

Compatibility Checks (CC) for NAWIs

A VDMA project

Presentation for the
Metrology seminar 2024 CECIP GA
2024-06-06
Dr. Ulrich Rauchschalbe



CECIP European Weighing Industry

The past

- Outdated EXCEL sheet 'Made by PTB'
- Not maintained any more
- Calculations cannot be protected / all based on trust
- Copies of copies ... cause 'mutations'
- German only – copies existed e.g. in EN and DK
- Not suitable for Digital load cells
-

	A	B	C	D	E	F	G	H	I	J
1	Eichbehörden der Länder €									
2										
4	Anschrift Waagenbaufirma: [REDACTED]									
5	[REDACTED]									
8	a) Messtechnische und technische Daten									
10	Waage (NSW)	Genauigkeitsklasse		Klasse						-
11	Fabrik-Nr.:	Höchstlast	Eichwert	M_{max}	e			kg	kg	
12		Einbereichsausgabe						kg	kg	
13	Waagentyp:							kg	kg	
14								kg	kg	
15		Übersetzungsverhältnis		R						-
16		Anzahl der Wägezellen		N						-
17		Einschaltnullstellbereich		$IZSR$						kg
18	Bauartzulassung:	Ecklastzuschlag		NUD						kg
19		Totlast		DL						kg
20		additive Tarahöchstlast		$T+$						kg
21		Grenzen des Temperaturbereichs		T_{min}	T_{max}			°C	°C	
22	Zulassungsinhaber:	Kabellänge		L						m
23		Kabelquerschnitt		A						mm ²
25	Auswertegerät (AVG)	Genauigkeitsklasse		Klasse						-
26	Hersteller:	Größe zul. Anzahl der Teilungswerte		n_{zul}						-
27		Speisespannung für die Wägezelle(n)		U_{max}						V
28		Mindesteingangsspannung des AVG		U_{min}						mV
29	Typ:	Mindestmesssignal pro Eichwert		ΔU_{min}						μV
30		Grenzwerte des Lastwiderstandes		R_{Lmin}	R_{Lmax}			Ω	Ω	
31	Prüfbericht/-schein:	Grenzen des Temperaturbereichs		T_{min}	T_{max}			°C	°C	
32		Bruchteil der Eichfehlergrenze		β_{zul}						-
33	und/oder Bauartzulassung:	Anschlußart (4- oder 6 Leitertechnik)		Anzahl Leiter						-
34		max. Kabellänge/Kabelquerschnitt		$(L/A)_{max}$						m/mm ²
36	Wägezelle(n) (WZ)	Genauigkeitsklasse		Klasse						-
37	Hersteller:	Höchstlast (Nennlast)		E_{max}						kg
38		Mindestvorlast		E_{min}						kg
39		Wägezellenkennwert		C						mV/V
40	Typ:	Größe zul. Anzahl der Teilungswerte		n_{LC}						-
41		Kleinster zulässiger Teilungswert oder		ν_{min}						kg
42		Höchstteilungsfaktor		γ						-
43	Prüfbericht/-schein:	Kriechteilungsfaktor oder		Z						-
44		Rückkehr des Vorlastsignals		DR						kg
45		Widerstand der (einzelnen) Wägezelle		R_{Lr}						Ω



Goal

- WEB solution
- Hosted by VDAM
- Tested and certified by PTB
- Accepted by verification officials
- Full functionality for license holders
- Guest access with reduced functionality



Login screen for licensed users

WEB application
hosted by
VDMA

VDMA Services GmbH

VDMA Certificate of compatibility (CC)

EN

DE

ES

FR

IT

Certificate of compatibility (CC)

VDMA Services GmbH

Please login.

E-Mail *

Password *

Login

Multi-language



User management –company admins

CC List IND List LC List **User administration**

+ Search Search user

Status	E-Mail	First name	Last name	Admin	Note
Active	a.barth@schenckprocess.com	Alexander	Barth	No	Field service technician Darmstadt
Active	a.fiala@schenckprocess.com	Arthur	Fiala	No	Field service technician Oberhausen
Active	h.gattermair@schenckprocess.com	Helmut	Gattermair	No	Field Service Coordinator Austria Braunau
Active	j.hofferberth@schenckprocess.com	Jens	Hofferberth	No	Field service technician Darmstadt

Add / maintain company users



List of Indicators / Load cells

CC List	IND List	LC List	User administration
<input type="text" value="Search"/> <input type="button" value="Search IND"/> <input type="button" value="Import IND €"/>			
Type ↑	Test report	Manufacturer	Accuracy class
CONiQ	DE-19-NAWID-PTB007 / OIML R76/2006-A-DE1-2019.03	Schenck Process Europe GmbH	III
CONiQ SWE	DE-20-MI006-PTB008	Schenck Process Europe GmbH	III
DISOBOX Plus	DE-18-NAWID-PTB007 / D09-10.21	Schenck Process Europe GmbH	III
DISOBOX Plus SWE	DE-17-MI006-PTB009 / D09-10.21	Schenck Process Europe GmbH	III
DISOMAT Opus	DE-16-NAWID-PTB002 / D09-11.05	Schenck Process Europe GmbH	III
DISOMAT Opus SWE	DE-16-MI006-PTB028 / D09-11.05	Schenck Process Europe GmbH	III

- **Very useful for frequently used components**
- **THE key feature of the tool**



Data set for Indicators

IND	
Type CONIQ SWE	Test report / Test certificate DE-20-MI006-PTB008
Type examination certificate DE-20-MI006-PTB008	Manufacturer Schenck Process Europe GmbH
Accuracy class III	
Maximum number of verification intervals (n-ind) 6000	Load cell excitation voltage (Uexc) 5 V
Minimum input voltage for indicator (Umin) 0 mV	Minimum input voltage per verification scale interval for the IND (Δ Umin) 0,3 μV
Minimum load cell impedance (RLmin) 38 Ω	Maximum load cell impedance (RLmax) 4500 Ω
Lower limit of temperature range (Tmin) -30 °C	Upper limit of temperature range (Tmax) 50 °C
Fraction of the maximum permissible error (Pind) 0,5	Cable connection (4- or 6-wires) - Number of wires 6
6-wire technology: Maximum value of cable length per wire cross section ((L/A)max) - 4-wire technol.. 10000 m/mm ²	<input type="checkbox"/> Multichannel <input checked="" type="checkbox"/> Publicly available



File import for Indicators and Load Cells

Navigation menu: CC List | **IND List** | LC List | User administration

Search: + Search Search IND **Import IND €**

Type ↑	Test report	Manufacturer	Accuracy class
CONiQ	DE-19-NAWID-PTB007 / OIML R76/2006-A-DE1-2019.03	Schenck Process Europe GmbH	III
CONiQ SWE	DE-20-MI006-PTB008	Schenck Process Europe GmbH	III
DISOBOX Plus	DE-18-NAWID-PTB007 / D09-10.21	Schenck Process Europe GmbH	III
DISOBOX Plus SWE	DE-17-MI006-PTB009 / D09-10.21	Schenck Process Europe GmbH	III
DISOMAT Opus	DE-16-NAWID-PTB002 / D09-11.05	Schenck Process Europe GmbH	III
DISOMAT Opus SWE	DE-16-MI006-PTB028 / D09-11.05	Schenck Process Europe GmbH	III

- **Usefull new feature for frequent users**
- **Extra license required**



File import for Indicators and Load Cells

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	type	typeApproval	manufacturer	testingReport	accuracyClass	eMin	eMax	c	nLC	vMin	y	z	dr	rlc	tMin	tMax	plc
2	dataNoError1	typeApproval	manufacturer	testReport1	A	0	2	4	2	0	2	5	3	1	-1	0	0.4
3	dataNoError2	typeApproval	manufacturer	testReport2	C	0	2	4	2	0	2	5	3	1	-1	0	0.4
4	dataNoError3	typeApproval	manufacturer	testReport3	D	0	2	4	2	0	2	5	3	1	-1	0	0.4
5																	
6																	
7																	
8																	

LC Import Schema

Important Information:

The separator of the CSV file must be a ";" to be accepted.

There must not be a semicolon (";") in a cell.

The separator for floating point numbers must be a ".".

Spaces in the header of the CSV file are ignored.



- Example file provided
- Detailed data description
- Very strict format control – CSV !

Datatype	Name	Extrainfo	Verifikation
String	type	Name	
String	typeApproval	Type approval ID (if available)	
String	manufacturer	Manufacturer name	
String	testingReport	Test report	
String	accuracyClass	Possibilities: A; B; C; D	
Float	eMin	Minimum preload	eMin >= 0
Float	eMax	Maximum load/nominal load	eMax > eMin
Float	c	Load cell characteristic value (mV/V)	c > 0
Integer	nLC	Permissible max. number of division values	nLC > 0
Float	vMin	min. permissible pitch value (vMin or y is mandatory)	vMin >= 0
Integer	y	Maximum division factor	y > 0
Integer	z	Creepage factor (z or dr is mandatory)	z > 0
Float	dr	Return of the preload signal	dr > 0
Float	rlc	Input resistance	rlc >= 0
Integer	tMin	Minimum ambient temperature	
Integer	tMax	Maximum ambient temperature	tMax > tMin
Float	plc	Fraction of the calibration error limits (default: 0.7)	1 > plc >= 0



Compatibility Check – Header and scale

Scale construction company *
Schenck Process Europe GmbH

Customer
Muster SWE Tersus+RTN

Note

Created by
Jörg Pommeranz

Creation date
23.2.2022

Status

Header

- Author
- Status
-

Scale data

- Max
- Dead load
- ...
- Configure digital LCs here

Scale (NAWI)

Serial number
121xxxb

Type examination certificate
DE-17-MI006-PTB029

Type

Weighing module

Max
40000 kg

Reduction ratio (R)
1 -

Initial zero setting range (ZSR)
4 %

Dead load (DL)
8500 kg

Lower limit of temperature range (Tmin)
-10 °C

Scale type
Rollgangswaage

Registration owner
Schenck Process Europe GmbH

Accuracy Class

e
20 kg

Number of load cells (N)
4 -

Correction for non-uniform distributed load (NUD) %

Additive tare (T+) kg

Upper limit of temperature range (Tmax)
40 °C



Compatibility Check– Indicator and LC

Indicator (IND) - Type: DISOMAT Tersus SWE

Type DISOMAT Tersus SWE	Test report / Test certificate DE-17-MI006-PTB029
Type examination certificate DE-17-MI006-PTB029	Manufacturer Schenck Process Europe GmbH
Accuracy class III	
Maximum number of verification intervals (n-ind) 8000	
Lower limit of temperature range (Tmin) -30 °C	Upper limit of temperature range (Tmax) 40 °C
Fraction of the maximum permissible error (Pind) 0,5	

- Indicator / LC section**
- **Data preferably from data base**



Compatibility Check – Check and Export

Scale construction company *
Schenck Process Europe GmbH

Customer
Muster SWE Tersus+RTN

Note

Created by
Jörg Pommeranz

Creation date
23.2.2022

Status: Released

Compatibility check: **Passed**

	3.000	≥	2.000	Yes
(6d) Actual dead load of the load receptor to the minimum dead load of the LCs in kg				
	DL*R/N	≥	E _{min}	
	2.125	≥	0	Yes
(7) Verification scale interval of the NAWI and minimum LC scale interval (in kg) must be compatible.				
	e ₁ *R/√N	≥	v _{min} = E _{max} /Y	
	10	≥	1,1	Yes

Delete CC

As PDF Share R/C Link Copy Reset change Save

• CC OK

• Individual checks

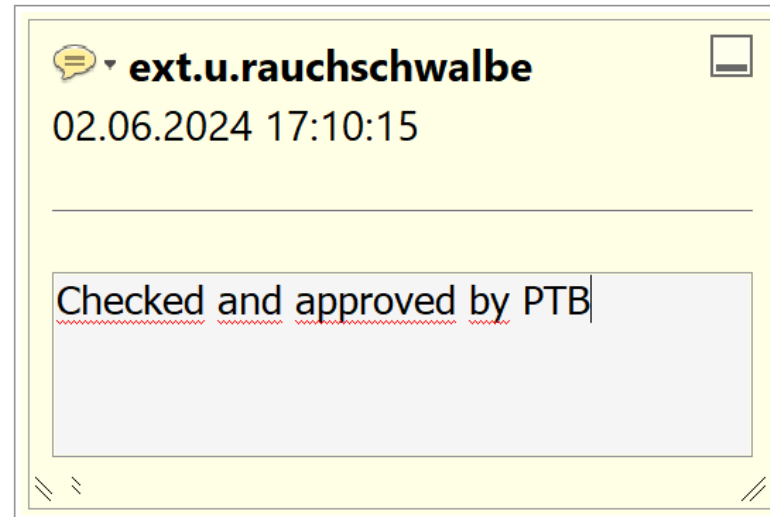
• Export as PDF

• Export link



Exported CC PDF

Created by: Jörg Pommeranz
Company: Schenck Process Europe GmbH
Creation date: 2022-02-23



**Comment function
enabled, e.g. for
verification officials**

Notes

Version: 0.2.1 Release date: 19.01.2021

Reference documents: OIML R76 (2006), WELMEC 2 (2015), EN 45501 (2015)

The software has been tested by the PTB (Test mark: DE-20-PB11-PTB001). On several case studies, the PTB was able to prove that the software performs the compatibility tests correctly.



Coming soon: New function - Data base maintenance

The screenshot displays a web application interface for data management. At the top, there is a navigation menu with five items: 'CC List', 'IND List' (highlighted in orange), 'LC List', 'IC List', and 'User administration'. Below the menu is a search bar with a plus icon and the text 'Search'. To the right of the search bar are two buttons: 'Search IND' and 'Delete INDs', with the latter being circled in red. Below the search bar is a table with four columns: a checkbox column, 'Type ↑', 'Test report', and 'Manufacturer'. The table contains seven rows of data. The second row, 'CONiQ SWE', has its checkbox circled in red. The 'Delete INDs' button is also circled in red.

<input type="checkbox"/>	Type ↑	Test report	Manufacturer
<input type="checkbox"/>	CONiQ	DE-19-NAWID-PTB007 / OIML R76/2006-A-DE1-2019.03	Schenck Process Europe GmbH
<input checked="" type="checkbox"/>	CONiQ SWE	DE-20-MI006-PTB008	Schenck Process Europe GmbH
<input type="checkbox"/>	DISOBOX Plus	DE-18-NAWID-PTB007 / D09-10.21	Schenck Process Europe GmbH
<input checked="" type="checkbox"/>	DISOMAT Opus	DE-16-NAWID-PTB002 / D09-11.05	Schenck Process Europe GmbH
<input type="checkbox"/>	DISOMAT Opus SWE	DE-16-MI006-PTB028 / D09-11.05	Schenck Process Europe GmbH
<input checked="" type="checkbox"/>	DISOMAT Tersus	DE-17-NAWID-PTB008 / D09-11.04	Schenck Process Europe GmbH

- **Select multiple entries**
- **Delete**
- ...



Coming soon: New function - Export / Modify / Import

KN Übersicht / AWG

CC List

IND List

LC List

IC List

User administration



Search

Search IND

Delete INDs

Import IND €

Export

<input checked="" type="checkbox"/>	Type ↑	Test report	Manufacturer	Accuracy class
<input type="checkbox"/>	CONiQ	DE-19-NAWID-PTB007 / OIML R76/2006-A-DE1-2019.03	Schenck Process Europe GmbH	III
<input checked="" type="checkbox"/>	CONiQ SWE	DE-20-MI006-PTB008	Schenck Process Europe GmbH	III
<input checked="" type="checkbox"/>	DISOBOX Plus	DE-18-NAWID-PTB007 / D09-10.21	Schenck Process Europe GmbH	III
<input checked="" type="checkbox"/>	DISOMAT Opus	DE-16-NAWID-PTB002 / D09-11.05	Schenck Process Europe GmbH	III
<input type="checkbox"/>	DISOMAT Opus SWE	DE-16-MI006-PTB028 / D09-11.05	Schenck Process Europe GmbH	III
<input checked="" type="checkbox"/>	DISOMAT Tersus	DE-17-NAWID-PTB008 / D09-11.04	Schenck Process Europe GmbH	III



Coming soon: New function – Export / Modify / Import

id	type	typeApproval	manufacturer	testingReport	accuracyClass	nInd	uExc	uMin	deltaUMin	rlMin	rlMax	tMin	tMax	
49	DISCOMAT Tersus	DE-17-NAWID-PTB008	Schenck Process Europe GmbH	DE-17-NAWID-PTB008 /	III		8000	12.0	0.0	0.4	43.0	4500.0	-30.0	40.0
65	DISCOMAT Plus	DE-18-NAWID-PTB007	Schenck Process Europe GmbH	DE-18-NAWID-PTB007 /	III		10000	5.0	0.0	0.5	43.0	4500.0	-30.0	50.0
1167	DISCOMAT Opus	DE-16-NAWID-PTB002	Schenck Process Europe GmbH	DE-16-NAWID-PTB002 /	III		6000	5.0	0.0	0.6	43.0	4500.0	-20.0	50.0
2923	CONIQ SWE	DE-20-MI006-PTB008	Schenck Process Europe GmbH	DE-20-MI006-PTB008	III		6000	5.0	0.0	0.3	38.0	4500.0	-30.0	50.0


**Data format differs
from File Import – do
not mix**

Import IND

You can use this function to import any number of evaluation devices from a csv file.

ATTENTION: This application is chargeable. The costs are €1000 for the period of... You will receive the invoice from VDMA Services GmbH by e-mail. The conditions of [ASP contract](#) apply.

The structure of the data can be found in the [Data Field Information for IND Import](#)
[Example File for IND Import\(.csv\)](#)

awg_ind_export_2024_5_2_17h21.csv 

Stand: 2024-06-02 15:23

Publicly available

Overwrite existing data(only works if data has fitting ids)

form.button.overwrite.create

Upload



Coming soon: New function - Add test reports

VDMA Services GmbH

VDMA Certificate of compatibility (CC) EN

KN Overview / {{icTitle}}

CC List IND List LC List **IC List** User administration

+ Search

Inspection Certificate Number

IC

File
d09-11.04de.pdf

Inspection Certificate Number
D09-11.04de

Type
WZ

Delete IC

Reset change Save




New function: Link test report to LC / IND / CC

LC select







Search Search LC Select Multiple

<input type="checkbox"/>	Type	Test report / Test certificate	Manufacturer	Accuracy class	Maximum capacity (kg)	Number of verification intervals
<input type="checkbox"/>	CSP-M	D09-98.05	RTE Revere Transducers Europe	C	40.002	3000
<input type="checkbox"/>	PR6221 50t C3	D09-03.15	Sartorius (GWT)	C	50.002	3000
<input checked="" type="checkbox"/>	RTN 22t C3	D09-96.20	Schenck Process Europe GmbH	C		
<input checked="" type="checkbox"/>	RTN 22t C5 / C4 MI7,5	D09-96.20	Schenck Process Europe GmbH	C		
<input checked="" type="checkbox"/>	RTN 33t C3	D09-96.20	Schenck Process Europe GmbH	C		

IC

File: d09-11.04de.pdf  Inspection Certificate Number: D09-11.04de

Type: WZ

 RTN 22t C3  RTN 33t C3  RTN 68t C3  RTN 22t C5 / C4 MI7,5  

Delete IC Reset change Save



New function: Export test reports with CC

(9) Allowed impedance range for the electronic IND and actual LC impedance in Ohm

	R_{Lmin}	\leq	$R_{LC/N}$	\leq	F
	38	\leq	1.120	\leq	4

(10) Length of extension cable between LC(s) and IND per wire cross section of this cable in m/mm

	(L/A)	\leq	(L/
	400	\leq	10

Delete CC

As PDF

Download test certificates

Share R/O Link

C



Licenses

- Guest access, free of charge, reduced functionality
 - No data base
- Association license – for CECIP members
- Company license
 - One or more Admins
- Single user license – e.g. for a small service company
- Upgrade license for file upload – single user



Test report



Physikalisch-Technische Bundesanstalt
Nationales Metrologieinstitut



Prüfbericht

Test Report

Gegenstand: <i>Object:</i>	Software
Hersteller: <i>Manufacturer:</i>	VDMA Services GmbH
Typ: <i>Type:</i>	VDMA Kompatibilitätsnachweis
Gerätenummer: <i>Serial No.:</i>	Version 0.2.1
Auftraggeber: <i>Customer:</i>	VDMA Services GmbH Lyoner Str. 18 60528 Frankfurt am Main, Deutschland
Anzahl der Seiten:	30



Tutorial

Welcome to our website

Create compatibility certificate without login

You can carry out a compatibility check with your data, download the results as a pdf file and send them. Your data will be stored for 5 days and then deleted.

Login

If you have already registered, you can simply log in here and use all database functions.

Registration

You can register for a single-user/multi-user or association licence. You will then receive access to our database. Your data and compatibility checks will be stored permanently.

Create compatibility
certificate without login

Login

The compatibility check is based on OIML R76: 2006, EN 45501: 2015 and WELMEC 2: 2015.

The software has been tested and approved by the PTB. Test mark: DE-20-PB11-PTB001

Test report: [test report](#)

Approved kernel version: 0.2.1

Current Version: 1.0.3 (kernel version 0.2.1)

Note: VDMA Services GmbH assumes no liability for the correctness and proper further use of the results obtained and any malfunctions caused by an operating error.

DE and EN



Contact Information

This presentation:

Ulrich Rauchschalbe

ext.u.rauchschalbe@schenckprocess.com

Licenses, Tutorial, etc.:

Hans-Günter Heil

hans-guenter.heil@vdma.org



THANK YOU FOR YOUR INTEREST

CECIP, European Weighing Industry
Bluepoint Building. Boulevard Auguste Reyers 80. Brussels
+32 (0)2 706 82 15
info@cecip.eu



CECIP European Weighing Industry