IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx BVS 11.0052X**

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Status: **Current**

Issue No: 10

Date of Issue: 2023-06-05

Applicant: **Endress+Hauser Conducta GmbH+Co. KG**
Dieselstr. 24
70839 Gerlingen
Germany

Equipment: **Inductive sensor-cable connection system MEMOSENS consisting of Sensor and measuring cable Type : Details see "Subject and Type"**

Optional accessory:

Type of Protection: **Intrinsic safety "i"**

Marking: See Annex

Certificate history:

Issue 9 (2021-06-16)
Issue 8 (2019-06-05)
Issue 7 (2018-10-10)
Issue 6 (2017-07-26)
Issue 5 (2016-03-14)
Issue 4 (2015-08-27)
Issue 3 (2014-07-16)
Issue 2 (2013-08-07)
Issue 1 (2012-12-17)
Issue 0 (2011-07-01)

Approved for issue on behalf of the IECEx Certification Body: **Dr Franz Eickhoff**

Position: **Senior Lead Auditor, Certification Manager and officially recognised expert**

Signature:
(for printed version)

Date:
(for printed version)

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Certificate issued by:

DEKRA Testing and Certification GmbH
Certification Body
Dinnendahlstrasse 9
44809 Bochum
Germany

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Date of issue: 2023-06-05 Issue No: 10

Manufacturer: **Endress+Hauser Conducta GmbH+Co. KG**
Dieselstr. 24
70839 Gerlingen
Germany

Manufacturing locations:

Endress+Hauser Conducta GmbH+Co. KG
Dieselstr. 24
70839 Gerlingen
Germany

Endress + Hauser Conducta Inc.
4123 E. La Palma Ave.
Anaheim, CA 92807
United States of America

Endress+Hauser Conducta GmbH+Co. KG
Landsberger Straße 28
04736 Waldheim
Germany

See following pages for more locations

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/BVS/ExTR11.0074/10

Quality Assessment Reports:

DE/BVS/QAR06.0005/11 DE/TUR/QAR13.0004/04 DE/TUR/QAR14.0002/05

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

General product information:

The inductive sensor-cable connection system MEMOSENS, consisting of a sensor and of the measuring cable type ***YK10-*******+*** or type ***YK20-*********+***, is used to measure different parameters of fluid media. For the inductive sensor-cable connection system MEMOSENS, instead of measuring cable type ***YK10-*******+*** or type ***YK20-*********+***, an in hardware and function identical and IECEx-certified measuring cable can be used.

The connection between sensor and measuring cable is galvanically isolated via a completely isolated connection system (inductive coupling).

The sensor's and measuring cable's electronic circuits are completely encapsulated.

Subject and Type:

See Annex

Parameters:

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:
See Annex

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
The manufacturer Endress+Hauser Analytical Instruments (Suzhou) Co., LTD. was added.

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Additional manufacturing locations:

Endress+Hauser Analytical Instruments(Suzhou) Co.,LTD.
No.31 JiangTianLiLu
Suzhou Industrial Park 215126
China

Annex:

BVS_11_0052X_E+H Conducta_Annex_issue10.pdf

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Certificate No.: **IECEx BVS 11.0052X issue No.: 10**
Annex

General product information:

The inductive sensor-cable connection system MEMOSENS, consisting of a sensor and of the measuring cable type ***YK10-*******+*** or type ***YK20-*********+***, is used to measure different parameters of fluid media. For the inductive sensor-cable connection system MEMOSENS, instead of measuring cable type ***YK10-*******+*** or type ***YK20-*********+***, an in hardware and function identical and IECEx-certified measuring cable can be used.

The connection between sensor and measuring cable is galvanically isolated via a completely isolated connection system (inductive coupling).

The sensor's and measuring cable's electronic circuits are completely encapsulated.

Subject and Type:

Measuring cable type *YK10- * ** * *** +*

- *** +*: Optional, one or more characters (non-Ex-relevant)
- ** *: Only by OYK10 or OCYK10, Label partner (non-Ex-relevant)
- *: Connection: 1 = Cable; 2 = Cable with plug-in connector
- **: Cable length ≤ 100 m
- *: G or I or E (non-Ex-relevant)
- *: C or O or OC (non-Ex-relevant)

Measuring cable type *YK20- ** ** ** *** +*

- *** +*: Optional, one or more characters (non-Ex-relevant)
- ** **: Only by OYK20 or OCYK20, Label partner (non-Ex-relevant)
- **: Connection: C1 = Cable with plug-in connector M12; C2 = Cable with plug-in connector M8
- **: Cable length ≤ 100 m
- *: BA or IA (non-Ex-relevant)
- *: C or O or OC (non-Ex-relevant)

pH/ORP-Sensor

type *PS ** D- * ** * * G *** +*

- Optional, one or more characters (non-Ex-relevant)
- Only by OPS or OCPS, Label partner (non-Ex-relevant)
- Electrolyte supply (only for type CPS4*D; non Ex-relevant)
- Shaft length max. 600 mm (non-Ex-relevant)
- 2 characters for application specified version (non-Ex-relevant)
- 7 = Basic version
  8 = SIL version (only for type CPS11D, CPS71D, CPS91D)
- 11, 12, 16, 31, 41, 42, 71, 72, 76, 91, 92, 96 (details see table below)
- C or O or OC (non-Ex-relevant)

Sensor-simulator Memocheck Plus

type *YP01D- **** * *** +*

- Optional, one or more characters (non-Ex-relevant)
- Only by OYP01D or OCYP01D, Label partner (non-Ex-relevant)
- G or I (non-Ex-relevant)
- non-Ex-relevant
- C or O or OC (non-Ex-relevant)

Sensor-simulator Memocheck

type *YP02D- *** * *** +*

- Optional, one or more characters (non-Ex-relevant)
- Only by OYP02D or OCYP02D, Label partner (non-Ex-relevant)
- G or I (non-Ex-relevant)
- non-Ex-relevant
- C or O or OC (non-Ex-relevant)

Oxymax (H)

type *OS22D- BA ***** 3 *** +*

- Optional, one or more characters (non-Ex-relevant)
- Only by OOS22D or OCOS22D, Label partner (non-Ex-relevant)
- non-Ex-relevant
- Material membrane cap
  B = Stainless steel
  D = Titanium
  E = Alloy C22
- non-Ex-relevant
- C or O or OC (non-Ex-relevant)

Oxymax (W) type COS51D- G * 8 * 0
- non-Ex-relevant

Tophit type *PS441D- 7 * * * G *** +*
- Optional, one or more characters (non-Ex-relevant)
- Only by OPS441D or OCPS441D, Label partner (non-Ex-relevant)
- non ex-relevant
- A, B (electrolyte supply), non-Ex-relevant

Tophit type *PS471D- 7 * * G *** +*
- Optional, one or more characters (non-Ex-relevant)
- Only by OPS471D or OCPS471D, Label partner (non-Ex-relevant)

Tophit type *PS491D- 7 * * G *** +*
- Optional, one or more characters (non-Ex-relevant)
- Only by OPS491D or OCPS491D, Label partner (non-Ex-relevant)
- non-Ex-relevant
- Shaft length max. 600 mm
- C or O or OC (non-Ex-relevant)

Condumax (W) type CLS15D-A ** G

Condumax (W) type CLS15D-B ** G

Condumax (W) type CLS15D-L ** G

Condumax (W) type *LS21D- *** G
- non-Ex-relevant
- C or O or OC (non-Ex-relevant)

Condumax (H) type *LS16D- **** G *** +*
- Optional, one or more characters (non-Ex-relevant)
- Only by OLS16D or OCLS16D, Label partner (non-Ex-relevant)
- non-Ex-relevant
- C or O or OC (non-Ex-relevant)

pH-Sensor type *PS171D-BA7 * ** * *** +*
- Optional, one or more characters (non-Ex-relevant)
- Only by OPS171D or OCPS171D, Label partner (non-Ex-relevant)
- Shaft length max. 600 mm (non-Ex-relevant)
- non-Ex-relevant
- 1 character for application specified version (non-Ex-relevant)
- C or O or OC (non-Ex-relevant)

pH-email Sensor

type *PS341D-7 * ** * *** +*

- Optional, one or more characters (non-Ex-relevant)
- Only by OPS341D or OCPS341D, Label partner (non-Ex-relevant)
- G or I (non-Ex-relevant)
- Process connection
- 1 character for application specified version (non-Ex-relevant)
- C or O or OC (non-Ex-relevant)

Conductivity Sensor

type *LS82D-** ** * *** +*

- Optional, one or more characters (non-Ex-relevant)
- Only by OLS82D or OCLS82D, Label partner (non-Ex-relevant)
- Shaft material (metal)
- Process connection
- BA or IA (non-Ex-relevant)
- C or O or OC (non-Ex-relevant)

Dissolved Oxygen Sensor

type *OS81D-** ** * * * 3 *** +*

- Optional, one or more characters (non-Ex-relevant)
- Only by OOS81D or OCOS81D, Label partner (non-Ex-relevant)
- 1 = O-ring material EPDM
3 = O-ring material FFKM
9 = Other O-ring material e.g. Silicone, temperature range identical to 1
- non-Ex-relevant
- Process connection, Shaft length max. 600 mm, diameter (non-Ex-relevant)
- BA or IA (non-Ex-relevant)
- C or O or OC (non-Ex-relevant)

MEMOSENS Measuring cable and Sensor details - type, designation, marking, ambient temperature range depend on temperature class:

Type	Designation	Marking	Ambient temperature range
YK10-****+***	Measuring cable	**Ex ia IIC T3/T4/T6 Ga**	-15 °C ≤ T_a ≤ +135 °C (T3) -15 °C ≤ T_a ≤ +120 °C (T4) -15 °C ≤ T_a ≤ + 70 °C (T6)
YK20-******+***	Measuring cable	**Ex ia IIC T6 Ga**	-10 °C ≤ T_a ≤ + 50 °C (T6)
PS11D-*G***+*** ***PS12D-****G***+*** ***PS16D-****G***+***	Orbisint	**Ex ia IIC T3/T4/T6 Ga**	-15 °C ≤ T_a ≤ +135 °C (T3) -15 °C ≤ T_a ≤ +120 °C (T4) -15 °C ≤ T_a ≤ + 70 °C (T6)
PS31D-*G***+***	Memosens	**Ex ia IIC T4/T6 Ga**	0 °C ≤ T_a ≤ + 80 °C (T4) 0 °C ≤ T_a ≤ + 70 °C (T6)
PS41D-**G***+*** ***PS42D-*****G***+***	Ceraliquid	**Ex ia IIC T3/T4/T6 Ga**	-15 °C ≤ T_a ≤ +135 °C (T3) -15 °C ≤ T_a ≤ +120 °C (T4) -15 °C ≤ T_a ≤ + 70 °C (T6)
PS71D-*G***+*** ***PS76D-****G***+***	Ceragel	**Ex ia IIC T3/T4/T6 Ga**	0 °C ≤ T_a ≤ +135 °C (T3) 0 °C ≤ T_a ≤ +120 °C (T4) 0 °C ≤ T_a ≤ + 70 °C (T6)
PS72D-*G***+***	Ceragel	**Ex ia IIC T3/T4/T6 Ga**	-15 °C ≤ T_a ≤ +135 °C (T3) -15 °C ≤ T_a ≤ +120 °C (T4) -15 °C ≤ T_a ≤ + 70 °C (T6)
PS91D-*G***+*** ***PS92D-****G***+*** ***PS96D-****G***+***	Orbipore	**Ex ia IIC T4/T6 Ga**	0 °C ≤ T_a ≤ +110 °C (T4) 0 °C ≤ T_a ≤ + 70 °C (T6)
YP01D-*****+***	Memocheck Plus	**Ex ia IIC T6 Gb**	-15 °C ≤ T_a ≤ + 70 °C (T6)
YP02D-****+***	Memocheck	**Ex ia IIC T6 Gb**	-15 °C ≤ T_a ≤ + 70 °C (T6)
OS22D-BAB*3***+* ***OS22D-BA***D*3***+* ***OS22D-BA***E*3***+*	Oxymax or Oxymax H	**Ex ia IIC T3/T4/T6 Ga**	- 5 °C ≤ T_a ≤ +135 °C (T3) - 5 °C ≤ T_a ≤ +120 °C (T4) - 5 °C ≤ T_a ≤ + 70 °C (T6)
COS51D-G*8*0	Oxymax or Oxymax W	**Ex ia IIC T6 Ga**	- 5 °C ≤ T_a ≤ + 50 °C (T6)
PS441D-7G***+*** ***PS471D-7**G***+***	Tophit	**Ex ia IIC T3/T4/T6 Ga**	-15 °C ≤ T_a ≤ +135 °C (T3) -15 °C ≤ T_a ≤ +120 °C (T4) -15 °C ≤ T_a ≤ + 70 °C (T6)
PS491D-7**G+***	Tophit	**Ex ia IIC T4/T6 Ga**	-15 °C ≤ T_a ≤ +110 °C (T4) -15 °C ≤ T_a ≤ + 70 °C (T6)

Type	Designation	Marking	Ambient temperature range
CLS15D-AG**	Condumax or Condumax W	**Ex ia IIC T3/T4/T6 Ga**	-20 °C ≤ T_a ≤ +135 °C (T3) -20 °C ≤ T_a ≤ +120 °C (T4) -20 °C ≤ T_a ≤ + 70 °C (T6)
CLS15D-BG** **CLS15D-L**G**	Condumax or Condumax W	**Ex ia IIC T3/T4/T6 Ga**	-20 °C ≤ T_a ≤ +135 °C (T3) -20 °C ≤ T_a ≤ +100 °C (T4) -20 °C ≤ T_a ≤ + 50 °C (T6)
LS21D-G**	Condumax or Condumax W	**Ex ia IIC T3/T4/T6 Ga**	-20 °C ≤ T_a ≤ +135 °C (T3) -20 °C ≤ T_a ≤ +115 °C (T4) -20 °C ≤ T_a ≤ + 65 °C (T6)
LS16D-*G***+*	Condumax or Condumax H	**Ex ia IIC T3/T4/T6 Ga**	- 5 °C ≤ T_a ≤ +135 °C (T3) - 5 °C ≤ T_a ≤ +115 °C (T4) - 5 °C ≤ T_a ≤ + 65 °C (T6)
PS171D-BA7****+*	pH-Sensor	**Ex ia IIC T3/T4/T6 Ga**	0 °C ≤ T_a ≤ +135 °C (T3) 0 °C ≤ T_a ≤ +120 °C (T4) 0 °C ≤ T_a ≤ + 70 °C (T6)
PS341D-7****+*	pH-enamel Sensor	**Ex ia IIC T3/T4/T6 Ga**	-15 °C ≤ T_a ≤ +135 °C (T3) -15 °C ≤ T_a ≤ +120 °C (T4) -15 °C ≤ T_a ≤ + 70 °C (T6)
LS82D-*****+*	Conductivity Sensor	**Ex ia IIC T3/T4/T6 Ga**	-20 °C ≤ T_a ≤ +140 °C (T3) -20 °C ≤ T_a ≤ +120 °C (T4) -20 °C ≤ T_a ≤ + 70 °C (T6)
OS81D-***13***+* ***OS81D-******93***+*	Dissolved Oxygen Sensor	**Ex ia IIC T3/T4/T6 Ga**	-10 °C ≤ T_a ≤ +130 °C (T3) -10 °C ≤ T_a ≤ +120 °C (T4) -10 °C ≤ T_a ≤ + 70 °C (T6)
OS81D-***33***+*	Dissolved Oxygen Sensor	**Ex ia IIC T3/T4/T6 Ga**	0 °C ≤ T_a ≤ +130 °C (T3) 0 °C ≤ T_a ≤ +120 °C (T4) 0 °C ≤ T_a ≤ + 70 °C (T6)

Parameters :

All sensors listed above, in connection with the measuring cable type ***YK10-*******+*** or type ***YK20-*********+*** or an in hardware and function identical and IECEx-certified measuring cable, may be connected to the sensor module FSDG1 of the field measuring device type Liquiline M CM42-……..
(TÜV Rheinland Industrie Service GmbH – IECEx TUR 11.0007X)
as well as to the communication module type 2DS Ex-i of the transmitter type Liquiline CM44**-***
(TÜV Rheinland Industrie Service GmbH – IECEx TUR 21.0004X).

Furthermore, the connection of all above listed sensors with measuring cable to an intrinsically safe output circuit (Ex ia IIC) with the following maximum values is possible:

Maximum output voltage	U_o	DC	5.1	V
Maximum output current	I_o		130	mA
Maximum output power (linear output characteristic)	P_o		166	mW

The maximum internal capacity and inductivity of the intrinsically safe output circuit may not exceed the following maximum values:

Maximum internal capacity	C_i	15	µF
Maximum internal inductivity	L_i	95	µH

Alternative:

Maximum output voltage	U_o	DC	5.04	V
Maximum output current	I_o		80	mA
Maximum output power (trapezoid output characteristic)	P_o		112	mW

The maximum internal capacity and inductivity of the intrinsically safe output circuit may not exceed the following maximum values:

Maximum internal capacity	C_i	14.1	µF
Maximum internal inductivity	L_i	237.2	µH

Further connectivity's can be taken from the actual manufacturer's instructions.

Furthermore, the connection of power limited MEMOSENS sensors (P_i is defined) to the power limited inductive coupling of the measuring cable type ***YK10-*******+*** or type ***YK20-*********+*** is possible considering of the following value:

Maximum output power	P_o	178	mW

Note: P_o is the maximum possible value under conditions mentioned above and shall be used for all calculations.

Temperature class and ambient temperature range – see table above.

Specific Conditions of Use:

1 The inductive sensor-cable connection system MEMOSENS, consisting of the sensors and of

the measuring cable type ***YK10-*******+*** or type ***YK20-*********+*** may be used in the following ambient temperature range: Temperature class and ambient temperature range – see table above.

2 The measuring cable type ***YK10-*******+*** or type ***YK20-*********+*** and its connecting head must be protected from electrostatic charging, if installed through areas of EPL Ga (Zone 0).

3 For the sensors type ***PS11D-****G***+***, ***PS12D-****G***+***, ***PS16D-****G***+***, ***PS31D-*****G***+***, ***PS41D-*****G***+***, ***PS42D-*****G***+***, ***PS71D-****G***+***, ***PS72D-****G***+***, ***PS76D-****G***+***, ***PS91D-****G***+***, ***PS92D-****G***+***, ***PS96D-****G***+***, ***YP01D-********+***, ***YP02D-*******+*** and ***PS171D-BA7*******+*** valid:
The sensors may not be operated in electrostatically critical processing conditions. Intense vapour or dust flows directly impacting on the connection system must be avoided.

4 For the sensor type ***OS22D-BA*****3***+*** and ***PS341D-7*******+*** valid:
The sensors may not be operated in electrostatically critical processing conditions.
Intense vapour or dust flows directly impacting on the connection system must be avoided.
The metallic parts of the sensors have to be mounted at the mounting location electrostatically conductive (< 1 MΩ).
For the non-metallic sensor shaft of type ***PS341D-7*******+***: Operation in product application intended fluid media providing conductivity of at least 10 nS/cm can be assumed as electrostatic uncritical.

Additional for the sensor type ***OS22D-BA***D*3***+*** valid:
The sensor shaft must be effectively protected against mechanical influences such as impacts or mechanical friction.

5 For the sensors type **COS51D-G*8*0, *PS441D-7***G*** +*, *PS471D-7**G*** +*** and ***PS491D-7**G*** +*** valid: The sensors may not be operated on processing conditions, in which an electrostatic loading of the sensor and the connecting system is to be counted. Operation in product application intended fluid media providing conductivity of at least 10 nS/cm can be assumed as electrostatic uncritical.

6 For the sensors type **CLS15D-A**G**, **CLS15D-B**G**, **CLS15D-L**G**, ***LS21D-***G** and ***LS16D-****G***+*** valid:
Metallic process connection parts have to be mounted at the mounting location electrostatically conductive (< 1 MΩ).
The sensors type **CLS15D-A**G**, **CLS15D-B**G** and **CLS15D-L**G** with non-metallic process connection and the sensor type ***LS21D-***G** may only be used in liquid media with a conductivity of at least 10 nS/cm.
The sensors type **CLS15D-A**G**, **CLS15D-B**G** and **CLS15D-L**G** with non-metallic process connection may not be operated on processing conditions, in which an electrostatic loading of the sensor and in particular of the electrically separated outer electrode, could be expected to occur.

7 For the sensor type ***LS82D-********+*** and ***OS81D-*******3***+*** valid:
The sensor may not be operated in electrostatically critical processing conditions.
Intense vapour or dust flows directly impacting on the connection system must be avoided.
The metallic parts of the sensor have to be mounted at the mounting location electrostatically conductive (< 1 MΩ).

Marking:

For the measuring cable type ***YK10-*******+*** and the sensors type ***PS11D-****G***+***, ***PS12D-****G***+***, ***PS16D-****G***+***, ***PS41D-*****G***+***, ***PS42D-*****G***+***, ***PS71D-****G***+***, ***PS72D-****G***+***, ***PS76D-****G***+***, ***OS22D-BA*****3***+*, ***PS441D-7***G***+***, ***PS471D-7**G***+***, **CLS15D-A**G, CLS15D-B**G, CLS15D-L**G, *LS16D-****G***+***, *LS21D-***G, *PS171D-BA7*******+***, ***PS341D-7*******+***, ***LS82D-********+***, ***OS81D-*******3***+***:

The name of the manufacturer or his trademark
Type
Ex ia IIC T3/T4/T6 Ga
Serial number
Certificate number

For the sensors type ***PS31D-*****G***+***, ***PS91D-****G***+***, ***PS92D-****G***+***, ***PS96D-****G***+***, ***PS491D-7**G*** +***:

The name of the manufacturer or his trademark
Type
Ex ia IIC T4/T6 Ga
Serial number
Certificate number

For the Sensor-simulators type ***YP01D-********+***, ***YP02D-*******+***:

The name of the manufacturer or his trademark
Type
Ex ia IIC T6 Gb
Serial number
Certificate number

For the sensor type **COS51D-G*8*0** and the measuring cable type ***YK20-*********+***:

The name of the manufacturer or his trademark
Type
Ex ia IIC T6 Ga
Serial number
Certificate number