

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Bus Bar

with type designation(s)
Cu-Flex

Issued to

CUBIC-Modulsystem A/S
BRØNDERSLEV, Denmark

is found to comply with

DNV GL rules for classification – Ships and offshore units

DNV GL rules for classification – High speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-06-30**.

Issued at **Høvik** on **2016-09-06**

DNV GL local station: **Aalborg**

Approval Engineer: **Marta Alonso Pontes**

for **DNV GL**

Trond Sjøvåg
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.

Product description

Cu-flex: Flexible single phase insulated bus-bar system, insulation voltage 1000 V, flammability in accordance to UL 94 VO.

Type name	Type description	Current* (A)	Joule-integrale (A ² s)	Rated short-circuit peak I _{pk} (kA)
FB 25	One Cu -flex bus-bar	155	8.3 x 10 ⁶	24
FB 50	One Cu -flex bus-bar	245	3.3 x 10 ⁷	64
FB 50	Two Cu -flex bus-bar	420	1.3 x 10 ⁸	64
FB 50	Three Cu-flex bus-bar	480	3.0 x 10 ⁸	64
FB 100	One Cu -flex bus-bar	380	1.3 x 10 ⁸	64
FB 100	Two Cu -flex bus-bar	610	5.3 x 10 ⁸	64
FB 240	One Cu -flex bus-bar	635	7.6 x 10 ⁸	64
FB 240	Two Cu -flex bus-bar	975	3.0 x 10 ⁹	105

* Connection: Busbar to electrical component. Air temperature around Cu-flex 45 °C.

Application/Limitation

To be used inside switchboards/enclosures onboard ships.

Cu-flex bus bar used for one outgoing circuit may be rated on the basis of the reduced short-circuit stress occurring on the load side of the respective short-circuit productive device as stated in IEC 61439-1 item 8.6.1 part 1 while Cu-flex bus-bar used as a connection from the main bus-bar to a dropper with several outgoing circuits shall be designed in accordance with the requirements IEC 60439-1 item 7.5.5.1.1 and 61439-1 item 8.6.1 part 2.

To be installed in accordance with the manufacturer's instruction. Max. 300 mm between the supports.

Type Approval documentation

Tests carried out

Short-circuit test after IEC 60439-1, IEC 61439-1 and UL 845. Voltage test in accordance with IEC 60092-350 § 10.3 and § 12.4.

Marking of product

Cu-flex - Cubic - Type designation

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.

Assessment to be performed at least every second year.

END OF CERTIFICATE