

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Misc. detector

with type designation(s)

SWN-P, SWN-P+, SWN-P-HT2, SWN-P-HT2+, EX-P-HT4, EX-P-STD, EX-P-STD2 and D01

Issued to

**Halogen Systems Inc.
Incline Village, NV, USA**

is found to comply with

**DNV GL rules for classification – Ships and offshore units
USCG Federal Register 46 CFR part 162, subpart 162.060-30**

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 A
Enclosure B/IP56**

Issued at **Høvik** on **2021-01-20**

This Certificate is valid until **2026-01-19**.

DNV GL local station: **Long Beach**

for **DNV GL**

Approval Engineer: **Siri Tag**

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**Jan Tore Grimsrud
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Online sensor for ballast water treatment systems which measures TRO (total residual oxidant) and salinity and will allow reading of oxidant levels in a water sample.
All sensor models use an optional display transmitter, D01, which provides remote display of all parameters and sensor information.

Standard TRO sensor series consist of the following models:

SWN-P
SWN-P+
SWN-P-HT2
SWN-P-HT2+

EX series for use in hazardous environment consist of the following models:

EX-P-HT4
EX-P-STD
EX-P-STD2

Nomenclature: A-B-C

A: Type

SWN Non-hazardous models
EX Hazardous location models

B: Reference electrode

P Normal TRO sensor
+ as PN suffix TRO sensor incl. pH measurement

C: Mounting

HT2 Hot Tap
HT4 Hot Tap Long
STD Side stream
STD2 Extended Flange

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.

Application/Limitation

The product has been tested for nominal voltage 24 VDC.

Ex installations to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Ex-certification is not covered by this certificate and the following paragraph, which is for information only, is based on information received from the manufacturer, but not verified by DNV GL.

Information on Ex-Certification received from manufacturer – Not verified by DNV GL		
Equipment	Certified	Certificate No.
EX-P-HT4 and EX-P-STD	Ex db ib IIC T5 Gb -20°C ≤ Ta ≤ 55°C	IECEx LC 18.0010X issue No.:0

EMC in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.

Type Approval documentation

Tests carried out

Applicable tests according to:
Class guideline, DNVGL-CG-0339, November 2016.
USCG Federal Register 46 CFR part 162, subpart 162.060-30.

Marking of product

Name of maker: "Halogen Systems"
Unit type: As listed under Product description
Serial number:
Electrical rating: 24 VDC @ 350 mA

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