

# EU RO Mutual Recognition Technical Requirements

LV ENCLOSURES & BOXES	Version	0.4
	Adoption Date	1 January 2023
	Application Date	1 January 2023
	Tier	1
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## 1. PRODUCT DESCRIPTION

### 1. a General description of the product

- a) **Empty enclosure** - enclosures intended for support and installation of electrical equipment, whose internal space provides suitable protection against external influences, as well as a specified degree of protection against approach to or contact with live parts and against contact with moving parts;
- b) **Empty box** - enclosures, generally of small dimensions and, in principle, intended to be mounted on a vertical plane.

### 1.b Application limitations

Enclosures and boxes used as part of switchgear and control gear assemblies of voltage up to 1000V a.c. at frequencies not exceeding 1000Hz or of voltage up to 1500V d.c.; intended for use onboard of ships; outdoor or indoor application. Enclosures and boxes intended for the below listed applications are excluded:

- a) installation in areas where explosive gases or vapour atmospheres may occur;
- b) appliances for which EMC requirements are to be met.

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## 1.c Intended use

Construction of electrical switchboards intended for distribution of electrical power and control or connection purposes.

## 1.d System context

See 1.b.

## 2. DESIGN EVALUATION

### 2.a Engineering evaluation requirements

#### 2.a i. Technical Requirements

- a) Enclosures and boxes shall be capable of withstanding ambient temperatures of  $+45\pm 2$  °C for prolonged periods without suffering any defects. Frame construction, front plates, mounting plates and casings of enclosures and boxes shall be made of metallic or other incombustible materials. Such materials shall be at least moisture-resistant and oil vapour-resistant. Application of other materials should be given consideration by the EU RO;
- b) Constructional components of enclosures and boxes shall be made of materials resistant to sea air (unless they are additionally protected onboard). Enclosures and boxes shall be of adequate rigidity and mechanical strength (resistant to mechanical stresses which may occur under service conditions or as a result of short-circuits). Screws, nuts, hinges, wall-fixing lugs and similar items of enclosures and boxes intended for installation on open decks or in spaces of humidity higher than normal shall be made of corrosion-resistant materials;
- c) Where the framework or doors of enclosures or boxes are of steel, suitable measures shall be provided to prevent overheating due to the possible circulation of eddy currents;
- d) Where screw fastenings are applied on/in enclosures and boxes, the means to exclude possibility of their self-unscrew shall be provided. Gaskets used in enclosures and boxes components (doors, covers, sight holes, cable glands, etc.) shall ensure required degree of protection under service conditions. Such gaskets shall be suitably fastened to those components;
- e) Cable entrances shall not impair the degree of protection of the enclosures and

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boxes. Enclosures and boxes intended for installation in places accessible to unauthorized persons shall be provided with doors, which can only be opened with a special key; the same shall apply for all the switchboards on the ship. Hinged doors are to be provided with fixing devices for keeping them in the open position. Casing and hinged or sliding doors shall have appropriate metal screwed connections intended for connection of protective conductor (to ensure continuity of the protective circuit). Such metal screwed connections shall be suitably assembled (welded) to casing and doors - proper electrical connection is to be retained;

- f) Enclosures intended for construction of main switchboards, emergency switchboards, selected distribution boards, control desks shall be provided with insulated handrails or handles fitted in an appropriate position at the front of the switchboard. Where access to the rear is necessary for operational or maintenance purposes, insulated handrails or insulated handles shall be fitted. Such handrails or handles should be made of insulating material, wood (of adequate rigidity and mechanical strength) or earthed metal covered with a suitable insulating material.

## 2.a.ii. Technical documents to be submitted

**IMPORTANT:** The English Language shall be used for all submitted documents.

- a) Enclosure classification according to International Standard IEC 62208 First Edition 2002-11;
- b) Relevant constructional and mechanical drawings and details;
- c) Instructions necessary for correct handling, assembling, mounting and service conditions of the enclosure/box;
- d) Information concerning the thermal power dissipation relative to the effective cooling surface.

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## 2.b Type testing requirements

- a) The enclosures under test shall be mounted and installed as in normal use according to the manufacturer's instructions. Unless otherwise specified, the tests shall be carried out at an ambient temperature of (20±5) °C.
- b) Test specimens shall be taken from the production line or from stocks†. Number of samples to be tested and order of test per sample (see **Table 1**) †.
- c) Tests shall be carried out in the presence of the EU RO Surveyor. In cases where the tests are conducted at Nationally Accredited Laboratories, the presence of the EU RO's surveyor may be omitted†.

† For further clarification of witnessing of tests and sampling the test specimen(s), refer to paragraphs 6, 7 and 8 of the EU RO "Design Evaluation Scheme" procedure (Appendix V of EU RO Framework Document for the Mutual Recognition of Type Approval found on <https://www.euomr.org/technical-requirements>).

**Table 1**

Test procedures	Test	Sample 1	Sample 2	Sample 3	Representative sample
International Standard IEC 62208 First Edition 2002-11	Static loads	1			
	Lifting	2			
	Verification of axial loads of metal inserts	3			
	Verification of degree of protection against external mechanical impacts (IK code)	4			
	Verification of degree of protection (IP code)	5			
	Verification of thermal stability		1		
	Verification of resistance to heat		2		
	Verification of resistance to abnormal heat and fire		3		
	Verification of dielectric strength	6			
	Verification of the continuity of the protective circuit	7		3	
	Verification of resistance to weathering				a)

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	Verification of resistance to corrosion			1 c)	
	Marking	8			
IACS UR E10	Verification of resistance to vibration - hinges, door lock, screws, etc. (Vibration test)	9 b)			
IACS UR E10	Verification of resistance to cold (Cold test)	10 c)			
Selected tests of group K according to IEC 60068-1 and substances according to IEC 60721-3-6	Test of resistance against liquids and chemicals			2 c)	

## NOTES:

- a) Tests shall be carried out on representative sample only;
- b) Applicable for enclosures of dimensions of at least 3 00x3 00x15 0mm (H x W x D). Enclosures of other dimensions shall be visually examined;
- c) Visual/functional examination of hinges, door lock, screws, coating, enclosure material, sealing etc. shall be carried out after test.

## ***2.c Type testing requirement for certificate renewal***

The manufacturer is to notify the RO of any modification or changes to the manufacturing specifications that may affect the MR TA to be renewed.

## **3. PRODUCTION REQUIREMENTS**

### ***3.a General requirements***

Refer to EU RO "Product Quality Assurance (PQA)" procedure (Appendix VI of EU RO Framework Document for the Mutual Recognition of Type Approval).

### ***3.b Special requirements***

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- a) The enclosure or box shall be constructed only of material capable of withstanding the mechanical, electrical and thermal stresses as well as effects of humidity which are likely to be encountered in normal use.;
- b) Protection against corrosion shall be ensured by the use of suitable materials or by the application of protective coating to the exposed surface, taking into account the intended conditions of use.

## 4. MARKING REQUIREMENTS

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment as per referenced standard. In addition, and as a minimum, the following items to be marked at the suitable place:

- a) Either the name, trade mark or identification mark of the enclosure manufacturer;
- b) Type designation or identification number of the enclosure.

The enclosure or box shall be identifiable, making it possible for the final assembler to obtain relevant information from the enclosure manufacturer. The marking shall be durable and easily legible and may be inside the enclosure.

## 5. TYPE APPROVAL CERTIFICATE CONTENT

The EU RO MR Type Approval Certificate shall contain the minimum information as defined in the EU RO Framework Document for the Mutual Recognition of Type Approval - see Appendix I EU RO MR Type Approval Certificate Information.

The following information is specifically applicable to products relevant to this technical requirement and shall be included on the relevant EU RO MR Type Approval Certificate:

- a) Type designations and dimensions of enclosures/boxes;
- b) Technical data;
- c) Additional conditions and remarks, limitations;
- d) Environmental Category;
- e) Range of application.

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## 6. APPROVAL DATE AND REVISION NUMBER

Date	Revision	Comment
8 July 2012	0.0	Accepted by Advisory Board
31 January 2014	0.1	Reference to EU RO Framework Document for the Mutual Recognition of Type Approval added.
31 January 2015	0.2	CRF018 – Revision to par. 2.a.ii - Technical documents to be submitted in English; CRF020 – Revision to par. 5 - 'Type Approval Certificate Content'
1 April 2016	0.3	CRF025 – Updated to new MR TR document format incl. par. 8; CRF026/026a – Witness testing & control of test specimen; CRF028 – addition of 6 month application clause.
1 January 2023	0.4	Added para 2.c Added para 9 Copyright (ref. 21030_)

## 7. BACKGROUND INFORMATION / REFERENCES

- a) Rules of the certifying EU RO;
- b) International Standard IEC 62208 First edition 2002-11;
- c) International Standard IEC 60068-1 Edition 6.0;
- d) International Standard IEC 60721-3-6. Edition 1.0;
- e) EU RO Framework Document for the Mutual Recognition of Type Approval.

## 8. MAINTENANCE & CLARIFICATION OF TECHNICAL REQUIREMENTS

Anyone wishing to propose changes to this document or request clarification of technical issues should contact the EU RO MR Group Secretariat in the first instance: [Secretariat@euromr.org](mailto:Secretariat@euromr.org).

Review and approval of change requests shall follow the EU RO MR Maintenance Process detailed in the EU RO Framework Document for the Mutual Recognition of Type Approval:

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## 9. LEGAL PROVISIONS / COPYRIGHT

a) Underlying legal provisions in accordance with EU RO Framework Document for the Mutual Recognition of Type Approval;

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For a list of EU RO MR Group members please see <https://www.euomr.org/about-us>.

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