Certificate of Compliance

Certificate:	80021490	**Master Contract:**	205557
Project:	80149231	**Date Issued:**	August 15, 2023

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: M. Munro

M Munro

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 US Standards

Class I Div 1 Groups A, B, C, D
Ex ia IIC Tx* Ga
Class I Zone 0 AEx ia IIC Tx* Ga

-Conductivity Sensors Memosens type xLS15E, xLS16E, xLS21E and xLS82E with suffixes as shown in the Product Nomenclature. Maximum input power: Pi = 180mW, connection via inductive coupling. Installation as per Control Drwg. 961005034.

- pH/ORP sensors Memosens type xPS##E: xPS11E, xPS12E, xPS16E, xPS31E, xPS41E, xPS42E, xPS61E, xPS62E, xPS71E, xPS72E, xPS76E, xPS91E, xPS92E, xPS96E with suffixes. Maximum input power: Pi = 180mW, connection via inductive coupling. Installation as per Control Drwg. 961005034.

- pH/ORP sensors Memosens type xPF81E and xPF82E with suffixes as shown in the Product Nomenclature. Maximum input power: Pi = 180mW, connection via inductive coupling. Installation as per Control Drwg. 961005034.

- ISFET pH sensors Memosens type xPS47D, xPS77D, xPS97D, xPS47E, xPS77E, xPS97E. Maximum input power: Pi = 180mW, connection via inductive coupling. Installation as per Control Drwg. 961005034.

-Oxygen sensors Memosens type xOS22E, xOS51E with suffixes as shown in the Product Nomenclature. Maximum input power: Pi = 180mW, connection via inductive coupling. Installation as per Control Drwg. 961005034.

Class I Div 1 Groups A, B, C, D
Ex ia op is IIC T6 Ga
Class I Zone 0 AEx ia op is IIC T6 Ga
Class II Division 1 Groups E, F, G
Ex ia op is IIIC T90ºC Da
Zone 20 AEx ia op is IIIC T90ºC Da

-Oxygen sensors Memosens type xOS81E with suffixes as shown in the Product Nomenclature. Maximum input power: Pi = 180mW, connection via inductive coupling. Inherently safe optical radiation: Popt < 15 mW. Installation as per Control Dwg. 961005034. Temperature class is T6 for a maximum Tamb and Tprocess of +60°C.

Note:*- The temperature code Tx is defined in the Environmental data 1, 2, 3, 4, 5 and 6 below.

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

Sensor-simulator Memocheck type xYP02E- ** * ** *** +*(xYP02E). Maximum input power: Pi = 180mW, connection via inductive coupling. Installation as per Control Drwg. 961005034.

CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non - Incendive Systems - For Hazardous Locations
CLASS 2258 83 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non - Incendive Systems - For Hazardous Locations - Certified to US Standards

NI Class I Div 2 Groups A, B, C, D T6
Ex ic IIC T6 Gc
Class I Zone 2 AEx ic IIC T6 Gc

Amperometric sensors Memosens types xCS50E, xCS51E, xCS53E, xCS55E and xCS58E with suffixes as shown in the Product Nonenclature. Maximum input power: Pi = 180mW, connection via inductive coupling. Installation as per Control Dwg. 961005034. Temperature class is T6 with maximum Tamb and Tprocess defined in the environmental data 7 below.

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Conditions of Acceptability :

1. xLS15E, xLS16E, xLS21E, xOS81E: Metallic process connection parts have to be mounted electrostatically conductive at the mounting location (< 1 MΩ).
2. xLS15E and xLS21E, xOS51E with non-metallic process connection may only be used in liquid media with a conductivity of at least 10 nS/cm.
3. xLS15E 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.
4. xLS82E, xOS22E, xOS81E: 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).
5. The Sensors type xPS## E, xPF81E, xPF82E, xOS51E sensors may not be operated in electrostatically critical processing conditions. Intense vapour or dust flows directly impacting on the connection system must be avoided.
6. For xOS22E, xOS81E: If sensor parts are consisting of light metal e.g. Titan, then these parts have to protected against hits.
7. Do no operate xOS81E it in an atmosphere temperature above +60C unless the atmosphere is not considered explosive .
8. The plastic housing may only be cleaned with a damp cloth.
9. The maximum ambient and process temperatures for the temperature classes T3, T4 or T6 are limited according to the tables of this certificate (see “Environmental data 1 , 2, 3, 4, 5 and 6” tables for all the sensors).
   The temperature table is only valid if the installation conditions specified in the manufacturer's operating instructions are observed. The manufacturer's operating instructions include the control drawings.
   If these installation conditions cannot be met, the maximum process temperature range shall not exceed the maximum ambient temperature range.
10. The sensor should be inductive coupling connected with a certified Memosens compatible supply with Po ≤ 180 mW).
11. Additional for ISFET pH Sensors: 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.

Environmental data 1:

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xLS15E-******A***+*	T3	-20 °C	135 °C	-20 °C	60 °C
	T4	-20 °C	120 °C	-20 °C	60 °C
	T6	-20 °C	70 °C	-20 °C	60 °C

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xLS15E-******B***+*	T3	-20 °C	135 °C	-20 °C	60 °C
	T4	-20 °C	100 °C	-20 °C	60 °C
	T6	-20 °C	50 °C	-20 °C	60 °C

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xLS16E-*********+*	T3	-5 °C	135 °C	-20 °C	60 °C
	T4	-5°C	115 °C	-20 °C	60 °C
	T6	-5 °C	65 °C	-20 °C	60 °C

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xLS21E-*********+*	T3	-20 °C	135 °C	-20 °C	60 °C
	T4	-20°C	115 °C	-20 °C	60 °C
	T6	-20 °C	65 °C	-20 °C	60 °C

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xLS82E-*********+*	T3	-20 °C	140 °C	-20 °C	60 °C
	T4	-20°C	120 °C	-20 °C	60 °C
	T6	-20 °C	70 °C	-20 °C	60 °C

Environmental data 2:

Sensor type	T class	T_p (process)		T_a (ambient)	
		min.	max.	min.	max.
xPS11E-**********+*	T3	-15 °C	135 °C	-15 °C	70 °C
xPS41E-**********+*	T4	-15 °C	120 °C	-15 °C	75 °C
xPS12E-**********+*			110 °C	-15 °C	80 °C
xPS42E-**********+*			100 °C	-15 °C	85 °C
xPS72E-**********+*			90 °C	-15 °C	90 °C
xPS16E-**********+*	T6	-15 °C	70 °C	-15 °C	70 °C
xPS61E-**********+*	T3	0 °C	140 °C	0 °C	70 °C
xPS71E-**********+*	T4	0 °C	120 °C	0 °C	75 °C
xPS62E-**********+*			110 °C	0 °C	80 °C
xPS76E-**********+*			100 °C	0 °C	85 °C
			90 °C	0 °C	90 °C
	T6	0 °C	70 °C	0 °C	70 °C
xPS31E-**********+*	T4	0 °C	80 °C	0 °C	90 °C
	T6	0 °C	70 °C	0 °C	70 °C
xPS91E-**********+*	T4	0 °C	110 °C	0 °C	80 °C
xPS92E-**********+*			100 °C	0 °C	85 °C
xPS96E-**********+*			90 °C	0 °C	90 °C
	T6	0 °C	70 °C	0 °C	70 °C
xYP02E-*********+*	T6	n/a	n/a	-15°C	70 °C

Environmental data 3:

Sensor type	T class	T_p (process)		T_a (ambient)	
		min.	max.	min.	max.
xPS47D-********+*	T3	-15 °C	135 °C	-15 °C	70 °C
xPS47E-********+*	T4	-15 °C	115 °C	-15 °C	75 °C
xPS77D-********+*			110 °C	-15 °C	80 °C
xPS77E-********+*			100 °C	-15 °C	85 °C
			90 °C	-15 °C	90 °C
	T6	-15 °C	65 °C	-15 °C	65 °C
xPS97D-********+*	T4	-15 °C	110 °C	-15 °C	80 °C
xPS97E-********+*			100 °C	-15 °C	85 °C
			90 °C	-15 °C	90 °C
	T6	-15 °C	65 °C	-15 °C	65 °C

Environmental data 4:

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xPF81E	T4	0 °C	110 °C	0 °C	55 °C
	T6	0 °C	70 °C	0 °C	50 °C
xPF82E	T4	0 °C	80 °C	0 °C	55 °C
	T6	0 °C	70 °C	0 °C	50 °C

Environmental data 5:

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xOS22E	T4	-5 °C	100 °C	-25 °C	70 °C
	T6	-5 °C	70 °C	-25 °C	70 °C
xOS51E	T6	-5 °C	60 °C	-5 °C	60 °C

Environmental data 6:

Sensor type	T class	Tp (process)		Ta (ambient)	
		Min.	Max.	Min.	Max.
xOS81E	T6 rep. T90 °C	-15 °C	60 °C	-25 °C	60 °C

Environmental data 7:

Sensor type	Measuring Parameter	T class	Tp (process)		Ta (ambient)	
			Min.	Max.	Min.	Max.
xCS50E	Chlorine dioxide	T6	0°C	+55°C	-20°C	+60°C
xCS51E	Free Chlorine	T6	0°C	+55°C	-20°C	+60°C
xCS53E	Total Chlorine	T6	0°C	+55°C	-20°C	+60°C
xCS55E	Free Bromine	T6	0°C	+55°C	-20°C	+60°C
xCS58E	Ozone	T6	0°C	+45°C	-20°C	+55°C

Product Nomenclature for xLS sensors:

Name	Type								
Memosens	xLS15E xLS16E xLS21E xLS82E	-	**	**	**	a	***	+*	

+* optional
= + one or more characters determining optional features (no ex-relevance)

*** only if x = O, OC
= three characters determining OEM/label partner (no ex-relevance)

a one character determining cell constant k
a=A = type A (cell constant k = 0.01 cm^{-1})
a=B = type B (cell constant k = 0.1 cm^{-1})

** = two characters determining sensor material, (no ex-relevance)

** = two characters determining process connection (no ex-relevance)

** = two characters determining order option approval certification, no Ex relevance

x = C E+H-labeled version (no Ex relevance)
x = O OEM/label partner-labeled version (no Ex relevance)
x = OC OEM/label partner-labeled version (no Ex relevance)

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Product Nomenclature for xPS sensors:

Name										Type
Memosens	xPSx1E xPSx2E xPSx6E	-	**	*	*	**	*	**	+*	

+* optional = one or more characters determining optional features, no Ex relevance

*** only if x = O, OC = three characters determining OEM/label partner (no ex-relevance)

* = one character determining shaft length, max. 600 mm, no Ex relevance

** = two characters determining reference system, no Ex relevance

* = one character determining application range, no Ex relevance

* = one character determining type of electrode, e. g. zero point at pH value 7, no Ex relevance

** = two characters determining order option approval certification, no Ex relevance.

x = C E+H-labeled version (no Ex relevance)
x = O OEM/label partner-labeled version (no Ex relevance)
x = OC OEM/label partner-labeled version (no Ex relevance)

Product Nomenclature for xPS#7 (ISFET) sensors:

ISFET sensors for pH measurement

Type	**-**	**aa**	**b**	**cc**	**dd**	**e**	**f**
xPS47E	-	**	*	*	**	*	+*
xPS77E	-	**	*	*	**	*	+*
xPS97E	-	**	*	*	**	*	+*

Where:

x:	C, O or OC
aa: Approval	any two characters (not ex-relevant)
b: Electrode type	any one character (non ex-relevant)
cc: Application range	any two characters (non ex-relevant)
dd: Reference system	any two characters (non ex-relevant)
e: shaft length	max. 600 mm (not ex-relevant)
f:	one or more characters (not ex-relevant)

Product Nomenclature for xPF##E:

Memosens	xPF81E-aabcddefff+g xPF82E-aabcddefff+g	
	x	C, O or OC (no ex-relevance)
	aa	Order option ex certification (no ex-relevance)
	b	Electrode Type (no ex-relevance)
	c	Application range (no ex-relevance)
	dd	Reference system (no ex-relevance)
	e	Insertion length (no ex-relevance)
	fff	only if x = O, OC = three characters (no ex-relevance)
	g	Optional = one or more characters determining optional features (no ex-relevance) e.g. test or other certificates/ declarations

Product Nomenclature for xOS22E:

Memosens	xOS22E-aabbccddefff+g	
	x	O, C or OC (no ex-relevance)
	aa	Order option ex-certification (no ex-relevance)
	bb	Measuring range (no ex-relevance)
	cc	Cap characteristics AA = Stainless steel BA = Titan CA = Alloy C22 YY = Special version
	dd	Sensor length (no ex-relevance) max 600 mm
	e	O-ring material (in the cap) (no ex-relevance)
	fff	only if x = O, OC (no ex-relevance)
	g	Optional = one or more characters determining optional features (no ex-relevance) e.g. test or other certificates/ declarations

Product Nomenclature for xOS51E:

Memosens	xOS51E-aabbccfff+g	
	x	O, C or OC (no ex-relevance)
	aa	Order option ex-certification (no ex-relevance)
	bb	Measuring range (no ex-relevance)
	cc	Cap characteristics (no ex-relevance) TF = Response time T90, 0,5 minutes steel TN = Response time T90, 3 minutes YY = Special version
	fff	only if x = O, OC (no ex-relevance)
	g	Optional = one or more characters determining optional features (no ex-relevance) e.g. test or other certificates/ declarations

Product Nomenclature for xOS81E:

Memosens	xOS81E-aabbccddefff+g	
	x	O, C or OC (no ex-relevance)
	aa	Order option ex certification (no ex-relevance)
	bb	Measuring range (no ex-relevance)
	cc	Cap characteristics AC = Stainless steel C-shape AU = Stainless steel U-shape BC = Titan C-shape BU = Titan U-shape CC = Alloy C22 C-shape CU = Alloy C22 U-shape YY = Special version
	dd	Sensor length (no ex-relevance) max 600 mm
	e	O-ring material (in the cap) (no ex-relevance)
	fff	only if x = O, OC = three characters determining OEM/label partner (no ex-relevance)
	g	Optional = one or more characters determining optional features (no ex-relevance) e.g. test or other certificates/ declarations

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Product Nomenclature for xCS50E, xCS51E, xCS53E, xCS55E & xCS58E

Memosens	xCS50E-aabbccddefff+g xCS51E-aabbccddefff+g xCS53E-aabbccddefff+g xCS55E-aabbccddefff+g xCS58E-aabbccddefff+g	
	x	O, C or OC (no ex-relevance)
	aa	Order option ex certification (no ex-relevance)
	bb	Application (no ex-relevance)
	cc	Measuring Range (no ex-relevance)
	dd	Adapter Mounted (no ex-relevance)
	e	O-ring material (in the cap) (no ex-relevance)
	fff	only if x = O, OC = three characters determining OEM/label partner (no ex-relevance)
	g	Optional = one or more characters determining optional features (no ex-relevance) e.g. test or other certificates/ declarations

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 60079-0:19	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"
CAN/CSA-C22.2 No. 60079-28:2016	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
CAN/CSA-C22.2 No. 213-17 (R2022)	Nonincendive electrical equipment for use in Class I and II, Division 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations
ANSI/UL 60079-0:19	Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements
ANSI/UL 60079-11:13	Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety “i”
ANSI/UL 60079-28:2017	Explosive Atmospheres - Part 28: Equipment – Protection of Equipment and transmission systems using optical radiation
ANSI/UL 121201:2021	Nonincendive electrical equipment for use in Class I and II, Division 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations
CAN/CSA C22.2 No. 61010-1-12 *(May 2012)*	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use —Part 1: General Requirements
ANSI/UL 61010-1-2018 (3rd Edition)	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements

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.

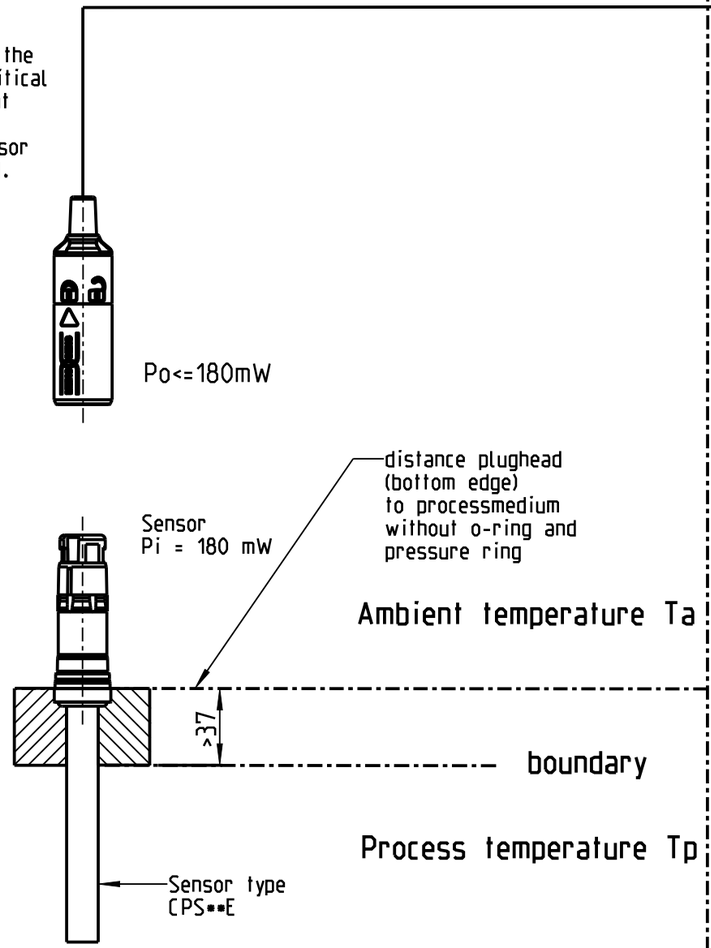
Method of markings: laser printing. The markings shall contain:

- Manufacturer's name: "Endress+Hauser", or CSA Master Contract Number "205557", adjacent to the CSA Mark in lieu of manufacturer's name.
- Model designation: As specified in the PRODUCTS section, above.
- Ambient temperature rating: As specified in the PRODUCTS section, Tables 1 through 6, above.
- Manufacturing date in MMYY format, or serial number, traceable to year and month of manufacture (The serial number is lased next to the above label. The date of manufacturing is coded in the serial number).
- Hazardous locations designation: Dependent on model, either Class I, Division 1, Groups A, B, C, D, or Class I Division 2, Groups A, B, C, D. The word "Class" may be abbreviated "CL", the word "Division" may be abbreviated "DIV", and the word "Groups" may be abbreviated "GRP" or "GP".
- Temperature code rating "T6" is optional for the above markings.
- Method of Protection markings (Ex -- markings): Dependent on model, either "Ex ia IIC Tx Ga"; and "Class I Zone 0 AEx ia IIC Tx Ga", where the marked temperature code is per tables 1 through 3 in the PRODUCTS section, above, or "Ex ic IIC T6 Gc"; and "Class I Zone 2 AEx ic IIC T6 Gc"
- The CSA Mark, with or without the "C" and "US" indicators, as shown on the Certificate of Conformity.
- The certificate number "CSA20CA80021490X".
- Dependent on the model, either:
  - The words "INTRINSICALLY SAFE" in English and "SECURITE INTRINSEQUE" in French or "I.S." or "Ex ia".
  - The words "NON-INCENDIVE" in English and "NON INCENDIAIRE" in French or "NI" or "Ex ic"
- Reference to the I.S. Control drawing 961005034.
- The words "Read and understand the manual before operating", or ISO 3864 Symbol B.3.1  or ISO 7000 symbol 0434  (triangle with exclamation point).

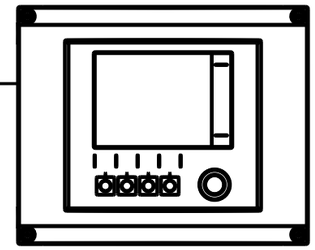
Hazardous location
Class I, Division 1, Groups A, B, C, D

Sensor type	T class	Tp (process)		Ta (ambient)	
		min.	max.	min.	max.
CPS11E CPS12E CPS16E CPS41E CPS42E CPS72E	T3	-15 °C	135 °C	-15 °C	70 °C
	T4	-15 °C	120 °C	-15 °C	75 °C
			110 °C	-15 °C	80 °C
			100 °C	-15 °C	85 °C
			90 °C	-15 °C	90 °C
	T6	-15 °C	70 °C	-15 °C	70 °C
CPS61E CPS62E CPS71E CPS76E	T3	0 °C	140 °C	0 °C	70 °C
	T4	0 °C	120 °C	0 °C	75 °C
			110 °C	0 °C	80 °C
			100 °C	0 °C	85 °C
			90 °C	0 °C	90 °C
	T6	0 °C	70 °C	0 °C	70 °C
CPS31E	T4	0 °C	80 °C	0 °C	90 °C
	T6	0 °C	70 °C	0 °C	70 °C
CPS91E CPS92E CPS96E	T4	0 °C	110 °C	0 °C	80 °C
			100 °C	0 °C	85 °C
			90 °C	0 °C	90 °C
	T6	0 °C	70 °C	0 °C	70 °C
CYP02E	T6	--	--	-15 °C	70 °C

It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.



Ordinary or hazardous location
(see sensor certification)



Measurement transmitter or control unit

Specific Conditions of Use:

1. The maximum ambient and process temperatures for the temperature classes T3, T4 or T6 are limited according to the tables. The temperature table is only valid if the installation conditions specified in the manufacturer's operating instructions are observed. If these installation conditions cannot be met, the maximum process temperature range shall not exceed the maximum ambient temperature range.
2. The sensor should be inductive coupling connected with a certified Memosens compatible supply with Po ≤ 180 mW).
3. The sensors pH/ORP-Sensors type *PS ** E* sensors may not be operated in electrostatically critical processing conditions. Intense vapor or dust flows directly impacting on the connection system must be avoided.

CSA20CA80021490X

F

I.S. Class 1 Division 1, Groups A, B, C, D, Tx
I.S. Class 1, Zone 0 AEx/Ex ia IIC Tx Ga
(Tx: see table for temperature requirements)

Endress+Hauser
Endress+Hauser Conducta GmbH+Co. KG
70839 Gerlingen, Germany

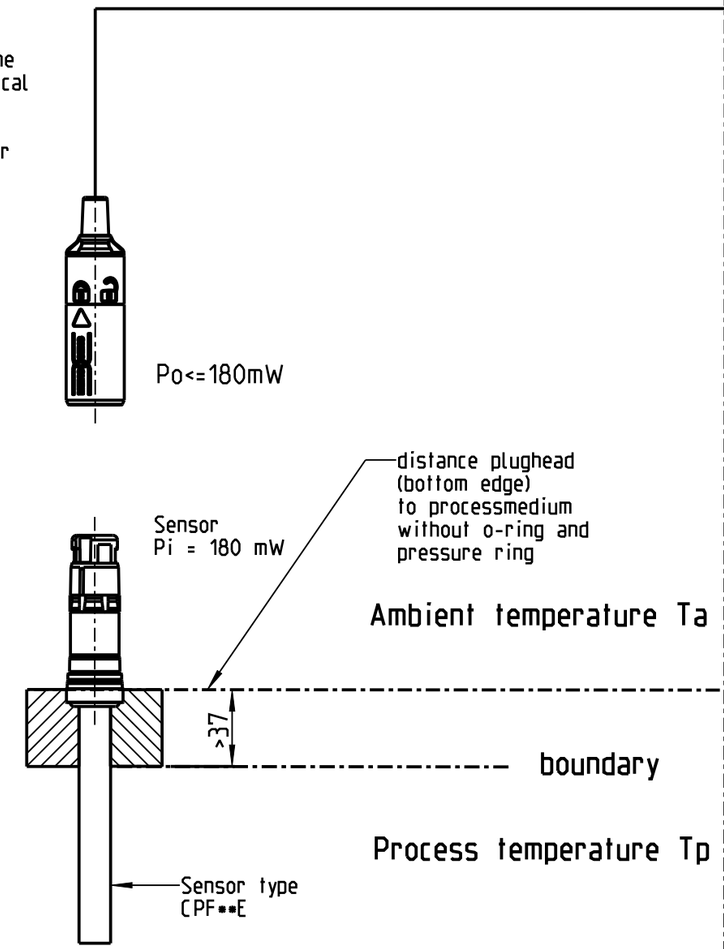
Refer to protection notice ISO 16016 Classification internal		Scale 1:5	Tolerance -
pH/ORP Control drawing CSA Sensors	Notif. no.	Designed 02.03.2021 BlochwitzS	
	Number of changes 9 F	Drawing chng.	
	Status In Work	Welding contr.	
		Approval contr.	
		Pressure contr.	
		Released	
Control drawing CSA Sensors	No. of document 961005034	Version F	Doc. part 000
211038777	Weight	Volume	
Material -	SAP material no. multiple	Format DIN A3	Sheet 1/7

ISO 8015 GPS-FUNDAMENTALS
ISO 14405 GPS-DIMENSIONAL TOLERANCING
ISO 10135 GPS-DRAWING INDICATIONS
ISO 13715 EDGES OF UNDEFINED SHAPE
ISO 1101 GPS-GEOMETRICAL TOLERANCING
ISO 1302 GPS-INDICATION OF SURFACE TEXTURE

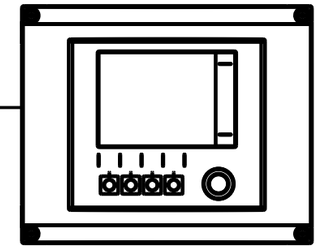
Hazardous location
Class I, Division 1, Groups A, B, C, D

Sensor type	T class	Tp (process)		Ta (ambient)	
		min.	max.	min.	max.
CPF81E	T4	0°C	110°C	0°C	55°C
	T6	0°C	70°C	0°C	50°C
CPF82E	T4	0°C	80°C	0°C	55°C
	T6	0°C	70°C	0°C	50°C

It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.



Ordinary or hazardous location
(see sensor certification)



Measurement transmitter or control unit

Specific Conditions of Use:

1. The maximum ambient and process temperatures for the temperature classes T3, T4 or T6 are limited according to the tables. The temperature table is only valid if the installation conditions specified in the manufacturer's operating instructions are observed. If these installation conditions cannot be met, the maximum process temperature range shall not exceed the maximum ambient temperature range.
2. The sensor should be inductive coupling connected with a certified Memosens compatible supply with Po ≤ 180 mW).
3. The sensors pH/ORP-Sensors type *PS ** E* sensors may not be operated in electrostatically critical processing conditions. Intense vapor or dust flows directly impacting on the connection system must be avoided.

C US
CSA20CA80021490X

F I.S. Class 1 Division 1, Groups A, B, C, D, Tx
I.S. Class 1, Zone 0 AEx/Ex ia IIC Tx Ga
(Tx: see table for temperature requirements)

Endress+Hauser
Endress+Hauser Conducta GmbH+Co. KG
70839 Gerlingen, Germany

Refer to protection notice ISO 16016
Classification internal

pH/ORP

Control drawing
CSA Sensors

Control drawing
CSA Sensors

211038777

Material
-

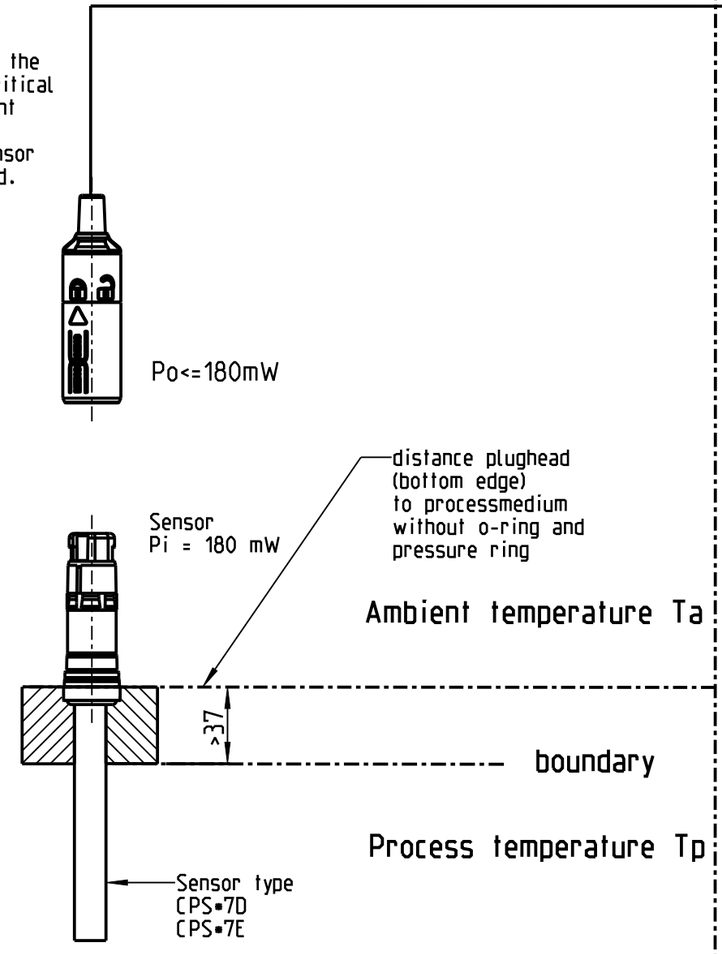
Scale 1:5
Tolerance -
Notif. no.
Designed 02.03.2021 BlochwitzS
Drawing chng.
Number of changes 9 F
Welding contr.
Approval contr.
Status In Work
Pressure contr.
Released
No. of document 961005034
Version F
Doc. part 000
Weight
Volume
SAP material no. multiple
Format DIN A3
Sheet 2/7

EDGES OF UNDEFINED SHAPE ISO 13715
GPS-GEOMETRICAL TOLERANCING ISO 1101
GPS-INDICATION OF SURFACE TEXTURE ISO 1302
GPS-FUNDAMENTALS ISO 8015
GPS-DIMENSIONAL TOLERANCING ISO 14405
GPS-DRAWING INDICATIONS ISO 10135

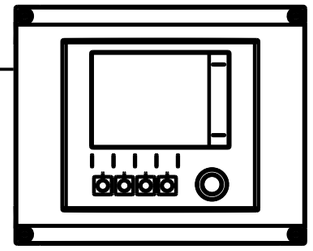
Hazardous location
Class I, Division 1, Groups A, B, C, D

Sensor type	T class	Tp (process)		Ta (ambient)	
		min.	max.	min.	max.
CPS47D CPS47E CPS77D CPS77E	T3	-15 °C	135 °C	-15 °C	70 °C
	T4	-15 °C	115 °C	-15 °C	75 °C
			110 °C	-15 °C	80 °C
			100 °C	-15 °C	85 °C
			90 °C	-15 °C	90 °C
	T6	-15 °C	65 °C	-15 °C	65 °C
CPS97D CPS97E	T4	-15 °C	110 °C	-15 °C	80 °C
			100 °C	-15 °C	85 °C
			90 °C	-15 °C	90 °C
	T6	-15 °C	65 °C	-15 °C	65 °C

It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.



Ordinary or hazardous location
(see sensor certification)



Measurement transmitter or control unit

Specific Conditions of Use:

1. It is not allowed to operate the sensor under electrostatic critical process conditions.
2. 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 last 10 nS/cm can be assumed as electrostatic uncritical.
3. Ex protected digital sensors providing Memosens Technology are indicated by an orange-red ring at the connection head.
4. The electrical connection instruction of the Installation Manual must be followed.

C US
CSA20CA80021490X

/F I.S. Class 1 Division 1, Groups A, B, C, D, Tx
I.S. Class 1, Zone 0 AEx/Ex ia IIC Tx Ga
(Tx: see table for temperature requirements)

EDGES OF UNDEFINED SHAPE ISO 13715
GPS-GEOMETRICAL TOLERANCING ISO 1101
GPS-INDICATION OF SURFACE TEXTURE ISO 1302
GPS-FUNDAMENTALS ISO 8015
GPS-DIMENSIONAL TOLERANCING ISO 14405
GPS-DRAWING INDICATIONS ISO 10135

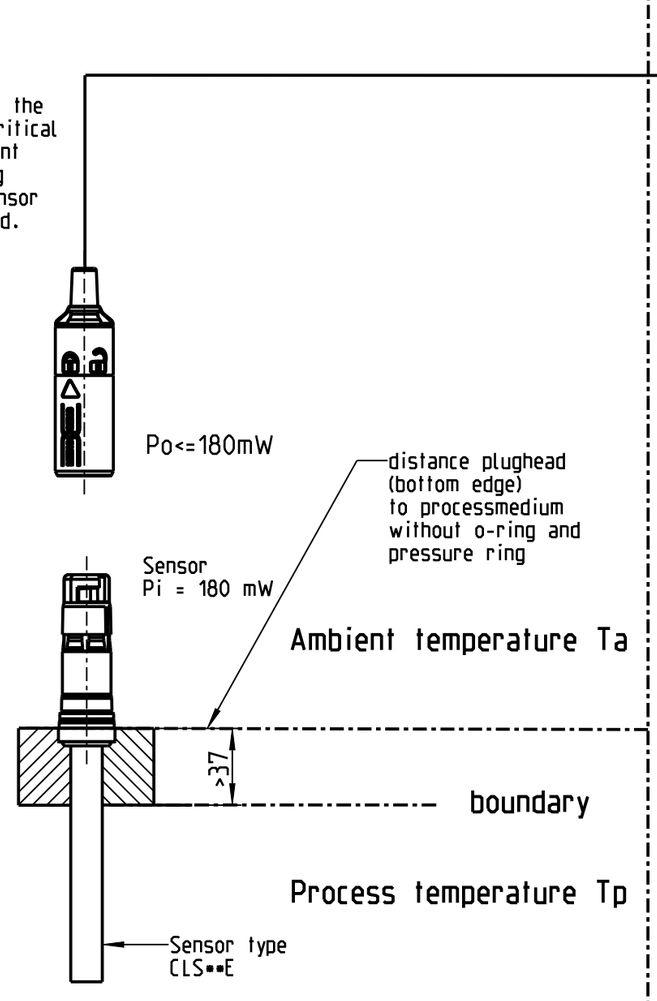
Endress+Hauser
Endress+Hauser Conducta GmbH+Co. KG
70839 Gerlingen, Germany

Refer to protection notice ISO 16016 Classification internal		Scale 1:5	Tolerance -
pH/ISFET Control drawing CSA Sensors	Notif. no.	Designed 02.03.2021 BlochwitzS	
	Number of changes 9 /F	Drawing chng.	
	Status In Work	Welding contr.	
		Approval contr.	
		Pressure contr.	
		Released	
Control drawing CSA Sensors	No. of document 961005034	Version F	Doc. part 000
211038777	Weight	Volume	
Material -	SAP material no. multiple	Format DIN A3	Sheet 3/7

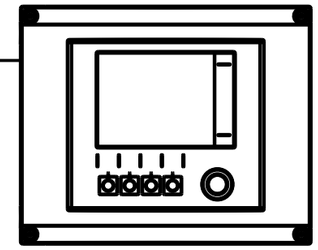
Hazardous location
Class I, Division 1, Groups A, B, C, D

Sensor type	T class	Tp (process)		Ta (ambient)
		min.	max.	max.
CLS15E-******A***+*	T3	-20°C	135°C	60°C
	T4	-20°C	120°C	60°C
	T6	-20°C	70°C	60°C
CLS15E-******B***+*	T3	-20°C	135°C	60°C
	T4	-20°C	100°C	60°C
	T6	-20°C	50°C	60°C
CLS16E-**********+*	T3	-5°C	135°C	60°C
	T4	-5°C	115°C	60°C
	T6	-5°C	65°C	60°C
CLS21E-**********+*	T3	-20°C	135°C	60°C
	T4	-20°C	115°C	60°C
	T6	-20°C	65°C	60°C
CLS82E-**********+*	T3	-20°C	140°C	60°C
	T4	-20°C	120°C	60°C
	T6	-20°C	70°C	60°C

It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.



Ordinary or hazardous location
(see sensor certification)



Measurement transmitter or control unit

Specific Conditions of Use:

1. The maximum ambient and process temperatures for the temperature classes T3, T4 or T6 are limited according to the tables. The temperature table is only valid if the installation conditions specified in the manufacturer's operating instructions are observed. If these installation conditions cannot be met, the maximum process temperature range shall not exceed the maximum ambient temperature range.
2. The sensor should be inductive coupling connected with a certified Memosens compatible supply with Po ≤ 180 mW).
3. CLS15E, CLS16E, CLS21E: Metallic process connection parts have to be mounted electrostatically conductive at the mounting location (< 1 MΩ).
4. CLS15E and CLS21E with non-metallic process connection may only be used in liquid media with a conductivity of at least 10 nS/cm.
5. CLS15E 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. CLS82E: 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).

C US
CSA20CA80021490X

I.S. Class 1 Division 1, Groups A, B, C, D, Tx
I.S. Class 1, Zone 0 AEx/Ex ia IIC Tx Ga
(Tx: see table for temperature requirements)

F

EDGES OF UNDEFINED SHAPE ISO 13715
GPS-GEOMETRICAL TOLERANCING ISO 1101
GPS-INDICATION OF SURFACE TEXTURE ISO 1302
GPS-FUNDAMENTALS ISO 8015
GPS-DIMENSIONAL TOLERANCING ISO 14405
GPS-DRAWING INDICATIONS ISO 10135

Endress+Hauser
Endress+Hauser Conducta GmbH+Co. KG
70839 Gerlingen, Germany

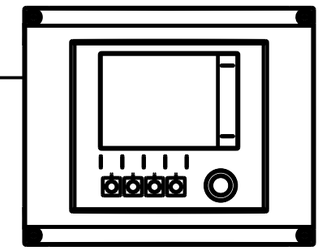
Refer to protection notice ISO 16016 Classification internal		Scale 1:5	Tolerance -
CONDUCTIVITY Control drawing CSA Sensors		Notif. no.	Designed 02.03.2021 BlochwitzS
		Number of changes 9 F	Drawing chng.
		Status In Work	Welding contr.
			Approval contr.
			Pressure contr.
			Released
Control drawing CSA Sensors		No. of document 961005034	Version F / Doc. part 000
211038777		Weight	Volume
Material -		SAP material no. multiple	Format DIN A3 / Sheet 4/7

Hazardous location
Class I, Division 1, Groups A, B, C, D
/F/ Class II, Division 1, Groups E, F, G

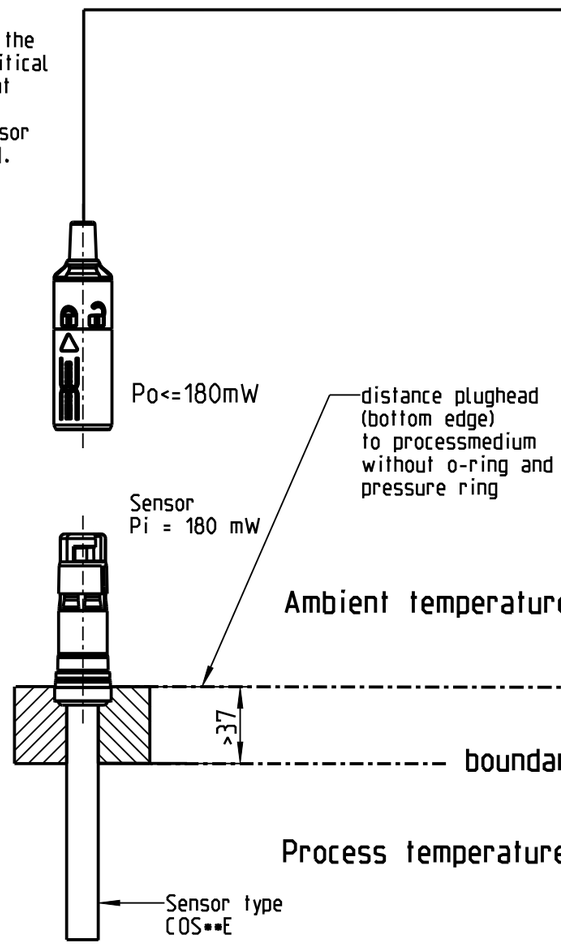
Sensor type	T class	Tp (process)		Ta (ambient)	
		min.	max.	min.	max.
COS81E	(T6 rep. T90°)	-15°C	60°C	-25°C	60°C

It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.

Ordinary or hazardous location
(see sensor certification)



Measurement transmitter or control unit



Specific Conditions of Use:

1. Metallic process connection parts have to be mounted electrostatically at the mounting location (< 1 MΩ).
2. The plastic housing may only be cleaned with a damp cloth.
3. It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.
4. If sensor parts are consisting of light metal e.g. Titan, then these parts have to protected against hits.
5. Do no operate COS81E it in an atmosphere temperature above +60°C unless the atmosphere is not considered explosive.

C US
CSA20CA80021490X

/F/
Class I Div 1 Groups A, B, C, D
Ex ia op is IIC T6 Ga
Class I Zone 0 AEx ia op is IIC T6 Ga
Class II Div 1 Groups E, F, G
Ex ia op is IIIC T90°C Da
Zone 20 AEx ia op is IIIC T90°C Da

ISO 8015 GPS-FUNDAMENTALS
ISO 14405 GPS-DIMENSIONAL TOLERANCING
ISO 10135 GPS-DRAWING INDICATIONS
ISO 13715 EDGES OF UNDEFINED SHAPE
ISO 1101 GPS-GEOMETRICAL TOLERANCING
ISO 1302 GPS-INDICATION OF SURFACE TEXTURE

Endress+Hauser
Endress+Hauser Conducta GmbH+Co. KG
70839 Gerlingen, Germany

Refer to protection notice ISO 16016
Classification internal

DO opt

Control drawing
CSA Sensors

Control drawing
CSA Sensors

211038777

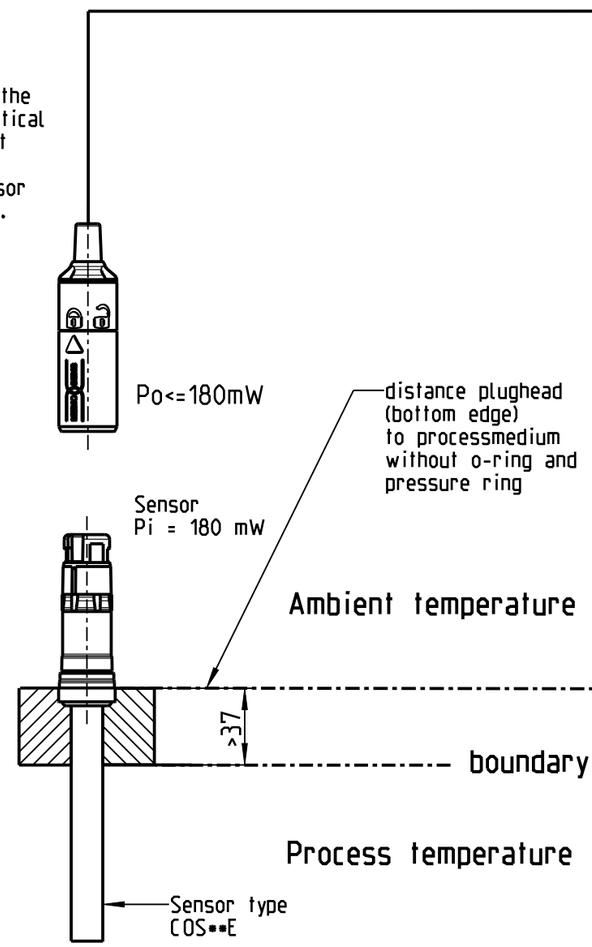
Material
-

Scale 1:5
Tolerance -
Notif. no.
Designed 02.03.2021 BlochwitzS
Drawing chng.
Number of changes 9 /F/
Welding contr.
Approval contr.
Status In Work
Pressure contr.
Released
No. of document 961005034
Version F
Doc. part 000
Weight
Volume
SAP material no. multiple
Format DIN A3
Sheet 5/7

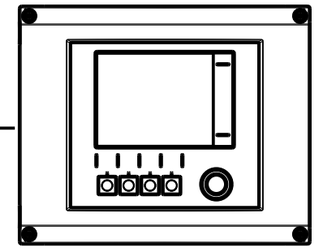
Hazardous location
Class I, Division 1, Groups A, B, C, D

Sensor type	T class	Tp (process)		Ta (ambient)	
		min.	max.	min.	max.
COS22E	T4	-5°C	100°C	-25°C	70°C
	T6	-5°C	70°C	-25°C	70°C
COS51E	T6	-5°C	60°C	-5°C	60°C

It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.



Ordinary or hazardous location
(see sensor certification)



Measurement transmitter or control unit

Specific Conditions of Use:

1. The maximum ambient and process temperatures for the temperature classes T3, T4 or T6 are limited according to the table (see also in manual).
2. The plastic housing may only be cleaned with a damp cloth.
3. The sensor may not be operated in electrostatically critical processing conditions, in which an electrostatic loading of the sensor and the connecting system is to be counted. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.
4. Metallic process connection parts have to be mounted electrostatically conductive at the mounting location (<1MΩ).
5. If sensor parts are consisting of light metal e.g. Titan, then these parts have to protected against hits.

Only for type COS51E:

6. Operation in product application intended fluid media providing conductivity of at least 10 nS/cm can be assumed as electrostatic uncritical.

CSA20CA80021490X

F I.S. Class 1 Division 1, Groups A, B, C, D, Tx
I.S. Class 1, Zone 0 AEx/Ex ia IIC Tx Ga
(Tx: see table for temperature requirements)

EDGES OF UNDEFINED SHAPE ISO 13715
GPS-GEOMETRICAL TOLERANCING ISO 1101
GPS-INDICATION OF SURFACE TEXTURE ISO 1302
GPS-FUNDAMENTALS ISO 8015
GPS-DIMENSIONAL TOLERANCING ISO 14405
GPS-DRAWING INDICATIONS ISO 10135

Endress+Hauser
Endress+Hauser Conducta GmbH+Co. KG
70839 Gerlingen, Germany

Refer to protection notice ISO 16016
Classification internal

DO amp

Control drawing
CSA Sensors

Control drawing
CSA Sensors

211038777

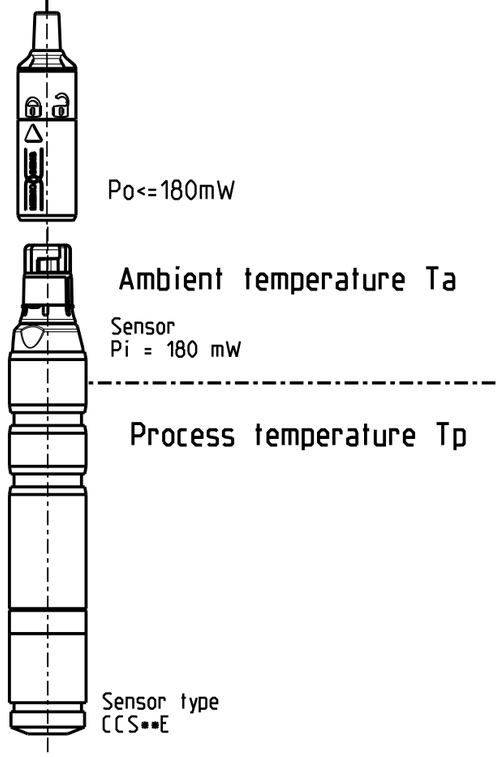
Material

Scale	1:5
Tolerance	-
Notif. no.	
Designed	02.03.2021 BlochwitzS
Drawing chng.	
Number of changes	9 F
Welding contr.	
Approval contr.	
Status	In Work
Pressure contr.	
Released	
No. of document	961005034
Version	F
Doc. part	000
Weight	
Volume	
SAP material no.	multiple
Format	DIN A3
Sheet	6/7

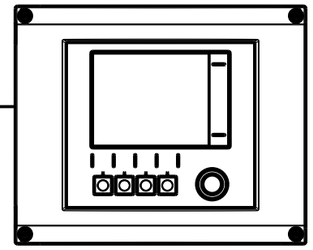
Hazardous location
Class I, Division 2, Groups A, B, C, D

Sensor type	T class	Tp (process)		Ta (ambient)	
		min.	max.	min.	max.
CCS50E	T6	0 °C	55 °C	-20 °C	60 °C
CCS51E	T6	0 °C	55 °C	-20 °C	60 °C
CCS53E	T6	0 °C	55 °C	-20 °C	60 °C
CCS55E	T6	0 °C	55 °C	-20 °C	60 °C
CCS58E	T6	0 °C	45 °C	-20 °C	55 °C

It is not allowed to operate the sensor under electrostatic critical process conditions. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.



Ordinary or hazardous location
(see sensor certification)



Measurement transmitter or control unit

/F

Specific Conditions of Use:

1. The sensor should be inductive coupling connected with a certified Memosens compatible supply with Po ≤ 180 mW).
2. The plastic housing may only be cleaned with a damp cloth.
3. The sensor may not be operated in electrostatically critical processing conditions, in which an electrostatic loading of the sensor and the connecting system is to be counted. Significant steam and dust clouds acting directly on the Memosens sensor head must be strictly avoided.

CSA20CA80021490X

/F

NI CL 1, DIV 2, GP A, B, C, D T6
IS Class I Zone 2 AEx / Ex ic IIC T6 Gc

EDGES OF UNDEFINED SHAPE ISO 13715
GPS-GEOMETRICAL TOLERANCING ISO 1101
GPS-INDICATION OF SURFACE TEXTURE ISO 1302
GPS-FUNDAMENTALS ISO 8015
GPS-DIMENSIONAL TOLERANCING ISO 14405
GPS-DRAWING INDICATIONS ISO 10135

Endress+Hauser
Endress+Hauser Conducta GmbH+Co. KG
70839 Gerlingen, Germany

Refer to protection notice ISO 16016
Classification internal

Desinfection

Control drawing
CSA Sensors

Control drawing
CSA Sensors

211038777

Material
-

Scale	1:1
Tolerance	-
Notif. no.	
Designed	02.03.2021 BlochwitzS
Drawing chng.	
Number of changes	9 /F
Welding contr.	
Approval contr.	
Status	In Work
Pressure contr.	
Released	
No. of document	961005034
Version	F
Doc. part	000
Weight	
Volume	
SAP material no.	multiple
Format	DIN A3
Sheet	7/7