

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Control system for fire extinguishing**with type designation(s)
ACS-1

Issued to

**safetec Brandes und Niehoff GmbH
Lüneburg, Germany**is found to comply with
DNV GL rules for classification – Ships**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

| | |
|--------------------|---|
| Temperature | B |
| Humidity | B |
| Vibration | A |
| EMC | B |
| Enclosure | Required protection according to the Rules shall be provided upon installation on board. |

Issued at **Hamburg** on **2017-06-21**for **DNV GL**This Certificate is valid until **2022-04-17**.DNV GL local station: **Hamburg**Approval Engineer: **Heinz Scheffler**

**Joannis Papanuskas
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 Alarm and Control System ACS-1 is a modular system.

It contains Hardware modules with different inputs and outputs for different purposes. Also combinations of below mentioned systems can be realized:

- ❖ Control system for „Fixed Water Based Local Application Fire Fighting Systems“ (FWBLAFFS) or „Water Mist Systems“
- ❖ Control system for Engine Room Protection Systems (as an alternative for CO₂- room-protection)
- ❖ Electrical Control of CO₂ Extinguishing Systems (EP-CO₂)
- ❖ Alarm panel for Sprinkler Systems (flow sensors, position sensors for section valves, pump pressure, pump control, tank control, mimic panel)

Hardware:

The interconnection between all modules is realized with a 4-wire CAN-bus. Alarms, system faults and event logs are indicated with clear text on a display.

Panels:

- CP-100: Main or parallel control panel with adapter module ADP-170/-172
- CP-110: Main or parallel control panel with adapter module ADP-174
- CP-209: Remote release panel with ADP-170 for control of extinguishing sections
- CP-240: CO₂ remote release panel with adapter module ADP-162
- CP-410: Display panel with ADP-170/-172 for water mist system
- CP-411: Display panel with ADP-170/-172 for fire alarm system
- CP-412: Display panel with ADP-170/-172 for sprinkler system
- CP-490: Sprinkler Alarm Mimic Panel
- RP-01: Local release box
- ACS01.205: Local release box for IO-630X / IO-634X

Module Cabinet for "I/O-modules" and the system power supply.

- MC-304/-308/-312: 300 X 380 X 210 mm / 380 X 600 X 210 mm / 600 X 600 X 230mm
- MC-316: 600 X 760 X 210 mm

Modules:

- ACS-OPTO16-A: 16 opto couplers (working current) with Terminals for End and Alarm Resistors
- ACS-OUT48: 48 outputs for connection of LEDs, opto couplers or small relays.
- ACS-OPTO48-A: 48 opto couplers (working current)
- ACS-OPTO48-R: 48 opto couplers (quiescent current)
- ACS-REL16: 16 relays (NO contacts)
- CAN-REDU-1: CAN-Bus interface-module
- IO-6300: 4 monitored inputs and outputs
- IO-6302: 4 monitored inputs and outputs for Consilium conventional detectors
- IO-6303: 4 monitored inputs and outputs for Egon Harig Typ 800/24 VST-K-NT and Apollo (ORBIS) conventional detectors
- IO-6340: 8 monitored inputs
- IO-6343: 8 monitored inputs for for Egon Harig Typ 800/24 VST-K-NT and Apollo (ORBIS) conventional Detectors
- POW-6510: battery charger for lead batteries 24V, max. 7Ah, integrated automatic switch over for main /emergency supply 220/230V AC or 110V AC.
- MEPS-01: Main / Emergency supply 230V AC or 110V AC.

Section Valve:

- J+J R20, J+J R20-U
- VBxxx-MAR, VBxxx-MAR-U, xxx=030,060,110,190,270,350 max working torque (Nm)

Application/Limitation

Equipment not for installation within a distance of 5 m from magnetic compass.

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 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 the certification the clause for application software control will be put into force.

Clause for application software control

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Type Approval documentation

Test report: No.03/3152-1;No.01-08/2003 and No.06-08/2005; No.01-04/2010; No.10/1106-1; No. 08 / 8085-2; No.01-07/2008; No. 15007-1-R00; No. 190-14.

Documents: Manual Alarm and Control System ACS-1 Rev. 1.01; Operating manual, issue 3.05, dated 2007-02-08 and issue 0, dated 2006-11-22 (CO2 release systems), Commissioning / test list dated 2003-08- 28; List of Documents "List Of Documents-DL7.pdf, dated 04.05.2017".

Tests carried out

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

Marking of product

The products to be marked with:

- Model name
- Manufacturer name
- Serial number

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