



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-12964**

This is to certify that the
Monitoring Relay

with type designation(s)
REA 10_

Issued to
ABB Oy, Distribution Automation
Vaasa, Finland

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
Arc fault monitoring system with fibre optic detectors for installation onboard ship and offshore units

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-01-22**

DNV local station: **Vaasa**

Approval Engineer: **Nicolay Horn**

for **Det Norske Veritas AS**

Marit Laumann
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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Product description

REA 10: Arc Fault Protection System

| Type number | Description |
|-------------|----------------------------------|
| REA 101 | Main arc fault protection module |
| REA 103 | System extension module |
| REA 105 | System extension module |
| REA 107 | System extension module |

| Trip /signals inputs and outputs | Description |
|----------------------------------|--|
| REA 101 | Two highspeed (< 1ms) transistor (IGBT) outputs for tripping of CB's and aux. relay output for CBFP or for alarm purpose. One reset input. |
| REA 103 | One signal output |
| REA 105 | Two highspeed (< 1ms) transistor (IGBT) outputs and one signal output. |
| REA 107 | Two signal outputs |

| Power supply | |
|---------------------------------|--------------------------------------|
| Rated supply voltage Ur | 110-240 V AC, 50/60 Hz, 110-250 V DC |
| Us variation | AC 85% to 110%, DC: 80% to 120 % |
| Rated insulation voltage | 250 V AC |
| Rated impulse withstand voltage | 5 kV |

| Environmental conditions | |
|---------------------------------|---|
| Permissible ambient temperature | -25 °C to +55 °C |
| Degree of protection | IP20, IP54 with separate dust cover accessory |

Application/Limitation

Installation of the unit is to be according to manufacturer's specifications.

Type Approval documentation

Technical Info :

« Arc Fault Protection System REA_10 Product guide » Catalogue from ABB Oy no. 1MRS756449 A dated: 2012-01-03.

Test reports

Nemko Test Report no. 1052822 dated ESPOO .2005-06-22, ABB reports no. 1MRS080759.

dated 2005-08-23, VTT test reports nos. VTT-S-02975-12 dated 2012-04-23 & VTT-S-00657-13 dated 2013-02-04.

Tests carried out

Type tests in accordance with IEC 60255 series. Environmental tests in accordance with DNV Standard For Certification (Low temperature, dry heat, damp heat, salt mist and vibration. EMC in accordance with the EMC directive / IEC 60255 series.

Marking of product

ABB Oy – 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 survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Survey to be performed at least every second year.

END OF CERTIFICATE