

EU RO Mutual Recognition Technical Requirements

ELECTRIC MOTOR STARTERS OTHER THAN SOFT STARTERS	Version	0.0
	Adoption Date:	01 January 2022
	Application Date:	01 July 2022
	Tier	9
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1. PRODUCT DESCRIPTION

1.a General description of the product

AC motor-starters, Direct-on-line (full voltage) a.c. starters, Star/Delta starters.

1.b Application limitations[†]

- The rated voltage of motor-starters does not exceed 1,000 V a.c. according to IEC 60947-4-1.
- Motor-starters dealt with in this standard are not normally designed to interrupt short-circuit currents.
- For circuit-breakers and fuse-combination units used as short-circuit protective devices in combination starters and in protected starters, the requirements of IEC 60947-2 and IEC 60947-3 respectively apply
- 'Ex' certification is not within the scope of these Technical Requirements. Equipment rated for use in explosive atmospheres will need separate IECEx certificate(s) issued by a notified body.
- Motor-starters Intended for on board non-essential and essential services, emergency services are excluded.

[†]The EU MR type approved product is generally not used as a stand-alone product but integrated as component in a sub-system or system. When a product is presented with an EU RO MR Type Approval Certificate for given application, its acceptability with regards to

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conditions defined in 1b, 1c and 1d of this Technical Requirement will be evaluated by the EU RO in charge of classing the ship or being in charge of the unit/system certification.

1.c Intended use

Motor-starters intended to start and accelerate motors to normal speed, to ensure continuous operation of motors, to switch off the supply from the motor and to provide means for the protection of motors and associated circuits against operating overloads.

1.d System context

See 1.c.

2. DESIGN EVALUATION

2.a Engineering evaluation requirements

2.a i. Technical Requirements

In general, Clause 8 of IEC 60947-4-1 applies.

- a) Constructional requirements
 1. Motor-starters are to be durably constructed and provided with efficient means for starting, stopping, reversing and controlling speed as well as be equipped with all essential safety devices.
 2. Motor-starters are to be provided with protective enclosures suitable for their location and to allow for safe operation by their personnel.
 3. All wearing parts of control gears are to be easily replaceable and accessible for inspection and maintenance.
- b) Performance requirements
- c) Electromagnetic compatibility (EMC)
 4. Enclosures and assemblies are to be constructed of steel or other suitable incombustible, moisture resistant materials and reinforced as necessary to withstand the mechanical, electro-magnetic and thermal stresses which may be encountered under both normal and short circuit fault conditions. Enclosures are to be of the closed type.

Minimum clearances and creepage distances between live parts of different potential, i.e., between phases and between phase and the ground, are to be in accordance with the following:

Un ≤ 250 V: min. clearance 15 mm, min. creepage distance 20 mm

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251 < Un ≤ 690 V: min. clearance 20 mm, min. creepage distance 25 mm
690 < Un ≤ 1000 V: min. clearance 25 mm, min. creepage distance 35 mm
5. Software quality plans to demonstrate that the provisions of ISO/IEC 90003 are incorporated. The plans are to define responsibilities for the lifecycle activities, including verification, validation, software module testing, integration with other components or systems and security policies to be applied.

2.a.ii. Technical documents to be submitted

Prior to tests:

- a) Proposed test program and test schedule;
- b) Description of the test specimens and explanation of the selected test sample(s) providing evidence that the selected sample meets the most rigorous and demanding requirements;
- c) Product descriptions, manuals, data sheets, assembly drawings, dimension drawings etc. clearly identifying the product;
- d) Complete accreditation certificate of the Test laboratory if the tests are conducted by an Accredited Test Laboratory as per 2.b.a. (prior the first test only; changes in the scope of accreditation shall also be advised);
- e) Details of production sites;
- f) Product specification;
- g) Application, working area;
- h) Instructions on fitting, assembly and operation;
- i) QM-certificate according to ISO 9001;
- j) Material specifications
- k) Catalogue.

After completion of tests:

- l) The test report with an identification number must contain all relevant data and test results including place and date of the tests, the names of the responsible personnel carrying out the test;
- m) Type references and serial numbers of the products tested;
- n) Test reports and test records must be signed by the personnel members in charge of the test and are to be confirmed by the EU RO by signing and marking the test report;
- o) Certificate of conformity to IEC Standards issued by one of the Certification Body under the ILAC or LOVAG or IECEE mutual recognition agreement.

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2.b Type testing requirements

- a) 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 surveyor may be omitted*;
- b) The test laboratory shall be accredited according to ISO 17025 for relevant IEC standards (incl. IEC 60947-4-1 sub - clause 9.1.2) by either a National Accreditation Body under the MLA regime of ILAC or one of the certification bodies under the LOVAG or IECEE Mutual Recognition Agreement. This applies to the Type Tests (including EMC) in compliance with the product standards;
- c) Special tests in accordance with URE10 or IEC 60947-4-1 sub-clause 9.1.5.2;
- d) IEC 60947-4-1 sub-clause 8.3 or URE10 Electromagnetic compatibility (EMC);
- e) Low temperature test for 16hours at agreed temperature;
- f) Examination of software for products that include programmable electronic systems*.

* 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>)

2.c Type testing requirement for certificate renewal

- a) 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.
- b) If the specified standard(s) is(are) amended or revised, the product is to be re-approved prior to it being supplied to vessels to which the amended standards apply.
- c) The Software history to be provided for review.

3. PRODUCTION REQUIREMENTS

- a) Refer to EU RO "Product Quality Assurance (PQA)" procedure (Appendix VI of EU RO Framework Document for the Mutual Recognition of Type Approval) found on <https://www.euomr.org/technical-requirements>

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4. MARKING REQUIREMENTS

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment and, in addition, at least the following items to be marked at the suitable place:

- a) Manufacturer's name or equivalent;
- b) Type No. or symbol;
- c) Serial No. and date of manufacture;
- d) Particulars or ratings.

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 EU RO MR Type Approval Certificate:

- a) Certificate Heading;
- b) Certificate number;
- c) Company Information;
- d) Product Information;
- e) Term of Validity;
- f) Rules & Standards;
- g) Generic Sentence;
- h) Approval date;
- i) Revision number of technical documentation;
- j) Approval letter numbers.

6. APPROVAL DATE AND REVISION NUMBER

Date	Revision	Comment
2021-07-01	0.0	Approved by EU RO MR Steering Committee

7. BACKGROUND INFORMATION / REFERENCES

- a) EU RO Framework Document for the Mutual Recognition of Type Approval;
- b) IEC 60947-2
- c) IEC 60947-3
- d) IEC 60947-4

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- e) e) IEC 60945;
- f) f) ISO 17025;
- g) g) IACS UR E10;
- h) h) CISPR 11

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@euomr.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: <https://www.euomr.org/technical-requirements>

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