



NIPPON KAIJI KYOKAI

COPY

TYPE APPROVAL CERTIFICATE FOR AUTOMATIC DEVICES AND EQUIPMENT

Certificate No. TA22486M

This is to certify that the undernoted product(s) has/have been approved in accordance with the requirements specified in Chapter 1, Part 7 of "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use" and the relevant Society's Rules.

This certificate is issued to

Manufacturer and
Place of Manufacturing:

Danfoss A/S
Nordborgvej 81, Dk-6430 Nordborg, Denmark
Danfoss (Tianjin) Ltd,
No 9 Quanhui Road , Wuqing Development Area
301700 Tianjin, China

Product description:

Temperature Sensor

Model:

MBT 5111, MBT 5113, MBT 5116, MBT 5410,
MBT 5722, MBT 5114

Approval No.:

96A106

Valid until:

27 October 2027

This certificate is subject to the conditions specified in the attached sheet(s).

Issued at Tokyo on 28 October 2022.



S. Oishi
General Manager
Machinery Department

Note: The manufacturer, if desired, is requested to apply to the Society for renewal prior to the expiration date.

Specification & documents:

1.Particular

Type	Sensor Element	Temp. Range	Drawing	Remarks
MBT 5111 standard	1 × NiCr-Ni	-40 ~ +800 °C	MBT5111	
MBT 5111 customise	1 × NiCr-Ni	-40 ~ +800 °C	MBT5111-1	
MBT 5113	1 × NiCr-Ni	-50 ~ +800 °C	MBT5113	Transmitter MBT 9110* ¹ is available.
	2 × NiCr-Ni	-50 ~ +800 °C		
MBT 5114 standard	1 × Pt1000	-50 ~ +600 °C	MBT5114	
	2 × Pt1000	-50 ~ +600 °C		
MBT 5114 customise	1 × Pt1000	-50 ~ +600 °C		
	2 × Pt1000	-50 ~ +600 °C		
MBT 5116	1 × Pt100	-50 ~ +600 °C	MBT5116	Transmitter MBT 9110* ¹ is available.
	2 × Pt100	-50 ~ +600 °C		
MBT 5116 Slim-line	1 × Pt100	-50 ~ +600 °C	MBT5116 Slime-line	
MBT 5410	1 × Pt100	-50 ~ +110 °C	MBT5410	Transmitter MBT 9110* ¹ is available.
	1 × Pt1000	-50 ~ +110 °C		
MBT 5722	1 × Pt100	-50 ~ +200 °C	MBT5722	

*1) Type Approval No. 98A105

2.Documentntation and Test Report

Data Sheet

- MBT 5111 (Doc No. AI237986443594en-001001, 2021-02)
- MBT 5113 / 5116 (Doc No. AI215386431660en-000701, 2021-03)
- MBT 5114 (Doc No. IC.PD.P30.T3.02 | 520B7543, 2016-12)
- MBT 5410 (Doc No. AI202186432661en-000801, 2021-02)
- MBT 5722 (Doc No. AI202086427489en-000801, 2021-02)

Test Report

- FORCE Test Report MBT5111 (Doc No. 117-34687-4, 2021-07-15)
- FORCE Test Report MBT5113 (Doc No. 117-34687-5, 2021-07-15)
- FORCE Test Report MBT5114 (Doc No. 117-34687-6, 2021-07-15)
- FORCE Test Report MBT5116 (Doc No. 117-34687-7, 2021-07-15)
- FORCE Test Report MBT5252 (Doc No. 117-34687-2 Rev.2, 2021-07-15)
- FORCE Test Report MBT5722 (Doc No. 121-29917-1, 2022-01-26)
- FORCE Test Report MBT5410 (Doc No. 120-35948-1, 2021-03-01)
- Technical Report MBT5722(5410) (Doc No. TR084Z0019-00, 2018-09-14)

- To be continued -

Test items & approval conditions:

1. Test items:

(Applied testing items are marked with X.)

ENVIRONMENTAL TESTS (IACS UR E10 Rev.8 basis)		Mark
External examination		X
Operation test and performance test		X
Electric power supply failure test		X(Note2)
Power supply fluctuation test	Electric	X(Note2)
	Pneumatic and Hydraulic	--
Insulation resistance test		X
High voltage test		X
Pressure test (Pneumatic and Hydraulic)		--
Dry heat test (Temperature 70°C × 16 hours)		X
Damp heat test		X
Vibration test (Note1)		X
Inclination test		--
Cold test (Temperature -50°C × 16 hours)		X
Salt mist test		--
Electrostatic discharge immunity test		X(Note2)
Radiated radio frequency immunity test		X(Note2)
Conducted low frequency immunity test		X(Note2)
Conducted high frequency immunity test		X(Note2)
Burst / Fast transient immunity test		X(Note2)
Surge immunity test		X(Note2)
Radiated emission test		X(Note2)
Conducted emission test		X(Note2)
Flame retardant test		--

- To be continued -

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Attached sheet -3/3 to the Certificate No. TA22486M

Note1: Condition of Vibration test

Type	Test Condition	
	Frequency / Amplitude	Duration
MBT 5111	2 ~ 25 Hz / 1.6 mm 25 ~ 40 Hz / 4.0 g 40 ~ 2000 Hz / 10.0 g	2.0 hours
MBT 5113		
MBT 5114		
MBT 5116		
MBT 5410	2 ~ 25 Hz / 1.6 mm 25 ~ 100 Hz / 4.0 g	1.5 hours
MBT 5722		

Note2: These test items were carried out for MBT 5113 / 5116 / 5410 with the transmitter MBT 9110.

2. Approval condition:

Each equipment is not allowed to be installed in the bridge and on open deck.

- The End -