

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Temperature Sensor

with type designation(s)
RTD, Thermocouple, Thermowell

Issued to

MRC Global Norway
NYBORG, Norway

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 -
Humidity -
Vibration **B**
EMC -
Enclosure **See product description.**

Issued at **Høvik** on **2017-07-19**

This Certificate is valid until **2022-06-30**.

DNV GL local station: **Oslo Maritime and CAP**

for **DNV GL**

Approval Engineer: **Nils Jarem**

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Odd Magne Nesvåg
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.



Product description

Type	Drawing No.	RTD	TC	TW	Description	Class
MH-Snap-DIN43650	300486 rev.B	●		●	Snap-on sensor with. connection box	B
MH-Snap-DIN43650	300382 rev.A	●		●	Snap-on sensor with. connection box	B
W-GN-Snap-Included sensor	300461 rev.D	●		●	Snap-on sensor with connection head	B
W-GN-Snap-Included sensor	300355 rev.B	●		●	Snap-on sensor with. connection box	B
W-GC-Snap-Included sensor	300509 rev.B	●		●	Snap-on sensor with. connection box	B
MH-SNAP	300610 rev.D	●		●	Snap-on sensor with. connection box	B
MT	H32148 rev.A	●			Wire connection	None
MKS	300564 rev.A	●			Wire connection	None
MK	H32149 rev.C	●			Wire connection	None
MITRA	H32150 rev.C	●			Prepared for transmitter	None
MITRAV	402052 rev.B	●			Prepared for transmitter, heavy duty type	None
MI	H32163 rev.C	●			With ceramic block	None
MIV	300536 rev.B	●			With ceramic block , heavy duty type	None
MH or CK1/T1	H32784 rev.B	●			With connection head	B/C
MH	H32784 rev.B	●			With connection head and fixed threads	B/C
MH-MI	300617 rev.A	●			With connection head	B/C
MH-MITRA	300618 rev.A	●			With connection head and prepared for transmitter	B/C
TankMT	301437 rev.B	●			Tank sensor	None
TS	H32133 rev.C		●		Wire connection	None
TT	H32137 rev.C		●		Wire connection	None
TK	H32138 rev.D		●		Wire connection	None
TQ	H32132 rev.C		●		Plug connection	None
TH	H32139 rev.B		●		With connection head	B/C
TH	H32139 rev.B		●		With connection head and fixed threads	B/C
TITRA	H32996 rev.B		●		Prepared for transmitter	None
TI	H32134 rev.B		●		With ceramic block	None
TK	300484 rev.A		●		Exhaust gas sensor	None
TK	300487 rev.A		●		Exhaust gas sensor, bent	None
W-GN	H32151 rev.C			●	Without extender	B/C
W-GC	H32153 rev.D			●	With extender	B/C

RTD: Resistance Temperature Detector; TC: Thermocouple; TW: Thermowell.

Class: Enclosure class B/C means: B aluminium housing, C stainless steel housing.

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 Type Approval does not include transmitters

Type Approval documentation

Tests carried out

Vibration test according to DNV Standard for Certification No. 2.4.

Marking of product

The products to be marked with:
- manufacturer name

Job Id: **262.1-015626-2**
Certificate No: **TAA00001AN**

- 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