Certificate of Compliance

Certificate: 80021719 **Master Contract:** 205557

Project: 80063052 **Date Issued:** 2021-01-21

Issued To: **Endress+Hauser Conducta GmbH & Co. KG**
Dieselstraße 24
Gerlingen, Baden-Württemberg, 70839
Germany

Attention: Marco Rottmann

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: *Peter Do*
Peter Do

PRODUCTS

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations

CLASS 2258 84 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations– Certified to U.S. Standards

Ex ia IIC T6…T4 Ga
Class I, Zone 0 AEx ia IIC T6…T4 Ga
IS Class I, Division 1, Groups A, B, C and D T6…T4

Inductive sensor-cable connection system MEMOSENS, consisting of a sensor and the measuring cable type xYK10 or type xYK20 is used to measure different parameters of fluid media.

The sensors in conjunction with measuring cable xYK10, xYK20 (max. length 100m) may be connected to the intrinsic safe digital sensor module FSDG1 output of CSA certified Liquiline CM42 or equivalent providing the following maximum values as described below. In particular the effective inner inductivity and capacity of the approved, intrinsic safe sensor output may not exceed the values given below. Install per control drawing XA01687C.

1. Entity Parameter Set	2. Entity Parameter Set
Uo = 5.1 V	Uo = 5.04 V
Io = 130 mA	Io = 80 mA
Po = 166 mW (linear output characteristic)	Po = 112 mW (trapezoid output characteristic)
Ci = 15 µF	Ci = 14.1 µF
Li = 95 µH	Li = 237.2 µH

Furthermore, the connection of power limited Memosens sensors (Pi is defined) to the power limited inductive coupling of measuring cable xYK10 and xYK20 is possible considering of the following value:
Maximum output power P_o = 178 mW (except for sensor type CLS50D).

Digital sensor types are:

- pH/ORP glass sensor type **xPSxxD-bccdeaafff +***
- pH/ORP sensor type **CPF81D-bccdaa +*, xPF82D-bccdaa +***
- pH sensor type **xPS171D-aabghhdfff +***
- pH ISET sensor type **xPS4x1D-bdegaafff +***
- Conductivity sensor type **CLS15D-ikkaa, xLS21D-Ckkaa, CLS16D-kkccaa+***
- Conductivity sensor type **xLS82D-aakklfff +***
- Conductivity measuring inductive sensor type **CLS50D-aakkmn+***
- Oxygen sensor type **xOS22D-aacckkoppfff+***
- Oxygen sensor type **COS21D-ccqaafff+***
- Oxygen sensor type **COS51D-aaS8r+***
- Dissolved Oxygen sensor type **xOS81D-aakkslt3fff+***

The cable types are:

- Measuring cable type **xYK10-aauuvfff +***
- Measuring cable type **xYK20-aauuwfff +***

Order codes:

xx = 11, 12, 16, 41, 42, 71, 72, 76, 91, 92, 96 (differs by name and ambient temperature, see table below)
4x1= 441, 471, 491 (differs in ambient temperature, see table below)
aa = 1 or 2 character identifier for Approval agency in Hazardous area (CC, C2, G, O, F, BA, 8A etc.)
b = 7, basic version; 8, SIL version, for xPS11D, xPS71D and xPS91D use only
g = 1 character for application specified or additional feature (not relevant for safety)
cc = 1 or 2 characters for application specified (not relevant for safety)
hh = 2 characters for internal reference for xPS171D use only (not relevant for safety)
d = 1 character for shaft length, maximum 600mm (not relevant for safety)
e = 1 character for electrolyte supply for xPS4xD and xPS441D use only (not relevant for safety)
fff = 3 character determining OEM label partner (not relevant for safety)
i = A, B for CLS15D use only (measurement range)
kk = 2 characters for process connection and material (not relevant for safety)
l = 1 character for sensor material (shaft material, metal)
m = B, C, D for CLS50D use only (material shaft/thread)

n = 1 character for cable length for CLS50D use only (maximum length 100m)
o = B (SS), D (Titanium), E (AlloyC22), membrane cup material for xOS22D use only
p = 1 character each for O-ring material (not relevant for safety)
q = 1 character for sensor length, maximum 120mm for COS21D use only (not relevant for safety)
r = 0, 1, diaphragm cap, normal or fast (not relevant for safety)
s = shape of sensor cap (not relevant for safety)
t = 1 (EPDM), 3 (FFKM), 9 (other). O-ring material for xOS81D use only
+* = 1 or more characters for optional features (not relevant for safety)
uu = 2 characters for cable length (maximum length 100m)
v = 1 character for connection type 1 (cable only) or 2 (cable with plug in connector)
w = 2 characters for connection type C1 (cable with plug in connector M12) or C2 (cable with plug in connector M8)

Name	Type	Ambient Temperature	Process Temp. Range
Orbisint pH electrode	xPS11D	0 °C ≤ Ta ≤ +55 °C (T4) ; 0 °C ≤ Ta ≤ +50 °C (T6)	-15 °C ≤ Ta ≤ +120 °C (T4) ; -15 °C ≤ Ta ≤ +70 °C (T6)
Orbisint ORP electrode	xPS12D		
Orbisint pH/ORP electrode	xPS16D		
Ceraliquid pH electrode	xPS41D		
Ceraliquid ORP electrode	xPS42D		
Ceragel ORP electrode	xPS72D		
Tophit	xPS441D, xPS471D		
Tophit	xPS491D		-15 °C ≤ Ta ≤ +110 °C (T4) ; -15 °C ≤ Ta ≤ +70 °C (T6)
Orbipac pH sensor	CPF81D		0 °C ≤ Ta ≤ +110 °C (T4) ; 0 °C ≤ Ta ≤ +70 °C (T6)
Orbipac ORP sensor	xPF82D		
Ceragel pH electrode	xPS71D	0 °C ≤ Ta ≤ +55 °C (T4) ; 0 °C ≤ Ta ≤ +50 °C (T6)	0 °C ≤ Ta ≤ +120 °C (T4) ; 0 °C ≤ Ta ≤ +70 °C (T6)
Ceragel pH/ORP electrode	xPS76D		
pH Sensor	xPS171D		
Orbipore pH electrode	xPS91D		0 °C ≤ Ta ≤ +110 °C (T4) ; 0 °C ≤ Ta ≤ +70 °C (T6)
Orbipore ORP electrode	xPS92D		
Orbipore pH/ORP electrode	xPS96D		
Conductivity sensor	xLS82D		-20 °C ≤ Ta ≤ +120 °C (T4) ; -20 °C ≤ Ta ≤ +70 °C (T6)
Condumax W	CLS15D-A		
Condumax W	CLS15D-B		-20 °C ≤ Ta ≤ +100 °C (T4) ; -20 °C ≤ Ta ≤ +50 °C (T6)
Condumax W	xLS21D-C		-20 °C ≤ Ta ≤ +115 °C (T4) ; -20 °C ≤ Ta ≤ +65 °C (T6)
Condumax H	CLS16D		-5 °C ≤ Ta ≤ +115 °C (T4) ; -5 °C ≤ Ta ≤ +65 °C (T6)
Indumax	CLS50D-***B CLS50D-***C		-20 °C ≤ Ta ≤ +120 °C (T4) ; -20 °C ≤ Ta ≤ +70 °C (T6)

Indumax	CLS50D-***D	-20 °C ≤ Ta ≤ +110 °C (T4) ; -20 °C ≤ Ta ≤ +70 °C (T6)
Oxymax (H)	COS21D, COS22D	-5 °C ≤ Ta ≤ +115 °C (T4) ; -5 °C ≤ Ta ≤ +65 °C (T6)
Oxymax (W)	COS51D	-5 °C ≤ Ta ≤ +50 °C (T6)
Dissolved Oxygen sensor	xOS81D-*****13, xOS81D-*****93	-10 °C ≤ Ta ≤ +120 °C (T4) ; -10 °C ≤ Ta ≤ +70 °C (T6)
Dissolved Oxygen sensor	xOS81D-*****33	0 °C ≤ Ta ≤ +120 °C (T4) ; 0 °C ≤ Ta ≤ +70 °C (T6)
Measuring Cable	xYK10	-15 °C ≤ Ta ≤ +120 °C (T4) ; -15 °C ≤ Ta ≤ +70 °C (T6)
Measuring Cable	xYK20	-10 °C ≤ Ta ≤ +50 °C (T6)

Note:
where applicable, prefix "x" = C or O or OC (not Ex relevant)

Ex ia IIC T6 Gb
Class I, Zone 0 AEx ia IIC T6 Gb
IS Class I, Division 1, Groups A, B, C and D T6

Memocheck Plus CYP01D, Memocheck xYP02D in connection with the measuring cable xYK10 serves as a test tool for qualification or checking of transmitters providing Memosens capabilities. The connection between sensor simulator and measuring cable is galvanically isolated via a completely isolated connection system. These simulators are not permanently installed in the field and not in contact with process media. Install per control drawing XA01687C.

The Sensor simulator types are:

- Memosens simulator Memocheck Plus type **CYP01D-**1*Gfff +***
- Memosens simulator Memocheck type **xYP02D-**1*Gfff +***

Order codes:

aa = 1 or 2 character identifier for Approval agency in Hazardous area
fff = 3 character determining OEM label partner (not relevant for safety)
* = 1 or more characters for optional features (not relevant for safety)

Name	Type	Ambient Temperature
Memocheck Plus	CYP01D	-15 °C ≤ Ta ≤ +70 °C (T6)
Memocheck	xYP02D	

Note:
where applicable, prefix "x" = C or O or OC (not Ex relevant)

Conditions of Acceptability:

1. The measuring cable type xYK10 or type xYK20 and its connecting head must be protected from electrostatic charging, if installed through areas of EPL Ga (Zone 0).
2. For the sensors type xPS11D, xPS12D, xPS16D, xPS41D, xPS42D, xPS71D, xPS72D, xPS76D, xPS91D, xPS92D, xPS96D, CYP01D, xYP02D, xPS171D, CPF81D and xPF82D, the sensors may not be operated in electrostatically critical processing conditions. Intense vapor or dust flows directly impacting on the connection system must be avoided.
3. For the sensor type xOS22D, the sensors may not be operated in electrostatically critical processing conditions. Intense vapor 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). The sensor shaft must be effectively protected against mechanical influences such as impacts or mechanical friction.
4. For the sensors type COS51D, xPS441D, xPS471D and xPS491D, 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.
5. For the sensors type CLS15D-A, CLS15D-B, CLS15D-L, CLS21D and CLS16D, metallic process connection parts have to be mounted at the mounting location electrostatically conductive (< 1 MΩ).The sensors type CLS15D-A, CLS15D-B and CLS15D-L with non-metallic process connection and the sensor type xLS21D may only be used in liquid media with a conductivity of at least 10 nS/cm. The sensors type CLS15D-A, CLS15D-B and CLS15D-L 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.
6. For the sensor type xLS82D and xOS81D, the sensor may not be operated in electrostatically critical processing conditions. Intense vapor 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).
7. The sensors type CLS50D-*****-** may only be used in liquid media with a conductivity of at least 10 nS/cm. Metallic process connection parts have to be mounted at the mounting location electrostatically conductive (< 1 MΩ). Non-metallic process connection parts have to be protected from electrostatic charging. The connection cable shall be protected from electrostatic charging where necessary.
8. Only sensors, intended to be used according to the user instructions, must be connected. The rated values of input and output circuits must be followed.
9. To be supplied by a Class 2 or Limited Energy Source in accordance with CSA 61010-1-12.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 61010-1-12 (r2017)	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements
CAN/CSA-C22.2 No. 60079-0:15	Explosive atmospheres – Part 0: Equipment – General requirements
CAN/CSA-C22.2 No. 60079-11:14	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”
UL 61010-1-Third Edition (2016)	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements
UL 60079-0, Sixth Edition	Explosive atmospheres – Part 0: Equipment – General requirements
UL 60079-11, Sixth Edition	Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety “i”

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Nameplate adhesive label material approval information:

N/A. No adhesive label used.

Markings are etched directly onto the housing using laser printing similar to other sensors approved under CSA report 70157089 for the same manufacturer

Refer to drawing # 201622 for the sensors generic name plate example.

The following details shall be provided by manufacturer on nameplate:

- Manufacturer's name "Endress + Hauser" or CSA Master Contract Number "205557", adjacent to the CSA Mark in lieu of manufacturer's name.
- The designation "CSA 20CA80021719".
- The CSA Mark, as shown on the Certificate of Conformity.
- Model designation: As specified in the PRODUCTS section, above.
- Electrical ratings: As specified in the PRODUCTS section, above.
- Ambient temperature rating: As specified in the PRODUCTS section, above or control drawings.
- Manufacturing date in MMYY format, or serial number, traceable to year and month of manufacture.
- Enclosure ratings: As specified in the PRODUCTS section, above.
- Hazardous Location designation: As specified in the PRODUCTS section, above.
- Temperature code: As specified in the PRODUCTS section, above.
- Install per control drawing as specified in the PRODUCTS section, above.
- ISO 3864 Symbol B.3.1 ⚠ or ISO 7000 symbol 0434 ⚠ (triangle with exclamation point)
- Warning as below both in English and French as applicable for each type of protection method:
  - "WARNING: Substitution of components may impair suitability for hazardous locations."
  - "AVERTISSEMENTS: La substitution de composants peut compromettre l'adaptabilité aux emplacements dangereux. »

Supplement to Certificate of Compliance

Certificate: 80063052 **Master Contract:** 205557

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
80063052	2021-01-21	Update of cCSAus report 80021719 for intrinsically safe digital sensor models used with CM42 transmitter to update product nameplates to address FIR (Factory ID 4925117, Trip Number DEU09Q2, date Aug.11, 2020) finding. Certificate number CSA 20CA80021719 and reference for installation drawing "XA01687C" missing from Nameplate.
80021719	2020-03-23	Issue a separate cCSAus prime report for digital sensor models used with CM42 transmitter, previously certified under CSA report 1718339. The I.S. Assessment is primarily based on IECEx issued by Dekra. The digital sensors protection method is Ex ia T4/T6 Ga, and the sensor simulators CYP01D, CYP02D are Ex ia T6 Gb.