

EU RO Mutual Recognition Technical Requirements

Electric Space Heating Equipment	Version	0.1
	Adoption Date:	1 January 2023
	Application Date:	1 July 2023
	Tier	9
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1. PRODUCT DESCRIPTION

1.a General description of the product

Devices intended for heating of accommodations, for habitability purposes.

These devices are typically known as space heaters.

Water heaters, oil heaters, heating batteries for ventilation systems and space heaters combined with air condition cabinets assumed not to a part of this document.

1.b Application limitations[†]

- Intended for use onboard of ships only;
- Only for indoor applications;
- Supply voltage not exceed 500 V alternating current;
- Only standalone applications;
- Only to be installed on a bulkhead or other rigid internal steel construction;
- Ex type equipment is excluded from this TR;
- Only electrically supplied equipment.

[†]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 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

Intended for use in crew accommodations, crew spaces (e.g. galleys and laundries) and passenger cabins (including bathrooms and showers).

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2. DESIGN EVALUATION

2.a Engineering evaluation requirements

2.a i. Technical Requirements

- a) Heaters shall be designed for proper operation in ambient temperature from 0 to 45 deg. C;
- b) Heaters shall be capable of correct operation at vibrations with a frequency of 2 Hz to 100 Hz, as follows:
 - at a frequency from 2 Hz to 13.2 Hz with displacement amplitude +/-1.0 mm;
 - at a frequency above 13.2 Hz to 100 Hz with acceleration amplitude +/-0.7 g;
- c) Heaters shall be capable of reliable operation with the ship continuously inclined from the normal up to 15 deg. transversely and up to 5 deg. of trimming, as well as with the ship rolling up to 22.5 deg. with the period of rolling of 7-9 sec. or pitching up to 10 deg.
- d) Heaters shall be so designed that it remains operative under steady conditions in all cases, at all deviations from the rated values of voltage and frequency:
Parameters Deviations from rated values
Prolonged Voltage +6% -10%
Prolonged Frequency ±5%
Transient Voltage ±20% time 1.5 sec
Transient Frequency ±10% time 5 sec
- e) Heaters shall also be capable of reliable performance at shocks having an acceleration of +5,0 g and at a frequency of 40 to 80 shocks per minute;
- f) In case of any electronic elements used inside the heaters EMC emission requirements are to be fulfilled (radiated emission, conducted emission);
- g) In case of any electronic elements used inside the heaters resistance to EMC interference to be checked (electrostatic discharge; radiated electromagnetic field; fast transient interference; conducted radio frequency interference; surge voltage immunity; conducted audio frequency interference);
- h) The structural parts of heaters shall be made of metal or at least of hardly combustible insulating materials, resistant to sea air and oil vapour effects, or they shall be reliably protected against such effects;
- i) Screws, nuts, hinges and similar items designed to fasten enclosures of the heaters shall be made of corrosion-resistant materials or shall have effective corrosion-resistant covering;

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- j) All current-carrying parts of heaters shall be made of copper, copper alloys or other materials of equivalent qualities;
- k) Stranded conductors shall be used for all the internal wiring (control circuits, power supply, etc.);
- l) Heaters shall be provided with appropriate protective enclosure - enclosure protection degree shall be not less than IP20 in dry accommodation spaces, not less than IP44 in bathrooms and showers and not less than IP44 in galleys and laundries.
- m) The metal parts of heaters which are likely to be touched under service conditions and which may become live in the event of damage to the insulation shall have a reliable electric contact with a component fitted with an earth terminal.
- n) Metal parts as control elements as switches and handles that can be touched should have a max temp of 55 deg, C. Non-metallic parts as plastic, wood etc should have max temperature of 65 deg.C.
- o) For internal control connections there shall be used cables and conductors having multi-wire cores with the cross-sectional area not less than 1.0 mm²;
- p) Heaters shall be of stationary type;
- q) Heaters are to be provided with a temperature limiting device without automatic reconnection which automatically trips all poles or phases not connected to earth when the enclosure temperature exceeds the maximum permissible value;
- r) Non-metallic parts as plastic, wood etc should have max temperature of 65 deg.C
- s) Heaters shall be designed that based on an ambient temperature of 20 deg. C the temperature of the casing or enclosure and of the air flow from the heater does not exceed 95 deg C.
- t) Heaters shall be so constructed as to preclude the possibility of ignition of window curtains or space furnishings, as well as the luggage and clothing left by the persons using the space concerned;
- u) Built-in power supply on/off switches are to be provided in the heaters. Switches shall disconnect power supply at all poles or phases;
- v) The enclosures of heaters shall be so constructed as to prevent the possibility of placing any objects on them;
- w) Heaters are to have special warning label on enclosure: „DO NOT COVER"
- x) Heaters shall be protected against access to live parts except with the aid of special tools;
- y) The enclosures shall have notices showing the rated voltage;
- z) IEC Publication 60335-2-30 shall be applied for design purposes;

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- aa) Temperature rises for surfaces are to be in compliance with IEC Publications 60335-2-30 Ed. 5.0 table 101. The temperature of the external surface of space heaters is not to exceed 60°C;
- bb) Space heater should be provided with interlocked over temperature thermostat with manual reset only by use of a tool;
- cc) The heating temperature of current-carrying parts and their connections shall not exceed the permissible heating temperature of the insulating materials at the rated load of the device.

2.a.ii. Technical documents to be submitted

- a) Technical specification with basic technical data and views
- b) Dimensional views - drawings;
- c) Functional description (in case of control buttons, modes, etc.);
- d) Electrical diagrams of power supply and control system;
- e) Material specifications (enclosure, electrical cables, etc.);
- f) Assembly description and service conditions;
- g) User manual;
- h) Marking specification;
- i) IEC Publications applied – list;
- j) Test reports acc 2.b;

2.b Type testing requirements

Tests acc. IACS UR E10 Rev.7: and in acc. with IEC 60335-2-30;

- a) External power supply failure;
- b) Power supply variations - electric A.C. supply;
- c) Dry heat
- d) Damp heat;
- e) Vibration
- f) Insulation resistance
- g) High voltage
- h) Radiant Emission (only in case when electronic elements are used inside)
- i) Conducted Emission (only in case when electronic elements are used inside)
- j) Flame retardant (only in case non-metallic materials is used for enclosure)
see table 2.3 for reference
- k) Additional tests:
-IP degree test acc. IEC 60529

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- IK degree test acc. IEC 62262

Heating device shall also be capable of reliable performance at shocks having an acceleration of +5,0 g and at a frequency of 40 to 80 shocks per minute.

- l) Test specimens shall be taken from the production line or from stocks. 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. *

* 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.euromr.org/technical-requirements>)

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

- 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.euromr.org/technical-requirements>

The heaters 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.

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;

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- d) Particulars or ratings;
- e) Date of manufacture.

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) Approved documents;
- h) Test Reports numbers;
- i) Limitations.

6. APPROVAL DATE AND REVISION NUMBER

Approval date and revision number of technical documentations are to be included in Type Approval Certificate. Approval letter numbers are to be included in Certificate.

Date	Revision	Comment
2021-07-01	0.0	Approved by EU RO MR Steering Committee
2023-01-01	0.1	Added para 9 Copyright (ref. 21030_)

7. BACKGROUND INFORMATION / REFERENCES

- a) EU RO Framework Document for the Mutual Recognition of Type Approval;
- b) IEC Publication 60335-2-30

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.

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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>

9. LEGAL PROVISIONS / COPYRIGHT

- a) Underlying legal provisions in accordance with EU RO Framework Document for the Mutual Recognition of Type Approval;
- b) Copyright © 2022. All EU RO MR Group rights reserved.
For a list of EU RO MR Group members please see <https://www.euomr.org/about-us>.

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