



Lloyd's
Register

Type Approval Certificate Extension

This is to certify that Certificate No. 90/70038(E6) for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	Danfoss A/S Nordborgvej 81 DK-6430 Nordborg Denmark
PLACE OF PRODUCTION	Danfoss Poland Sp. z.o.o. Ul. Chrzanowska 5 PL 05-825 Grodzisk Mazowiecki Poland
DESCRIPTION	Thermostats, Pressure controllers, Differential pressure controllers
TYPES	CAS-Series: Thermostats: CAS-178; CAS-180; CAS-181 Pressure controllers: CAS-133; CAS-136; CAS-137 CAS-139; CAS-143 CAS-145; CAS-147 Differential pressure controllers: CAS-155
APPLICATION	Marine applications for use in environmental categories ENV1, ENV2, ENV3 and ENV4 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 - 1996:
DESIGN CODE	Manufacturer's specification

Certificate No.	15/20032
Issue Date	13 April 2015
Expiry Date	12 April 2020
Sheet	1 of 2



Thorsten Wolff
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"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The attached Design Appraisal Document No. HTS/ETS 31494-15 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

All other details remain as the previous Certificate No. 90/70038(E6) to which this extension should be attached.

Certificate No.	15/20032
Issue Date	13 April 2015
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Sheet	2 of 2

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Marine Design Appraisal Document

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Date
13 April 2015

Please quote this reference number on all future communications
HPC1562014/31494-15/TW/ND/SC

**THE LLOYD'S REGISTER'S TYPE APPROVAL SYSTEM, 2002
ISSUED TO: DANFOSS A/S
FOR: THERMOSTATS, PRESSURE CONTROLLERS, DIFFERENTIAL PRESSURE CONTROLLERS
TYPE APPROVAL CERTIFICATE NO. 15/20032**

The (additional) undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register's Type Approval System, 2002 and this Design Appraisal Document forms part of the Certificate.

ADDITIONAL APPROVAL DOCUMENTATION

Form 2571	Application for Type Approval Certification	23.01.2015
GDK1500134	Production Quality Assessment Form	16.03.2015
DK002813	ISO 9001:2008 BUREAU VERITAS	02.02.2015
520B5468	Data sheet Pressure switch and Thermostat Type CAS	12.2014

TEST REPORTS

960354	Sine Vibration Test Report CAS 1080	26.09.1996
119202	DEMKO Test Report	20.02.1996

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the LR Type Approval System Procedure.

Thorsten Wolff
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Lloyd's Register EMEA
 Lloyd's Register

LR031-1.2013.12

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Part 3
Switches

Producer/Licence No.	Item Description	Technical Details	Category/Additional Tests	Remarks	Cert. No.
Danfoss A/S Nordborgvej 81 DK-6430 Nordborg Denmark	<p>Pressure switches with bellows sensing element Types: CAS-133; CAS-136 CAS-137; CAS-139</p> <p>Differential pressure switches with diaphragm sensing element Types: CAS-143; CAS-145; CAS-147</p> <p>Differential pressure switches with diaphragm sensing element Type: CAS-155</p> <p>Temperature switches with capillary/bulb sensing element Types: CAS-178; CAS-180; CAS-181</p>	<p>Range: 0 to 3.5 Bar / 0 to 10 Bar/ 6 to 18 Bar/ 10 to 35 Bar Accuracy % of FS: ±1</p> <p>Range: 0 to 10 Bar / 4 to 40 Bar/ 6 to 60 Bar Accuracy % of FS: ±1</p> <p>Range: 0.2 to 2.5 Bar Accuracy % of FS: ±1</p> <p>Range: 20 to 80°C/ 70 to 120°C / 60 to 150°C Accuracy % of FS: ±1</p> <p>Switch actions: Single pole double throw Contact rating: AC15: 250 Vac, 0.1 A DC13: 125 Vdc, 12 W</p>	<p>ENV1, ENV2, ENV3, ENV4 (1996)</p> <p>Low temperature test: -25°C</p>	Expires: 12 April 2020	15/20032

