DNV·GL

Certificate No:
TAA00002HC

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Sensors and Transmitters for liquid analysis

with type designation(s)
CPS11D, CPS12D, CLS21D, CLS50D, CLS82D, CPF81D, CUS50D, CUS52D, CCS50D, CCS51D, CCS55D, COS81D, CM72, CM82, CYK10

Issued to
Endress+Hauser Conducta GmbH+Co. KG
Gerlingen, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Temperature	**A**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**D**

Issued at **Hamburg** on **2019-11-04**
This Certificate is valid until **2024-11-03**.
DNV GL local station: **Magdeburg**

Approval Engineer: **Dariusz Lesniewski**

for **DNV GL**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

ph electrode with digital Memosens technology

	010	020	030	040
CPS11D-	*	**	*	*

010	Version:	
	7	Basic version
020	Application Range:	
	AA	1-12pH, -15...80°C, 6 bar
	AS	1-12pH, -15...80°C, 6 bar, add. salt
030	Shaft Length:	
	2	120mm
040	Approval:	
	C	Non-hazardous area + EAC marking
	1	Non-hazardous area
	G	ATEX/NEPSI II 1G; FM IS NI; CSA IS NI Ex ia IIC T3/T4/T6 Ga CL.I. Div 1,Group A-D IECEx EX ia IIC T3/T4/T6/Ga
	K	EAC Ex, 0Ex ia IIC T3/T4/T6 Ga
	V	ATEX/NEPSI II 3G Ex ic IIC T3/T4/T6

ORP electrode with digital Memosens technology

	010	020	030	040
CPS12D-	*	**	*	*

010	Version:	
	7	Basic version
020	Measuring surface:	
	NA	Gold
	PA	Platinum
030	Shaft Length:	
	2	120 mm
040	Approval:	
	C	Non-hazardous area + EAC marking
	G	ATEX/NEPSI II 1G; FM IS NI; CSA IS NI Ex ia IIC T3/T4/T6 Ga CL.I. Div 1,Group A-D IECEx EX ia IIC T3/T4/T6/Ga
	K	EAC Ex, 0Ex ia IIC T3/T4/T6 Ga X
	V	ATEX/NEPSI II 3G Ex ic IIC T3/T4/T6
	1	Non-hardous area

ph/ORP electrode with digital Memosens technology

	010	020	030	040
CPF81D-	*	**	*	*

010	Version:	
	7	Basic version
020	Application range:	
	LH	0-14pH; 0-110°C
	NN	0-11pH; 0-80°C
030	Insertion length:	
	1	23mm + electrode guard
	3	58mm + electrode guard
040	Approval:	
	O	FM IS NI Cl.I Div.1&2, Groups A-D
	1	Non-hardous area

Condutivity sensor with digital Memosens technology

	010	020	030
CLS21D-	*	**	*

010	Measuring Range:	
	C	0.01-20.0mS/cm; k=1
020	Process Connection:	
	1E	Thread G1; PES
	1N	Thread NPT 1"; PES
030	Approval:	
	C	Non-hazardous + EAC marking
	G	ATEX / NEPSI II 1G Ex ia IIC T3/T4/T6 IECEx Ex ia IIC T6 Ga
	K	EAC Ex, 0Ex ia IIC T6/T4/T3 Ga X
	O	FM/CSA IS/NI Cl I Div. 1&2 GP A-D
	V	ATEX / NEPSI Ex ic IIC T3/T4/T6 Gc
	1	Non-hazardous area

Inductive conductivity sensor with digital Memosens technology

	010	020	030	040	050
CLS50D-	**	*	*	*	*

010	Approval:	
	AA	Standard:
	BA	ATEX II 1G Ex ia IIC T4/T6 Ga
	BV	ATEX / NEPSI Ex ic IIC T3 T4/T6 Gc
	C2	CSA IS/NI Cl.I Div. 1/2 GP ABCD / Cl. I Zone 0 AEX ia IIC, Cl. I Zone 2 IIC
	FB	FM IS/NI Cl.I Div. 1/2 GP ABCD / Cl. I Zone 0 AEX ia IIC, Cl. I Zone 2 IIC
	GB	EAC Ex, 0Ex ia IIC T6/T4 Ga X
	GR	Non-hazardous area + EAC marking
	IA	IECEx ia IIC T4/T6 Ga
	NA	NEPSI Ex ia IIC T4/T6 Ga
020	Process Connection:	
	1	Thread G 3/4"
	2	Thread NPT 1"; PEEK
030	Sensor-, Seal-; Adapter Material:	
	B	PEEK; Viton; PEEK
	C	PEEK; Chemraz; PEEK
	D	PFA; Chemraz; 1.4571
040	Cable Length:	
	1	3m
	2	7m
	3	15m
050	Cable connection:	
	1	Fixed cable ; crimp sleeves
	2	Fixed cable; M12 plug

Hygienic conductivity sensor with digital Memosens technology

	010	020	030
CLS82D-	**	**	*

010	Approval:	
	AA	Non-hazardous
	BA	ATEX II 1G Ex ia IIC T3/T4/T6 Ga
	C2	CSA IS NI Cl. I Div.1&2 Gr.A-D
	FB	FM IS NI Cl. I Div. 1&2 Gr.A-D
	GC	EAC Ex, 0Ex ia IIC T6/T4/T3 Ga X
	GR	Non-hazardous + EAC marking
	IA	IECEx ia IIC T3/T4/T6 Ga
	NA	NEPSI Ex ia IIC T3/T4/T6 Ga

020	Process Connection:	
	GA	Thread G1
	HA	Thread NPT1
	PG	PG 13.5 120mm
	PM	PG 13.5 215mm
030	Sensor Material:	
	A	Ceramic, Platinum, Stainless Steel

Absorbtion sensor for turbidity measurement

	010	020	030	040	050	060	070
CUS50D-	**	*	*	*	*	*	*

010	Approval:	
	AA	Non-hazardous area
	GR	Non-hazardous area + EAC marking
020	Measuring Range:	
	2	Absorption (ISO 7027)
030	Process Connection:	
	A	Immersion sensor, thread G1, NPT 3/4
040	Adaption Cable:	
	A	Fixed cable ; crimp sleeves
	B	Fixed cable; M12 plug
050	Cable Length:	
	2	3m
	3	7m
	4	15m
	7	…m
	8	…ft
060	Sensor Material:	
	A	Head: PCTFE, shaft: 1.4571
	B	Head: PCTFE, shaft: PPS
070	Seal Material:	
	1	EPDM

Inline and immersion sensor for turbidity measurement

	010	020	030	040	050
CUS52D-	**	*	*	*	*

010	Approval:	
	AA	Non-hazardous area
	GR	Non-hazardous area + EAC marking
020	Measuring Method:	
	1	ISO 7027, IR
030	Process Connection:	
	A	Immersion Sensor, thread G1, NPT 3/4
040	Adaption Cable:	
	A	Fixed cable ; crimp sleeves
	B	Fixed cable; M12 plug
050	Cable Length:	
	2	3m
	3	7m
	4	15m
	7	….m
	8	…. Ft

Chlorine dioxine sensor with digital Memosens technology

010	020	030

CCS50D-	**	**	**
010	Approval:		
	AA	Non-hazardous area	
	GR	Non-hazardous area + EAC marking	
	CD	CSA C/US NI Cl.I, Div.2, GP. A-D T6	
020	Application:		
	11	Process water, drinking water	
030	Measuring Range:		
	AD	5 mg/l	
	BF	20 mg/l	
	CJ	200 mg/l	

Coductivity sensor with digital Memosens technology

	010	020	030
CCS51D-	**	**	**
010	Approval:		
	AA	Non-hazardous area	
	GR	Non-hazardous area + EAC marking	
	CD	CSA C/US NI Cl.I, Div.2, GP. A-D T6	
020	Application:		
	11	Process water, drinking water	
030	Measuring Range:		
	AD	5 mg/l	
	BF	20 mg/l	
	CJ	200 mg/l	

Inductive conductivity sensor wirh digital Memosens technology

	010	020	030
CCS55D-	**	**	**
010	Approval:		
	AA	Non-hazardous area	
	GR	Non-hazardous area + EAC marking	
	CD	CSA C/US NI Cl.I, Div.2, GP. A-D T6	
020	Application:		
	31	Process water, sea water	
030	Measuring Range:		
	AD	5 mg/l	
	BF	20 mg/l	
	CJ	200 mg/l	

Optical sensor for measuring oxygen

	010	020	035	040	050	060
COS81D-	**	**	*	*	*	*
010	Approval:					
	AA	Non-hazardous area				
	BA	ATEX II 1G Ex ia IIC T3/T4/T6 Ga				
	C3	CSA C/US IS NI Cl.I Div 1&2 Gr.A-D				
	GC	EAC Ex, 0Ex ia IIC T6/T4/T3 Ga X				
	GR	Non-hazardous area + EAC marking				
	IA	IECEx ia IIC T3/T4/T6 Ga				
	NA	NEPSI Ex ia IIC T3/T4/T6 Ga				
020	Diameter; Process Connection; Length:					
	A2	12mm; PG13.5; 120mm				
	A4	12mm; PG13.5;220mm				
035	Type Optical Cap:					

	C	C-shape
	U	U-shape
040	Material, Sensorshaft; Sensorcap:	
	B	Stainless steel 1.4435, 316L
050	Material O-Ring:	
	1	EPDM USP Cl. VI+FDA
	3	FFKM
060	Material Process Sealing:	
	1	FKM USP Cl. VI+FDA

Compact transmitter configurable for Memosens sensors

	010	020	030	040	045	050	055
CM72-	**	**	**	*	*	*	*

010	Approval:	
	AA	Non-hazardous area
	GR	Non-hazardous area + EAC marking
	CA	CSA C/US General Purpose
	B5	ATEX II 1G Ex ia IIC T4/T6 Ga + ATEX II 2D Ex ia IIIC T85°C…T135°C Db
	I4	IECEx Ex ia IIC T4/T6 Ga + IECEx Ex ia IIIC T85°C…T135°C Db
	CH	CSA C/US IS Cl.I/II/III Div. 1 GP A-G T4/T6
	82	ATEX/IECEx II 1G Ex ia IIC T4/T6 Ga + ATEX/IECEx II 2D Ex ia IIIC T85°C...T135°C Db + CSA C/US IS Cl. I/II/III Div. 1 GP A-G T4/T6
020	Sensor Type; Measuring Range:	
	AD	pH; 0..pH4
	AM	ORP; -1500mW…+1500mV
	DD	Conductivity conductive; 0..20uS/cm
	DE	Conductivity conductive; 0..500uS/cm
	DF	Conductivity conductive; 0..20mS/cm
	DG	Conductivity conductive; 0..500mS/cm
	FD	Oxygen amperometric; 0..200ug/l
	FF	Oxygen amperometric; 0..20mg/l
	GD	Oxygen optical; 0..200ug/l
	GF	Oxygen optical; 0..20mug/l
	LE	Chlorine; 0..5mg/l
030	Communication:	
	B2	1x output 4..20mA, HART
040	Cable Length:	
	C	3m
	F	7m
	K	15m
045	Cable Type:	
	1	Outdoor use, rugged, shielded, diameter < 7mm
050	Cable Connection:	
	A	Crimp sleeves
055	Cable Outlet:	
	1	Straight

Compact transmitter configurabale for Memosens sensors

	010	020	030	040	045	050	055
CM82-	**	**	**	*	*	*	*

010	Approval:	
	AA	Non-hazardous area

	GR	Non-hazardous area + EAC marking
	CA	CSA C/US General Purpose
	B5	ATEX II 1G Ex ia IIC T4/T6 Ga + ATEX II 2D Ex ia IIIC T85°C…T135°C Db
	I4	IECEx Ex ia IIC T4/T6 Ga + IECEx Ex ia IIIC T85°C…T135°C Db
	CH	CSA C/US IS Cl.I/II/III Div. 1 GP A-G T4/T6
	82	ATEX/IECEx II 1G Ex ia IIC T4/T6 Ga + ATEX/IECEx II 2D Ex ia IIIC T85°C...T135°C Db + CSA C/US IS Cl. I/II/III Div. 1 GP A-G T4/T6
020	Sensor Type:	
	XA	Sensors with Memosens plug-in head
030	Communication:	
	B2	1x output 4..20mA, HART
040	Cable Length:	
	C	3m
	F	7m
	K	15m
045	Cable Type:	
	1	Outdoor use, rugged, shielded, diameter < 7mm
050	Cable Connection:	
	A	Crimp sleeves
055	Cable Outlet:	
	1	Straight

Memosens data cable

	010	020	030
CYK10-	*	**	*

010	Approval:	
	A	Non-hazardous area
	G	ATEX / NEPSI II 1G Ex ia IIC T3/T4/T6 Ga IECEx ia IIC T3/T4/T6 Ga FM / CSA IS/NI CLI Div1&2 GP ABCD
	I	IECEx Ex ia IIC T3/T4/T6 Ga
	L	non-hazardous area, silicone free
	O	FM IS Cl.I Div.1 Gr. A-D
	S	CSA IS Cl.I Div.1 Gr. A-D
	T	TIIS, pH
	U	TIIS, Oxygen
	V	ATEX/NEPSI II 3G Ex ic IIC
020	Cable Length:	
	03	3m
	05	5m
	10	10m
030	Cable Connection:	
	1	wire terminals
	2	M12 plug

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each

case according to DNV GL Rules and Ex-Certification / Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Place of manufacture

Type Approval documentation

Tests carried out
Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product
The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment
The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:
- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE