

[1] EC TYPE-EXAMINATION CERTIFICATE

**[2] Equipment or Protected System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

- [3] **EC-Type Examination Certificate Number:** Nemko 05ATEX1112X
- [4] **Equipment or Protective System:** Level Gauging Radar Sensor
- [5] **Applicant and Manufacturer:** Kongsberg Maritime AS
- [6] **Address:** Haakon VII's gt. 4
N-7005 Trondheim
Norway
- [7] **This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.**
- [8] **Nemko AS, notified body number 0470 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.**
- The examination and test results are recorded in confidential report no. 38495**
- [9] **Compliance with the Essential Health and Safety Requirements has been assured by compliance with:**
- CENELEC EN 50014: 1997 + A1: 1999 + A2: 1999 and CENELEC EN 50020: 2002
CENELEC EN 50284: 1999**
- [10] **If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.**
- [11] **This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.**
- [12] **The marking of the equipment or protective system shall include the following:**



II 1 G

EEx ia IIC/IIB T4 Ta: 85°C

Oslo, 2005-08-31



Rolf Hoel
Certification Department

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[13] Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 05ATEX1112X

[15] Description of Equipment or Protective System

The type **GLA-120/P** and **GLA-120/H** Level Gauging Radar Sensor comprises an electronic unit and antenna unit enclosed in a stainless steel enclosure. The unit is connected to intrinsically safe power supply and signal circuits as advised in this certificate. The GLA-120 is intended for use in ships.

The antenna part mounted inside the storage tank is the only difference between the variations covered by this certificate.

GLA-120/P: With parabolic antenna. EEx ia IIC

GLA-120/H: With horn antenna. EEx ia IIC/IIB

Horn antennas made with plastic materials having antistatic properties qualify for gas group IIC.

Horn antennas without antistatic materials qualify for IIB.

Safety Data

Power supply, terminals 1 and 2

Maximum input voltage	U_i : 15,6 V
Maximum input current	I_i : 397 mA
Maximum input power	P_i : 2,1 W
Maximum internal capacitance	C_i : 347 nF
Maximum internal inductance	L_i : Negligible

Signal supply, terminals 3,4,5,6, 7, 8

Maximum input voltage	U_i : 15,6 V
Maximum input current	I_i : 12 mA
Maximum internal capacitance	C_i : Negligible
Maximum internal inductance	L_i : Negligible

The input circuits shall be connected to intrinsically safe output circuits with data corresponding to the listed input data of the GLA120.

The power supply connected to terminals 1 and 2 may have resistive trapezoid output characteristic.

Range of Ambient Temperature

$-40^{\circ}\text{C} \geq T_a \geq +85^{\circ}\text{C}$

[16] Report No. 38495 and the listed Descriptive Documents

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Descriptive Documents

Number	Rev.	Date	Title/Description	Sheets.
TFLT5028	A	-	Tilverkningsföreskrift	9
PSLT6028	B	-	Produktstruktur- Trine. 24 GHz Microwave unit ..	1
KSLT6028	A	03-04-07	TRINE (LT6028)	5
GLA-120/PFELL	0	05-08-04	Fellesmaterieell RTGS GL-120	2
GLA-120/HFELL	0	05-08-11	Fellesmaterieell RTGS GL-120/H	2
DLT6028	A	02-11-12	FMCW Radar Unit	1
E-2640	A	05-09-02	Type plate for RTG unit GLA-120/-- radar Tank Gauging system GL-120	1
GL-2241	-	05-07-04	Radar Level Gauging System type GL-120 Safety Control Drawing	1
GL-2213	-	05-05-31	Feed Cover with Cap type GL-2213/- for GLA 120/P	1
GL-2189	-	05-03-04	PTFE TFM Bolt GLA 120/P Detail drawing	1
GL-2164	-	05-07-10	RF Adapter type GL-2164/1	1
GL-2159	A	05-06-27	GLA-120/P Felles Radar Tank Gauging system GL-120	1
GL-2153	A	05-06-27	Radar Tank Gauge unit GLA-120/P Radar Tank Gauging system	1
GL-2146	-	05-06-30	Offset Parabola Feed Assembly type GL-2146/1 for GLA-120/P	1(2)
GL-2146	-	05-06-30	Offset Parabola Feed Assembly type GL-2146/2 for GLA-120/P	(2)2
GL-2144	-	05-06-30	Horn antenna type GL-2144/1 for GLA120/H for gas class IIB/ IIC Ass. Dwg.	2
GL-2143	-	05-06-30	Lens for Horn Antenna type GL2141/- for GLA120/H IIB / IIC Detail Drwg.	2
GL-2139	-	05-06-30	Offset Parabolic Antenna type GL-2139/- for GLA120/P	1
GL-2110	-	05-02-09	Cover for feed GLA120/P Detail drawing	1
GL-2094	B	05-07-01	Electrical connection of GLA100/3, GLA-120/P and GLA-120/H.	1
GL-1865	-	05-08-02	Radar sensor Modem & Control unit	1
UY-127	-	05-04-06	GLB-120 frame for potting of components	1
GLB-120	0	05-08-02	Radar Modem og styringsenhet	1
7212-366.0000	0	05-08-04	PCB Specification	1
7212-366.001	0	05-08-04	GLB-120 7212-366.0000, Sheet 001	1
7212-366.002	0	05-08-04	GLB-120 7212-366.0000, Sheet 002	1
7212-366.005	0	05-08-04	GLB-120 7212-366.0000, Sheet 005	1
7212-366.006	0	05-08-04	GLB-120 7212-366.0000, Sheet 006	1
7212-366.007	0	05-08-04	GLB-120 7212-366.0000, Sheet 007	1
7212-366.103	0	05-08-04	GLB-120 7212-366.0000, Sheet 103	1
7212-366.107	0	05-08-04	GLB-120 7212-366.0000, Sheet 107	1
7212-366.300	0	05-08-04	GLB-120 7212-366.0000, Sheet 300	1
7212-366.400	0	05-08-04	GLB-120 7212-366.0000, Sheet 400	1
9212-366.001 GLB-120	0	05-07-07	Materialliste Kretskort Grunnversjon	4

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[17] Special Conditions for Safe Use

1. The allowed ambient temperature range of the apparatus is $-40^{\circ}\text{C} \geq T_a \geq +85^{\circ}\text{C}$
2. The intrinsically safe electrical circuit of the GLA120 is connected to the earthed metal enclosure and does not comply with clause 6.4.12 in EN 50020. Special precautions shall be considered in order to avoid the possibility of different earth potential at the sensor location and the earth connection of the supply barrier.
3. The GLA-120 may be used for connection to the associated apparatus GLK-100, certificate Nemko Nr.Ex 97D303.

GLK-100 Power Supply, Terminals X81:2-1

Maximum output voltage	$U_0=15,6\text{ V}$	
Maximum output current	$I_0=397\text{ mA}$	
Maximum output power	$P_0=2,1\text{ W}$	
Maximum external capacitance	IIC: $C_0=497\text{ nF}$	IIB: $C_0=3\text{ }\mu\text{F}$
Maximum external inductance	IIC: $L_0=40\text{ }\mu\text{H}$	IIB: $L_0=160\text{ }\mu\text{H}$
Maximum ratio L_0/R_0	IIC: $L_0/R_0=17\text{ }\mu\text{H}/\Omega$	IIB: $L_0/R_0=68\text{ }\mu\text{H}/\Omega$

[18] Essential Health and Safety Requirements

See item 9

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Supplement 1 to EC-TYPE EXAMINATION CERTIFICATE**[13] Supplement 1****[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 05ATEX1112X****[15] Description of Equipment or Protective System**

The type **GLA-120/H** Level Gauging Radar Sensor with horn antenna has been reclassified for use in group IIC provided the special conditions are met for the installation.

Types covered by this certificate

GLA-120/P: With parabolic antenna. EEx ia IIC T4

GLA-120/H: With horn antenna. EEx ia IIC T4 with special conditions as specified in this document.

[16] Report No. 96094 and the document GLA-120/H Safety Instructions, dated 2007-10-02**17] Special Conditions for Safe Use**

1. The allowed ambient temperature range of the apparatus is $-40^{\circ}\text{C} \geq T_a \geq +85^{\circ}\text{C}$
2. The intrinsically safe electrical circuit of the GLA120 is connected to the earthed metal enclosure and does not comply with clause 6.4.12 in EN 50020. Special precautions shall be considered in order to avoid the possibility of different earth potential at the sensor location and the earth connection of the supply barrier.
3. The GLA-120 may be used for connection to the associated apparatus GLK-100, certificate Nemko Nr.Ex 97D303.
4. The potential electro static charging/discharging risk on the horn antenna GLA- 120/H has to be observed when used with gas group IIC (hydrogen, acetylene and carbon disulphide). If the mounting conditions as specified by the manufacturer and the manufacturers instructions are followed, the GLA-120/H assembly with socket is approved for use in gas group IIC.

Specifically, the minimum distance (h) from socket opening/end and up to the antenna front should not be less than 300 mm.

Additionally, no charging mechanisms such as dry rubbing or liquid/mist/vapour/gas/air stream directed towards and no object to touch the antenna front should be allowed while group IIC explosive atmosphere.

[18] Essential Health and Safety Requirements

See item 9

Oslo, 2007-11-08



Rolf Hoel
Certification Manager, Ex-products

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Supplement 2 to EC-TYPE EXAMINATION CERTIFICATE**[13] Supplement 2****[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 05ATEX1112X****[15] Description of Equipment or Protective System**

This certificate is extended to include electronic unit GLB-122 which is an intrinsically safe device, primarily designed as a spare part or system upgrade for Level Gauging Radar Sensor GLA120/P, GLA120/H in principal certificate no. Nemko 05ATEX1112X. The GLB-122 can be equipped with a 10 or 24 GHz microwave unit, depending on the application. Communication with safety compatible central equipment is analogue over four twisted pairs of wire. The GLB-122 is evaluated after EN 60079-0: 2009 and EN 60079-11: 2007.

Type Designations and Data

GLB-122/y

y=1: 10 GHz

y=2: 24 GHz

Safety parameter	Power supply, terminal 1 - 2	Signal supply, terminals 3 - 8
Maximum input voltage [Ui]	15,6V	15,6V
Maximum input current [Ii]	397mA	12mA
Maximum input power [Pi]	2,5W	-
Maximum internal capacitance [Ci]	347nF	Negligible
Maximum internal inductance [Li]	Negligible	Negligible

[16] Report No. 119314

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Supplement 2 to EC-TYPE EXAMINATION CERTIFICATE**Descriptive Documents**

Name/Title	Drawing No.	Rev.	Date	Sheets
GLB-122 PCB Layout	7212-467.0000	A	19.11.2010	4
BOM GLB-122 Basic version	9212-467.0000	A	26.11.2010	2
BOM GLB-122 Full version	GLB-122	A	26.11.2010	1
Radar Sensor Modem & Control Unit GLB-122 Schematics	GL-2461	-	18.11.2010	1
PCB Specification GLB-122	GLB-122_PCB_SPEC	A	18.11.2010	1
Tilverkningsforskrift	TFLT6028	B	09.02.2005	9
Produktstruktur Trine 24 GHz	PSLT6028	D	26.09.2005	1
Trine (LT6028) Schematic drawing	KSLT6028	H	30.03.2005	5
Fellesmateriell RTGS GL-120/P	GLA-120/PFELL	T	28.05.2010	2
Fellesmateriell RTGS GL-120/H	GLA-120/HFELL	O	28.05.2010	2
Type plate	E-2640	B	14.09.2011	1
Safety control drawing	GL-2241	B	03.10.2011	1
RF Adapter type GL-2164/1	GL-2164	B	09.03.2010	1
GLA-120/P Felles radar tank gauging system GL-120	GL-2159	H	26.05.2010	1
Offset parabol feed assembly type GL-2146/1 for GLA-120/P	GL-2146	C	27.09.2010	1
Radar Modem og styringsenhet BOM	GLB-120	B	27.09.2007	1
Radar Tank Gauge unit GLA-120/P Radar Tank Gauging system	GL-2153	E	09.01.2008	1
Electrical connection of GLA100/3, GLA-120/P and GLA-120/H	GL-2094	C	29.11.2005	1
GLB-120 frame for potting of components	UY-127	A	22.01.2008	1
Radar sensor modem & Control unit. Schematic drawing.	GL-1865	A	23.01.2008	1
Cover for feed GLA_120/P Detail drawing	GL-2110	A	22.01.2008	1
Lens for horn antenna type GL-2141/1 for GLA-120/H for gas class IIB/IIC Detail dwg	GL-2143	A	21.01.2008	3
Horn antenna type GL-2144/1 for GLA-120/H for gas class IIB/IIC ass dwg	GL-2144	A	21.01.2008	2
PTFE TFM Bolt GLA-120/P detail drawing	GL-2189	A	21.01.2008	1

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Supplement 2 to EC-TYPE EXAMINATION CERTIFICATE**17] Special Conditions for Safe Use**

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3. The GLA-120 may be used for connection to the associated apparatus GLK-100, certificate Nemko Nr.Ex 97D303.
4. The potential electro static charging/discharging risk on the horn antenna GLA- 120/H has to be observed when used with gas group IIC (hydrogen, acetylene and carbon disulphide). If the mounting conditions as specified by the manufacturer and the manufacturers instructions are followed, the GLA-120/H assembly with socket is approved for use in gas group IIC.

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[18] Essential Health and Safety Requirements

See item 9

Oslo, 2011-12-19

Asle Kaastad

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Certification Manager, Ex-products

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