



MARINE DIVISION

Certificate number: 11676/C0 BV

File number: AP 3420

Product code: 3831H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

DANFOSS A/S
NORDBORG - DENMARK

for the type of product

TEMPERATURE CONTROLLERS

Temperature controls, Type MBC 8100

Requirements:

BV Rules for the Classification of Steel Ships.

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 25 Jun 2017

For BUREAU VERITAS,

At BV FREDERICIA, on 25 Jun 2012,

Jesper Jensen



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Temperature controls, Type MBC 8100.

Main specification:

Types	Rigid sensor, capillary tube, armoured capillary tube
Setting range	- 10 to +200° C
Switch	Single-pole changeover switch (SPDT)
Contact load	Alternative current: inductive 0.5A, 250 V, AC15 Direct current: 12 W, 125 V, DC 13
Ambient temperature	- 40 to +70° C
Enclosure protection index	IP65

2. DOCUMENTS AND DRAWINGS:

Danfoss A/S:

- Mechanical drawings N° 061B9014 Ver. 02, 061R9014 ver. 00, 061B8301 ver. 03 & ver. 04.
- Data sheet DKACTION.PD. P10.J.1.02.
- Data Sheet IC.PD.P10.D2.02-520B2392.
- Technical brochure - doc. No. IC.PD.P10.D5.02/520B4846, issued on 12-2011.

3. TEST REPORTS:

- 3.1 - Danfoss test report N° MBC 3-921622, KIJ010805(01) dated 15/11/01.
- 3.2 - Danfoss test report N° J.no.:20042053-E 1
- 3.3 - Danfoss test report N° J.no.:20042053-E 3
- 3.4 - Danfoss test report N° J.no.:20042053-E 4
- 3.5 - Danfoss test report N° no.:2008-2262 dated 28/Apr./2008.

4. APPLICATION / LIMITATION:

- 4.1 - Bureau Veritas Rules for the Classification of Steel Ships.
- 4.2 - Approval also valid for ships to be granted with the notation: **AUT-UMS, AUT-PORT, AUT-CCS and AUT-IMS.**

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 - The above products are to be manufactured, examined and tested by **DANFOSS A/S** in accordance with the type described in this certificate and Bureau Veritas Rules for the Classification of Steel Ships.
- 5.2 - Production sites are to be recognized by Bureau Veritas as per NR320 for HBV products. To this end **DANFOSS A/S** has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.
- 5.3 - **DANFOSS A/S** has declared to Bureau Veritas that the type of product described in this certificate are manufactured at the following production site:

**Danfoss Sp z o.o.
Ul. Chrzanowska 5
05-825 Grodzisk Mazowiecki
POLAND**

6. MARKING OF PRODUCT:

- Trade name.
- Date of manufacture and serial number.
- Equipment type or model identification under which it was type-tested.

7. OTHERS:

- 7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the units at any time and that **DANFOSS A/S (NORDBORG - DENMARK)** will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.
- 7.2 - This certificate supersedes the Type Approval Certificate N° 11676/B2 BV issued on 16 May 2011 by the Society.

*** END OF CERTIFICATE ***