NoBoMet

European Coordination Group for Notified Bodies in Legal Metrology

Document 3

2025

Documentation: Digital Certificate of Conformity for Type Examination (D-CoC MB)

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NoBoMet is the European Coordination Group of Bodies notified by the European Commission for the Directives 2014/31/EU and 2014/32/EU.

The group is established by the European Commission based on the decision at the Working Group Measuring Instruments meeting in 2019.

This document is a document of the NoBoMet Project group "Digital certificates of conformity in Metrology" to provide information to notified bodies.

This document is purely informative and does not itself impose any restrictions or additional technical requirements beyond those contained in relevant EU-Directives.

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1. Introduction

Digital Certificate of Conformity Module B (D-CoC M B) is a data structure that describes the content part of a digital certificate of conformity relating to a type examination carried out within product certification (cf. EN ISO/IEC 17065:2012).

The D-CoC M B comprises a set of elements, attributes, data types, and constraints for the representation and exchange of conformity-relevant information generated in different systems and by different actors. This document provides an overview of the data structure part for certificate content specific to a type examination.

1.1 Motivation

Legal metrology deals with all measurements in the economic, health, and police monitoring which are regulated by laws and has, therefore, a high significance for the European industry and customer rights. However, in a more and more digital world, it has to be transformed. The development of digital, machine-readable formats for documents such as certificates of conformity is a corner stone for the digitalisation of legal metrology.

Digital certificates of conformity can be used for a harmonised data exchange between conformity assessment bodies, market surveillance, and manufacturers. They also enhance findability and comparability of information. A potential use case is the harmonisation of certificate databases among notified bodies.

1.2 Scope

The D-CoC M B data structure focuses on type examination as part of product certification of legally regulated measuring instruments according to Directive 2014/32/EU (MID) and non-automatic weighing instruments according to Directive 2014/31/EU (NAWID). It can also be used outside of legal metrology as well.

D-CoC document family: This document is part of the D-CoC document family, which comprises the certificate structure of different certification systems and schemes. The following documents contain separate data structures for the content of the certificate specific to the respective certification schemes in accordance to ISO/IEC 17067:2013. These schemes correspond to the conformity assessment procedures referred to as “conformity assessment modules” set out in Annex II of Directives 2014/31/EU and 2014/32/EU:

- D-CoC is specific to the part of the certificate with **administrative content**;
- D-CoC M F is specific for the conformity assessment of legally regulated measuring instruments based on **product verification**;
- D-CoC QA is specific for the conformity assessment related to the **quality assurance**.

1.3 Status

In May 2021, a project group “Digital certificates of conformity in Metrology” has been established at Notified Bodies in Legal Metrology (NoBoMet) to develop data structures for certificates in legal metrology (NAWID and MID) for the conformity assessment module B (type examination), D, D1, E, E1, H, H1 (quality assurance survaillance), and F (product verification). The general certification data has been published already as D-CoC as well as the data structure related to quality assurance surveillance. The present documentation in focused on the description of information of a type examination.

1.4 Funding Note

Part of the work on the digital certificate of conformity has been performed within the project framework QI-Digital in the pilot project “Reliable hydrogen filling stations”.

2. The Principle of Defining the Data Structure

2.1 Prefixes

The prefix is **dcocMB**. Additionally, the following prefixes are used for elements imported from the other data structures: **dcoc** from the Digital Certificate of Conformity (D-CoC) and **si** from the Digital System of Units (D-SI).

2.2 Modularisation and Data Structure

This document focuses on the content part of certificate of conformity related to type examination and must be used in combination with the administrative content part of the D-CoC.

The D-CoC M B elements are based on the content of WELMEC Guide 8.3. The overview of the elements and their attributes can be represented graphically as follows:

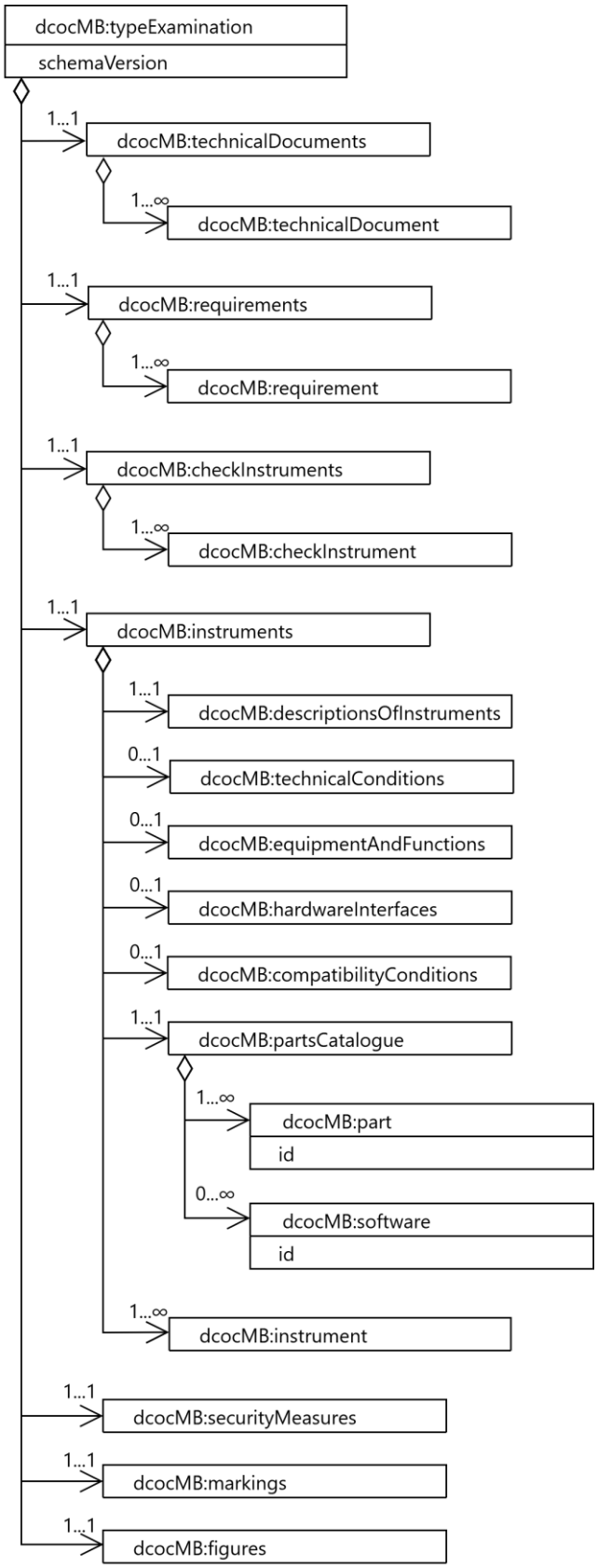
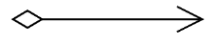
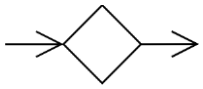


Figure 1 - General overview about the elements of the certificate content specific to type examination

The meaning of the relations between the elements used in the graphical representation of the data structure are shown in the following table:

Arrow	Description
	parent-child relation
	choice relation, that allows only one of the elements to be used

The data structure contains a number of so-called **universal elements**. These belong to several superordinate elements and are therefore defined as generally as possible. The universal elements are as follows:

- **dcocMB:name**, that occurs with dcocMB:requirement, dcocMB:checkInstrument, dcocMB:part, dcocMB:instrument dcocMB:marking, dcocMB:equipmentAndFunction, dcocMB:hardwareInterface, dcocMB:securityMeasure, dcocMB:condition, and dcocMB:software;
- **dcocMB:description**, that occurs with dcocMB:requirement, dcocMB:checkInstrument, dcocMB:descriptionsOfInstruments, dcocMB:descriptionsOfPart, dcocMB:descriptionsOfInstrument, dcocMB:securityMeasure, dcocMB:marking, dcocMB:condition, dcocMB:equipmentAndFunction, dcocMB:software, and dcocMB:hardwareInterface;
- **dcocMB:optional**, that occurs with dcocMB:partGroup, dcocMB:softwareGroup, dcocMB:condition, dcocMB:equipmentAndFunction, and dcocMB:hardwareInterface;
- **dcocMB:technicalConditions**, that occurs with dcocMB:instruments, dcocMB:instrument, and dcocMB:part;
- **dcocMB:technicalCondition**, that occurs with dcocMB:instruments, dcocMB:instrument, and dcocMB:part;
- **dcocMB:equipmentAndFunctions**, that occurs with dcocMB:instruments, dcocMB:instrument, and dcocMB:part;
- **dcocMB:equipmentAndFunction**, that occurs with dcocMB:instruments, dcocMB:instrument, and dcocMB:part;
- **dcocMB:hardwareInterfaces**, that occurs with dcocMB:instruments, dcocMB:instrument, and dcocMB:part;
- **dcocMB:hardwareInterface**, that occurs with dcocMB:instruments, dcocMB:instrument, and dcocMB:part;

2.3 Characterisation of the Elements, Attributes, and Data Types

2.3.1 Structure of the Specification

The D-CoC M B elements, data types and attributes presented here are documented using the following approach:

MACHINE INTERPRETABLE DESIGNATION: prefix:nameElement or prefix:nameDataType or prefix:nameAttribute;

DEFINITION: The representation of the scope of meaning of the D-CoC M B element, data type, and attribute in natural language;

LABEL	This is a human-readable label that can be displayed to the user, e.g. when visualising the digital certificate.
EXAMPLE	This is an example of element content.
NOTE	A note contains additional information regarding the use of the D-CoC M B element, data type, and attribute.
CARDINALITY	Cardinality characterises elements and data types in terms of two properties: (1) the degree of mandatory use and (2) the number of occurrences in the digital certificate. (See here in 2.3.2 Cardinality).
DATA TYPE	In the data structure, two main categories of data types are distinguished: simple and complex. Simple data types are expressed by their common names. The following simple data type are used: **string** as a set of any characters composed, **ID** as a unique identifier, **IDREF** as a reference to a unique identifier, **IDREFS** as a list of references, **date** as a Gregorian calendar date, **boolean** as an indication of whether the relevant content is false or true, and **binary** as a binary content. In use, these can be adopted in most languages, e.g. in XML as xs:string, xs:ID, xs:IDREF, xs:IDREFS, xs:date, xs:boolean, and xs:hexBinary. Complex data types are internally developed data types that cover the requirements of digital certificate, e.g. in the representation of the contact data of relevant persons and organisations, of the text-based certification-relevant content, of the encoded files, and of the language-related information.
ATTRIBUTE	See here in 2.3.3 Attribution.
PREDEFINED LIST OF VALUES	This list contains the values available for selection when creating a digital certificate. These values are to be regarded as suggestions based on the current state of the data structure's development and may be changed/expanded in the future if necessary. The fixed list may be realised as an **enumeration**.

FIGURE: This is a graphic representation of elements, their subelements, and mandatory attributes.

Figures do not claim to be exhaustive.

2.3.2 Cardinality

The cardinality is expressed in the data structure as follows:

- The cardinality value **1 … ∞** stands for a mandatory element and data type that can be entered more than once;
- The cardinality value **1 … 1** stands for a mandatory element and data type that can be entered exactly once in the certificate;
- The cardinality value **0 … 1** represents an optional element and data type that can be entered at most once;
- The cardinality value **0 … ∞** represents an optional element and data type that can be entered more than once.

2.3.3 Attribution

In the data structure, attributes are distinguished into mandatory attributes and optional attributes.

3 Specification of the Data Structure

3.1 dcocMB:typeExamination

certificate specific to the conformity assessment based on type examination

LABEL	type examination
CARDINALITY	1 … 1
MANDATORY ATTRIBUTE	schemaVersion

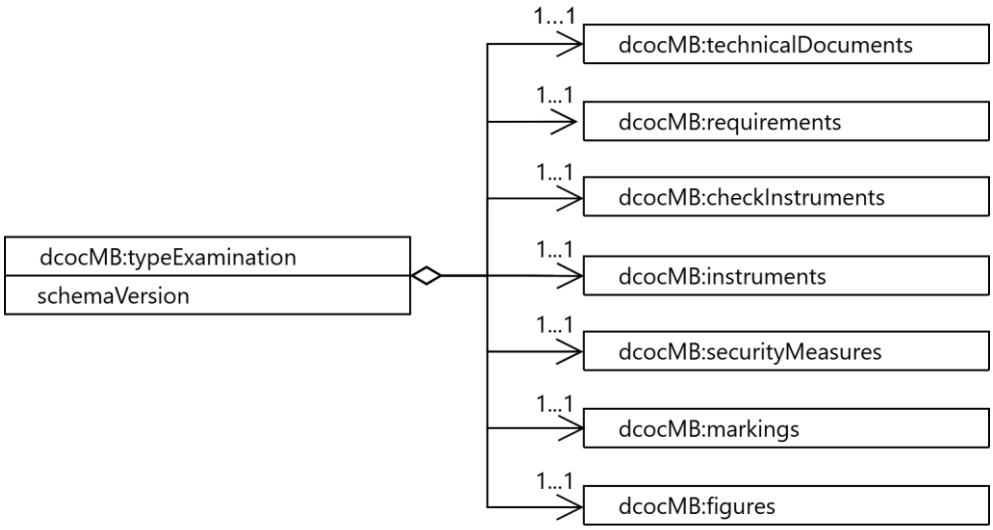


*Figure 2 - The subdivision of the element **dcocMB:typeExamination** into the individual subelements*

3.1.1 dcocMB:technicalDocuments

technical documents with which the instrument must comply

LABEL	technical documents
NOTE	The technical documents described in this specification are equivalent to the technical documentation in accordance with the Artikle 18 of Directives 2014/31/EU and 2014/32/EU.
CARDINALITY	1 … 1

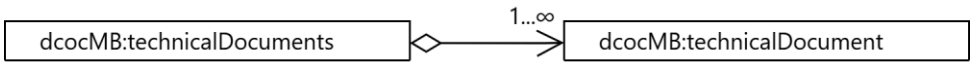


*Figure 3 - The subdivision of the element **dcocMB:technicalDocuments** into the individual subelements*

3.1.1.1 dcocMB:technicalDocument

technical document with which the instrument must comply

LABEL	technical document
CARDINALITY	1 … ∞
OPTIONAL ATTRIBUTE	id

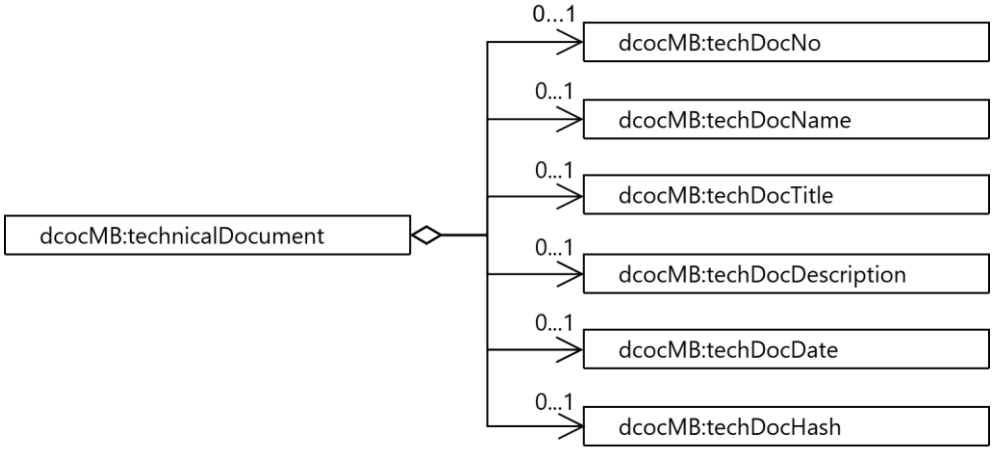


*Figure 4 - The subdivision of the element **dcocMB:technicalDocument** into the individual subelements*

3.1.1.1.1 dcocMB:techDocNo

identifier of the technical document

LABEL	document identifier
CARDINALITY	0 … 1
DATA TYPE	string

3.1.1.1.2 dcocMB:techDocName

designation of the technical document

LABEL	document designation
EXAMPLE	*filename.pdf*
CARDINALITY	0 … 1
DATA TYPE	string

3.1.1.1.3 dcocMB:techDocTitle

title of the technical document

LABEL	document title
EXAMPLE 1	*Instruction manual*
EXAMPLE 2	*Control panel for hazardous areas*
CARDINALITY	0 … 1
DATA TYPE	text

3.1.1.1.4 dcocMB:techDocDescription

description of the technical document

LABEL	document description
EXAMPLE	*The technical documents relating to this Certificate are deposited in the respective Set of Certification Documents at PTB. The Table of Contents of the Set of Certification Documents was sent to the owner of the Certificate.*
CARDINALITY	0 … 1
DATA TYPE	text

3.1.1.1.5 dcocMB:techDocDate

issuing date of the technical document

LABEL	issuing date
CARDINALITY	0 … 1
DATA TYPE	date

3.1.1.1.6 dcocMB:techDocHash

result generated by a hash function in order to verify the integrity and authenticity of the technical document

LABEL	hash value
CARDINALITY	0 … 1
DATA TYPE	string

3.1.2 dcocMB:requirements

requirements which must be fulfilled by the instruments to comply with certification criteria

LABEL	requirements
CARDINALITY	1 … 1

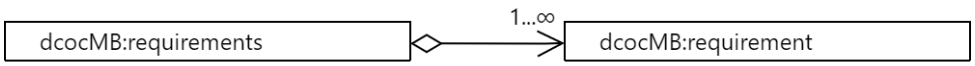


*Figure 5 - The subdivision of the element **dcocMB:requirements** into the individual subelements*

3.1.2.1 dcocMB:requirement

requirement which must be fulfilled by the instruments to comply with the certification criteria

LABEL	requirement
CARDINALITY	1 … ∞
OPTIONAL ATTRIBUTE 1	id
OPTIONAL ATTRIBUTE 2	refId

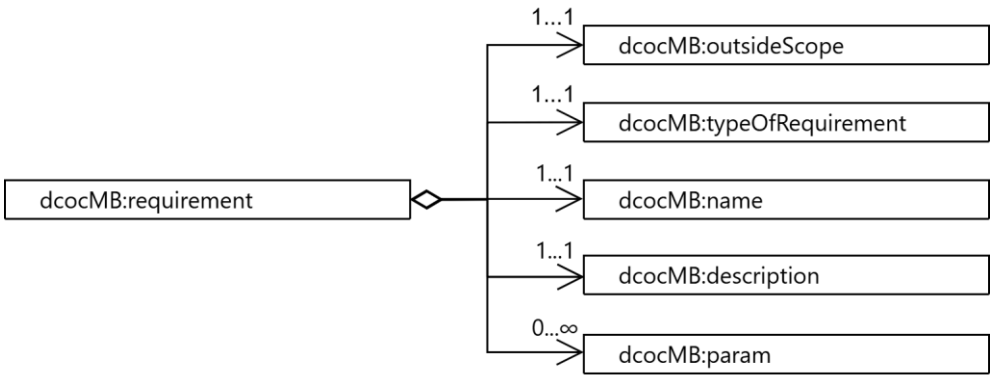


*Figure 6 - The subdivision of the element **dcocMB:requirement** into the individual subelements*

3.1.2.1.1 dcocMB:outsideScope

statement of whether the function or requirement is outside of the framework of the certification

LABEL	outside scope
CARDINALITY	1 … 1
DATA TYPE	boolean

3.1.2.1.2 dcocMB:typeOfRequirement

type of the requirement

LABEL	type of requirement
CARDINALITY	1 … 1
DATA TYPE	string
PREDEFINED LIST OF VALUES	requirement on production, requirement on putting into use, requirement on consistent utilisation

3.1.2.1.3 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE	*restricted test scope for high-pressure tests*
CARDINALITY	1 … 1
DATA TYPE	text

3.1.2.1.4 dcocMB:description

textual representation of the corresponding content element

LABEL	description
CARDINALITY	1 … 1
DATA TYPE	text

3.1.2.1.5 dcocMB:param

parameter essential for the corresponding requirement

LABEL	parameter
EXAMPLE	*for alternating current: 120 V or 240 V (±10 %) 48 to 63 Hertz, 12 Watt*
CARDINALITY	0 … ∞
DATA TYPE	text

3.1.3 dcocMB:checkInstruments

measure required for the metrological control of the instruments in use

LABEL	check on instruments
CARDINALITY	1 … 1

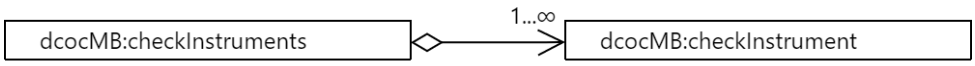


*Figure 7 - The subdivision of the element **dcocMB:checkInstruments** into the individual subelements*

3.1.3.1 dcocMB:checkInstrument

measure required for the metrological control of the instrument in use

LABEL	check on instrument
CARDINALITY	1 … ∞
OPTIONAL ATTRIBUTE 1	id
OPTIONAL ATTRIBUTE 2	refId

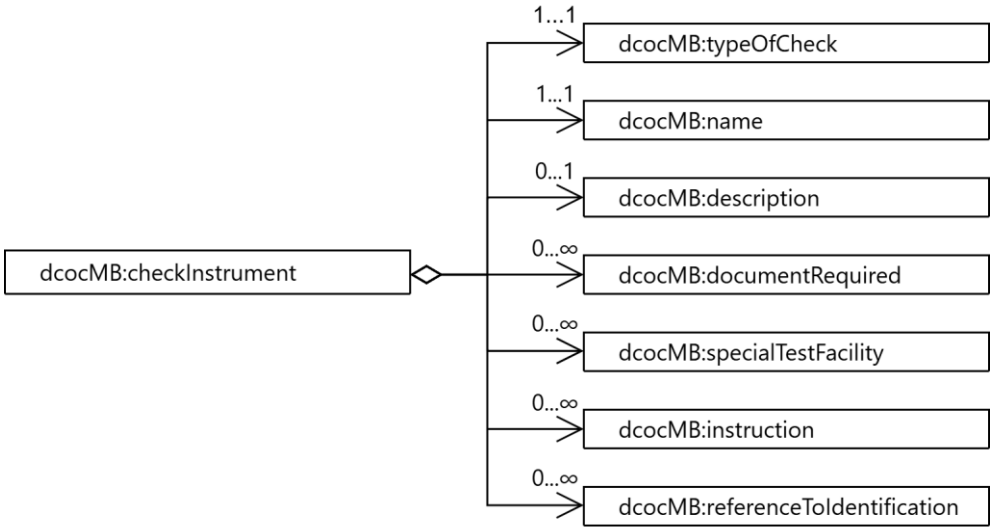


*Figure 8 - The subdivision of the element **dcocMB:checkInstrument** into the individual subelements*

3.1.3.1.1 dcocMB:typeOfCheck

type of check to be performed on the instrument in use

LABEL	type of check
CARDINALITY	1 … 1
DATA TYPE	string
PREDEFINED LIST OF VALUES	calibration, metrological inspection, visual inspection of markings

3.1.3.1.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE 1	*identification of software*
EXAMPLE 2	*inspection of seals*
CARDINALITY	1 … 1
DATA TYPE	text

3.1.3.1.3 dcocMB:description

textual representation of the corresponding content element

LABEL	description
CARDINALITY	0 … 1
DATA TYPE	text

3.1.3.1.4 dcocMB:documentRequired

document, which is essential for the metrological control of the instrument in use

LABEL	document
EXAMPLE 1	*copy of this type examination certificate*
EXAMPLE 2	*handbook*
EXAMPLE 3	*users manual*
EXAMPLE 4	*standard ISO xyztr*
CARDINALITY	0 … ∞
DATA TYPE	text

3.1.3.1.5 dcocMB:specialTestFacility

physical and non-physical facility required for the metrological control of the instrument in use

LABEL	special test facility
CARDINALITY	0 … ∞
DATA TYPE	text

3.1.3.1.6 dcocMB:instruction

information describing the actions required to perform metrological control of the instrument in use

LABEL	instruction
EXAMPLE	*press info button*
CARDINALITY	0 … ∞
DATA TYPE	text

3.1.3.1.7 dcocMB:referenceToIdentification

description for the clear identifiability of the instrument(s)

LABEL	reference to identification
EXAMPLE	*The identity of the MPU800c/MPU1600c unit is made clear by the inscriptions on the nameplate.*
CARDINALITY	0 … ∞
DATA TYPE	text

3.1.4 dcocMB:instruments

devices executing specific functions alone or in conjunction with other devices and/or parts

[SOURCE: International Vocabulary of Metrology (VIM), 3.1, modified - The definition is modified to enable more than one instrument to be defined. The expression “for making measurement” is replaced by

“executing specific functions”. The expression “and/or parts” is added and the notes 1 and 2 are not considered.]

LABEL instruments

CARDINALITY 1 … 1

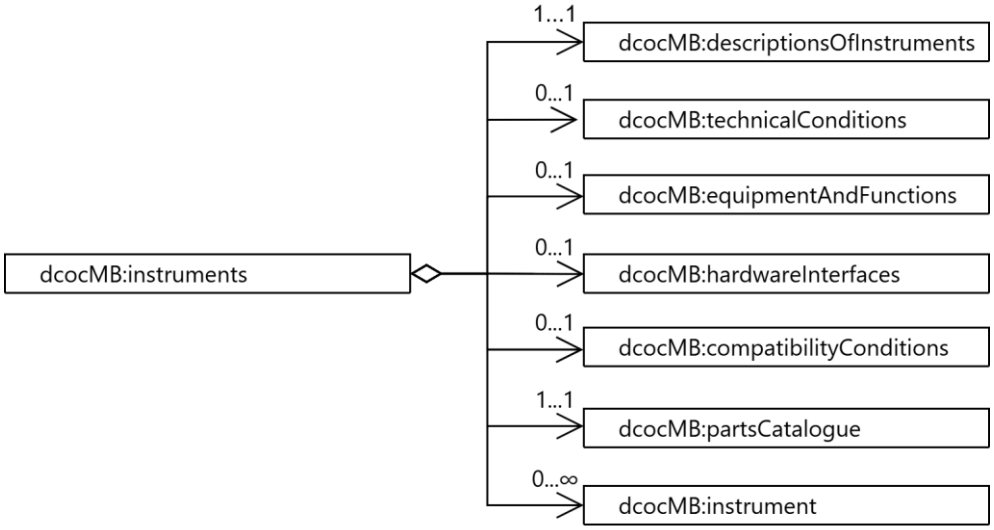


*Figure 9 - The subdivision of the element **dcocMB:instruments** into the individual subelements*

3.1.4.1 dcocMB:descriptionsOfInstruments

textual representation of the instruments

LABEL instruments descriptions

CARDINALITY 1 … 1

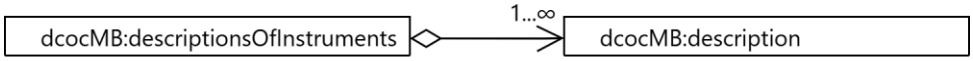


*Figure 10 - The subdivision of the element **dcocMB:descriptionsOfInstruments** into the individual subelements*

3.1.4.1.1 dcocMB:description

textual representation of the corresponding content element

LABEL description

CARDINALITY 1 … ∞

DATA TYPE text

3.1.4.2 dcocMB:technicalConditions

(rated) operating conditions of the instrument(s) or part(s)

LABEL technical conditions

CARDINALITY 0 … 1

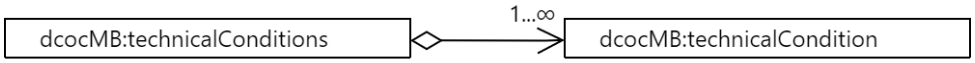


*Figure 11 - The subdivision of the element **dcocMB:technicalConditions** into the individual subelements*

3.1.4.2.1 dcocMB:technicalCondition

(rated) operating condition of the instrument(s) or part(s)

LABEL technical condition

CARDINALITY 1 … ∞

DATA TYPE condition

3.1.4.3 dcocMB:equipmentAndFunctions

predetermined operations and/or equipment of the instrument(s) or part(s)

LABEL equipment and functions

CARDINALITY 0 … 1

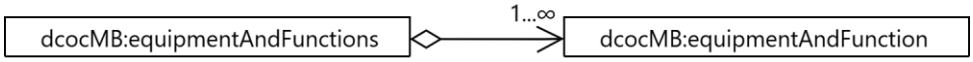


*Figure 12 - The subdivision of the element **dcocMB:equipmentAndFunctions** into the individual subelements*

3.1.4.3.1 dcocMB:equipmentAndFunction

predetermined operation or equipment of the instrument(s) or part(s)

LABEL equipment or function

CARDINALITY 1 … ∞

DATA TYPE equipmentAndFunction

3.1.4.4 dcocMB:hardwareInterfaces

physical connecting points of the instrument(s) or part(s)

LABEL hardware interfaces

CARDINALITY 0 … 1

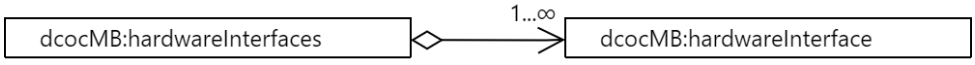


*Figure 13 - The subdivision of the element **dcocMB:hardwareInterfaces** into the individual subelements*

3.1.4.4.1 dcocMB:hardwareInterface

physical connecting point of the instrument(s) or part(s)

LABEL hardware interface
CARDINALITY 1 … ∞
DATA TYPE hardwareInterface

3.1.4.5 dcocMB:compatibilityConditions

characteristics of the instrument(s) or part(s) which affect their physical/non-physical interconnections with other instrument(s) and/or part(s), and which serve as conditions for a compatibility check

LABEL compatibility conditions
CARDINALITY 0 … 1

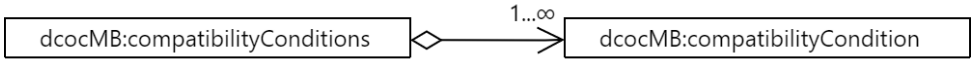


*Figure 14 - The subdivision of the element **dcocMB:compatibilityConditions** into the individual subelements*

3.1.4.5.1 dcocMB:compatibilityCondition

characteristic of the instrument(s) or part(s) which affects physical/non-physical interconnection with other instrument(s) and/or part(s), and which serves as a condition for a compatibility check

LABEL compatibility condition
CARDINALITY 1 … ∞
DATA TYPE condition

3.1.4.6 dcocMB:partsCatalogue

list of physical and non-physical parts that may be incorporated in the instrument(s)

LABEL parts catalogue
CARDINALITY 1 … 1

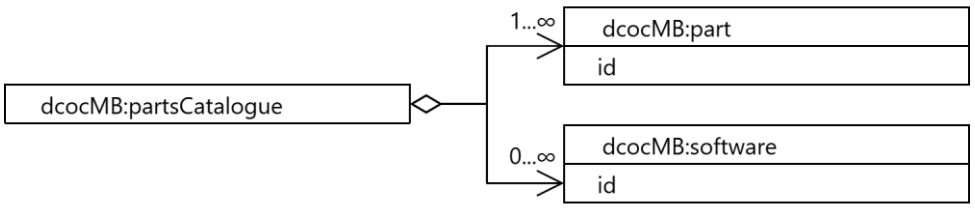


*Figure 15 - The subdivision of the element **dcocMB:partsCatalogue** into the individual subelements*

3.1.4.6.1 dcocMB:part

physical part of the instrument

LABEL	part
CARDINALITY	1 … ∞
MANDATORY ATTRIBUTE	id
OPTIONAL ATTRIBUTE	refId

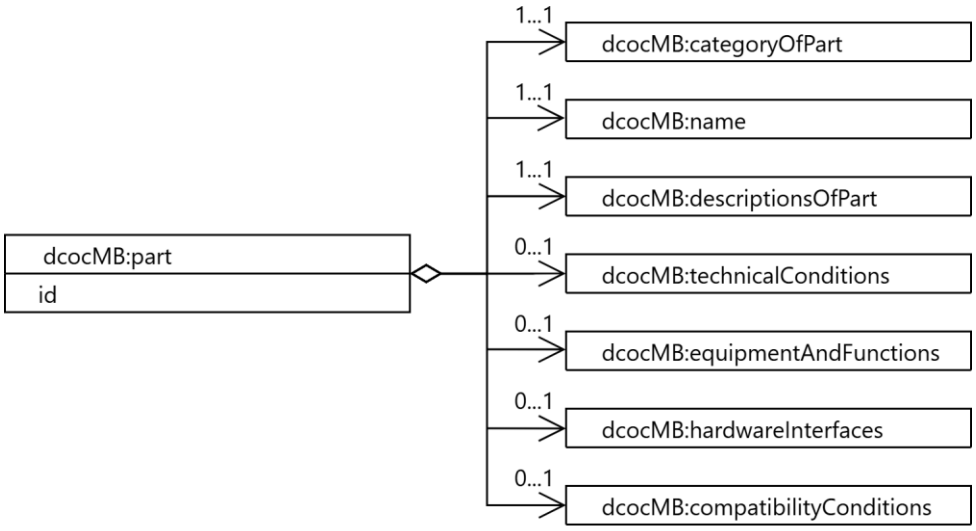


*Figure 16 - The subdivision of the element **dcocMB:part** into the individual subelements*

3.1.4.6.1.1 dcocMB:categoryOfPart

category of the part

LABEL	part category
EXAMPLE 1	*sensor*
EXAMPLE 2	*indicator*
CARDINALITY	1 … 1
DATA TYPE	text

3.1.4.6.1.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE	*display AV1*
CARDINALITY	1 … 1
DATA TYPE	text

3.1.4.6.1.3 dcocMB:descriptionsOfPart

descriptions of the part

LABEL part descriptions
CARDINALITY 1 … 1

3.1.4.6.1.3.1 dcocMB:description

textual representation of the corresponding content element

LABEL description
EXAMPLE *load cell according to WELMEC Guide 2.4*
CARDINALITY 1 … ∞
DATA TYPE text

3.1.4.6.1.4 dcocMB:technicalConditions

(rated) operating conditions of the instrument(s) or part(s)

LABEL technical conditions
CARDINALITY 0 … 1

3.1.4.6.1.4.1 dcocMB:technicalCondition

(rated) operating condition of the instrument(s) or part(s)

LABEL technical condition
CARDINALITY 1 … ∞
DATA TYPE condition

3.1.4.6.1.5 dcocMB:equipmentAndFunctions

predetermined operations and/or equipment of the instrument(s) or part(s)

LABEL equipment and functions
CARDINALITY 0 … 1

3.1.4.6.1.5.1 dcocMB:equipmentAndFunction

predetermined operation or equipment of the instrument(s) or part(s)

LABEL equipment or function
CARDINALITY 1 … ∞
DATA TYPE equipmentAndFunction

3.1.4.6.1.6 dcocMB:hardwareInterfaces

physical connecting points of the instrument(s) or part(s)

LABEL hardware interfaces

CARDINALITY 0 … 1

3.1.4.6.1.6.1 dcocMB:hardwareInterface

physical connecting point of the instrument(s) or part(s)

LABEL hardware interface

CARDINALITY 1 … ∞

DATA TYPE hardwareInterface

3.1.4.6.1.7 dcocMB:compatibilityConditions

characteristics of the instrument(s) or part(s) which affect physical/non-physical interconnection with other instrument(s) and/or part(s), and which serve as conditions for a compatibility check

LABEL compatibility conditions

CARDINALITY 0 … 1

3.1.4.6.1.7.1 dcocMB:compatibilityCondition

characteristic of the instrument(s) or part(s) which affects physical/non-physical interconnection with other instrument(s) and/or part(s), and which serves as a condition for a compatibility check

LABEL compatibility condition

CARDINALITY 1 … ∞

DATA TYPE condition

3.1.4.6.2 dcocMB:software

non-physical part of the instrument(s) or part(s) that enables to perform functions

LABEL software

CARDINALITY 0 … ∞

DATA TYPE software

MANDATORY ATTRIBUTE id

3.1.4.7 dcocMB:instrument

device executing specific functions alone or in conjunction with other devices and/or parts

[SOURCE: International Vocabulary of Metrology, 3.1, modified - the expression “for making measurement” is replaced by “executing specific functions”. The expression “and/or parts” is added and the notes 1 and 2 are not considered.]

LABEL	instrument
CARDINALITY	1 … ∞
OPTIONAL ATTRIBUTE	id

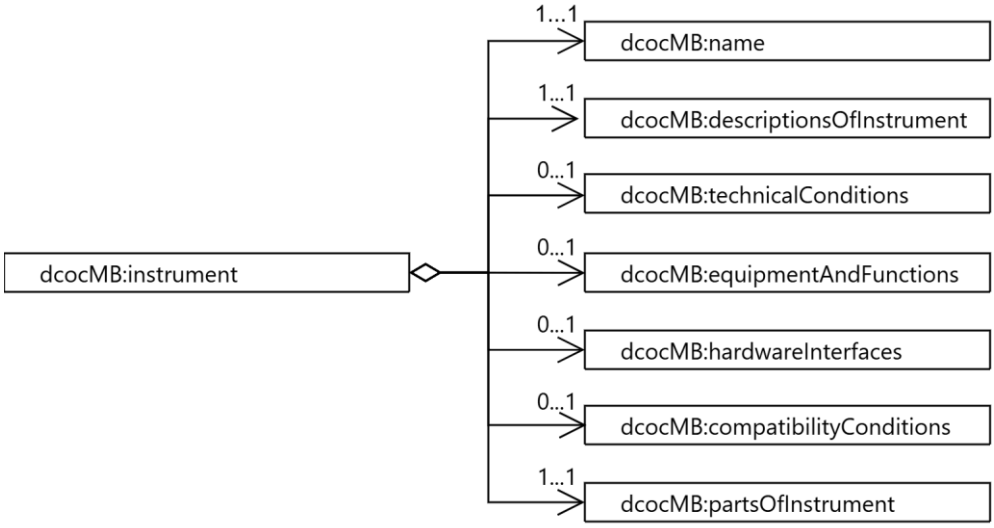


*Figure 17 - The subdivision of the element **dcocMB:instrument** into the individual subelements*

3.1.4.7.1 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE	*water meter version a*
CARDINALITY	1 … 1
DATA TYPE	text

3.1.4.7.2 dcocMB:descriptionsOfInstrument

descriptions of the instrument covered by the certificate

LABEL	instrument descriptions
CARDINALITY	1 … 1

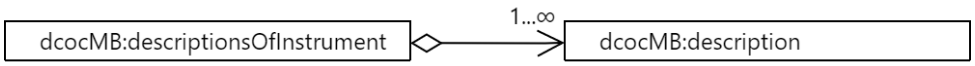


*Figure 18 - The subdivision of the element **dcocMB:descriptionsOfInstrument** into the individual subelements*

3.1.4.7.2.1 dcocMB:description

textual representation of the corresponding content element

LABEL description

EXAMPLE *The ultrasonic gas meter is a volume gas meter.*

CARDINALITY 1 … ∞

DATA TYPE text

3.1.4.7.3 dcocMB:technicalConditions

(rated) operating conditions of the instrument(s) or part(s)

LABEL technical conditions

CARDINALITY 0 … 1

3.1.4.7.3.1 dcocMB:technicalCondition

(rated) operating condition of the instrument(s) or part(s)

LABEL technical condition

CARDINALITY 1 … ∞

DATA TYPE condition

3.1.4.7.4 dcocMB:equipmentAndFunctions

predetermined operations and/or equipment of the instrument(s) or part(s)

LABEL equipment and functions

CARDINALITY 0 … 1

3.1.4.7.4.1 dcocMB:equipmentAndFunction

predetermined operation or equipment of the instrument(s) or part(s)

LABEL equipment or function

CARDINALITY 1 … ∞

DATA TYPE equipmentAndFunction

3.1.4.7.5 dcocMB:hardwareInterfaces

physical connecting points of the instrument(s) and/or part(s)

LABEL hardware interfaces

CARDINALITY 0 … 1

3.1.4.7.5.1 dcocMB:hardwareInterface

physical connecting point of the instrument(s) and/or part(s)

LABEL hardware interface

CARDINALITY 1 … ∞

DATA TYPE hardwareInterface

3.1.4.7.6 dcocMB:compatibilityConditions

characteristics of the instrument(s) or part(s) which affect physical/non-physical interconnection with other instrument(s) and/or part(s), and which serve as conditions for a compatibility check

LABEL compatibility conditions

CARDINALITY 0 … 1

3.1.4.7.6.1 dcocMB:compatibilityCondition

characteristic of the instrument(s) or part(s) which affects physical/non-physical interconnection with other instrument(s) and/or part(s), and which serves as a condition for a compatibility check

LABEL compatibility condition

CARDINALITY 1 … ∞

DATA TYPE condition

3.1.4.7.7 dcocMB:partsOfInstrument

list of physical and non-physical parts the instrument consists of

LABEL instrument parts

CARDINALITY 1 … 1

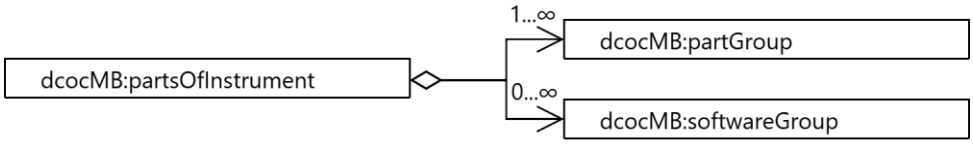


*Figure 19 - The subdivision of the element **dcocMB:partsOfInstrument** into the individual subelements*

3.1.4.7.7.1 dcocMB:partGroup

set of physical parts of the same type

LABEL part group

NOTE One part from the group is incorporated in the instrument.

CARDINALITY 1 … ∞

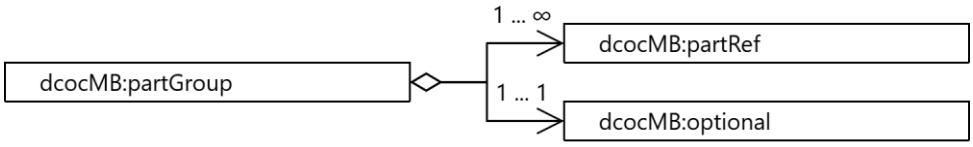


*Figure 20 - The subdivision of the element **dcocMB:partGroup** into the individual subelements*

3.1.4.7.7.1.1 dcocMB:partRef

reference to the corresponding part

LABEL part reference
CARDINALITY 1 … ∞
DATA TYPE IDREF

3.1.4.7.7.1.2 dcocMB:optional

statement whether the corresponding content element is optional

LABEL optional
CARDINALITY 1 … 1
DATA TYPE boolean

3.1.4.7.7.2 dcocMB:softwareGroup

set of software of the same type

LABEL software group
NOTE One software from the group is incorporated in the instrument.
CARDINALITY 0 … ∞

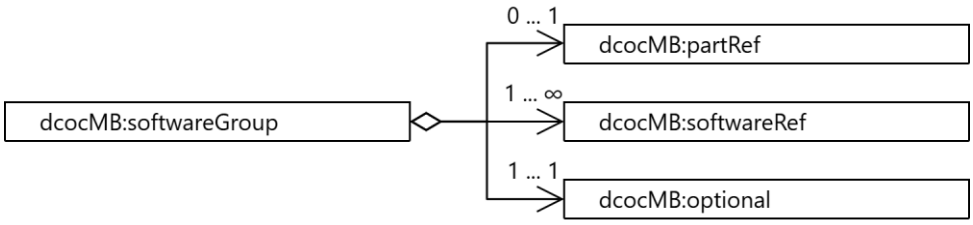


*Figure 21 - The subdivision of the element **dcocMB:softwareGroup** into the individual subelements*

3.1.4.7.7.2.1 dcocMB:partRef

reference to the corresponding part

LABEL part reference
CARDINALITY 0 … 1
DATA TYPE IDREF

3.1.4.7.7.2.2 dcocMB:softwareRef

reference to the corresponding software

LABEL	software reference
CARDINALITY	1 … ∞
DATA TYPE	IDREF

3.1.4.7.7.2.3 dcocMB:optional

statement whether the corresponding content element is optional

LABEL	optional
CARDINALITY	1 … 1
DATA TYPE	boolean

3.1.5 dcocMB:securityMeasures

measures to protect the instrument(s) against unintentional changes on legally relevant hardware, software, data or parameters

LABEL	security measures
CARDINALITY	1 … 1

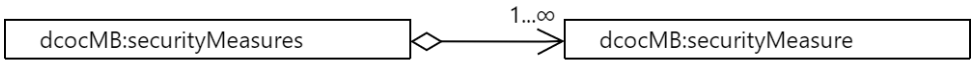


*Figure 22 - The subdivision of the element **dcocMB:securityMeasures** into the individual subelements*

3.1.5.1 dcocMB:securityMeasure

measure to protect the instrument(s) against unintentional changes on legally relevant hardware, software, data or parameters

LABEL	security measure
CARDINALITY	1 … ∞
OPTIONAL ATTRIBUTE 1	id
OPTIONAL ATTRIBUTE 2	refId

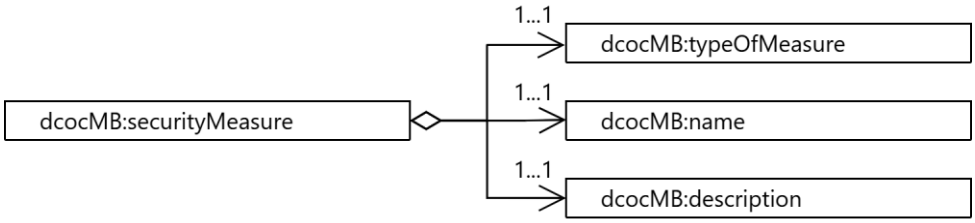


*Figure 23 - The subdivision of the element **dcocMB:securityMeasure** into the individual subelements*

3.1.5.1.1 dcocMB:typeOfMeasure

type of security measure

LABEL	security measure type
CARDINALITY	1 … 1
DATA TYPE	string
PREDEFINED LIST OF VALUES	mechanical seal, electronic seal

3.1.5.1.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE	*logbook*
CARDINALITY	1 … 1
DATA TYPE	text

3.1.5.1.3 dcocMB:description

textual representation of the corresponding content element

LABEL	description
CARDINALITY	1 … 1
DATA TYPE	text

3.1.6 dcocMB:markings

markings on the instrument(s)

LABEL	markings
CARDINALITY	1 … 1

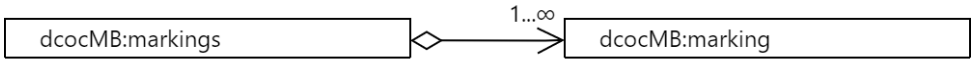


*Figure 24 - The subdivision of the element **dcocMB:markings** into the individual subelements*

3.1.6.1 dcocMB:marking

marking on the instrument(s)

LABEL	marking
CARDINALITY	1 … ∞
OPTIONAL ATTRIBUTE 1	id
OPTIONAL ATTRIBUTE 2	refId

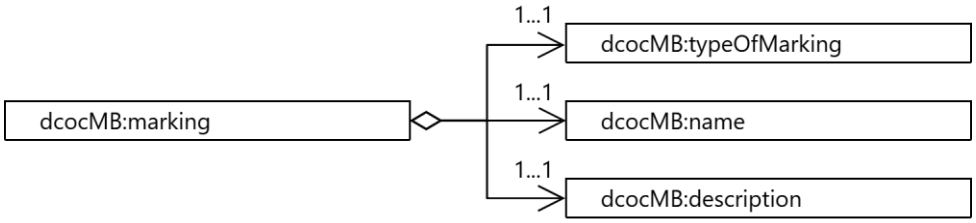


*Figure 25 - The subdivision of the element **dcocMB:marking** into the individual subelements*

3.1.6.1.1 dcocMB:typeOfMarking

type of marking

LABEL	type of marking
CARDINALITY	1 … 1
DATA TYPE	string
PREDEFINED LIST OF VALUES	inscription, seal

3.1.6.1.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
CARDINALITY	1 … 1
DATA TYPE	text

3.1.6.1.3 dcocMB:description

textual representation of the corresponding content element

LABEL	description
CARDINALITY	1 … 1
DATA TYPE	text

3.1.7 dcocMB:figures

figures attached to the certificate

LABEL	figures
CARDINALITY	1 … 1
OPTIONAL ATTRIBUTE	id

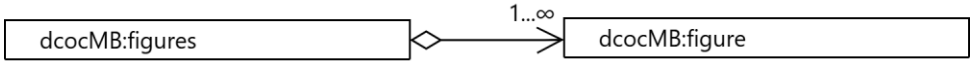


*Bild 26 - The subdivision of the element **dcocMB:figures** into the individual subelements*

3.1.7.1 dcocMB:figure

figure attached to the certificate

LABEL	figure
CARDINALITY	1 … ∞
DATA TYPE	byteData

3.2 Data Types

3.2.1 dcoc:text

indication of any content in text form including used language

NOTE	The element name and cardinality are given at the point where it is used.
OPTIONAL ATTRIBUTE	id

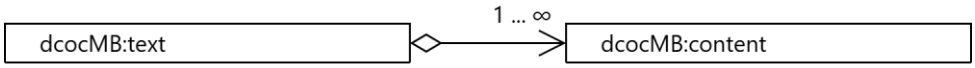


*Figure 27 - The subdivision of the data type **dcocMB:text** into the individual subelements*

3.2.1.1. dcoc:content

text content based on language indication

LABEL	content
CARDINALITY	1 … ∞
DATA TYPE	string
OPTIONAL ATTRIBUTE 1	id
OPTIONAL ATTRIBUTE 2	lang

3.2.2 dcocMB:condition

technical and compatibility condition of the instrument(s) and part(s) covered by the certificate

NOTE	The element name and cardinality are given at the point where it is used.
OPTIONAL ATTRIBUTE 1	id
OPTIONAL ATTRIBUTE 2	refId

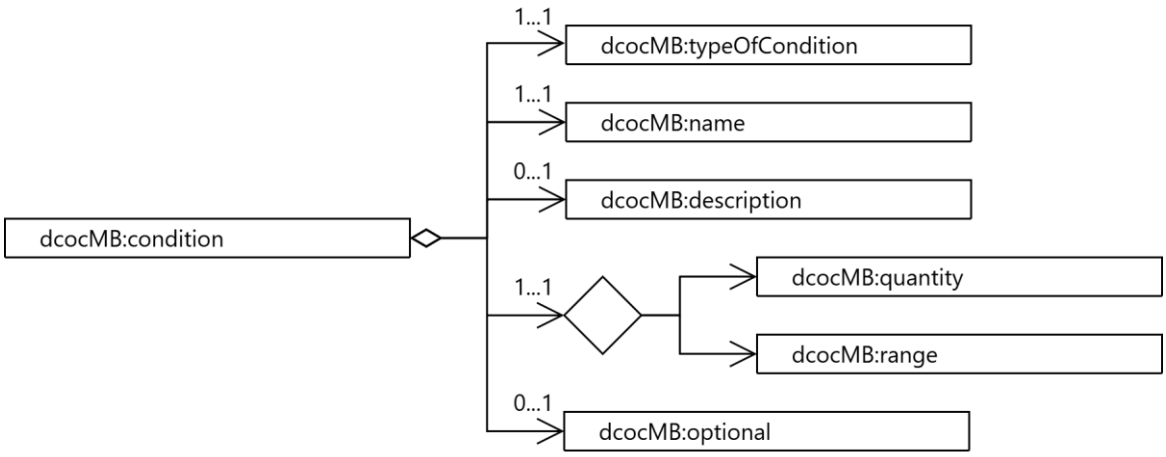


*Figure 28 - The subdivision of the data type **dcocMB:condition** into the individual subelements*

3.2.2.1 dcocMB:typeOfCondition

type of the condition of the instrument(s) and part(s) covered by the certificate

LABEL	condition type
CARDINALITY	1 … 1
DATA TYPE	string
PREDEFINED LIST OF VALUES	measurand, measurement range, accuracy class, environmental condition, influence quantity, climatic, mechanical, electromagnetic, other

3.2.2.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE	*accuracy class*
CARDINALITY	1 … 1
DATA TYPE	text

3.2.2.3 dcocMB:description

textual representation of the corresponding content element

LABEL	description
EXAMPLE	*Only applicable for multi interval weighing instruments.*
CARDINALITY	0 … 1
DATA TYPE	text

3.2.2.4 dcocMB:quantity

property of a phenomenon, body, or substance, where the property has a magnitude that can be expressed as a number and a reference

[SOURCE: International Vocabulary of Metrology (VIM), 1.1, modified - The notes 1 - 6 are not considered.]

LABEL	quantity
NOTE	The **quantity** is one of two elements besides the **range** that is assigned by a choice relation and may therefore only be used if **range** is not applicable.
CARDINALITY	1 … 1
DATA TYPE	quantity

3.2.2.5 dcocMB:range

set of values between the values of the minimum quantity and maximum quantity

LABEL	range
NOTE	The **range** is one of two elements besides the **quantity** that is assigned by a choice relation and may therefore only be used if **quantity** is not applicable.
CARDINALITY	1 … 1

3.2.2.5.1 dcocMB:minQuantity

quantity represented by its lowest value

LABEL	minimum quantity
CARDINALITY	1 … 1
DATA TYPE	quantity

3.2.2.5.2 dcocMB:maxQuantity

quantity represented by its highest value

LABEL	maximum quantity
CARDINALITY	1 … 1
DATA TYPE	quantity

3.2.2.6 dcocMB:optional

statement whether the corresponding context element is optional

LABEL	optional
CARDINALITY	0 … 1
DATA TYPE	boolean

3.2.3 dcocMB:quantity

NOTE The element name and cardinality are given at the point where it is used.

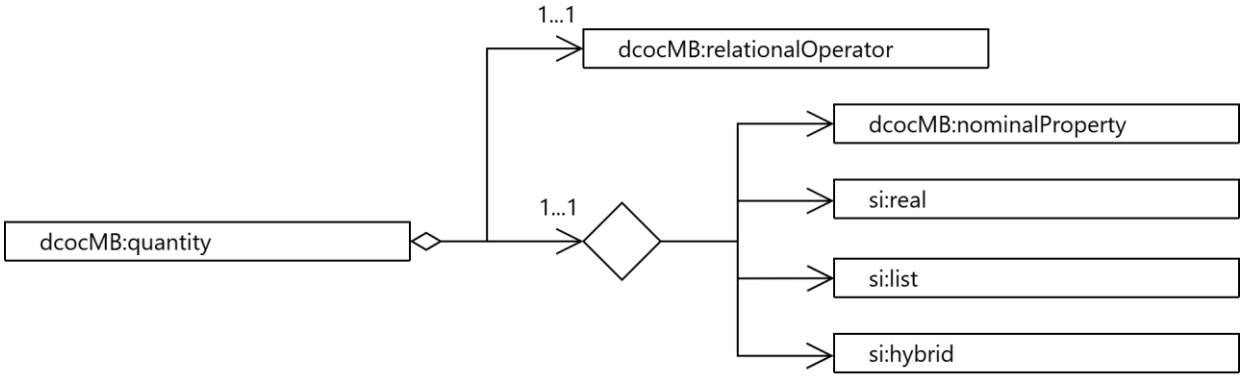


*Figure 29 - The subdivision of the data type **dcocMB:quantity** into the individual subelements*

3.2.3.1 dcocMB:relationalOperator

operator represented by the comparison characters

LABEL	relational operator
CARDINALITY	1 … 1
PREDEFINED LIST OF VALUES	equalTo, greaterThan, lessThan, greaterThanEqualTo, lessThanEqualTo
DATA TYPE	string

3.2.3.2 dcocMB:nominalProperty

property of a phenomenon, body, or substance, where the property has no magnitude

[SOURCE: International Vocabulary of Metrology (VIM), 1.30]

LABEL	nominal property
NOTE 1	The **nominal property** is one of four elements besides the **real**, **list**, and **hybrid** that is assigned by a choice relation and may therefore only be used if the other three elements are not applicable.
NOTE 2	In the context of this specification, the **nominal property** can be used to represent, in particular, an accuracy class of the instrument covered by the D-CoC. While in the analogue world the accuracy class is usually represented by an oval around a Roman numeral, in this specification a string is used instead in order to optimise machine readability, see here the EXAMPLE 3.
EXAMPLE 1	*M1*
EXAMPLE 2	*Y (a)*
EXAMPLE 3	III
CARDINALITY	1 … 1
DATA TYPPE	string

3.2.3.3 si:real

[SOURCE: D-SI - Digital System of Units.]

NOTE The **real** is one of four elements besides the **nominal property**, **list**, and **hybrid** that is assigned by a choice relation and may therefore only be used if the other three elements are not applicable.

CARDINALITY 1 … 1

3.2.3.4 si:list

[SOURCE: D-SI - Digital System of Units.]

NOTE The **list** is one of four elements besides the **nominal property**, **real**, and **hybrid** that is assigned by a choice relation and may therefore only be used if the other three elements are not applicable.

CARDINALITY 1 … 1

3.2.3.5 si:hybrid

[SOURCE: D-SI - Digital System of Units.]

NOTE The **hybrid** is one of four elements besides the **nominal property**, **real**, and **list** that is assigned by a choice relation and may therefore only be used if the other three elements are not applicable.

CARDINALITY 1 … 1

3.2.4 dcocMB:equipmentAndFunction

predetermined operation or equipment of the instrument(s) and part(s)

NOTE The element name and cardinality are given at the point where it is used.

OPTIONAL ATTRIBUTE id

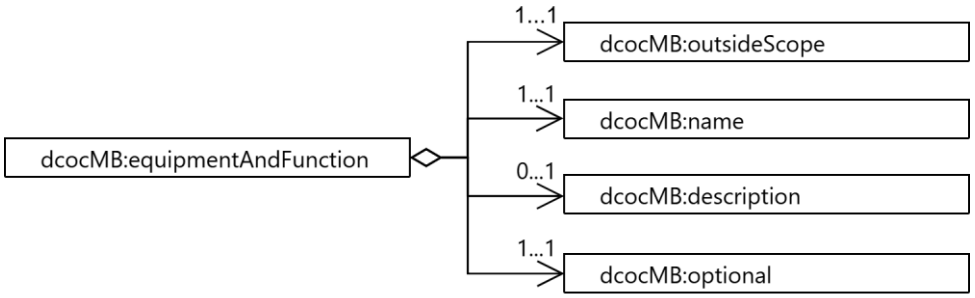


*Figure 30 - The subdivision of the data type **dcocMB:equipmentAndFunction** into the individual subelements*

3.2.4.1 dcocMB:outsideScope

statement of whether the function or requirement is outside of the framework of the certification

LABEL outside scope
CARDINALITY 1 … 1
DATA TYPE boolean

3.2.4.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL name
EXAMPLE *semi-automatic zero-setting device*
CARDINALITY 1 … 1
DATA TYPE text

3.2.4.3 dcocMB:description

textual representation of the corresponding content element

LABEL description
EXAMPLE *function according to EN 45501 T.2.7.2.3*
CARDINALITY 0 … 1
DATA TYPE text

3.2.4.4 dcocMB:optional

statement whether the corresponding context element is optional

LABEL optional
CARDINALITY 1 … 1
DATA TYPE boolean

3.2.5 dcocMB:software

non-physical part of the instrument(s) or part(s) that enable to perform functions

NOTE The element name and cardinality are given at the point where it is used.
MANDATORY ATTRIBUTE id

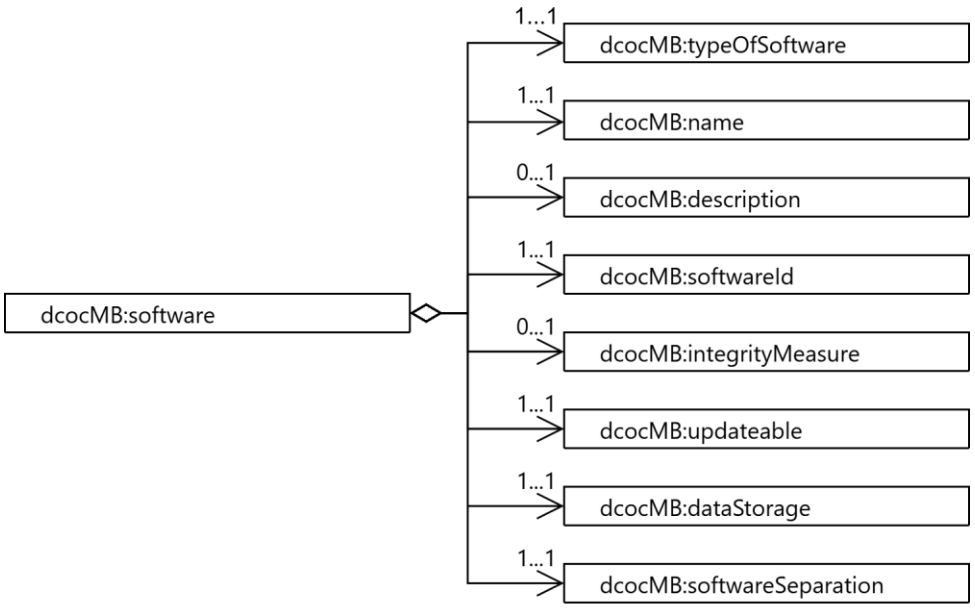


*Figure 31 - The subdivision of the data type **dcocMB:software** into the individual subelements*

3.2.5.1 dcocMB:typeOfSoftware

type of software

LABEL	type of software
CARDINALITY	1 … 1
DATA TYPE	string

3.2.5.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
CARDINALITY	1 … 1
DATA TYPE	text

3.2.5.3 dcocMB:description

textual representation of the corresponding content element

LABEL	description
CARDINALITY	0 … 1
DATA TYPE	text

3.2.5.4 dcocMB:softwareId

sequence of readable characters (e.g., version number, checksum) that represents the software or software module under consideration

[SOURCE: WELMEC Software Guide 7.2, modified - The undefiend article before “sequence” and the note have not been considered.]

LABEL	software identification
NOTE	Software identification is according to the requirements P2/U2 of *WELMEC Software Guide 7.2*.
EXAMPLE 1	*ultrasonicDSP*
EXAMPLE 2	*Ode3b95f*
CARDINALITY	1 … 1
DATA TYPE	string

3.2.5.5 dcocMB:integrityMeasure

cryptographic means that identifies the change of the legally relevant software, measurement data and parameters within the instrument(s) and part(s)

LABEL	integrity measure
NOTE	Integrity measure is according to requirements P6/U6 of *WELMEC Software Guide 7.2*.
EXAMPLE	*0x7E33DA3A*
CARDINALITY	0 … 1
DATA TYPE	string

3.2.5.6 dcocMB:updateable

statement whether the software can be actualised

LABEL	updateable
CARDINALITY	1 … 1
DATA TYPE	boolean

3.2.5.7 dcocMB:dataStorage

statement whether the software enables keeping the measurement results to be available after completion of the measurement for later legally relevant purposes

LABEL	data storage
CARDINALITY	1 … 1
DATA TYPE	boolean

3.2.5.8 dcocMB:softwareSeparation

statement whether there is a separation of the software into legally relevant software modules and not legally relevant software modules

LABEL	software separation
CARDINALITY	1 … 1
DATA TYPE	boolean

3.2.6 dcocMB:hardwareInterface

physical connecting point of the instrument(s) and part(s)

NOTE	The element name and cardinality are given at the point where it is used.
OPTIONAL ATTRIBUTE	id

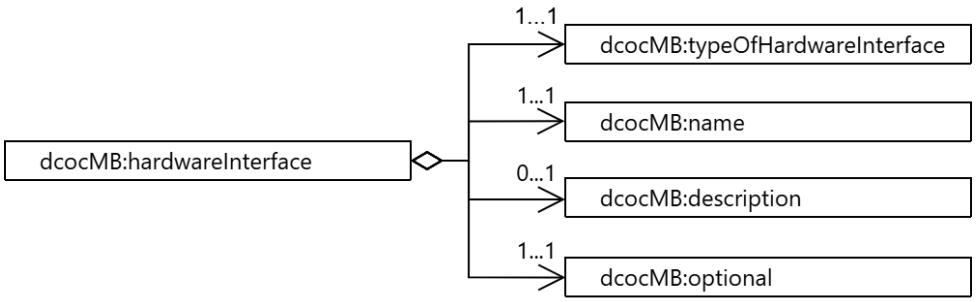


*Figure 32 - The subdivision of the data type **dcocMB:hardwareInterface** into the individual subelements*

3.2.6.1 dcocMB:typeOfHardwareInterface

type of the physical connecting point of the instrument(s) and part(s)

LABEL	hardware interface type
CARDINALITY	1 … 1
DATA TYPE	string
PREDEFINED LIST OF VALUES	connector, wireless module

3.2.6.2 dcocMB:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE 1	*USB 3.0 socket*
EXAMPLE 2	*USB 3.0 plug*
EXAMPLE 3	*USB-C socket*
EXAMPLE 4	*USB-C plug*
EXAMPLE 5	*RJ45 socket*
EXAMPLE 6	*RJ45 plug*
EXAMPLE 7	*HDMI socket*
EXAMPLE 8	*HDMI plug*

EXAMPLE 9 *D-SUB-9 socket*

EXAMPLE 10 *D-SUB-9 plug*

EXAMPLE 11 *Bluetooth*

CARDINALITY 1 … 1

DATA TYPE text

3.2.6.3 dcocMB:description

textual representation of the corresponding content element

LABEL description

CARDINALITY 0 … 1

DATA TYPE text

3.2.6.4 dcocMB:optional

statement whether the corresponding context element is optional

LABEL optional

CARDINALITY 1 … 1

DATA TYPE boolean

3.2.7 dcoc:byteData

encoded file

NOTE The element name and cardinality are given at the point where it is used.

OPTIONAL ATTRIBUTE id

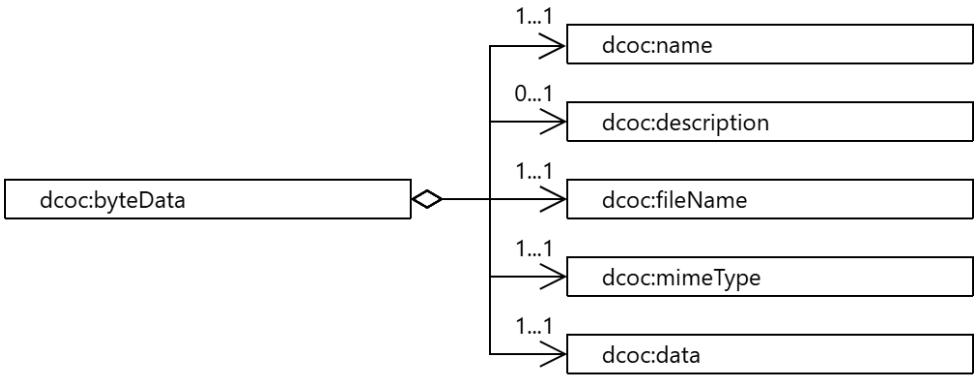


*Figure 33 - The subdivision of the data type **dcocMB:byteData** into the individual subelements*

3.2.7.1 dcoc:name

designation or proper name of the corresponding content element

LABEL	name
EXAMPLE	*seal plan*
CARDINALITY	1 … 1
DATA TYPE	text

3.2.7.2 dcoc:description

textual representation of the corresponding content element

LABEL	description
CARDINALITY	0 … 1
DATA TYPE	text

3.2.7.3 dcoc:fileName

designation of the encoded file

LABEL	file name
EXAMPLE	*picture.jpg*
CARDINALITY	1 … 1
DATA TYPE	string

3.2.7.4 dcoc:mimeType

underlying file type

LABEL	mime type
NOTE	Mime type is according to specification *Multipurpose Internet Mail Extensions*.
EXAMPLE	*base64*
CARDINALITY	1 … 1
DATA TYPE	string

3.2.7.5 dcoc:data

encoded data

LABEL	file
CARDINALITY	1 … 1
DATA TYPE	binary

3.3 Attributes

3.3.1 dcoc:schemaVersion

version of the schema

LABEL	schema version

EXAMPLE	*0.4.0*
DATA TYPE	string
RESTRICTION ON VALUE	The value is expressed as digit.digit.digit.

3.3.2 dcoc:id

identification number

LABEL	ID
EXAMPLE	*software1*
DATA TYPE	ID

3.3.3 dcocMB:refId

reference to the identification number

LABEL	reference
EXAMPLE	*software1*
DATA TYPE	IDREFS

3.3.4 dcoc:lang

language used

LABEL	language
DATA TYPE	string
RESTRICTION ON VALUE	code according to ISO 639

4. References

1. ISO/IEC 17065:2012. Conformity assessment — Requirements for bodies certifying products, processes and services.

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5. Version control

Issue Year	Significant changes
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