

AX 111 / AX 115



Precision analog 4-wire Pt100 probe



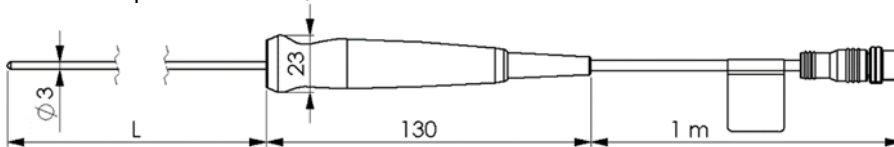
- Interchangeable with good accuracy
- Fast
- Pt100 platinum probe for 4-wire reference Instruments (e.g. PRO 115)
- Ergonomic handle with high operating temperature up to 120 °C
- Robust for many years of professional use
- Easy to clean
- Water-protected according to IP67

DESCRIPTION

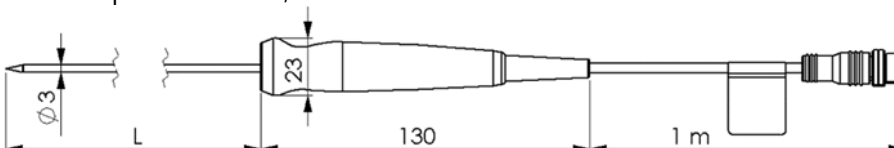
The AX 111 are precision analog Pt100 temperature probes based on thin film sensor technology.
The AX 115 are high precision analog immersion probes incorporating wire wound Pt100 sensors for best precision.
The probes are designed for use in gases, liquids and soft materials.
Stem material is corrosion and temperature resistant stainless steel., which is suitable for continuous food contact.
The standard 1 meter cable is optionally terminated with M12 male connector, Mini-DIN or loose ends.
The probes can be optionally supplied with ISO 9001 or DAkkS-/ACCREDIA accredited calibration ISO/IEC 17025 when combined to a suitable display instrument (e.g. PRO 111 / 115 Pt 100 Thermometer).

Two variants of probe tip are available:

Immersion probe \varnothing 3 mm,



Insertion probe \varnothing 3 mm,



TECHNICAL SPECIFICATION

Measuring element	
AX 111-xx	Pt100 thin film
AX 115-xx	Pt100 wire wound
Construction	
AX 11x-D3	Immersion probe Ø 3 mm
AX 11x-I3	Insertion probe Ø 3 mm
AX 11x-M3	Immersion probe mineral insulated *) Ø 3 mm
Accuracy	Tolerance classes B, A, AA, 1/10 B **)
Measuring range ***)	
AX 111-D3/I3	-50...+250 °C, available classes: B, A or AA
AX 111-M3	-200...+600 °C, class B
AX 115-M3	-100 ... +450 °C, class A -50 ... +100 °C, class 1/10 B
Response time (T ₉₀)	Ø 3 mm: water 0.4 m/s < 2 s, air 2 m/s approx. 40 s Ø 3 mm mineral insulated water: 0.4 m/s < 5 s, air 2 m/s approx. 60 s
Output	Pt100 4-wire
Connection	M12 4-pole male A-coded, Mini-DIN 4 pole (for GMH 37xx) or loose ends
Dimensions	Stem: Ø3 mm, L = 150/300 mm (other lengths on request) Cable: Ø4 mm, L = 1, 2 or 5 m
Weight	110 g approx. with 1 m cable
Materials	Stem: AISI 316, Handle: Polyamide (PA6-GF30, max. 120°C), optionally molded, for permanent under water use (-WD, PVC cable only) Cable: PVC (permanently up to +80 °C / short-term 2 hours per session up to +105 °C)
Protection degree	IP67, with option "Waterproof molded handle" for continuous operation under water
Applications	Immersion, insertion

*) Mineral-insulated temperature probes are filled with ceramic powder inside the sensor tube, thus achieving a higher temperature resistance, and the probes can be bent within certain limit (except the first 4 cm from the tip).

) following **tolerance classes of platinum resistors are standardized according/aligning to IEC 751 and EN 60751:

Tolerance class	Norm	limiting deviation in °Kelvin	wire wound	thin film
B	IEC 751 / EN 60751	$\pm (0,30 + 0,00500 \bullet \text{temperature})$	-196 to +600 °C	-50 to +500 °C
A	IEC 751 / EN 60751	$\pm (0,15 + 0,00200 \bullet \text{temperature})$	-100 to +450 °C	-30 to +300 °C
AA (= 1/3 B)	IEC 751 / EN 60751	$\pm (0,10 + 0,00167 \bullet \text{temperature})$	-50 to +250 °C	0 to +150 °C
1/10 B	none	$\pm (0,03 + 0,00050 \bullet \text{temperature})$	-50 to 100 °C	

Depending on the class, the limiting deviation is only valid within the named limited range.

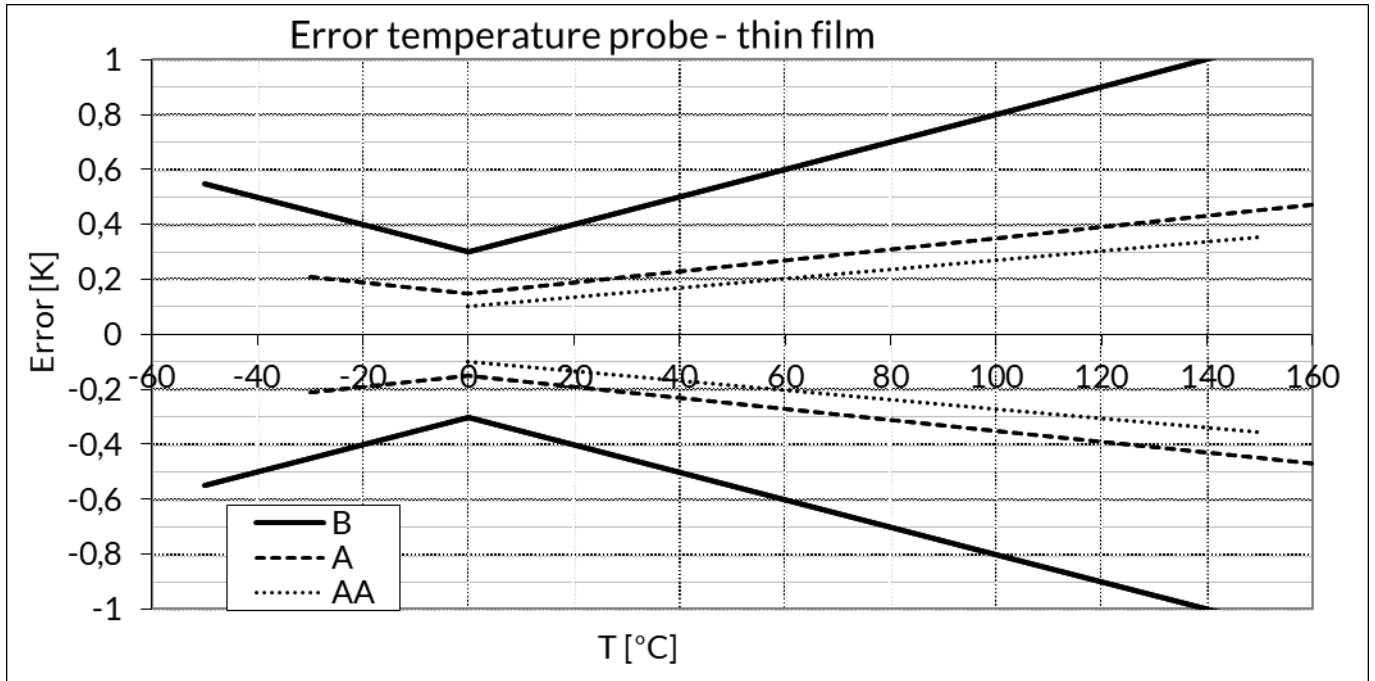
Higher deviations are to be expected outside the limited range of validity.

Ageing and vibration can lead to drift, which further reduces accuracy.

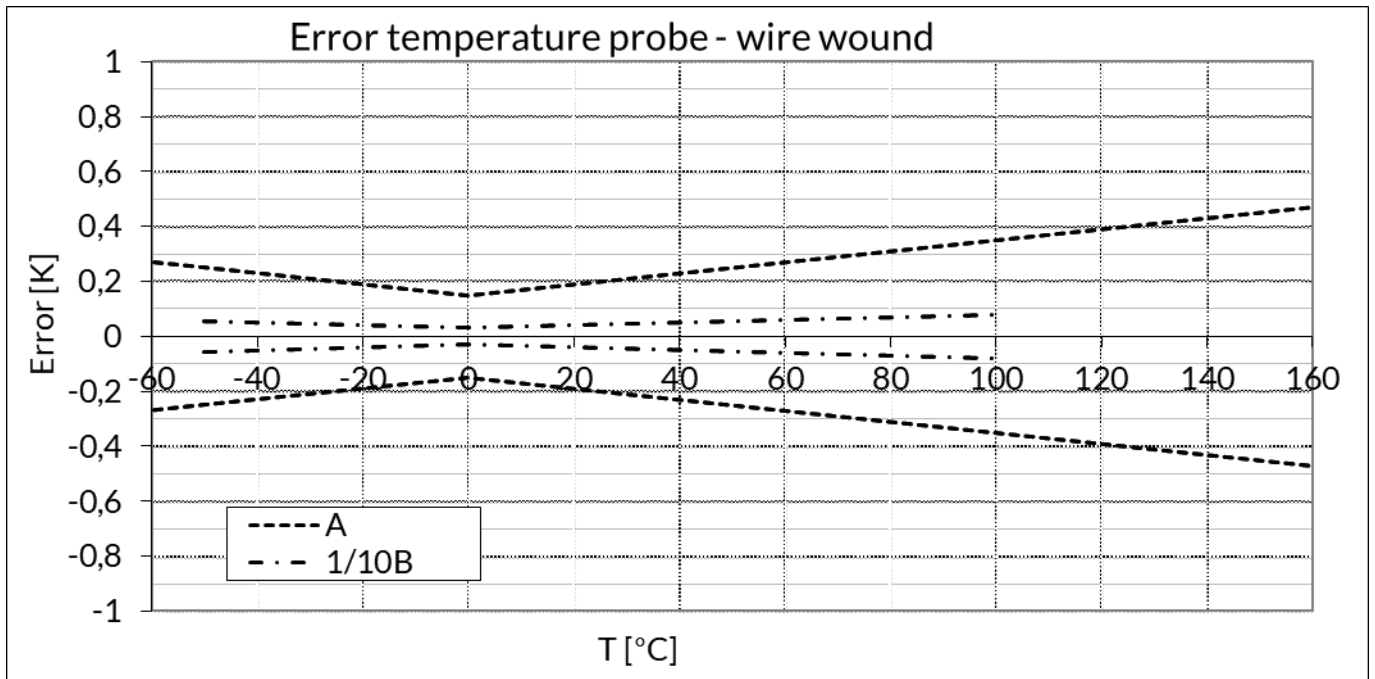
***) The final measuring range depends on the design of the sensor (mineral insulated or not) and the sensor type (wire-wound/thin film).

The measuring range must not be exceeded under any circumstances, otherwise in the worst case the sensor may be destroyed or at least the accuracy reduced.

Error band of Pt100 thin film resistors



Error band of Pt100 wire wound resistors



ORDERING CODE

AX 1. - 2. - 3. - 4. - 5. - 6. - 7.

1.	Measuring element	
	111	Pt100 thin film
	115	Pt100 wire wound
2.	Stem construction	
	D3	Ø3 mm immersion
	I3	Ø3 mm insertion
	M3	Ø3 mm immersion mineral insulated
3.	Accuracy	
	B	Class B
	A	Class A
	AA	Class AA
	01B	1/10 class B
4.	Stem length	
	-150	150 mm
	-300	300 mm
	-XXX	other length on request
5.	Cable length and material	
	-L01-P	1 m PVC cable, -20 ... +105 °C
	-L02-P	2 m PVC cable, -20 ... +105 °C
	-L05-P	5 m PVC cable, -20 ... +105 °C
	-L01.2SK	Spiral cable stretchable to 1.2 m
6.	Connection	
	-M12	M12 connector, 4-pin (e.g. PRO 11X)
	-MD	Mini-DIN plug, 4 wire (GMH 37xx)
	-LE	Loose ends with wire end ferrules, 4-wire
7.	Option	
	-WD	Waterproof molded handle for permanent under water use

STANDARD ARTICLES

AX 111-D3-B-150-L01-P-M12	Pt100 immersion probe, -50 ... +250 °C, thin film sensor class B, Ø3 x 150 mm, PVC cable 1 m, M12	Art no. 486727
AX111-D3-AA-150-L01-P-M12	Pt100 immersion probe, -50 ... +250 °C, thin film sensor class AA, Ø3 x 150 mm, PVC cable 1 m, M12	Art no. 487377
AX111-I3-AA-150-L01-P-M12	Pt100 insertion probe, -50 ... +250 °C, thin film sensor class AA, Ø3 x 150 mm, PVC cable 1 m, M12	Art no. 486830
AX111-M3-B-300-L01-P-M12	Pt100 immersion probe, -50 ... +500 °C, mineral insulated thin film class B, Ø3 x 150 mm, PVC cable 1 m, M12	Art no. 487377
AX 115-M3-01B-300- L01-P-M12	Pt100 immersion probe, -50 ... +100 °C, min. insulated, wire wound 1/10 class B Ø3 x 300 mm, cable length 1 m, M12	Art no. 486730
AX 115-M3-01B-150- L01-P-M12	Pt100 immersion probe, -50 ... +100 °C, min. insulated, wire wound 1/10 class B Ø3 x 150 mm, cable length 1 m, M12	Art no. 488245

Extract from portfolio, others on request

SUITABLE INSTRUMENTS

PRO 111	1-channel temperature meter for Pt100 4 wire probes, M12 socket 4-pole, graphic display. Supplied in carton box, with 4 x AA alkaline batteries, QuickStart, test-protocol	Art no. 486650
PRO 115	1-channel temperature meter/data logger for Pt100 4 wire probes, M12 socket 4-pole, graphic display. Supplied with 4 x AA alkaline batteries, QuickStart, test-protocol, USB cable. Free Software ProXware downloadable from Senseca website	Art no. 486651