Certificate No:
TAE00004AF

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Overcurrent- and Short-Circuit Relay

with type designation(s)
EF 193-EE, EF 193-EF

Issued to
Rockwell Automation - WI
Milwaukee, WI, USA

is found to comply with
DNV 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.

Issued at **Høvik** on **2022-11-30**
This Certificate is valid until **2027-11-29**.
DNV local station: **Certification & Inspection Services**

Approval Engineer: **Thomas Hartmann**

for **DNV**

Marta Alonso Pontes
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.

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.

Product description

Thermal overload relays for protection of a.c. circuits and motors against overloads, phase failure, long starting time and prolonged stalling of the motor.

General data

Degree of protection	IP20	
Pollution degree	3	
Terminal Style Devices:		
Rated Insulation Voltage U_i	690	V AC
Rated Operating Voltage U_e	690	V AC
Rated Impulse Voltage (U_{imp})	6	kV AC
Rated Frequency	45…65	Hz
Pass-thru Style Devices:		
Rated Insulation Voltage U_i	1000	V AC
Rated Operating Voltage U_e	1000	V AC

Structure Designation

193-	1EE	A	B
1	**2**	**3**	**4**

1 Product Line	193 – IEC overload relay			
2 Designated Relay Type	1EE – Single- & Three-phase Devices (Trip Class 10, 20; Manual Reset Only) 1EF – Single- & Three-phase Devices (Trip Class 10, 15, 20, 30; Manual or Automatic Reset)			
3 Designated Current Range	A –	0.1…0.5A	H –	30…150A (150:5 CT)
	B –	0.2…1.0A	J –	40…200A (200:5 CT)
	C –	1.0…5.0A	K –	60…300A (300:5 CT)
	D –	3.2…16A	L –	100…500A (500:5 CT)
	E –	5.4…27A	M –	120…600A (600:5 CT)
	F –	11…55A	N –	160…800A (800:5 CT)
	G –	20…100A	W –	80…400A (400:5 CT)
4 Design Contactor Size	B –	100-C09 to 100-C23		
	D –	100-C30 to 100-C55		
	E –	100-C60 to 100-C97		
	Z –	For use with external CT		
	P –	Pass-thru Design		

Mounting options: IEC contactor, Integrated panel/DIN Rail Mount and Pass-thru
Accessories as per manufacturers' product description

Application/Limitation

For installation inside switchboards / enclosures onboard ships and offshore units.
With U_{imp} = 6 kV the max. rated voltage is 600 V when used in an IT (ship) grid. It can be used in applications with directly earthed systems with rated voltage of 400/690 V.

Type Approval documentation

Tests carried out

Type tests in accordance with IEC 60947-4-1. Environmental tests including dry heat, damp heat, vibration, high voltage, cold, EMC and insulation resistance test.

Marking of product

As per IEC 60947-4-1 marking requirements Manufacturer name/ Model name/ Serial number/ Power ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval

are 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 Routine Tests (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.

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