

Annex to declaration of accreditation (scope of accreditation)
 Normative document: EN ISO/IEC 17025:2017
 Registration number: **K 065**

of **Thermo Electric Instrumentation B.V.**

This annex is valid from: **10-01-2024 to 01-04-2025**

Replaces annex dated: **18-03-2021**

Location(s) where activities are performed under accreditation

Head Office

Coenecoop 71-73
 2741 PH
 Waddinxveen
 The Netherlands

Location	Abbreviation/ location code
Coenecoop 71-73 2741 PH Waddinxveen The Netherlands	Wa

HCS code	Measured quantity, Range	Frequency	CMC ¹	Remarks	Location
LF 0 0	DC/LF Electricity				
LF 1 0	DC Voltage			measuring	Wa
	1 μ V – 100 mV		$5 \cdot 10^{-6} \cdot U + 2 \mu$ V		
	100 mV – 1 V		$5 \cdot 10^{-6} \cdot U + 2 \mu$ V		
	1 V – 10 V		$5.8 \cdot 10^{-6} \cdot U + 1.2 \mu$ V		
	DC Voltage			generating	Wa
	1 μ V – 100 mV		$5 \cdot 10^{-6} \cdot U + 2.6 \mu$ V		
	100 mV – 1 V		$5 \cdot 10^{-6} \cdot U + 2.6 \mu$ V		

¹ Calibration and Measurement Capability (CMC): Demonstrated measurement uncertainty, with coverage probability of 95%, in a given measurement point or measurement range. Measurement uncertainty, U , is calculated according to EA-4/02 "Evaluation of the Uncertainty of Measurement in Calibration".

This annex has been approved by the Board of the Dutch Accreditation Council, on its behalf,

J.A.W.M. de Haas

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HCS code	Measured quantity, Range	Frequency	CMC ¹	Remarks	Location
	1 V – 10 V		$6 \cdot 10^{-6} \cdot U + 1.6 \mu\text{V}$		
LF 2 0	DC Current			measuring and generating	Wa
	100 μA – 1 mA		0.2 μA		
	1 mA – 10 mA		$9 \cdot 10^{-5} \cdot I + 0.11 \mu\text{A}$		
	10 mA – 50 mA		$1 \cdot 10^{-4} \cdot I$		
LF 6 2	DC Resistance			measuring	Wa
	1 Ω – 10 Ω		3.5 m Ω		
	10 Ω – 100 Ω		$1 \cdot 10^{-5} \cdot R + 3.4 \text{ m}\Omega$		
	100 Ω – 1 k Ω		$3 \cdot 10^{-5} \cdot R + 1.4 \text{ m}\Omega$		
	1 k Ω – 10 k Ω		$1.6 \cdot 10^{-5} \cdot R + 16 \text{ m}\Omega$		
	DC Resistance			generating	Wa
	1 Ω – 10 Ω		5.3 m Ω		
	10 Ω – 100 Ω		5.3 m Ω		
	100 Ω – 1 k Ω		$3 \cdot 10^{-5} \cdot R + 2.4 \text{ m}\Omega$		
	1 k Ω – 10 k Ω		$1.6 \cdot 10^{-5} \cdot R + 16 \text{ m}\Omega$		

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HCS code	Measured quantity, Instrument, Measure	Range	CMC ²	Remarks	Location
TE 0 0	Temperature				Wa
	Calibration furnaces and -bathes	-196 °C to 550 °C	0.056 °C		
		550 °C to 1050 °C	0.96 °C		
TE 1 0	Resistance thermometers (Pt100)	-196 °C	0.04 °C	Boiling point of liquid nitrogen	Wa
		0 °C	0.012 °C	Ice bath	
		-80 °C to -20 °C	0.046 °C		
		-20 °C to 90 °C	0.048 °C		
		90 °C to 200 °C	0.056 °C		
		200 °C to 550 °C	0.092 °C		
		550 °C to 850 °C	0.88 °C		
TE 3 0	Thermocouples	-196 °C	0.092 °C	Boiling point of liquid nitrogen CMC based on thermocouple type E	Wa
		0 °C	0.06 °C	Ice bath CMC based on thermocouple type E	
		-80 °C to 90 °C	0.078 °C	CMC based on thermocouple type E	
		90 °C to 200 °C	0.08 °C	CMC based on thermocouple type E	
		200 °C to 550 °C	0.11 °C	CMC based on thermocouple type E	
		550 °C to 1050 °C	0.94 °C	CMC based on thermocouple type J	
		1050 °C to 1500 °C	3.4 °C	CMC based on thermocouple type R	

² Calibration and Measurement Capability (CMC): Demonstrated measurement uncertainty, with coverage probability of 95%, in a given measurement point or measurement range. Measurement uncertainty, *U*, is calculated according to EA-4/02 "Evaluation of the Uncertainty of Measurement in Calibration".

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HCS code	Measured quantity, Instrument, Measure	Range	CMC ²	Remarks	Location
TE 4 0	Self Indicating thermometers				
TE 4 1	Self Indicating thermometers, sensors with transmitter (0-20) mA and (4-20) mA	-196 °C	0.04 °C	Boiling point of liquid nitrogen	Wa
		0 °C	0.01 °C	Ice bath	
		-80 °C to 90 °C	0.045 °C		
		90 °C to 200 °C	0.054 °C		
		200 °C to 550 °C	0.088 °C		
		550 °C to 1050 °C	0.94 °C		
		1050 °C to 1500 °C	3.4 °C		
TE 9 0	Simulators / indicators				
TE 9 2	For the purpose of thermocouples	-200 °C to 0 °C	0.1 °C to 0.052 °C	CMC based on thermocouple type E	Wa
		0 °C to 1000 °C	0.052 °C to 0.078 °C	CMC based on thermocouple type E	
		1000 °C to 1200 °C	0.096 °C	CMC based on thermocouple type E	
		1200 °C to 1372 °C	0.13 °C	CMC based on thermocouple type K	
		1372 °C to 1768 °C	0.48 °C	CMC based on thermocouple type R	
		1768 °C to 1820 °C	0.48 °C	CMC based on thermocouple type B	
		-200 °C to 850 °C	0.008 °C to 0.038 °C	CMC based on Pt100	

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HCS code	Measured quantity, Instrument, Measure	Range	CMC²	Remarks	Location
	Transmitters	-200 °C to 850 °C	0.022 °C	CMC based on Pt100 input	Wa
		-270 °C to 1372 °C	0.08 °C	CMC based on thermocouple, type K input	

Remarks:

- The calibrations are carried out at an ambient temperature of 23 °C nominal.
- This list with the scope of accreditations has only a relation with calibrations performed within the laboratory at Waddinxveen.