TARAline CP4MA*-AT

indicator	Total chlorine = free chlorine + bound chlorine (TRO = total residual oxidants) Reduced dependence on pH	
Application	Sea water, ballast water of vessels Surfactants (tensides) are partially tolerated.	
Chlorination agents	inorganic chlorine compounds: NaOCl (=sodium hypochlorite), $Ca(OCl)_2$, chlorine gas, electrolytically generated chlorine	
Measuring system	Membrane covered, amperometric potentiostatic 3-electrode system with electronic inside	
Electrical connection	Only allowed to be connected to a suitable and authorised zener barrier, (see manual „TARAline CP4MA-AT“)	
Electronic	mA-version: - current output; analog - not galvanically isolated electronics - output signal: analog (analog-out/analog)	
Information about the measuring range	The actual slope of a sensor can vary production-related between 65% and 150% of the nominal slope Note: With a slope > 100% the measuring range is reduced accordingly. (Ex.: 150% slope → 67% of the specified measuring range)	
Slope drift At repeatability conditions (25 °C, pH 7,2 in drinking water)	approx. <-1% per month	
Working temperature	Measuring water temperature	0 … +45 °C (no ice crystals in the measuring water)
	ambient temperature	0 °C < Ta < +55°C
Temperature compensation	Automatically, by an integrated temperature sensor Sudden temperature changes must be avoided	
Norminal pressure	Nominal pressure :	0.3 bar, no pressure impulses and/or vibrations
	Max. allowable working pressure:	Operation without retaining ring: 0.5 bar, no pressure impulses and/or vibrations
		Operation with retaining ring: 0.5 bar, no pressure impulses and/or vibrations

TARAline CP4MA*-AT

Flow rate (Incoming flow velocity)	approx. 15-30 l/h (33 – 66 cm/s) in TARAflow FLC, small flow rate dependence is given	
pH-range	pH 4 – pH 12, highly reduced dependence on pH-value (see diagram “Slope of TARAline CP4 versus pH”)	
Run-in time	First start-up approx. 2 h	
Response time	T_{90}: approx. 2 min.	
Zero point adjustment	Not necessary	
Slope calibration	At the device, by analytical determination, DPD-4-Method (DPD-1 + DPD-3)	
interferences	Only for the measurement of total chlorine: ClO_2: factor 1 O_3: factor 1.3	
Absence of the disinfectant	Max. 24 h	
Connection	4-20 mA version: 2-pole terminal	
max. length of sensor cable (depending on internal signal processing)	analog	< 30 m
	digital	> 30 m are permissible Maximum cable length depends on application
material	Microporous hydrophilic Membrane, PVC-U, PEEK, stainless steel 1.4571	
Size	diameter: approx. 25 mm Length: 4-20 mA version approx. 220 mm	
Transport	+5 … +50 °C (Sensor, electrolyte, membrane cap)	
storage	Sensor:	dry and without electrolyte no limit at +5 … +40 °C
	Electrolyte:	in original bottle protected from sunlight at +5 … +35 °C min. 1 year or until the specified EXP-Date
	Membrane cap:	in original packing no limit at +5 … +40 °C (used membrane caps can not be stored)
maintenance	Regularly control of the measuring signal, min. once a week The following data depend on the water quality: Change of the membrane cap: once a year Change of the electrolyte: every 6 months	

<table>
<tr><td>  </td><td colspan="2">TARAline
CP4MA*-AT</td></tr>
<tr><td rowspan="3">Ex-proof</td><td colspan="2">Certified according to ATEX and IECEx
Intrinsic safety "i"
(certificate, pages 6-12 of this data sheet)</td></tr>
<tr><td>Marking:</td><td>Ex II 2G Ex ib IIB T4 Gb</td></tr>
<tr><td>Zone:</td><td>EPL "Gb" corresponds to zone 1
EPL = Explosion Protection Level</td></tr>
<tr><td>CE</td><td colspan="2">EMC-Testing DIN EN 61326-1, 61326-2-3, 63000
RoHS compliant</td></tr>
</table>

Technical Data

1. CP4MA*-AT 4-20 mA (analog output, analog internal signal processing)

analog-out / analog

Only allowed to be connected to a suitable and authorised zener barrier, refer to operating instructions, section 3 „Ex-proof specifications“.

Electrical limits for the sensor electronics:
Input voltage: 12 ... 24 VDC
current: 4 ... 20 mA

	**Measuring range** **in ppm as Cl_2**	**resolution** **in ppm as Cl_2**	**Output** **Output resistance**	**Nominal slope** (at pH 7.2) **in mA/ppm as Cl_2**	**Voltage supply**	**Connection**
CP4MA2-AT	0.005…2.000 *	0.001	4…20 mA uncalibrated	4.8	12…24 VDC R_L 50Ω…R_L 900Ω	2-pole terminal (2 x 1 mm²) Recommended: Round cable ∅ 4 mm 2 x 0.34 mm²
CP4MA5-AT	0.05…5.00 *	0.01		1.92		
CP4MA10-AT	0.05…10.00 *	0.01		0.96		
CP4MA20-AT	0.05…20.00 *	0.01		0.48		

* tested and approved up to the concentration indicated

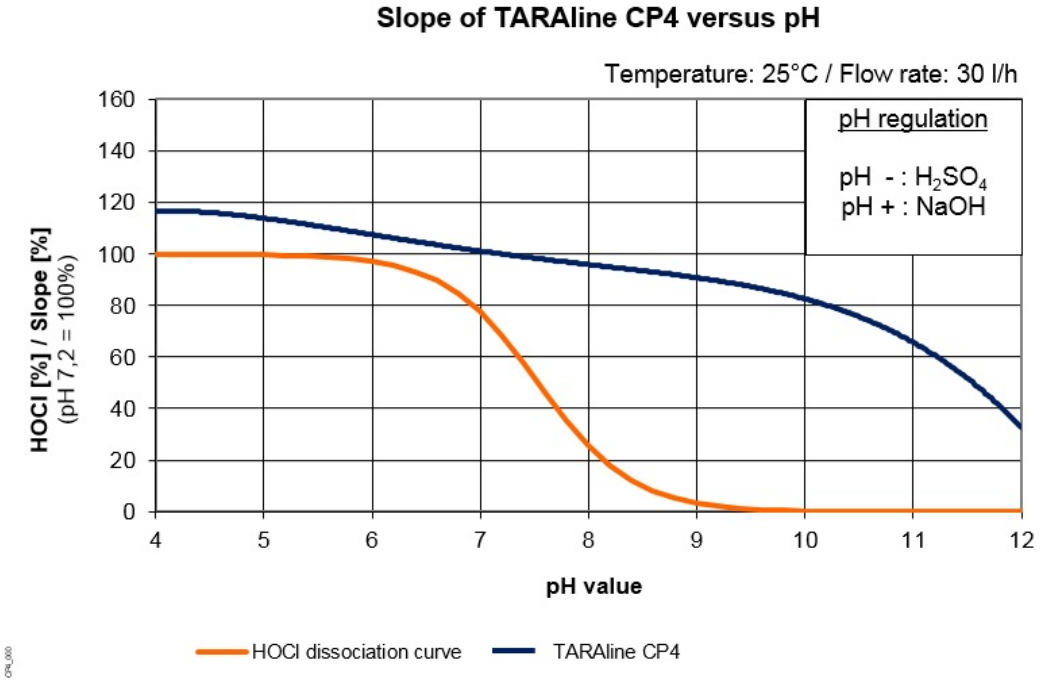
(Subject to technical changes.)

Spare Parts

Type	**Membrane cap**	**Electrolyte**	**Emery**	**O-ring**
For all CP4MA*-AT	M48.4S, Art. No. 11051-S	ECP1.4/GEL, 100 ml Art. No. 11006.1	S1 Art. No. 11908	14 x 1.8 NBR Art. Nr. 11806

(Subject to technical changes.)

Reiss GmbH
Eisleber Str. 5
D – 69469 Weinheim
Germany


Slope of TARAline CP4 versus pH
Temperature: 25°C / Flow rate: 30 l/h
pH regulation
pH - : H2SO4
pH + : NaOH
HOCl [%] / Slope [%]
(pH 7,2 = 100%)
160
140
120
100
80
60
40
20
0
4
5
6
7
8
9
10
11
12
pH value
HOCl dissociation curve
TARAline CP4

Translation

EU-Type Examination Certificate Supplement 4

1

2 **Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU**

3 EU-Type Examination Certificate Number: **BVS 13 ATEX E 101 X**

4 Product: **TARAline sensor type X-BS1MA**, TC2-BS**, CP4MA**-AT**

5 Manufacturer: **Reiss GmbH**

6 Address: **Eisleber Straße 5, 69469 Weinheim, Germany**

7 This supplementary certificate extends EU-Type Examination Certificate No. BVS 13 ATEX E 101 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. BVS PP 13.2193 EU.

9 The Essential Health and Safety Requirements are assured in consideration of:

EN IEC 60079-0:2018	**General requirements**
EN 60079-11:2012	**Intrinsic Safety "i"**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ex **II 2G Ex ib IIB T4 Gb**

DEKRA Testing and Certification GmbH
Bochum, 2021-05-26

Signed: Jörg-Timm Kilisch

Managing Director

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 13 ATEX E 101 X
Supplement 4

15 **Product description**

15.1 **Subject and type**

TARAline sensor type X-BS1MA**, TC2-BS**, CP4MA**-AT

Instead of the ** in the complete denomination numerals will be inserted to characterize the measuring range.

The specified types are identical devices, which differ only in the type designation.

15.2 **Description**

Reason for the supplement:

- Assessment in accordance with the current standard versions
- Changes in layout and documentation
- Change of temperature class from T5 to T4

Description of Product:

The sensor is set for the measurement of the chlorine concentration in the ballast water of vessels. It consists of a bar-shaped shaft. At the bottom of the shaft the electrode finger is located.

The measuring part of the bar-shaped sensor is installed in a probe housing made of acrylic glas. The sample water from the ballast water stream flows through this probe housing. At the exterior part of the sensor a two-pole electrical connection is available. This connection can be covered. The electronic circuit is completely sealed in the bar-shaped PVC-U housing. By a suitable two-wire electrical cable the 4 – 20 mA signal is lead through the Ex-area and connected to a suitable supply and evaluation device.

Listing of all components used referring to older standards

None

15.3 **Parameters**

Maximum input voltage	U_i	DC	25.4	V
Maximum input current	I_i		115	mA
Maximum Input power	P_i		650	mW
Effective internal capacitance	C_i		120	nF
Effective internal inductance	L_i		13	nH
Ambient temperature range	T_a		0 up to +55 °C	

16 **Report Number**

BVS PP 13.2193 EU, as of 2021-05-26

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

17 **Special Conditions for Use**

17.1 The sensor shall be mounted in areas where electrostatic charge / discharge will be avoided.
17.2 Along the external intrinsically safe circuit (between sensor and power supply) must be equipotential equalization.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.
Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2021-05-26
BVS-Hil/MGR A20200737

Managing Director

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
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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 13.0104X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 4	Issue 3 (2016-06-09) Issue 2 (2016-01-13) Issue 1 (2014-12-09) Issue 0 (2013-10-10)
Date of Issue:	2021-06-08		
Applicant:	**Reiss GmbH** Eisleber Straße 5 69469 Weinheim **Germany**		
Equipment:	**TARAline sensor type X-BS1MA**, CP4MA**-AT, TC2-BS****		
Optional accessory:			
Type of Protection:	**Equipment protection by intrinsic safety "i"**		
Marking:	Ex ib IIB T4 Gb		

Approved for issue on behalf of the IECEx Certification Body: **Dr Michael Wittler**

Position: **Deputy Head of Certification Body**

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

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

DEKRA
On the safe side.

IECEx Certificate of Conformity

Certificate No.: **IECEx BVS 13.0104X** Page 2 of 4

Date of issue: 2021-06-08 Issue No: 4

Manufacturer: **Reiss GmbH**
Eisleber Straße 5
69469 Weinheim
Germany

Additional manufacturing 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 Edition:7.0 — Explosive atmospheres - Part 0: Equipment - General requirements

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

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/ExTR13.0112/03

Quality Assessment Report:

DE/BVS/QAR13.0008/07

IECEx Certificate of Conformity

Certificate No.: **IECEx BVS 13.0104X** Page 3 of 4

Date of issue: 2021-06-08 Issue No: 4

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

Subject and Type

TARAline sensor type X-BS1MA** or type CP4MA**-AT or type TC2-BS**

Instead of the ** in the complete denomination numerals will be inserted to characterize the measuring range.

The specified types are identical devices, which differ only in the type designation.

Description

The TARAline sensor is set for the measurement of the chlorine concentration in the ballast water of vessels. It consists of a bar-shaped shaft. At the bottom of the shaft the electrode finger is located.

The measuring part of the bar-shaped sensor is installed in a probe housing made of acrylic glas. The sample water from the ballast water stream flows through this probe housing. At the exterior part of the sensor a two-pole electrical connection is available. This connection can be covered. The electronic circuit is completely sealed in the bar-shaped PVC-U housing. By a suitable two-wire electrical cable the 4 – 20 mA signal is lead through the Ex-area and connected to a suitable supply and evaluation device.

Parameters

Maximum input voltage	Ui DC	25.4	V
Maximum input current	Ii	115	mA
Maximum input power	Pi	650	mW
Effective internal capacitance	Ci	120	nF
Effective internal inductance	Li	13	nH
Ambient temperature range	Ta	0 °C up to +55	°C

SPECIFIC CONDITIONS OF USE: YES as shown below:
1 The sensor shall be mounted in areas where electrostatic charge/discharge will be avoided.

2 Along the external intrinsically safe circuit (between sensor and power supply) must be equipotential equalization.

IECEx Certificate of Conformity

Certificate No.: **IECEx BVS 13.0104X** Page 4 of 4

Date of issue: 2021-06-08 Issue No: 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Assessment in accordance with the current standard versions
- Changes in layout and documentation
- Change of temperature class from T5 to T4