

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Fire Alarm Central Unit

with type designation(s)
Minerva MX Marine T2000, T2000R, T2000CV, T2000RCV

Issued to

Tyco Fire & Security GmbH
Schaffhausen, Switzerland

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	B
Humidity	B
Vibration	A
EMC	B
Enclosure	A

This Certificate is valid until **2020-09-27**.

Issued at **Høvik** on **2018-09-28**

DNV GL local station: **Southampton**

for **DNV GL**

Approval Engineer: **Frode Nygård**

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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

MINERVA MX T2000 fire detection panels providing conventional and digital addressable fire detection:

- Minerva MX Marine T2000. Equipped with 2 loops and expandable to eight loops using additional loop expansion cards. Supports up to 1000 addressable devices.
- Minerva MX Marine T2000R. Connects to fire detection panel T2000 and provides repeater functions.
- Minerva MX Marine T2000CV. Equipped with 3 loops supporting up to 750 addressable devices
- Minerva MX Marine T2000R CV. Connects to fire detection panel T2000CV and provides repeater functions.

The panels are constructed using the following modules:

Type number	Description
ODM800	Operators Display Module
OCM800	Operator Control Module
LPB800	Power Supply Module with Loop Booster
PSU830	Power Supply Module
CPU800	Central Processing Module
FB800	Fuse Board (optional)
FIM800	Field Interface Module
XML800	Expansion Loop Module
IOB800	Input/output Module
MPM800	Multi Purpose Interface Module
ANN840	40 Way Alarm/fault LED Module
ANN880	80 Way Alarm LED Module
COM820	20 Way Status Control Module
TLI 800 EN	Network Module
CPU 801	Central processor unit installed in fire alarm control panels

Software Version 22.0

Approval conditions

The Type approval covers hardware and software as listed under "Product description"

Application/Limitation

System configuration and application to be in accordance with relevant parts of the Rules.
Repeater panels are accepted as Indicating Units only.

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this type approval certificate
- System block diagram including location of loop equipment.
- Power supply arrangement (may be part of the system block diagram)

Instruction Manual covering each specific installation to be available on board.

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Type Approval documentation

Tests carried out

Applicable tests according to Class Guideline DNVGL-CG-0339, Edition November 2016.
Applicable tests according to EN 54-2 (1997), EN 54-2 A1 (2006)
Applicable tests according to EN 54-4 (1997), EN 54-4 A1 (2002), EN 54-4 A2 (2006)

Marking of product

The products covered by this type approval are marked as follows:

<u>Model number</u>	<u>Part number</u>
Minerva MX Marine T2000	557.200.610
Minerva MX Marine T2000R	557.200.611
Minerva MX Marine T2000CV	557.200.620
Minerva MX Marine T2000RCV	557.200.621

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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE