Annex to declaration of accreditation (scope of accreditation)
Normative document: EN ISO/IEC 17025:2017
Registration number: **K 038**

of **Stichting Koninklijk Lucht- en Ruimtevaartlaboratorium**
National Aerospace Laboratory
Facility Instrument Maintenance

This annex is valid from: **20-07-2022** to **01-09-2025** Replaces annex dated: **19-08-2021**

Location(s) where activities are performed under accreditation

Head Office

Voorsterweg 31
8316 PR
Marknesse
The Netherlands

Location	Abbreviation/ location code
Voorsterweg 31 8316 PR Marknesse The Netherlands	MA

HCS code	Measured quantity, Range	Frequency	CMC[1]	Remarks	Location
LF 0 0	DC/LF Quantities				
LF 1 0	DC Voltage				MA
	0 μV - 10 μV		0,2 μV	Measuring	
	10 μV - 2 mV		$3 \cdot 10^{-4} \cdot U$ + 0,2 μV		
	2 mV - 20 mV		$2{,}5 \cdot 10^{-4} \cdot U$ + 0,2 μV		
	20 mV - 100 mV		$2{,}5 \cdot 10^{-4} \cdot U$		
	100 mV - 200 mV		$3 \cdot 10^{-5} \cdot U$		
	200 mV - 1 kV		$2 \cdot 10^{-5} \cdot U$		

[1] Calibration and Measurement Capability (CMC): Demonstrated measurement uncertainty, with coverage probability of 95%, in a given measurement point or measuMrement 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
	100 mV		$1{,}5 \cdot 10^{-5} \cdot U$		
	1/10/100/1000 V		$6 \cdot 10^{-6} \cdot U$		
LF 1 0	DC Voltage				MA
	0 μV - 10 μV		0,5 μV	Generating	
	10 μV - 1 mV		$2{,}5 \cdot 10^{-4} \cdot U$ + 0,5 μV		
	1 mV - 200 mV		$2 \cdot 10^{-5} \cdot U$ + 0,5 μV		
	200 mV - 1 kV		$1{,}5 \cdot 10^{-5} \cdot U$		
	1 V ; 10 V		$5 \cdot 10^{-6} \cdot U$		
LF 1 2	DC Voltage Ratio				MA
	0 - 1,1		$(1 \cdot 10^{-6} \cdot U_i$ + 1 μV)/U_i	1 V < U_i < 100 V, stepsize $1 \cdot 10^{-7}$	
LF 3 2	AC Voltage ratio				MA
	0 - 1	400 Hz – 1kHz	$(1 \cdot 10^{-6} \cdot U_i)/U_i$	In phase,1V < U_i <100V, stepsize $1 \cdot 10^{-7}$	
			$(1 \cdot 10^{-6} \cdot U_i)/U_i$	Quadrature, stepsize $1 \cdot 10^{-7}$	
	0 - 1	50 Hz – 5 kHz	$(5 \cdot 10^{-6} \cdot U_i)/U_i$	In phase,1V < U_i <100V, stepsize $1 \cdot 10^{-7}$	
			$(2 \cdot 10^{-5} \cdot U_i)/U_i$	Quadrature, stepsize $1 \cdot 10^{-7}$	
LF 2 0	DC Current				MA
	0 μA – 10 μA		5 nA	Measuring	
	10 μA – 2 A		$5 \cdot 10^{-4} \cdot I$		
	2 A - 20 A		$1 \cdot 10^{-3} \cdot I$		

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LF 2 0	DC Current				MA
	0 μA – 10 μA		15 nA	Generating	
	10 μA - 100 μA		$1{,}5 \cdot 10^{-3} \cdot I$		
	100 μA - 2 A		$5 \cdot 10^{-4} \cdot I$		
	2A - 20 A		$1 \cdot 10^{-3} \cdot I$		
LF 3 0	AC Voltage			Measuring en Generating	MA
	0,5 V - 1 V	50 Hz – 100 kHz	$2 \cdot 10^{-4} \cdot U$		
	10 V	400 Hz – 1 kHz	$2 \cdot 10^{-4} \cdot U$		
	1 V	10 Hz – 100 Hz	$3 \cdot 10^{-4} \cdot U$		
	1 V	100 kHz – 1 MHz	$1 \cdot 10^{-3} \cdot U$		
	1 mV - 2 V	50 Hz – 1 kHz	$(1 \cdot 10^{-3} – 3 \cdot 10^{-3}) \cdot U$		
	2 V - 1000 V	50 Hz – 1 kHz	$5 \cdot 10^{-4} \cdot U$		
	0,2 V - 20 V	50 Hz – 50 kHz	$1{,}5 \cdot 10^{-3} \cdot U$		
LF 4 0	AC Current				MA
	10 μA - 1 mA	50 Hz – 1 kHz	$3 \cdot 10^{-3} \cdot I$	Measuring	
	1 mA - 20 A	50 Hz – 1 kHz	$2 \cdot 10^{-3} \cdot I$		
	10 μA - 1 mA	50 Hz – 1 kHz	$3 \cdot 10^{-3} \cdot I$	Generating	
	1 mA - 20 A	50 Hz – 1 kHz	$2 \cdot 10^{-3} \cdot I$		
LF 6 1	Resistance				
LF 6 2	DC Resistance				MA
	1 mΩ		$2 \cdot 10^{-4} \cdot R$	Generating	
	10 mΩ		$5 \cdot 10^{-5} \cdot R$		
	100 mΩ		$2 \cdot 10^{-5} \cdot R$		

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HCS code	Measured quantity, Range	Frequency	CMC[1]	Remarks	Location
	1 Ω		$1 \cdot 10^{-5} \cdot R$		
	1,9 Ω		$5 \cdot 10^{-5} \cdot R$		
	10 Ω		$1 \cdot 10^{-5} \cdot R$		
	19 Ω		$2{,}5 \cdot 10^{-5} \cdot R$		
	100 Ω		$1 \cdot 10^{-5} \cdot R$		
	190 Ω		$1{,}5 \cdot 10^{-5} \cdot R$		
	1 kΩ		$5 \cdot 10^{-6} \cdot R$		
	1,9 kΩ		$1 \cdot 10^{-5} \cdot R$		
	10 kΩ		$3 \cdot 10^{-6} \cdot R$		
	19 kΩ		$1 \cdot 10^{-5} \cdot R$		
	100 kΩ		$5 \cdot 10^{-6} \cdot R$		
	190 kΩ		$1 \cdot 10^{-5} \cdot R$		
	1 MΩ		$1{,}5 \cdot 10^{-5} \cdot R$		
	1,9 MΩ		$3 \cdot 10^{-5} \cdot R$		
	10 MΩ		$5 \cdot 10^{-5} \cdot R$		
	19 MΩ		$1 \cdot 10^{-4} \cdot R$		
	0.1 Ω – 200 Ω		$5 \cdot 10^{-5} \cdot R$ + 1 mΩ		
	200 Ω - 19 kΩ		$2 \cdot 10^{-5} \cdot R$		
	0 mΩ - 0,1 mΩ		0,06 µΩ	Measuring	
	1 mΩ		$5 \cdot 10^{-5} \cdot R$		
	10 mΩ		$2{,}5 \cdot 10^{-5} \cdot R$		
	100 mΩ		$1{,}5 \cdot 10^{-5} \cdot R$		
	1 Ω		$1 \cdot 10^{-5} \cdot R$		
	10 Ω		$1 \cdot 10^{-5} \cdot R$		
	100 Ω		$5 \cdot 10^{-6} \cdot R$		
	1 kΩ		$5 \cdot 10^{-6} \cdot R$		
	10 kΩ		$3 \cdot 10^{-6} \cdot R$		

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HCS code	Measured quantity, Range	Frequency	CMC[1]	Remarks	Location
	100 kΩ		$5 \cdot 10^{-6} \cdot R$		
	1 MΩ		$5 \cdot 10^{-6} \cdot R$		
	10 MΩ		$1{,}5 \cdot 10^{-5} \cdot R$		
	0,1 mΩ - 2 mΩ		$6 \cdot 10^{-4} \cdot R$		
	2 mΩ - 20 mΩ		$1{,}5 \cdot 10^{-4} \cdot R$		
	0,02 Ω - 1 Ω		$1 \cdot 10^{-4} \cdot R$		
	1 Ω - 10 Ω		$8 \cdot 10^{-5} \cdot R$		
	10 Ω - 20 Ω		$4 \cdot 10^{-5} \cdot R$		
	20 Ω - 200 kΩ		$2 \cdot 10^{-5} \cdot R$		
	200 kΩ - 2 MΩ		$4 \cdot 10^{-5} \cdot R$		
	2 MΩ - 20 MΩ		$1{,}5 \cdot 10^{-4} \cdot R$		

Remarks:

The ambient temperature during the calibration within the laboratory is nominal 23 °C.
All calibrations mentioned in this scope are carried out at the laboratory of NLR in Marknesse, Netherlands