

Reference Measuring Instruments

ALMEMO® 1020-2



Reference measuring instrument for temperature
High-precision measuring by means of thermocouples
Types N, S, R, B
Resolution 0.01 K, up to 1800 °C

Technical features

- Temperature measurement with very high levels of resolution, precision, and linearity, using thermocouples Types N, S, R, B
- Suitable as reference device in calibration laboratories and quality assurance procedures
- Very high accuracy thanks to multi-point adjustment of the thermocouple temperature sensor
- Each temperature sensor has its own cold junction stored in the ALMEMO® plug or externally. The cold junction temperature in the ALMEMO® plug is measured to a very high resolution of 0.001 K by means of an NTC sensor.
- Two electrically isolated measuring inputs for thermocouples, types N, S, R, B
- Resolution 0.01 K
- Units °C, °F, K
- High-resolution A/D converter, delta-sigma, 24-bit, 1.25 mops (measuring operations per second)
- Two output sockets for digital interface, ALMEMO® memory connector
- Compact, modern, ergonomic design
- Graphics display, illuminated with white light
- Easy and convenient to operate by means of 4 soft-keys and cursor block
- Measured value display : 2 measured values, differential, measuring point list, cold junction temperature
- Measuring functions : Zero-setting, smoothing, maximum / minimum values, individual value memory for 100 values
- Data logger with ALMEMO® memory connector (accessory)
- Sensor programming : Smoothing, designation, units
- Device configuration : Illumination, contrast, device address, baud rate
- Choice of language : German, English, French

Technical data ALMEMO® 1020-2

Measuring inputs	2 ALMEMO® input sockets for thermocouples
Electrical isolation	Semiconductor relay (50 V)
A/D converter	Delta-sigma, 24-bit, 1.25 mops
Measuring ranges	
NiCrSi-NiSi Type N	-200 to +1300 °C
PtRh10-Pt Type S	-50 to +1768 °C
PtRh13-Pt Type R	-50 to +1768 °C
PtRh30-PtRh6 Type B	+250 to +1820 °C
Resolution	0.01 K
Accuracy	±0.1 K ± 1 digit in range
Type N	-200 to +1300 °C
Type S	+50 to +1760 °C
Type R	+100 to +1760 °C
Type B	+500 to +1800 °C
Nominal conditions	23 °C ±2 K, 1013 mbar, battery mode
Temperature drift	typical 10 ppm / K
Cold junction temperature	Measuring operations with 0.001 K resolution

Outputs	2 ALMEMO® sockets for interface cable and ALMEMO® memory connector
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Standard equipment	
Display	Graphics display, 128 x 64 pixels, 8 rows
Illumination	2 white LEDs
Keypad	7 silicone keys (of which 4 soft-keys)
Date and time-of-day	Real-time clock, buffered by battery
Individual value memory, internal	100 measured values

Power supply	
Battery set	3 AA alkaline batteries
Mains adapter	ZA1312NA7 230 VAC to 12 VDC, 1 A, electrically isolated

Current consumption (without input and output modules)	approx. 20 mA
With illumination	approx. 40 mA

Housing	127 x 83 x 42 mm (LxWxH) ABS (maximum 70 °C), 290g
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Accessories

Ethernet data cable	
ALMEMO® memory connector with micro SD	
Rubberized impact protection, gray	
DIN rail mounting	

Order no.

ZA1945DK
ZA1904SD
ZB2490GS2
ZB2490HS

Reference Measuring Instruments

10/2013 • We reserve the right to make technical changes.

Variants

Complete set comprising reference measuring instrument for temperature plus accessories, evaluation software, thermocouple sensor, with DAkks / DKD calibration certificate

Reference measuring instrument ALMEMO® 1020-2, including 3 AA alkaline batteries, desktop mains unit ZA1312NA7, USB data cable ZA1919DKU, instrument case, and evaluation software ALMEMO® View SW5500AV (see page 06.16)

Set with high-precision sheathed thermocouple sensor type N



Set

with sheathed thermocouple sensor type N FTAN926L0500P2 with DAkks / DKD calibration certificate at 0 / 100 / 500 / 1000 °C, including adjustment

Order no.

SP10202ND

Technical data:

Sheathed thermocouple sensor type N FTAN926L0500P2	
Measuring element	NiCrSi-NiSi, type N, class 1
Measuring tip	Mineral-insulated sheathed line, d = 6 mm, L = 500 mm
Operative range	-200 to +1150 °C
Connecting cable	1.5 meters, thermal line (stranded wire) FEP / silicone (-50 to +200 °C)
ALMEMO® plug	Resolution 0.01 K with integrated cold junction compensation sensor

Set with high-precision thermocouple sensor type S



Set

with thermocouple sensor type S FTAS918L0500P2 Case for sensors ZB9000TK1 with DAkks / DKD calibration certificate at 500 / 1000 / 1200 °C, including adjustment

Order no.

SP10202S1D

Technical data:

Thermocouple sensor type S FTAS918L0500P2	
Measuring element	PtRh10-Pt, Type S, Class 1
Measuring tip	Thermowire, d = 0.5 mm in ceramic protective tube diameter = 8 mm, length = 500 mm
Operative range	up to +1400 °C
Connecting cable	1.5 meters, compensation line FEP / silicone (-50 to +200 °C)
ALMEMO® plug	Resolution 0.01 K with integrated cold junction compensation sensor

Set with precision thermocouple sensor type S, with external cold junction



Set

with thermocouple sensor type S, with external cold junction FTAS908L0500P2 Case for sensors ZB9000TK1 with DAkks / DKD calibration certificate at 500 / 1000 / 1200 °C, including adjustment

Order no.


SP10202S2D

Technical data:

Thermocouple sensor type S, with external cold junction FTAS908L0500P2	
Measuring element	PtRh10-Pt, Type S, Class 1
Measuring tip	Thermowire, d = 0.5 mm in ceramic protective tube diameter = 8 mm, length = 500 mm
Operative range	up to +1600 °C
Connecting cable	0.75 meters, insulated, thermo-wires PtRh10-Pt as far as cold junction
Cold junction	Stainless steel protective tube diameter = 5 mm, length = 250 mm
Connecting cable	2 meters, stranded copper wire
ALMEMO® plug	Resolution 0.01 K

Certificates

Calibration certificate for ALMEMO® 1020-2 with precision sheathed thermocouple sensor type N (Example)



Kalibriergegenstand 1 Thermoelementfühler NiCrSi-NiSi, Typ N, Ø 6 mm Länge 760 mm, angeschlossen an ein Temperaturanzeigegerät ALMEMO 1020-2, Serien-Nr. H12070031


Object of calibration 1 thermocouple probe NiCrSi-NiSi, type N, Ø 6 mm length 760 mm, connected with one temperature measuring device ALMEMO 1020-2, Serial-No. H12070031

Messergebnisse / Test Result

Kanal Channel	Serien-Nr. Serial No.	Prüftemperatur Test Temperature °C	Anzeige Indication °C	Abweichung Deviation K	Messunsicherheit Uncertainty K
M0	-	1150,00	1150,00	0,00	3,0
		1000,00	1000,00	0,00	1,5
		500,00	500,00	0,00	1,0
		100,00	100,00	0,00	0,3

Die Werte beziehen sich auf die Internationale Temperaturskala von 1990 (ITS-90).
The values are based on the International Temperature Scale of 1990 (ITS-90).

Calibration certificate for ALMEMO® 1020-2 with precision thermocouple sensor type S, with external cold junction (Example)



Kalibriergegenstand 1 Thermoelementfühler Pt10%Rh-Pt, Typ S, Schutzrohr: Keramik, Ø 8,2 mm, Länge 500 mm, mit externer Vergleichsstelle, angeschlossen an ein Temperaturanzeigegerät ALMEMO 1020-2, Serien-Nr. H12070031

Object of calibration 1 thermocouple probe Pt10%Rh-Pt, type S, Sheath tube: ceramics, Ø 8,2 mm, length 500 mm, with external cold-junction, connected with one temperature measuring device ALMEMO 1020-2, Serial-No. H12070031

Messergebnisse / Test Result

Kanal Channel	Serien-Nr. Serial No.	Prüftemperatur Test Temperature °C	Anzeige Indication °C	Abweichung Deviation K	Messunsicherheit Uncertainty K
M0	12050001	1200,00	1200,00	0,00	1,5
		1000,00	1000,00	0,00	1,0
		500,00	500,00	0,00	0,5

Die Werte beziehen sich auf die Internationale Temperaturskala von 1990 (ITS-90).
The values are based on the International Temperature Scale of 1990 (ITS-90).

Die Korrektur der Messkette erfolgte über die Mehrpunktjustage-Funktion!
The correction of the measuring system was realized by the multiple point function!

Bedingungen während der Kalibrierung
Calibration Conditions

Other certificates for measuring instruments and sensors (see chapter „Calibration certificates“)