical connection		Flat-pin plug, brass nickel plated

Article	Art.-No.
Temperature probe Pt500	0627 0472-100
Temperature probe Pt1000	0627 0472-101

- Shock resistant, durable and sturdy
- Fast electrical installation

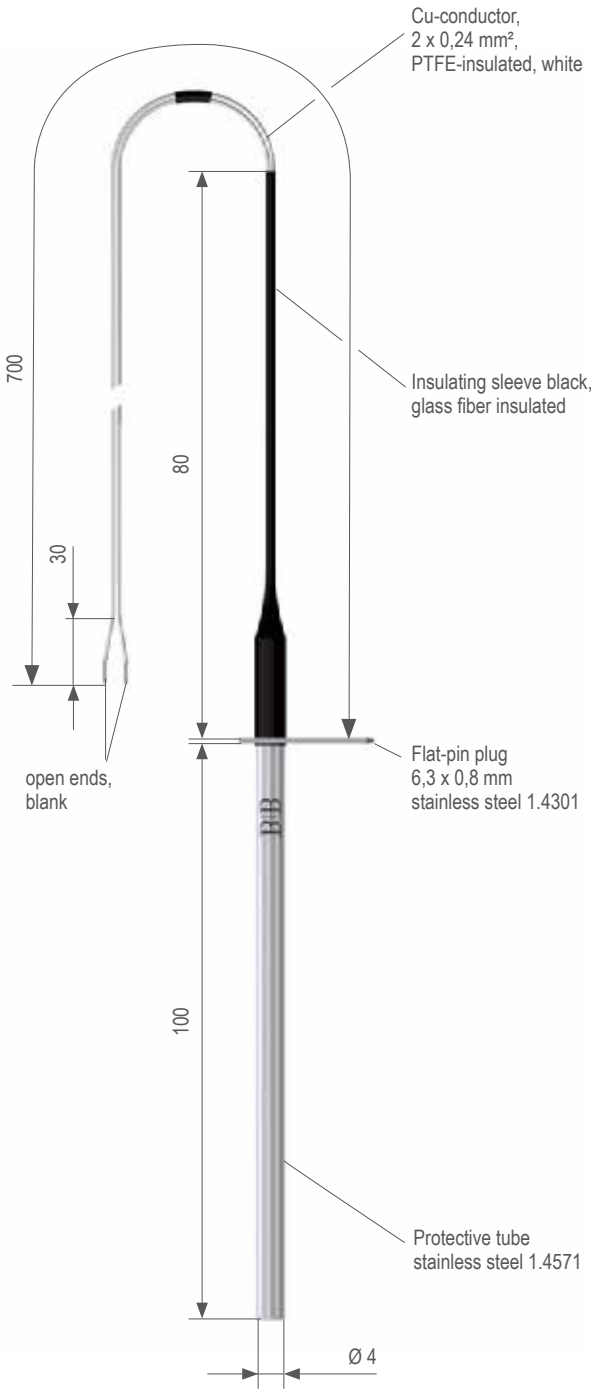


COOKING CHAMBER PROBE

Cable probe

Pt1000, Class B, 2-wires connection

Description



Technical Data

Sensor		Pt1000
Measurement range		0...+550 °C
Accuracy		IEC 751 Class B
Measurement current		max. 0,1 mA
Connection type		2-wires connection
Nominal length		100 mm
Diameter		4 mm
Material	Protective sleeve	Stainless steel 1.4571
Electrical connection		open ends 30 mm, blank
Connectionleitung	Length Cross section Insulation	700 mm 2 x 0,24 mm² PTFE
Ingress protection probe tube		IP67

Article	Art.-No.
Cable probe Pt1000	0625 0279-100

Different connectors for your specific requirements are available on request.

- Shock resistant, durable and sturdy
- Fast electrical installation
- To control the self-cleaning function (pyrolyse probe)

PYROLYSE PROBE

Waterproof HACCP-Thermometer
with Pt1000 probe

Description

The waterproof HACCP-Thermometer with Pt1000-Penetration temperature probe is the appropriate instrument for measuring temperature or process controls for the food industry, laboratories and production processes. The device is built dust- and waterproof (IP67). The display shows the Min/Max- and hold values of the current measurement in one view.

Features

- Fix connected Pt1000-Penetration probe with PEEK-Handle for temperatures up to +250 °C
- PTFE connection cable
- Waterproof and rugged construction
- Easy to clean surfaces
- High-quality instrumentation and mechanics
- Long battery life
- Easy to use
- High system accuracy and speed

Applications:

- Quality control for the food industry
- Production process control
- Incoming goods inspection
- Transport monitoring
- Laboratory

Technical Data

Measurement range	-200...+250 °C
Penetration temperature probe IP67	Pt1000, 2-wires connection, potential-free, waterproof and vapor-tight, fix connected to device, Ø 3,3 mm, connection cable 1000 mm
Accuracy	at -20...+100 °C ± 1 °C ± 1 digit at -70...+200 °C ± 0,1 % v. MW ± 2 digit probe is calibrated to the device
Ingress protection	IP67, housing made of ABS
Response time T_{90}	approx. 10 sec
Display	two 4-digits LCD (12,4 mm and 7 mm)
Operating temperature	-25...+50 °C
Storage temperature	-30...+70 °C
Power supply	9 V-Battery
Battery life time	> 6000 hours
Dimensions (W x H x D)	67 x 106 x 30 mm
Weight	245 g (incl. battery and probe)

Article	Art.-No.
HACCP-Thermometer with Pt1000 probe	0560 2710
Accessories: Silicone protective case	0554 2710

Accessories:
Silicone protective cover

Scope of delivery:
Measuring device, probe, 9 V-Battery, operating instruction on CD.

Infrared-Thermometer

FoodPro und FoodPro plus

HACCP

Fast and precise measurements where conventional thermometers cannot be used.

The FoodPro and FoodPro plus Infrared-Thermometers are designed particullarly for the use in food and beverage processing applications. Direct measurements can be carried out by presetting the emissivity. The B+B FoodPro plus Infrared-Thermometer combines contactless surface measurement and measurement of the core temperature in a single instrument. Particularly noteworthy is the built-in timer with alarm function (FoodPro plus). Temperature-time sequences can be monitored conveniently as a result, including heat-up, keep-warm and cool-down processes.

Applications

- Cold and hot buffets
- Transport monitoring
- Incoming goods inspection

Benefits

- Fast temperature measurement with no risk of contamination
- Makes the extensive tasks associated with HACCP controls considerably easier
- Vertification of the surface temperature through additional measurement of the core temperature
- Monitoring of temperature-time processes (integrated timer)

FoodPro Infrared-Thermometer

Infrared instrument FoodPro

Description

The FoodPro Infrared-Thermometer is used for rapid temperature checks in accordance with the HACCP self-monitoring system. The FoodPro offers simple handling and rapid response times. As well as displaying temperatures, symbols are used to indicate critical values in the food sector. The instrument is washable and is categorised under protection class IP54.

- Laser pointer
- HOLD-Function (7 seconds)
- Emissivity (0,97) adjusted for food
- Recommended measuring distance : 25 to 250 mm (Spot diameter Ø 12...100 mm)
- HACCP control indicator (optical indication of food-critical temperature ranges, green / red / green)
- Ingress protection IP54

Scope of delivery:
FoodPro Infrared-Thermometer incl. battery, operating instruction.

Technical Data

Measurement range	-30...+200 °C
Operating temperature	0...+50 °C
Device accuracy	between -10...+65 °C ±1 °C above +65 °C ±1,5 %
Ingress protection	IP54, washable
Response time	< 500 ms
Resolution	0,2 °C
Distance : Spot ratio	2,5 : 1
Smallest spot diameter	12 mm
Operating temperature	0...+50 °C
Battery	9 V
Battery life time (at 23 °C)	approx. 10 h
Dimensions	30 x 150 x 50 mm (W x H x D)
Weight	100 g

Article	Art.-No.
FoodPro Infrared-Thermometer	0560 0030

HACCP

HACCP-Control Indicator

(HACCP-Check)

An organised and repeatable approach is important for HACCP checks.
The HACCP control display helps with this.

green - red - green
good - caution - good

The „Caution“ range encompasses the temperatures at which perishables must only pass through for a short period of time (+4...+60 °C). The measured temperature appears on the display.

The HACCP-Control Indicator is available in FoodPro- and FoodPro plus Infrared-Thermometer.

FoodPro plus Infrared-Thermometer

Infrared instrument FoodPro plus

Description

The FoodPro plus infrared thermometer is used for rapid temperature checks in accordance with the HACCP self-monitoring system. As well as displaying temperatures, symbols are used to indicate critical values in the food sector. The display is backlit and easy to read. The FoodPro plus can be folded and, since it weighs just 150 g, it is ideal for mobile temperature measurements. The instrument is washable and is categorised under ingress protection IP54.

- Surface temperatures can be monitored quickly and without risk of contamination
- Makes the extensive tasks associated with HACCP controls condiderably easier
- Clear identification of potentially risky temperature ranges
- Monitoring of temperature-time relationships
- Additional measurement of the core temperature with the integrated penetration probe.

Scope of delivery: FoodPro plus Infrared-Thermometer incl. battery, operating instruction on CD.

Technical Data

		Penetration Measurement	IR Measurement
Measurement range		-40 °C...+200 °C	-35 °C...+275 °C
Operating temperature			0...+50 °C
Device accuracy	0...65 ° C < 0 °C >65 °C	±0,5 °C ±1 °C ±1 %	±1 °C ±1 °C ±1,5 %
Ingress protection			IP54, washable
Response time		7 - 8 sec.	< 500 ms
Resolution			0,1 °C
Distance : Spot ratio			2,5 : 1
Smallest spot diameter			12 mm
Battery			9 V
Battery life time (at 23 °C)			approx. 10 h
Dimensions			32 x 165 x 50 mm (W x H x D)
Weight			150 g

Article	Art.-No.
FoodPro plus Infrared-Thermometer	0560 0031

HACCP

HACCP-Control Indicator

(HACCP-Check)

An organised and repeatable approach is important for HACCP checks.
The HACCP control display helps with this.

green - red - green
good - caution - good

The „Caution“ range encompasses the temperatures at which perishables must only pass through for a short period of time (+4...+60 °C). The measured temperature appears on the display.

The HACCP-Control Indicator is available in FoodPro- and FoodPro plus Infrared-Thermometer.

Infrared measurement technology

B+B infrared measurement technology offers you the ideal properties for monitoring and controlling your processes. In many food processing applications, the process and product temperature represents an important physical parameter. Contactless temperature measurement with an infrared sensor system is a very powerful method for monitoring and managing these processes. It helps companies in the food industry achieve a high standard of quality on their production lines.

Applications

- Monitoring of production processes, as on-the spot measurements or as a thermal image
- Monitoring in the production area, also with alarm function
- Documentation

Benefits

- Compact and programmable
- Short response time
- High precision
- Fast and without contact

Infrared Camera Thermo-Cam

mobile cam with USB-connection

Description

The Thermo-Cam is a small, compact infrared camera for monitoring and evaluation of thermal processes in industry. Apart from the time, the temperature is the most frequently measured physical property. The temperature behavior is therefore a very good indicator for the status of physical systems. Too much friction creates heat, too high resistance of electrical contacts creates higher temperatures and energy losses are mostly shown by changes in temperature. This thermal processes can be found in almost all industry branches.

Within the range of process automation the Thermo-Cam is a reliable monitoring system for the observation of continuous processes within the food industry. Hotspots within bulky materials on conveyor belts can be detected quickly to avoid the development of irregularity.

The Thermo-Cam can be integrated in automation systems. A process interface output with an analogue output 0-10 V or alarm signal is the direct communication interface to the process.

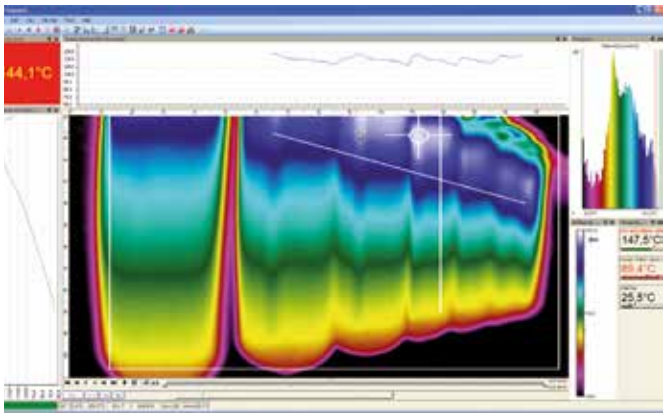
With this interface, temperatures of the main measuring area can be issued analogue or with an alarm. A process interface input allows beside the synchronization of the camera and the external control of emissivity values, background radiation compensation or the triggering of video or snapshot recordings.

Application

With the Thermo-Cam you can not only see where it is hot, but also measure exactly the temperatures - all within a 10 millisecond interval! The camera provides excellent infrared images in a wide temperature range of -20°C up to 900°C. The standard and comprehensive software package features to capture and edit infrared snapshots and videos, for thermal analysis with hot and cold spot detection display of isotherms and much more!

The Thermo-Cam is the thermographic solution for:

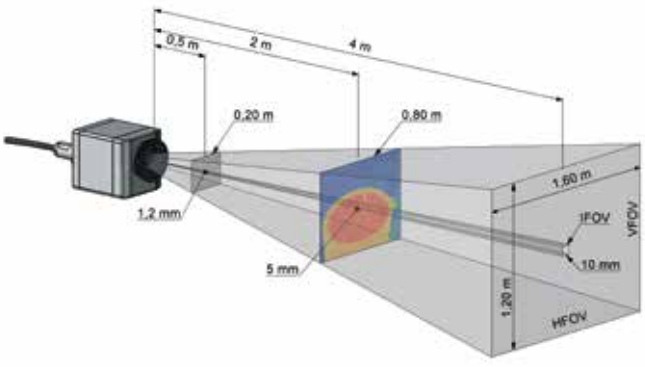
- Building diagnostics
- Supervision, restoration and renovation
- Energy consulting
- Stationary and portable measuring tasks



Exchangeable lenses

The Thermo-Cam has a very small, waterproof and rugged camera sensing head with exchangeable lenses of 6°, 23° and 48° field of view.

Lens	Focal length	Minimum distance	
6 ° x 5 ° Tele lens	35,5 mm	0,5 m	
23 ° x 17 ° Standard lens	10 mm	0,2 m	
48 ° x 37 ° Wide angle lens	4,5 mm	0,2 m	



Function of measuring field of view (FOV) and distance (lens 23° x 17°)

Software

User-friendly software Thermo-Cam

This real time software sets new performance standards with its variability and functionality: It offers extensive opportunities:

- Video recodings and snapshots with up to 120 Hz
- Digital real time temperature data correction for all pixels
- Hot and cold spot analysis
- Editing of captured infrared video for reports and presentations

The software can combine flexible spots with crosshairs marking and programmable measurement areas with an automatic display of maximum-, minimum- or average temperature readings.

Thermo-Cam with attached Tablet PC for mobile applications

Technical Data	
Measurement range	-20...+900 °C
Operating temperature	0...+50 °C
Relative humidity (non condensing)	10...95 %
Refresh rate	120 Hz
Spectral range	7,5...13 µm
Optical resolution	160 x 120 Pixel
System accuracy	±2 % oder ±2 ms
Lenses (exchangeable)	6° x 5° FOV / f = 35,5 mm 23° x 17° FOV / f = 10 mm 48° x 37° FOV / f = 4,5 mm
Thermal sensivity (NETD)	0,3 K with 6° FOV / F = 1,6 0,08 K with 23° FOV / F = 0,7 0,1 K with 48° FOV / F = 1
Ingress protection	IP67
Detector	Focal Plane Array (FPA), uncooled Micro Bolometer 25 x 25 µm
Shock	IEC 68-2-27: 50 G, 11 ms
Vibration	IEC 68-2-6: 3 G, 11...200 Hz
Weight	250 g, incl. lens
Dimensions	45 x 45 x 65 mm
Tripod mount	1/4-20 UNC
Output	USB 2.0
Power supply	USB 2.0 powerd
Process interface (electrically isolated)	0...10 V input, Digital-input 0-10 V output
Process interface - Functions: Remote emissivity adjustment background compensation or record, begin triggering. Analog output for max-/ min or mean value temperature of the mean field or alarm signal	

Software Features	
Configuration	Automatic or manual scaling of the measurement range, selectable and definable software layouts, language translation tool, adjustable measurement parameters (emissivity 0.10...1.00, background radiation compensation, reference temperature)
Measurement-functions	Mobile measurement points with automatic calculation of the MAX, MIN or AVG values, automatic HOT spot and COLD spot finder, temperature profiles, isothermal representation, reference functions (with external sensor), linescan modes.
Image representation	11 colour palettes, colour reference strip, histogram, digital displays for temperature measurement fields (with alarm display), video control (Start, Pause, Stop, Freeze Frame, Rew and FF), full screen mode.
Video recording	Real-time video recording (radiometric) at 120 Hz (adjustable), video editing tools, freeze frame storage (radiometric JPG)

Article	Art.-No.
Infrared Camera Thermo-Cam, with lens 6° x 5°	0560 0904
Infrared Camera Thermo-Cam, with lens 23° x 17°	0560 0905
Infrared Camera Thermo-Cam, with lens 48 ° x 37 °	0560 0906

Scope of delivery:
Camera Thermo-Cam, inkl. transport case, table Top Tripod, USB-Cable, couples for process interface, Software und operating instruction

Infrared-Temperature Measurement Device

DM301 D

Description

- Emissivity adjustable via 0-10 V DC input or software
- 0-5 or 0-10 V freely scaleable or alarm adjustable voltage levels
- Connection cable 1 m (standard), 3 m, 8 m or 15 m optional
- Optional USB-Adaptor incl. terminal block and software on CD

Connections

Connection analog with open collector alarm output

Scope of delivery:
Sensor, operation instruction on CD.

Technical Data

Measurement range	-40...+350 °C (expandable to +1030 °C via optional USB-Adaptor)
Operating temperature	-20...+80 °C, without cooling
Relative humidity (no condensing)	10...95 %
Distance : Spot ratio	15 : 1
Smallest measuring spot	7 mm
Accuracy (temperature of object >0 °C)	±1,5 % or ±1,5 °C
Reproducibility (at 23 °C)	±0,75 % or ±0,75 °C
Response time T95	25 ms
Warm-up time	10 min.
Emissivity	0,1...1,1
Transmissivity	0,1...1,1
Ingress protection	IP63
Spectral range	8 - 14 µm
Electrical connection	I / 01 programmable as output 0-5 V, 0-10 V or as alarm I / 02 programmable as analog input 0-10 V or as digital input / output / alarm
Alarm output	0-30 V / 50 mA (open collector)
Connection cable length	1 m, optional 3 m, 8 m oder 15 m
Power supply	5-30 V DC
Dimensions sensoring head	M12 x 1, L= 87 mm
Programming	with optional USB-Programmable adaptor

Article	Art.-No.
DM301 D with 1 m cable	0560 0447-20
USB-Adaptor incl. terminal block and software on CD	0554 2005-10

Data loggers
for the food industry

The data loggers from B+B Thermo-Technik GmbH are electronic data acquisition systems. These systems enable continuous measuring of sensors to be recorded. Different types of thermocouples, Pt100 sensors and standardized outputs (0 to 10 V DC, 4 to 20 mA, DC or Pt100) can be connected to the data loggers. Even in harsh industrial environments (Ingress protection up to IP67) the systems provide precise and reliable variables in digital form. Via an interface, all settings and measurements are transmitted to a PC and displayed through the user-friendly software easily and clearly in graphical or tabular form.

Applications

- Quality assurance
- Process control
- Area monitoring
- Transport monitoring
- Incoming goods inspection

Benefits

- Compact and programmable
- High precision
- Reliable data recording
- Excellent price-performance ratio

Data logger TagTemp

for the measurement and storage of ambient temperatures

Description

Technical Data	
Measurement range	-20...+70 °C
Accuracy (at 25 °C)	±1 °C
Resolution	0,1 °C
Operating temperature	-20...+70 °C
Sample rate	min. 1 sec. ... max. 18 hours
Memory capacity	16.000
Battery	3,6 V
Battery life time	> 200 days
Software language	english
Ingress protection	IP67
Dimensions (W x H x D)	30 x 47 x 12,5 mm

Article	Art.-No.
Data logger TagTemp	0568 0037
USB-Interface IRLink-3, Software	0568 0036

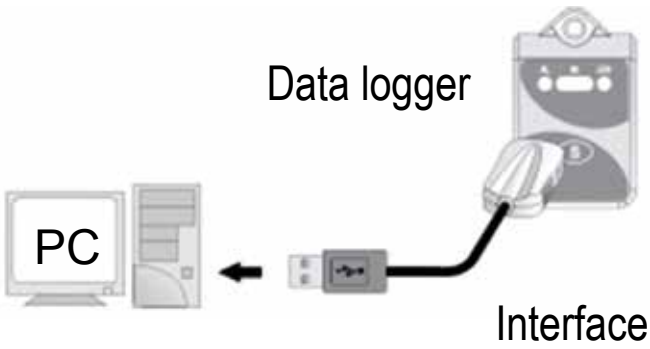
Small, portable data logger with integrated temperature sensor for the measurement and storage of ambient temperatures.

- Integrated temperature sensor
- Manual or software controlled measurement start: immediately, schedule or when temperature setpoint is reached
- Programmable alarm setpoints
- Infrared-interface with optional USB-Interface IRLink-3

USB-Interface IRLink-3

USB-Interface IRLink-3
Is needed for the configuration of the data logger and for reading the measured value memory.

Battery life time
Approx. 200 days at a weekly download and measurement interval of 5 minutes. Battery life time strongly depends on the number of downloads.



Scope of delivery:
Data logger TagTemp inkl. battery, operation instruction on CD.

LogBox AA IP67

Temperature data logger for analogue industry sensors

Description

Data Logger for two analogue industrial sensors: Input for thermocouples type J, K, T, E, N, R, S and B, Pt100, DC linear/scalable 0-10 V, 0-50 mV or current 0-20 mA, 4-20 mA.

- Visual alarm indication (LED)
- The input channels are selectable
- Memory: 32000 measures
- 1 Alarm value (MIN or MAX) programmable per channel
- Logging start:
  - immediately after programming
  - daily within a time interval (programmable)
- Integrated real-time clock
- Infrared-interface with optional USB-Interface

USB-Interface IRLink-3
Necessary for the configuration of the data logger and for reading the measured value memory.

Battery life time
Approx. 200 days at a weekly Download and measurement interval of 5 minutes. Battery life time strongly depends on the number of downloads.

Scope of delivery:
Data Logger LogBox AA IP67 incl. battery, operation instruction on CD.

Technical Data

Measurement range for thermocouple type	J	-50...+760 °C
	K	-90...+1370 °C
	T	-100...+400 °C
	E	-40...+720 °C
	N	-90...+1300 °C
	R	0...+1760 °C
	S	0...+1760 °C
	B	+150...+1820 °C
Measurement range for	Pt100	-200...+630 °C
	DC linear/ scaleable	0...50 mV, 0...10 V 0...20 mA, 4...20 mA -32768 ... +32767
Accuracy (% of measurement range) for thermocouple type	J, K, T, E	0,25 % ±1 °C
	N, R, S, B	0,25 % ±3 °C
Accuracy (% of measurement range) for	Pt100 DC linear	0,20 %
Operating temperature		-40...+70 °C
Sample rate		min. 10 sec max. 18 hours
Memory capacity		32.000
Connection		2 x M8 connectors with cable
Battery		3,6 V Lithium, 1/2 AA
Battery life time		approx. 1 year (measuring rate 5 min and 1 data export per day)
Software language		english
Ingress protection		IP67
Dimensions (W x H x D) without screwings		70 x 60 x 35 mm

Article	Art.-No.
LogBox IP67	0568 0034
USB-Interface IRLink-3, Software	0568 0036

USB-Interface IRLink-3

LogBox RHT with LCD

Data Logger with integrated temperature-humidity sensor

Description

Technical Data

Measurement range	temperature humidity	-40...+80 °C 0...100 % RH
Accuracy at +25 °C at 20...80 % RH	temperature humidity	±0,5 °C ±3 %
Resolution		0,1 °C / 0,1 % RH
Operating temperature		-40...+80 °C
Sample rate		min. 1 sec max. 18 hours
Memory capacity		32.000
Battery		3,6 V Lithium, 1/2 AA
Battery life time		> 200 days
Software language		english
Ingress protection		IP65
Dimensions (B x H x T)		60 x 70 x 35 mm

Article	Art.-No.
LogBox RHT with LCD	0568 0038-01
USB-Interface IRLink-3, software	0568 0036

Portable data logger with LCD and integrated sensors for measurement of temperature and relative humidity.

- Integrated LCD for visualization of collected data
- Integrated temperature and humidity sensors
- Manual or software controlled measurement start: immediately, scheduled on day and time input or at reached preset temperature
- Two programmable alarm setpoints
- Infrared-interface with optional USB-Interface

USB-Interface IRLink-3
Necessary for the configuration of the data logger and the reading of the memory.

Battery life time
Approx. 200 days at a weekly download and meassurement interval of 5 minutes. Battery life time strongly depends on the number of downloads.

USB-Interface IRLink-3

Scope of delivery:
Data Logger LogBox RHT with LCD incl. battery,
operating instruction on CD.

Indicators / Controllers

for the food industry

The Indicator N480i-RR, the on/off controllers 321/ 322 RHT and the PID controller N1100 HC/C3 are suitable for food processing and refrigeration. Several relay outputs and five programmable alarms make the microprocessor-based indicators and controllers to universal devices.

The controller N1100 HC/C3 has a program controller function, which allows to provide the temperature with a nominal valuetime profile.

Applications

- Chiller cabinets
- Refrigerated transports
- General monitoring
- Cold stores

Benefits

- For universal use
- Reliable
- Reasonable price
- Muliple functions

Indicator N480i-RR

for panel mounting

Description

The 480i-RR indicator with universal input (for different thermocouples, Pt100, DC linear, (mV, V, mA)) is more than a simple indication device for the process quantities. It is standardly equipped with 2-potential free Alarm output relays. 5 different Alarm functions can be assigned to each relay. The device can also be used to monitor and survey the Min- /Max values.

- Universal input
- 2 relay outputs
- 5 alarm functions
- LED-display

- Input channels can be selected
- Ring buffer or end of recording at reaching the storage capacity
- 1 alarm level (high or low) for each channel programmable
- Visual alarm display (LED)
- Start of data collection:
  -immediately after programming
  -daily in the same time window (programmable)
- Infrared interface with optional USB interface
- Programming via Windows ® compatible software, ease of use
- Data output graphs and tables
- Integrated real-time clock

Scope of delivery: Indicator N480i-RR, operating instruction on CD.

Technical Data

Inputs for thermocouples type			J, K, T, E, N, R and S
Iputs for Pt und DC linear/scaleable			Pt100/3L, mV, V, mA
Sample rate			1 / sec
Output 1 + 2			SPST relay*, max. 1,5 A, 250 V (ohm resistive load)
Display			dual-row, 4-digits LED-display, red + green
Operating temperature			0...+55 °C
Device accuracy for all thermocouples types			± 0,25 % of measurem. range span ± 1°C
Device accuracy for Pt100, DC linear			± 0,2 % of measurement range span
Measurement range for thermocouples type	J	-50 … +760 °C	-58...+1400 °F
	K	-90…+1370 °C	-130...+2498 °F
	T	-100 … +400 °C	-148 ...+752 °F
	E	-30 ... +720 °C	-22...+1328 °F
	N	-90...+1300 °C	-130...+2372 °F
	R	0...+1760 °C	+32...+3200 °F
	S	0...+1760 °C	+32...+3200 °F
Measurement range for	Pt100	-200 … +530 °C	-328. ..+986 °F
	DC linear		0...50 mV, 0...10 V, 4...20 mA scaleable -1999...+9999
Power supply	0556 0100:		100...240 V AC (±10 %) 50/60 Hz max. 3,0 VA
	0556 0100-02:		24 V AC/DC (±10 %)
Ingress protection			IP65 on the front
Dimensions (W x H x D)			48 x 48 x 110 mm
Installation depth			97 mm
Weight			97 g

*dry contact

Article	Art.-No.
Display N480i-RR to 100 to 240 V AC	0556 0100
Display N480i-RR with 24 V AC/DC	0556 0100-02

Controller N1100 HC C/3 (3-Punkt / stetig)

for panel mounting

Description

The universal controller N1100-HC C/3 offers not only a universal input but has also a universal output which can be programmed for a continuous retransmission of the setpoint value with a 0 (4) to 20 mA signal, as logical output or as a digital input. 2 physical outputs can be configured to be control outputs with different control parameters allowing so to control the heating and cooling processes independently.

Using the programmable control time function the user can configure a time dependant variation of the control setpoint. Up to 4 programs with up to 5 time-segments respectively can be programmed. The user has also the possibility to link together sequentially the 4 programs giving rise to a single time-program running with up to 20 time segments. The controller offers 3 relay outputs and a universal input/output which can be defined as the user requires. The outputs can be used as control outputs (max. 2) or as alarm outputs (max. 4).

Technical Data

Inputs for thermocouples type			J, K, T, N and S
Inputs for Pt und DC linear/scaleable			Pt100/3L, mV, V, mA
Sample rate			5 / sec
Output 1 + 2			SPST relay*, max. 1,5 A, 250 V (ohm resistive load)
Output 3			SPDT relay*, max. 3 A, 250V (ohm resistive load)
Output (Input) 4			Control output, 0 (4)...20 mA or logic output 10 V DC or PV or SP retransmission 0 (4) digital input (for example for external start/stopp)
Display			dual-row, 4-digits LED-display, red + green
Operating temperature			0...+55 °C
Device accuracy for thermoelmente type:	J, K, T N, S		± 0,25 % of measurement range span ± 1 °C ± 0,25 % of measurement range span ± 3 °C
Device accuracy for	Pt100 DC linear		± 0,2 % measurement range span
Measurement range for thermocouples type	J K T N S	-50…+760 °C -90…+1370 °C -100…+400 °C -90...+1300 °C 0...+1760 °C	-58...+1400 °F -130...+2498 °F -148...+752 °F -130...+2372 °F +32...+3200 °F
Measurement range for	Pt100	-200…+530 °C	-328...+986 °F
	DC linear		0...50 mV, 0...10 V, 4...20 mA scaleable
Power supply			100...240 V AC (±10 %) 50/60 Hz, max. 3 VA
Ingress protection			IP65 on the front
Dimensions (W x H x D)			48 x 48 x 110 mm
Weight			97 g

*** dry contact**

Article	Art.-No.
Controller N1100 HC C/3 with 100 to 240 V A	0556 0104

- Universal Input
- 4 Outputs
- 5 Alert types
- Control behavior ON / OFF or PID self-tuning
- Automatic control parameter adaptation
- Program controller functions
- Time function of the alarm outputs
- External Setpoint

Scope of delivery: Controller N1100-HC C/3, operating instruction on CD.

Controller N480D-RRR (2-Punkt)

for panel mounting

Description

The temperature controller N480D has in addition to the control output, and 2 alarm outputs with 5 different types of alarm (programmable). For a slow rise of temperature on the set value, the ramp function can be selected. Here, a pitch in the range 0.1 to 100.0 °C per hour can be put in. As outputs 3 relays and a logic output and logic output (5 V) for driving a semiconductor relay are available. The assignment of the outputs can be set arbitrarily. The measurement input is designed for various thermocouples and Pt100.

- Input for thermocouple and Pt100
- 3 outputs
- 5 types of alarms
- Control behavior ON / OFF or PID
- Automatic control parameter adaptation
- Reference value ramp function
  24 V and 100 - 240 V version

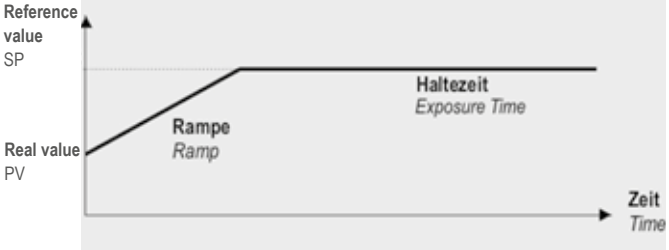
Scope of delivery:
Controller N480D-RRR, operating instruction on CD.

Technical Data

Inputs for thermocouples type		J, K, T, E, N, R, S
Inputs for Pt und DC linear/scaleable		Pt100/3L
Sample rate		10 / sec
Output 1 + 2		SPST relais*, max. 1,5 A, 250 V (ohm resistive load)
Output 3		SPDT relais*, max. 3 A, 250 V (ohm resistive load)
Output 4		Logic output 5 V DC
Display		dual-row, 4-digits LED-display, red +green
Operating temperature		0...+55 °C
Device accuracy for thermocouples type	J, K, T, E N, R, S	± 0,25 % of easurement range span ± 0,25 % of measurement range span
Device accuracy for	Pt100	± 0,2 % of measurement range span
Measurement range for thermocouples type	J K T E N R S	-50…+760 °C -90…+1370 °C -100…+400 °C -30... +720 °C -90...+1300 °C 0...+1760 °C 0...+1760 °C
Measurement range for	Pt100	-200…+530 °C
Power supply 0556 0102: 0556 0102-01:		100...240 V AC (± 10 %) 50/60 Hz, max. 9 VA 24 V AC / DC (± 10 %), max. 9 VA
Ingress protection		IP65 on the front
Dimensions (W x H x D)		48 x 48 x 110 mm
Weight		97 g

*dry contact

Article	Art.-No.
Controller N480D-RRR with 100 to 240 V AC	0556 0102
Controller N480D-RRR with 24 V AC/DC	0556 0102-01



Controller N321

Cooling and heating temperature controller

Description

0556 0108-01 and 0556 0108-04 incl. NTC 10 k probe

The N321 temperature controller is used to measure, display and control the temperature in many different systems and applications. It accepts 4 sensor types: Pt100, Pt1000, NTC or thermocouples type J, K or T. It offers an excellent price to performance ratio. The user can programme the control action according to the application: direct action (refrigeration) or reverse action (for heating). The internal 10 A relay can directly control compressors (cooling) or electrical heaters (heating). The control behaviour is ON/OFF mode. The controller is CE (European Union) and UL (United States and Canada) certification compliant.

- Measuring range from -200 to + 1000 °C, depending on sensor type
- Device accuracy ±0,5 °C to ±2 °C, depending on sensor
- Adjustable hysteresis

Scope of delivery:
Controller N321, operating instruction on CD.
(0556 0108-01 and 0556 0108-04 incl. NTC 10 k probe)

Technical Data

Inputs (depending on the version)		Thermocouples type J, K und T Pt100 / Pt1000 NTC 10 k, 2 x NTC 10 k
Measurement range for thermocouples type	J K T	0...+600 °C -50...+1000 °C -50...+400 °C
Measurement range for	Pt100 Pt1000 NTC 10K	-50...+300 °C -200...+530 °C -50...+120 °C
Accuracy for:	thermocouples Pt100/Pt1000 NTC 10 k	± 2 °C ± 0,5 °C ±1 digit at 25 °C: ±1 %
Resolution		0,1 °C from -19,9...+199,9 °C
Sample rate		1,5 / sec
Output		SPDT Relay*, 1 HP 250 V AC (16 A ohm resistive load)
Display		3,5 digits LED display red
Operating temperature		0...+55 °C
Power supply		100...240 V AC (± 10 %)
Ingress protection		IP65 on the front
Dimensions (W x H x D)		75 x 33 x 75 mm
Weight		120 g

*dry contact

Article	Art.-No.
Controller N321 for Pt1000	0556 0108
Controller N321 for NTC 10 k incl. probe (-50...+120 °C)	0556 0108-01
Controller N321 for Pt100	0556 0108-02
Controller N321 for thermocouple J, K, T	0556 0108-03
Controller N321S 2 x NTC 10 k incl. probe (-50...+120 °C)	0556 0108-04

Versions with 24 V DC/AC on request.

Controller N322 RHT

Humidity and temperature probe

Description

The humidity and temperature controller N322 RHT is a digital controller for relative humidity and temperature. Two relay outputs can be configured individually to control the temperature or the relative humidity. The standard delivery scope includes a humidity and temperature sensor. The sensor is protected by a nylon cap and has a three meter connection cable. The display can alternate between the measured temperature and the measured relative humidity. The switch time between the two displays can be configured by the user freely. The control unit is CE (European Union) and UL (U.S. and Canada) certified.

- Input: Humidity- and temperature sensors
- Resolution: 1 % over the entire range
- Adjustable hysteresis

Scope of delivery:
Controller N322 RHT with Pt1000 humidity- / temperature probe, operating instruction on CD

Technical Data

Input		Pt1000
Measurement range	temperature humidity	-40...+120 °C 0...100 % RH
Accuracy	temperature humidity	±0,5 °C at +25 °C ±3 % at +25 °C
Resolution		1 % over full range
Sample rate		1,5 / sec
Output 1		SPDT relay*, 1 HP 250 V AC / 1/3 HP 12 V AC (16 A ohm resistive load)
Output 2		SPST relay 3 A / 250 V AC
Display		3,5 digits LED display red
Operating temperature		0...+40 °C
Power supply		100...240 V AC (±10 %)
Ingress protection		IP65 on the front
Dimensions (W x H x D)		75 x 33 x 75 mm
Weight		120 g

*dry contact

Article	Art.-No.
Controller N322 RHT with Pt1000 humidity-/ temperature probe	0556 0110

Versions with 24 V DC/AC on request.

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