



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAE000001N
Revision No:
3

This is to certify:
that the Monitoring Relay

with type designation(s)
TVOC-2

issued to
ABB Electrification Sweden AB, Motor Starting & Safety
Västerås, Sweden

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2024-08-07**

for **DNV**

This Certificate is valid until **2028-06-17**.

DNV local unit: **Sweden CMC**

Approval Engineer: **Qiang William Guo**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2023-09

www.dnv.com

Page 1 of 3

Name and place of manufacturer

Fideltronic sp. z p o. o.
 Sucha Beskidzka
 Poland

Product description

Arc fault monitoring system with fiber optic sensors

Type	Type number	Description
Arc Monitor	TVOC-2-48	Including one HMI and door accessories
Arc Monitor with communication module	TVOC-2-48-C	Including one HMI with COM module
Arc Monitor	TVOC-2-240	Including one HMI and door accessories
Arc Monitor with communication module	TVOC-2-240-C	Including one HMI with COM module
Extension	TVOC-2-E1	10 optical inputs
Extension	TVOC-2-E3	10 optical inputs for 60 m detector cable
HMI	TVOC-2-H1	Human machine interface - additional
Communication module	TVOC-2-COM	Including one HMI with Modbus RTU interface
Current sensing unit	CSU-2LV CSU-2MV	4 current sensor inputs

Optical inputs and outputs	
Detectors TVOC-2-DPx	Includes optical detector & cable, x indicates cable length
Current signal from CSU	2 inputs: X1.21, X1.22 (optical)
Forward current signal to another Arc monitor	1 output: X1.23 (optical)

Power supply	TVOC 2
Rated supply voltage Us	100 - 240 V AC, 50/60 Hz, 100 - 250 V DC, 24 - 48 V DC
Us variation	AC -20 % +10%, DC: -25 % +30 %
Rated insulation voltage	250 V AC with reinforced insulation
Rated impulse withstand voltage	4 kV

Optical inputs and outputs	CSU-2LV/MV
Current signal from CSU-2	1 input: 1 (optical)
Current signal to Arc monitor	2 output: 2,3 (optical)

Inputs	CSU-2LV/MV
Current Sensor RC120-xx, RC200-xx	Includes current sensor and cable, xx indicates cable length
Current sensor	4 Sensor inputs (L1, L2, L3, N)

Power supply	CSU-2L/MV
Rated supply voltage Us	24 ... 240 V AC 50/60 Hz, 24 - 250 V DC
Us variation	AC -20% +10%, DC: -25% +30%
Rated insulation voltage	250 V AC with reinforced insulation
Rated impulse withstand voltage	4 kV

Environmental conditions	TVOC-2, CSU-2
Permissible ambient temperature	-25 °C to +55 °C
Degree of protection	IP20 Arc monitor, IP54 HMI front side IP20 Current Sensing Unit

Application/Limitation

Installation of the unit is to be in accordance with the manufacturer's specification.

Type Approval documentation

Technical Info:

«Arc Guard System TM – TVOC-2» 1SFC170001C0201 Catalogue from ABB

Test reports:

DELTA test reports nos. 619-20085-11- R0 dated 2020-02-14.

DELTA test reports nos. REC-E704076 & REC-E704076-1 dated 2014-12-18, REC-E703202 dated 2012-05-21.

FORCE test reports nos. 619-20085-30 dated 2020-03-02, 621-20007-10-R0 dated 2021-10-27.

Intertek Test Report nos. 1211574 dated 2012-04-25, 814986-1 & 2 dated 2009-11-05. 1022339-1 issued 2010-12-06, 1022339-2 issued 2010-12-08, 1109820-1 issued 2011-03-09, 815182-1 dated 2009-10-08, 1023139-1 dated 2010-10-22.

ABB reports nos. 2CMT001035D0212, 2CMT001035D0213 dated 2012-05-29 & 30,

Innventia test report no. 273 313 dated 2012-05-04, 279667 dated 2009-10-20, 279647 dated 2009-10-09.

Tests carried out

Type tests in accordance with IEC 60947-5-1 & IEC 61010-1. Environmental tests in according to IEC 60945 (Low temperature, Dry heat, damp heat and vibration. EMC in accordance with the EMC directive.

Marking of product

ABB Electrification Sweden AB – Type designation

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routines (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment to be performed at 2 and 3.5 year and at renewal.

END OF CERTIFICATE