

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Temperature Sensor**

with type designation(s)

HT201-K1C; HT201-K2C; HT201-K2B; HR101-P1P; HR101-H

Issued to

Heriana Co., Ltd.**Busan, Republic of Korea**

is found to comply with

Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**Application :****Location classes****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Temperature	B
Humidity	B
Vibration	B
EMC	N/A
Enclosure	B/ IP56

This Certificate is valid until **2019-06-30**.Issued at **Busan** on **2015-10-12**DNV GL local station: **Pusan**Approval Engineer: **Dong Ho Park**for **DNV GL**

Baeg Soon Choi
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

Temperature sensors listed below (with reference to drawings in Application for Type Approval Certificate):

No	Model	DWG No.	Sheet No.	Range (°C)	Length (mm)		
					L1	L2	D (ø)
1	HT201-K1C	M-11-R01-0	1/21	800	45-250	4000-12000	4.5-6.4
		M-11-R02-0	2/21	800	45-250	4000-12000	4.5-6.4
		M-11-R07-0	3/21	800	45-250	4000-12000	6-10
		M-11-R08-0	4/21	800	45-250	4000-12000	6-10
		M-11-R09-0	5/21	200	45-250	4000-12000	6-10
		M-11-R03-0	6/21	800	45-250	300-5000	4.5-6.4
		M-11-R04-0	7/21	800	45-250	300-5000	4.5-6.4
		M-11-R05-0	8/21	800	45-250	300-5000	4.5-6.4
		M-11-R06-0	9/21	800	45-250	300-5000	4.5-6.4
2	HT201-K2C	M-12-R01-0	10/21	800	45-250	4000-12000	4.5-6.4
		M-12-R02-0	11/21	800	45-250	4000-12000	4.5-6.4
		M-12-R03-0	12/21	800	45-250	300-5000	4.5-6.4
		M-12-R04-0	13/21	800	45-250	300-5000	4.5-6.4
		M-12-R05-0	14/21	800	45-250	300-5000	4.5-6.4
		M-12-R06-0	15/21	800	45-250	300-5000	4.5-6.4
3	HT201-K2B	M-10-R01-0	16/21	800	80-200	500-700	4.5-6.4
		M-10-R02-0	17/21	800	80-200	130	4.5-6.4
		M-10-R03-0	18/21	800	80-200	X	4.5-6.4
4	HR101-P1P	M-03-R01-0	19/21	200	60-250	X	8-10
5	HR101-H	M-06-R01-0	20/21	600	80-300	X	13-16
		M-06-R02-0	21/21	600	80-300	X	17-20

1. HT201-K1C: Thermocouple – K – Type (Single element, cable type)
2. HT201-K2C: Thermocouple – K – Type (Double element, cable type)
3. HT201-K2B: Thermocouple – K – Type (Double element, connector block type)
4. HR101-P1P: Resistance bulb – Pt100Ω (Low temperature)
5. HR101-H: Resistance bulb – Pt100Ω (High temperature)

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

Type Approval documentation

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

Marking of product

Product shall be marked
— identification of manufacturer

Job Id: **262.1-009035-3**
Certificate No: **TAA000004K**

- equipment type number or model identification
- serial number

Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the survey are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Retention survey is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE