Certificate no.:
TAA00003V1

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Gas Detector

with type designation(s)
HGD-200 Series

issued to
Hanla IMS Co., Ltd.
Busan, **Korea, Republic of**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

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

Temperature	**D**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**C***

*** see Product description**

Issued at **Høvik** on **2026-03-04**
This Certificate is valid until **2031-03-03**.
DNV local unit: **Gimhae Station**

for **DNV**

Approval Engineer: **Heinz Scheffler**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

HANLA Gas Detector HGD-200 detects hazardous gases that may occur in various areas to prevent accidents.

General technical data	
Input Voltage	18 to 36 Vdc (24Vcd nominal)
Max Power Consumption	Max 5Watts. 24Vdc
Analog Output	3-wire 4~20mA (Source)
Analog Output during Calibration	2.0mA (F.S.±0.5mA)
Analog Output during Fault	<1.0mA
Digital Output (NC)	H-ALARM, HH-ALARM, FAULT
Communication (Option)	RS-485 (MODBUS Protocol), CAN
IP Rating	IP 66
Ex Marking	Ex db IIC T6 Gb (-20℃ ≤ Ta ≤ 60℃)
Software version	R2

Types of detectable gases

1. Oxygen

Oxygen (O2)	
Gas Sensor Type	**HGD-200-O2-G-250V**
Measuring Range	0 ~ 25 %VOL
Calibration Level	20.9%VOL
Accuracy (Full Scale)	±3%
Response Time (T90)	<45S
Operating Temperature	-20 ~ 50℃
Sensor Type	Electrochemical Cell
Life Time	24Months

2. Explosive

Methane (CH4)		
Gas Sensor Type	**HGD-200-CH4-IR-101L**	**HGD-200-CH4-IR-101V**
Measuring Range	0 ~ 100 %LEL	0 ~ 100 %VOL
Calibration Level	50%LEL, 100%LEL	50%VOL, 100%VOL
Accuracy (Full Scale)	±3%	±3%
Response Time (T90)	<30S	<30S
Operating Temperature	-20 ~ 60℃	-20 ~ 60℃
Sensor Type	Infrared (IR)	Infrared (IR)
Life Time	>5Years	>5Years

Propane (C3H8)	
Gas Sensor Type	**HGD-200-C3H8-IR-101L**
Measuring Range	0 ~ 100 %LEL
Calibration Level	50%LEL, 100%LEL
Accuracy (Full Scale)	±3%
Response Time (T90)	<30S
Operating Temperature	-20 ~ 60℃
Sensor Type	Infrared (IR)
Life Time	>5Years

3. Toxic

Ammonia (NH3)			
Gas Sensor Type	**HGD-200-NH3-E-101P**	**HGD-200-NH3-E-301P**	**HGD-200-NH3-E-501P**
Measuring Range	0 ~ 100ppm	0 ~ 300ppm	0 ~ 500ppm
Calibration Level	50ppm, 100ppm	150ppm, 300ppm	250ppm, 500ppm
Accuracy (Full Scale)	±3%	±3%	±3%
Response Time (T90)	<150S	<150S	<150S
Operating Temperature	-20 ~ 50℃	-20 ~ 50℃	-20 ~ 50℃
Sensor Type	Electrochemical Cell	Electrochemical Cell	Electrochemical Cell
Life Time	24Months	24Months	24Months

Hydrogen Sulfide (H2S)	
Gas Sensor Type	**HGD-200-H2S-E-101P**
Measuring Range	0 ~ 100ppm
Calibration Level	50ppm, 100ppm
Accuracy (Full Scale)	±3%
Response Time (T90)	<150S
Operating Temperature	-20 ~ 50℃
Sensor Type	Electrochemical Cell
Life Time	24Months

Approval conditions
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 classification of ships Pt.4 Ch.9 Control and monitoring systems.

Application/Limitation
Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to DNV Rules and Ex-Certification / Special Condition for Safe Use listed in valid Ex-certificate issued by a notified / recognized Certification Body.

Before installation on board, the Technical Manual must be observed.

Location class EMC B (Compass safe distance): The devices shall be not installed less than 5 m from magnetic compass.

Type Approval documentation
See Annex1.

Tests carried out
Applicable tests according to:
- DNV-CG-0339, August 2021
- EN 50104:2019
- EN IEC 60079-0:2018 incl. AC:2020
- EN 60079-29-1:2018 incl. AC:2020
- EN 50270:2015
- EN 50271:2018 (SIL1)
- IEC 60092-504:2016
- IEC 60533:2015
- EN 45544-1:2015

Marking of product
The products to be marked with:
- manufacturer name
- model name
- serial number

Periodical assessment
The scope of the periodical assessment 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 assessment 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

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE

Annex1: Type Approval documentation

Hidden