

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Flame Detector**

with type designation(s)

FV311S, FV311SC, FV311SC-N, FV312S, FV312SC, FV312SC-N

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 D****Humidity B****Vibration A****EMC B****Enclosure C / IP 66**Issued at **Høvik** on **2018-08-29**This Certificate is valid until **2022-06-30**.DNV GL local station: **Southampton**for **DNV GL**Approval Engineer: **Nils Jarem**

**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

The following type designations are covered by this certificate:

FV311S (no CCTV camera)

FV312S (no CCTV camera)

and

FV311SC (with PAL CCTV camera)

FV311SC-N (with NTSC CCTV camera)

FV312SC (with PAL CCTV camera)

FV312SC-N (with NTSC CCTV camera)

Note: The colour video cameras were not tested acc. to EN 54-10.

Only the decoupling of camera and detection unit in accordance with EN 54-10 was verified.

The detectors of the FV311S/FV312S series have three IR sensors detecting IR radiation in different wavelength ranges.

The detectors have an alarm and fault relay, a 4-20mA output and an interface for the connection to external devices.

Optionally, the detector can be fitted with an inbuilt colour video camera (PAL or NTSC) for connection with a video surveillance system. The field of view can be represented by an Overlay indicating the alarm location and status information.

Further details and principles of operation can be found in User Manual – FV Series IR Array Flame Detectors, Edition 2010-10-14.

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.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After certification the clause for software control will be put into force.

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.

Application/Limitation

Ex-certification is not covered by this certificate. Application in hazardous area 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.

The colour video cameras were not tested. Only the decoupling of camera and detection unit in accordance with EN 54-10 was verified.

Type Approval documentation

Tests carried out

Relevant tests in accordance with DNV Standard for Certification 2.4 (Issue 2006).
Relevant tests of application functions in accordance with EN 54-10 (Issue 2002).

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