



**RULES CHANGE NOTICE No.3**  
**Part 1 Seagoing Ships**

**RULES FOR ELECTRICAL  
INSTALLATION**

**Volume IV**

**April 2023**

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## Foreword

This Rules Change Notice (RCN) No.3 gives new additions and amendments to the “Rules for Electrical Installations (Pt.1, Vol.IV), 2022 Consolidated Edition” along with the effective dates from which these changes are applicable.

Amendments to the preceding Edition are marked by strikethrough, red color, and expanded text. These new additions and amendments are to be read in conjunction with the requirements given in the RCN No.1, No.2 and the 2022 Consolidated Edition of the Rules.

The summary of current amendments for each section including the implementation date are indicated in **Table 1 - Amendments Incorporates in This Notice**.

This RCN is available to be downloaded at [www.bki.co.id](http://www.bki.co.id). Once downloaded, this RCN will be uncontrolled copy. Please check the latest version on the website.

Further queries or comments concerning this Rules are welcomed through communication to BKI Head Office.

## Rules Changes Notice No. 3 – April 2023

**Table 1 – Amendments Incorporates in This Notice**

These amendments come into force for ships contracted for construction on or after 1 June 2023, unless otherwise stated in the Table below.

Paragraph	Title/Subject	Status/Remark
<b>Section 1 General Requirements and Guidance</b>		
<b>1.B</b>	<b>Definitions</b>	
<b>Table 1.1</b>	<b>Definition</b>	
22	Flame-retardation of individual cables	Add more detailed information of IEC publication used as reference
23	Flame-retardation of cable bunches	Add more detailed information of IEC publication used as reference changing the fire test category
38	Control Station	Add reference to Guidance for Code and Convention Interpretations (Pt.1, Vol.Y)
<b>Section 12 Cable Network</b>		
<b>D</b>	<b>Installation</b>	
<b>14</b>	<b>Measures for limitation of the propagation of fire along cable and wire bundles</b>	
14.1	-	Add more detailed information of IEC publication used as reference and changing the fire test category
14.8	-	Add reference to Guidance for Code and Convention Interpretations (Pt.1, Vol.Y)
<b>Section 20 Electrical Equipment</b>		
<b>D</b>	<b>Storage Batteries, Chargers and Uninterruptible Power Supplies (UPS)</b>	
<b>4</b>	<b>Uninterruptible power supplies (UPS)</b>	
<b>4.1</b>	<b>General</b>	
4.1.1	-	Adding reference to IEC 62040-3
<b>4.3</b>	<b>Location</b>	
4.3.2	-	Add more detailed IEC publications as reference

## Section 1 General Requirements and Guidance

### B. Definitions

Table 1.1 Definition

No.	Item	Description
22	Flame-retardation of individual cables	Single cables and wires are considered to be flame-retardant if they meet the test requirements of IEC publication 60332-1-2:2004+AMD1:2015 regarding flame propagation.
23	Flame-retardation of cable bunches	Cable bunches and wire bunches are considered flame-retardant if they are flame retardant as single cables, and laid bundled, meet the requirements of IEC publication 60332-3-22:2018 category A/F with regard to flame propagation.
24	Fire-resistant cables	Fire-resistant cables are those which under the influence of flames demonstrate function sustaining characteristics for a certain time, e.g. 3 hours, and meet the IEC publication 60331 test requirements.
25	Cable bundles	Arrangement of two or more cables laid parallel and directly contiguous.
26	Systems	Systems contain all equipment necessary for monitoring, control and safety including the input and output devices. Systems cover defined functions including behaviour under varying operating conditions, cycles and running.
27	Protection devices	Protective devices detect actual values, activate alarms in the event of limit-value infringement and prevent machinery and equipment being endangered. They automatically initiate curative measures or calls for appropriate ones.
28	Safety devices	Safety devices detect critical limit-value infringements and prevent any immediate danger to persons, ship or machinery.
29	Safety systems	Combination of several safety devices and/or protection devices into one functional unit.
30	Alarms	An alarm gives optical and acoustical warning of abnormal operating conditions.
31	Power electronics	All equipment and arrangements for generation, transformation, switching and control of electrical power by the use of semi-conductor components.
32	Equipment of power electronics	All equipment which directly affect the flow of electrical energy; consist of the functional wired semiconductor elements together with their protection and cooling devices, the semiconductor transformers or inductors and the switchgear in the main circuits.
33	International Protection (IP)	Degree of protection provided against the intrusion of solid objects including body parts like hands and fingers, dust, accidental contact and water.
34	Short circuit calculation	Are calculation needed to determine the required switching capabilities of the circuit breakers, the breaking capabilities of fuses and the dynamical strength of busbars and other current carriers.
35	Electromagnetic Compatibility (EMC)	Capability of an electric system to neither disturb or be disturbed via radiation or transferred through the connection cable. It also includes disturbance by signals in cables not connected to the disturbed unit but signals running through cables parallel to cables of the disturbed unit.
36	Engineer's call	The duty alarm system sends alarms to the responsible persons/Engineer in case of incorrect situations whenever the machinery spaces are unattended.

**Table 1.1 Definition (continued)**

No.	Item	Description
37	<b>Voyage Data Recorder (VDR)</b>	Maintains continuously sequential records of preselected data items relating to the status and output of the ship's equipment, and command and control of the ship, such as date and time, ship's position, heading, speed, conversations in the Bridge, other ship status, etc. to investigate causes of an incident.
38	<b>Control Station</b>	<p>Are those spaces which are:</p> <ol style="list-style-type: none"> <li>1. Main navigational equipment includes, in particular, the steering stand and the compass, radar and direction-finding equipment are located.</li> <li>2. Where in the regulations of chapter II-2 relevant to fixed fire-extinguishing systems there are no specific requirements for the centralization within a control station of major components of a system, such major components may be placed in spaces which are not considered to be a control station.</li> <li>3. Spaces containing, for instance, the following battery sources should be regarded as control stations regardless of battery capacity:             <ul style="list-style-type: none"> <li>– emergency batteries in separate battery room for power supply from black-out till start of emergency generator,</li> <li>– emergency batteries in separate battery room as reserve source of energy to radio-telegraph installation,</li> <li>– batteries for start of emergency generator,</li> <li>– and, in general, all emergency batteries required in pursuance of Reg. II-1/42 or Reg. II-1/43. (MSC/Circ. 1120)</li> </ul> </li> <li>4. Steering gear rooms containing an emergency steering position are not considered to be control stations.</li> </ol> <p style="color: red;">See also Guidance for Code and Convention Interpretations (Pt.1, Vol.Y) Sec.11.SC17</p>

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## Section 12 Cable Network

### D. Installation

#### 14. Measures for limitation of the propagation of fire along cable and wire bundles

**14.1** All cables shall be so installed that the original flame-retardant properties of the individual cables are not impaired. This requirement can be considered to be fulfilled if:

- the bundled cables are individually flame-retardant and have been successfully passed the bundle fire test in accordance with IEC publication 60332-3-22:2018 category A<sub>2</sub>F
- suitable measures have been taken during the installation, e.g. by providing of fire stops or application of flameproof coatings

**14.2** For cable bundles consisting of cables which have not been subjected to a bundle fire test, the following precautions shall be taken to limit the fire propagation:

**14.2.1** Fire stops shall be provided:

- at main and emergency switchboards
- at cable entries to engine control rooms
- at central control panels and consoles for the main propulsion plant and for important auxiliaries

**14.2.2** In closed and semi-enclosed rooms, fire stops shall be provided at the following locations:

- at each entry and exit point of cable runs in enclosed metallic installation shafts
- for open vertical cable runs, at least for every second deck, limited to a maximum interval of 6 meters
- every 14 meters for open horizontal cable runs

#### 14.3 Exceptions

Fire stops in accordance with 14.2.1 a) and c) can be omitted if the switchboards or consoles are installed in separate rooms and measures have already been taken at the cable entrances to these rooms, in cargo holds and in under-deck service passageways in the cargo zone. Fire stops shall be provided only for the boundaries of these rooms.

#### 14.4 Version of fire stops

The flame propagation of cables passing through fire stops shall fulfil the SOLAS requirements for B-O partitions.

Fire stops may, for example, be formed by existing partitions or by a steel plate (minimum 3 mm in thickness) together with a B-O penetration in each case.

The steel plate shall be so formed that it extends around the cables as specified below:

- twice the maximum dimension of the cable run with vertically laid cables
- the maximum dimension of the cable run with horizontally laid cables

The steel plates, however, need not to be extended through upper covers, decks, bulkheads or trunk walls.

#### 14.5 Application of flameproof coatings

Instead of the fire stops prescribed in 14.4, installed cable bundles may be provided with (BKI type approved) flameproof coatings as follows:

- on horizontal cable runs for every 14 meters, a length of 1 meter
- on vertical cable runs over the entire length

Other distances for the coatings may be approved after special testing.

#### **14.6 Alternative methods**

Other methods which have been proved to be equivalent to the measures stated in [14.4](#) and [14.5](#) may be accepted.

#### **14.7 Explanatory sketches**

Explanatory notes to the installation provisions described above are given in [Fig. 12.1 - 12.4](#).

**14.8** See also [Guidance for Codes and Convention Interpretations \(Pt.1, Vol.Y\) Sec.11.SC10](#)

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## Section 20 Electrical Equipment

### D. Storage Batteries, Chargers and Uninterruptible Power Supplies (UPS)

#### 4. Uninterruptible power supplies (UPS)

##### 4.1 General

**4.1.1** These requirements to UPS units, **as defined in IEC 62040-3:2011**, apply when providing an alternative power supply or transitional power supply to services as defined in [Section 3.C](#). A UPS unit complying with these requirements may provide an alternative power supply as an accumulator battery in terms of being an independent power supply for services defined in [Section 3.C.3.2.4](#) or [Section 14. C.1.2.3](#).

##### 4.1.2 Definitions

###### .1 Uninterruptible Power System (UPS)

Combination of converter, inverter, switches and energy storage means, for example batteries, constituting a power supply system for maintaining continuity of load power in case of input power failure (IEC 62040-3:2011).

###### .2 Off-line UPS unit

A UPS unit where under normal operation the output load is powered from the input power supply (via bypass) and only transferred to the inverter if the input power supply fails or goes outside preset limits. This transition will invariably result in a brief break in the load supply.

###### .3 On-line UPS unit

A UPS unit where under normal operation the output load is powered from the inverter and will therefore continue to operate without break in the event of the power supply input failing or going outside preset limits.

#### 4.2 Design and construction

**4.2.1** UPS units are to be constructed in accordance with IEC 62040-1:2017, IEC 62040-2:2016, IEC 62040-3:2011, IEC 62040-4:2013 and/or IEC 62040-5-3:2016 as applicable or an acceptable and relevant National or International Standard. Battery ventilation shall be designed in accordance with [Section 2.C](#).

**4.2.2** The operation of the UPS is not to depend upon external services.

**4.2.3** The type of UPS unit employed, whether off-line or on-line, is to be appropriate to the power supply requirements of the connected load equipment.

**4.2.4** A bypass or a second UPS in parallel is to be provided.

**4.2.5** The UPS unit is to be monitored. An audible and visual alarm is to be given on the ship's alarm system for:

- power supply failure (voltage and frequency) to the connected load,
- earth fault, if applicable,
- operation of battery protective device,
- when the battery is being discharged, and
- when the UPS is not operating under normal condition.



### 4.3 Location

4.3.1 The UPS unit is to be suitably located for use in an emergency.

4.3.2 UPS units utilising valve regulated sealed batteries may be located in compartments with normal electrical equipment, provided the ventilation arrangements are in accordance with the requirements of IEC 62040-1:2017, IEC 62040-2:2016, IEC 62040-3:2011, IEC 62040-4:2013 and/or IEC 62040-5-3:2016 or an acceptable and relevant national or international standard.

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