

**Raad voor Accreditatie
(Dutch Accreditation Council
RvA)**

Harmonised Classification scheme

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A RvA-information document gives information about the policy and/or the procedures of the RvA concerning a specific field of accreditation.

A current version of the information document is available through the website of the RvA. (www.rva.nl).

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1 RvA-Calibration Harmonised Qualification Scheme

The previous versions of this document described the (extended) RvA version of the EA Harmonised Classification Scheme. The current version has been revised in order to incorporate recent extensions in technical fields and to comply with developments within EA (EA database for calibration activities).

This version is also reflecting the various competence areas as categorised by accredited laboratories and various experts. Therefore this scheme is also applied as basis for the participation in proficiency tests.

The Scheme is given in appendix A.

2 Accredited scopes

Range AND Uncertainty

On RvA scopes, both measurement points and -ranges may be stated.

In the column Best Measurement Uncertainty, the uncertainty to be stated shall be valid for the whole range. It may be expressed as absolute figure or as a relative figure, a combination of both (limited to a first order equation) or stated as a range (from - until) in relative or absolute numbers. In the last case, the ratio between 'from' and 'until' should not exceed a factor of 5 in order to maintain a fair idea of the order of magnitude of the uncertainty. Higher ratios will lead to a split in more ranges.

Meaning of “Best Measurement Uncertainty”

Best Measurement Uncertainty (BMC): According to EA-4/02 par. 1.3

BMC is defined as the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation,

- when performing more or less routine calibrations of nearly ideal measurement standards intended to define, realize, conserve or reproduce a unit of that quantity or one or more of its values, or
- when performing more or less routine calibrations of nearly ideal measuring instruments designed for the measurement of that quantity.

Further comments on the assessment of the above definition is given in appendix A of EA-4/02.

The expression of uncertainty

The statement on uncertainty can be done in two ways:

- Using absolute uncertainties consisting of a figure and a unit (both according to SI);
- Using a relative uncertainty consisting of a scientific notation (mantissa between 1 and 10, followed by a power of 10), followed by the quantity (in italics). (E.g. $m \cdot 10^p \cdot U$)

Another possible way to express the relative uncertainty is to use the figure followed by a SI-prefix and the quantity, expressed as unit/unit. (E.g. 10 mV/V) This way of expressing is currently used for describing scopes of national measurement institutes in the framework of CMC.

3 Modification compared to previous revision

Compared to the previous revision of this document the following modifications are included:

- Sept 2004 New format;
- Sept 2004 NKO replaced by RvA.
- Sept 2004 Definition BMC now referring to EA-4/02
- June 2006 New table with technical (competence) areas
- June 2007 corrected old numbering Electrical quantities

Annex - table with technical (competence) areas

old code (EA-HCS)	main code (Quantity)	sub field	sub sub field	main field	sub field	sub sub field	dutch headword
1.1	LF	0	0	DC/LF electricity			DC/LF grootheden
1.1.1.1	LF	1	0		Direct voltage		Gelijkspanning
1.1.1.1	LF	1	1			DV	Gelijkspanning
1.1.3.1	LF	1	2			DV ratio	Gelijkspanningsverhouding
(1.1.1.3)	LF	1	3			Direct high voltage	Gelijkhoogspanning
1.1.2.1	LF	2	0		Direct current		Gelijkstroom
1.1.2.1	LF	2	1			DC	Gelijkstroom
1.1.2.4	LF	2	2			DC ratio	Gelijkstroomverhouding
(1.1.2.1)	LF	2	3			Direct high current	Gelijksterkstroom
1.1.1.2	LF	3	0		Alternating voltage		Wisselspanning
1.1.1.2	LF	3	1			AV	Wisselspanning
1.1.3.2	LF	3	2			AV ratio	Wisselspanningsverhouding
(1.1.4)	LF	3	4			AV/DV transfer	AV/DV transfer
(1.1.1.2)	LF	3	3			Alternating high voltage	Wisselhoogspanning
1.1.2.2	LF	4	0		Alternating current		Wisselstroom
1.1.2.2	LF	4	1			AC	Wisselstroom
1.1.2.5	LF	4	2			AC ratio	Wisselstroomverhouding
1.1.4	LF	4	4			AC/DC transfer	AC/DC transfer
(1.1.2.2)	LF	4	3			Alternating high current	Wisselsterkstroom
1.1.5	LF	5	0		Power and energy		Vermogen en energie
1.1.5.1	LF	5	1			Power factor/cos(ϕ)	Vermogensfactor/cos(ϕ)
(1.1.6-8)	LF	6	0		Impedance (DC/LF)		
1.1.6	LF	6	1			Resistance	Weerstand
1.1.6.1	LF	6	2			DC resistance	DC Weerstand
1.1.6.2	LF	6	3			AC resistance	AC Weerstand
1.1.7	LF	6	4			Capacitance	Capaciteit
1.1.7.1	LF	6	5			LF capacitance	LF Capaciteit
1.1.7.2	LF	6	6			RF capacitance	HF Capaciteit
1.1.8	LF	6	7			Inductance	Inductie
1.1.9	LF	6	8			Dissipation factor	Dissipatie factor
1.2	RF	0	0	High frequency electricity			Hoogfrequent grootheden
1.2.1	RF	1	0		High frequency Voltage / CW Flatness		Hoogfrequent spanning / CW Flatness

1.2.2	RF	2	0		Impedance		Impedantie
	RF	2	1			(reflection factor)	(reflectie factor)
1.2.4	RF	2	2			Attenuation	Verzwakking
1.2.3	RF	3	0		High frequency power		Hoogfrequent vermogen
1.2.5	RF	4	0		Noise		Ruis
1.2.6	RF	5	0		Electrical /magnetic field quantities /EMC/EMI/TEM cell		Electromagnetische grootheden / EMC
2	MQ	0	0	Magnetic quantities			Magnetische grootheden
2.1	MQ	1	0		Magnetic flux density		Magnetische flux dichtheid
2.2	MQ	2	0		Magnetic material properties		Magnetische materiaal eigenschappen
3	TF	0	0	Time and frequency			Tijd en frequentie
3.1	TF	1	0		Absolute time		Absolute tijd
3.1.3	TF	1	1			UTC-time	UTC tijd
3.2	TF	2	0		Relative time		relatieve tijd
	TF	2	1			Frequency	Frequentie
3.1.1	TF	2	2			Time interval	Tijd interval
3.1.2	TF	2	3			Phase angle	Fasehoek
3.1.4	TF	2	4			Rise time	Stijgtijd
	TF	3	0		Timeinterval and amplitude		tijdinterval en amplitude
3.2.1	TF	3	1			Modulation (FM/AM)	Modulatie (FM/AM)
3.2.2	TF	3	2			Harmonic distortion	Harmonische vervorming
4	DM	0	0	Dimensional quantities			Geometrische grootheden
4.1.1	DM	0	1		Length	Laser wavelength	Laser golflengte
4.1.2	DM	1	0		Length gauges		Eindmaten
4.2.1	DM	10	0		Angle gauges		Meetmiddelen voor hoek
4.2.2	DM	11	0		Index tables		Indexeer tafel
4.2.3	DM	12	0		Clinometers		Hellingmeter
4.1.3	DM	2	0		Line scales, distances		Liniaal, verplaatsing
4.1.4	DM	3	0		Length measuring instruments		Lengtemeetinstrument
4.1.5	DM	4	0		Diameter		Diameter
4.1.6	DM	5	0		Form error		Vorm fout
4.1.7	DM	6	0		Roughness		Ruwheid
4.1.8	DM	7	0		Thread quantities		Schroefdraad grootheden
4.1.9	DM	8	0		Co-ordinate measuring machines		Coördinaten meetmachines
4.1.10	DM	8	1			Machine tools, work pieces	Gereedschappen, produkten

4.2	DM	9	0		Angle (meas.instruments)		Hoekmeting
5.1	FQ	0	0	Force	Force		Kracht
5.2-3	MW	1	0	Mass	Mass		
5.2	MW	1	1			Mass (mass and density of mass std)	Massa (massa en dichtheid van massa-std)
5.3	MW	1	2			Weighing instruments	Weegwerktuigen
	PV	0	0	Pressure and vacuum			Druk en vacuum
5.4	PV	1	0		Gas pressure		Gasdruk
	PV	1	1			Absolute pressure	Absolute druk
	PV	1	2			over atmospheric pressure	Overdruk
	PV	2	0		Liquid pressure		Vloeistofdruk
	PV	2	1			Absolute pressure	Absolute druk
	PV	2	2			over atmospheric pressure	Overdruk
5.5	PV	3	0		Vacuum quantities		Vacuum grootheden
	PV	3	1			under atmospheric pressure	Onderdruk
5.6	TQ	0	0	Torque			Moment
6	AC	0	0	Acoustical quantities			Akoestische grootheden
6.1	AC	1	0		Acoustical pressure		Akoestische druk
6.2	AC	2	0		Transducers (electrical quantities)		Transducers / microfoons (elektrische grootheden)
5.7	AM	0	0	Accelerometry			Versnelling
	US	0	0	Ultrasonics			Ultrasoon
7.5	DV	1	0	Density and viscosity	Density and viscosity		Dichtheid en viscositeit
7.4	DV	1	1			Mass, volume and density of gases and liquids	Massa, volume en dichtheid van gassen en vloeistoffen
	FG	1	0	Flow of gas	Flow of gas		
7.1	FG	1	1			Gas flow rate	Gas en vloeistof debiet
7.1.1	FG	1	2			Flow transducers	Debietmeters/transducers
	FL	1	0	Flow of liquids	Flow of liquids		
7.1	FL	1	1			Liquid flow rate	Gas en vloeistof debiet
7.1.1	FL	1	2			Flow transducers	Debietmeters/transducers
7.2	VG	1	0	Volume of flowing gases	Volume of flowing gases		Volume van stromend gas
7.3	VG	1	1			Velocity of gases	Gas snelheid
7.2	VL	1	0	Volume of flowing liquids	Volume of flowing liquids		Volume van stromende vloeistof
8	OQ	1	0	Optical quantities	Optical quantities		Optische grootheden
8.1	OQ	1	1			Radiometric quantities	Radiometrische eigenschappen

8.2	OQ	1	2		Photometric quantities	Fotometrische grootheden
8.3	OQ	1	3		Optical system properties	Optische systeem eigenschappen
8.3.1	OQ	1	4		Luminous Flux	(Oud: Lichtbron rendement) Nieuw: Lichtstroom
8.3.2	OQ	1	5		Optical power	Optisch vermogen
8.3.3	OQ	1	6		Glass fibers	Glasvezels
9	IR	1	0	Ionising radiation and radioactivity	Ionising radiation and radioactivity	Ioniserende straling en radioactiviteit
9.1	IR	1	1		Radiometric quantities	Radiometrische grootheden
9.2	IR	1	2		Dosimetric quantities	Dosimetrische grootheden
9.3	IR	1	3		Radioprotection quantities	Stralingsbeschermings grootheden
9.4	IR	1	4		Activity of radioactive sources	Activiteit van stralingsbronnen
10	TE	0	0	Temperature		Temperatuur
10.1	TE	1	0		Resistance thermometers	Weerstandsthermometers
10.1.1	TE	1	1		Rhodium-iron resistance thermometers	Rhodium-ijzer weerstandsthermometers
10.1.2	TE	1	2		Platinum resistance thermometers (PRTs)	Platina-weerstandsthermometers (PRTs)
10.1.3	TE	1	3		Thermistors	Thermistors
10.1.4	TE	1	4		Other resistive thermometers	Andere weerstandsthermometers
10.1.5	TE	2	0		Standard Platinum Resistance Thermometers (SPRTs)	Standaard-platinaweerstandsthermometers (SPRTs)
10.1.5.1	TE	2	1		Capsule-type SPRTs	Capsule- SPRT's
10.1.5.2	TE	2	2		Long-stem SPRTs including HTSPRTs	Lange steel SPRTs inclusief HTSPRTs
10.2	TE	3	0		Thermocouples	Thermokoppels
10.2.1	TE	3	1		Noble-metal thermocouples	Edelmetaal-thermokoppels
10.2.2	TE	3	2		Base-metal thermocouples	Basemetaal-thermokoppels
10.2.3	TE	3	3		Other type thermocouples	Andere thermokoppeltypes
10.3	TE	4	0		Self Indicating thermometers	Zelfaanwijzende thermometers
10.3.1	TE	4	1		Temperature sensors with display unit (digital system thermometer or dataloggers)	Thermometers met uitleeseenheid (o.a. dataloggers)

10.3.2	TE	4	2		Liquid-in-glass thermometers	Vloeistof-in-glas thermometers
10.3.3	TE	4	3		Other contact thermometers	Overige contactthermometers
10.4	TE	5	0	Radiation thermometry		Stralingsthermetrie
10.4.1	TE	5	1		Pyrometers, optical	Pyrometers, optisch
10.4.2	TE	6	2		Radiation thermometers	Stralingsthermometers
10.4.3	TE	7	0	Radiation sources		
10.4.3.1	TE	7	1		Standard lamps	Standaardlampen
10.4.3.2	TE	7	2		Secondary fixed-point blackbody cells and complete instruments	Zwarte stralers met secundaire vaste punten: alleen de cel danwel het complete instrument
10.4.3.3	TE	7	3		Variable temperature blackbody radiation sources	Zwarte stralers voor variabel instelbare temperatuur
10.6	TE	8	0	Thermophysical properties		Thermofysische eigenschappen
10.6.1	TE	8	1		Emissivity	Emissie-factor
10.6.2	TE	8	2		Thermal conductivity	Warmtegeleidingscoëfficiënt
10.6.3	TE	8	3		Specific heat capacity	Warmtecapaciteit
10.6.4	TE	8	4		Spectral transmission factor	Spectrale transmissiefactor
10.7	TE	9	0	Simulators / indicators		Simulatoren / uitleeseenheden
10.7.1	TE	9	1		For the purpose of resistance thermometers	Tbv weerstandsthermometers
10.7.2	TE	9	2		For the purpose of thermocouples	Tbv thermokoppels
10.8	TE	10	0	Contact thermometry fixed points for realising ITS-90		Contactthermetrie vaste punten voor de realisatie van ITS-90
10.8.1	TE	10	1		Primary fixed-point cells	Primaire vaste-puntcellen
10.8.2	TE	10	2		Complete apparatus realizing fixed-points	Compleet instrument voor de realisatie van vaste-punten
10.9	TE	11	0	Radiation thermometers items for realising ITS-90		Stralingsthermometers voor de realisatie van ITS-90
10.9.1	TE	11	1		Primary fixed-point cells	Primaire vaste-puntcellen
10.9.2	TE	11	2		Complete apparatus realizing fixed-points	Compleet instrument voor de realisatie van vaste-punten
10.9.3	TE	11	3		Standard radiation thermometers	Standaard stralingsthermometers

10.9.4	TE	11	4		Absolute radiation thermometers // thermodynamic measurements	Absolute stralingsmeters // thermodynamische metingen
10.10	TE	12	0	Temperature controlled chambers		Temperatuurgeregelde klimaatkasten
10.11	TE	13	0	Other temperature enclosures		Andere afgesloten temperatuurbronnen
10.11.1	TE	13	1		Dry block calibrator	Droge-blok kalibratoren
10.11.2	TE	13	2		Thermostat baths and ovens	Thermostaatbaden en ovens
10.11.3	TE	13	3		Secondary fixed-point cells and apparatus, for contact thermometry	Secundaire vaste-puntcellen en apparaten, voor contact-thermometrie
10.11.4	TE	13	4		Fixed point materials for melting point measurements	Vaste-punt materialen voor smeltpuntmetingen
10.12	TE	14	0	Bridge linearity		Lineariteitscontrole van weerstandsbruggen
10.13	TE	15	0	Cold junction compensation		Koude-las compensatie
10.13.1	TE	15	1		Compensation wires for reference junction	Compensatie draden ten behoeve van de koude-lasreferentie
10.13.2	TE	15	2		Reference junction compensators	Koude-lascompensatie-systemen
10.5	RH	0	0	Humidity		Vochtigheid
10.5.1	RH	1	0		Hydrometers	Hygrometers
10.5.1.1	RH	1	1		Dew/frost-point hygrometer	Dauwpuntsmeter/ rijppunt
10.5.1.2	RH	1	2		Psychrometers	Psychrometers
10.5.1.3	RH	1	3		Relative humidity sensors	Relatieve vochtigheidssensoren
10.5.1.4	RH	1	4		Others hygrometers	Andere hygrometers
10.5.2	RH	2	0		Other instruments for humidity	Overige instrumenten voor vochtigheid
10.5.3	RH	3	0		Generators for humidity	Generatoren voor vochtigheid
10.5.3.1	RH	3	1		Dew/frost-point generators	Dauwpuntsgeneratoren
10.5.3.2	RH	3	2		Relative humidity generators	Generatoren voor relatieve vochtigheid
10.5.3.3	RH	3	3		Flow mixing generators	Generatoren op basis van mengen van debiet
10.5.3.4	RH	3	4		Permeation tube/diffusion tube	Permeatiebuizen

10.5.3.5	RH	3	5		Salt solution (saturated/unsaturated)	Verzadigde en onverzadigde zoutoplossingen
10.5.3.6	RH	3	6		Reference gases	Referentiegassen
10.5.4	RH	4	0		Humidity of temperature controlled chambers	Vochtmeting van klimaatkasten
11	CH	0	0	Chemical analysis		Chemische analyses
11.2.1	CH	0	1		Analytical instruments / monitors	Analytische instrumenten / monitors
11.3	CH	1	0		pH measuring equipment	pH meetapparatuur
11.4	CH	2	0		Hardness (of water)	Hardheid (van water)
11.5	CH	3	0		Olfactometry (odour)	Olfactometrie (geur)
11.5.1	CH	3	1		Dilution instruments	Verdunningsapparatuur
11.6	CH	4	0		Calorific value/ Wobbe index	Calorische waarde/ Wobbe index
	RM	0	0	Reference materials		Referentiematerialen
11.1	RM	1	0		Amount of substance	Hoeveelheid stof
11.2	RM	2	0		Gas mixtures	Gasmengsels
4.1.11	RM	3	0		Hardness	Hardheid