

TYPE APPROVAL CERTIFICATE

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

with type designation(s)
FV411F, FV412F, FV413F

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 C / IP66

Issued at **Høvik** on **2019-01-14**

This Certificate is valid until **2023-06-30**.

DNV GL local station: **Southampton**

for **DNV GL**

Approval Engineer: **Nils Jarem**

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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.



Product description

The following type designations are covered by this certificate :

Variant	Type and Description	Camera
FV411f	Flameproof detector with window heater, 4-20 mA, Relay, Conventional, MX and MODBUS Interfaces. Window heater may be powered separately in some configurations.	No camera
FV412f	Flameproof detector with window heater, 4-20 mA, Relay, Conventional, MX and MODBUS Interfaces. Window heater and camera may be powered separately in some configurations.	PAL
FV413f	Flameproof detector with window heater, 4-20 mA, Relay, Conventional, MX and MODBUS Interfaces. Window heater and camera may be powered separately in some configurations.	NTSC

All the models of FV400 provide the following interfaces which are selectable by configuration.

- Fire and Fault relays (NO or NC contacts)
- 4 - 20 mA (Source or Sink)
- Video twisted pair balanced line (NSTC/PAL)
- MODBUS (RS485) interface
- Configuration port (RS485)

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

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

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.
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)

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Certificate No: **TAA000022G**

- 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