[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 03ATEX016X**
[4]	**Equipment or Protective System:**	**Wireless Temperature Monitoring System**
[5]	**Applicant/Manufacturer:**	**Kongsberg Maritime Ship Systems AS**
[6]	**Address:**	**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. 200244128

[9] **Compliance with the Essential Health and Safety Requirements has been assured by compliance with:**

CENELEC EN 50014: 1997 + A1: 1999 + A2: 1999 , CENELEC EN 50020 1994
CENELEC EN 50284 1999, CENELEC EN 50281-1-1

[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) GD	**[EEx ia] IIC (GBP100) Tamb: 85°C**
II 1 GD	**EEx ia IIC/IIB T6/T5/T4 (GBS1, GBW) Tamb: 85/95/100°C**

Oslo, 2003-04-11

Rolf Hoel
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Enterprise number: NO 974404532

[13] Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 03ATEX016X

[15] Description of Equipment or Protective System

The Sentry GB-100 System constitutes a wireless temperature monitoring system for measurement of temperature in parts of rotating machinery.
The system comprises the following units:
1. A signal processing/barrier unit model GBP100
2. Up to 16 RF-antennas model GBS1, which are connected to the power supply via coaxial cables.
3. Wireless temperature sensors model GBW for mounting in the machinery.

Type Designations and Types of Protection

The Sentry GB-100 System comprises the listed parts.

Signal Processing/ Barrier Unit

GBP100/abbcd(d)
The letters abcde denote the following:
a: type of communication protocol
bb: number of sensors
connected
c: Software options
d(d): sensor type dX=EEx ia IIC version

Code: II (1) GD [EEx ia] IIC Tamb: 85°C

Stationary Antenna

GBS1aa/bb-cc

The letters aaabbcc denote the following:
aa: Mechanical design: aa
bb: Thread length
cc: cable length

Codes:
EEx ia IIC T6/T5/T4 mechanical design aa= 50 or 51 (design with external conductive plastic cover)
EEx ia IIB T6/T5/T4 mechanical design aa=30 or 31
Tamb: 80°C /95°C /100°C

Temperature Sensor

GBWaaa/bc-ddd

The letters aaabcddd denote the following:
aaa: Mechanical design.
b: Mounting versions

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c: Sensor tip design
ddd: Sensor length

Codes:
EEx ia IIC T6/T5/T4 mechanical design aa= 50 or 51 (design with external conductive plastic cover)
EEx ia IIB T6/T5/T4 mechanical design aa=30 or 31
Tamb: 80°C /95°C /100°C

Data

Power supply 18-32V DC
Maximum safe voltage Um: 250V
Max RF pulse power out 100mW , mean RF power 140 µW, 856MHz

[16] Report No. 200244128 and the listed descriptive documents.

Descriptive Documents

Name/Number	Rev.	Date	Title/Description
Overview of documentation	A	2003-04-10	
GBP1OO/ ----- X Block diagram	B	2003-03-28	Block Diagram
GBX-1	C	2003-03-12	Ex-protection Schematics 4 sheets
7212C391.0040	C	2003-03-20	PCB component lay out side B
7212C391.0020	C	2003-03-20	PCB lay out side B
7212C391.0010	C	2003-03-20	Side A viewed from side B
7212C391.0000 GBX-1	C	2003-02-20	Parts list 2 pages
7212C391.0000.	C	2003-02-20	PCB Specification
Beskrivelse av sikkerhetskomponenter	V4	2003-01-16	Parts list
GBP100_1_EX	C	2003-01-08	Sentry02 Schematics 10 sheets
Sentry 02/C_EX GBP-3	C	2003-02-07	PCB lay out drawings 10 sheets
Sentry02/C_EX.Bom	A	2003-01-16	Bill of Materials 4 sheets
M4151spc.txt		2003-02-07	PCB specification 2 pages
11892	E	2003-01-10	DC/DC Converter 10069 Schematics 3 pages
PA10069 PCB 11901G		2003-01-10	PCB lay out 3 sheets
11896	C	2003-01-16	Design spec. 1 page
11891E	-	2003-01-20	Parts list 5 pages
11901G	-	2003-01-10	PCB spec.
GB-162	-	2001-02-20	4-20mA med SPI grensesnitt 5 sheets
7212-362.004	1	2001-03-17	PCB lay out
7212-362.104	1	2001-03-17	PCB lay out
7212-362.002	1	2001-03-17	PCB lay out
7212-362.001	1	2001-03-17	PCB lay out
7212-362.007	1	2001-03-17	PCB lay out
7212-362.107	1	2001-03-17	PCB lay out
GBP-2 7212-362.0001	C	2003-01-17	Parts lists GB 162 Rev C 3 pages
7212-362.9001	-	2003-01-17	PCB spec.
3.02.0005.2.00	2	2000-10-07	Schematic drawing PPCB DS 856MHz Inductive Coupler
7212.372.0070	-	2001-12-03	Sammenstillingstegning for GBS-1

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GBS-1	-	2003-03-13	Bill of Materials
GBW-4	A	2002-01-15	PCB for 3 x 9,8mm SAW sensor
7212-379.0010	-	2002-01-15	GBW-4 7212-279.0000
7212-379.0020	-	2002-01-15	GBW-4 7212-279.0000
7212-379.0040	-	2002-01-15	GBW-4 7212-279.0000
7212-379.0000	-	2003-01-13	Bill of materials for GBW-4
7212-379.0000	-	2002-01-15	PCB spec.
GB-150	E	2003-04-02	Sentry stationary antenna GBS100/- and GBS/130 for IIB
GB-456	-	2003-04-02	Sentry stationary antenna GBS150 for IIC
GB-273	A	2003-04-02	Sentry wireless sensor GBW105/AF- and GBW205/AF for IIB
GB-457	-	2003-04-02	Sentry wireless sensor GBW305/AF- for IIC
GB-242	A	2003-04-02	Sentry wireless sensor GBW106/AF- and GBW206/AF for IIB
GB-463	-	2003-04-03	Sentry wireless sensor GBW306/AF- for IIC
GB-410	C	2003-04-09	Sentry GBP100/
GB-467	-	2003-04-09	Montering av styreklo/jordingsklemme GBP100/-
UT-199	-	1984-03-10	Styreklo/Guide disc
GB-409	B	2003-03-27	Koblingsskjema Sentry-Ex GBP100/
GB-449	-	2003-03-27	Koblingsskjema GBP1--
E2619	C	2003-04-09	Name Label for GBP100/
GB-408	C	2003-03-31	Ex merking av GBW2/--/--
GB-427	-	2003-02-10	Dimensional Sketch

[17] Special Conditions for Safe Use

The ambient temperatures and temperature classes for the antenna and the sensor are
Ta= -20°C to + 80°C ➔ T6
Ta= -20°C to + 95°C ➔ T5
Ta= -20°C to + 100°C ➔ T4

[18] Essential Health and Safety Requirements
Covered by item 9

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SUPPLEMENT 1 TO EC-TYPE EXAMINATION CERTIFICATE

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 03ATEX016X

[15] Description of Equipment or Protective System

The certificate is extended to include versions with various types of sensors and antenna as shown in the descriptive documents.

[16] Report No. 24943

Descriptive Documents

Name/Title	Drawing No.	Rev.	Date	Sheets
Stationary antenna, GBS----	GB-724	-	2004-06-28	1
Sensor GBW1----	GB-723	-	2004-06-28	1

Oslo, 2004-10-29

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SUPPLEMENT 2 TO EC-TYPE EXAMINATION CERTIFICATE

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 03ATEX016X

[15] Description of Equipment or Protective System

The certificate is extended to include new plastic material of type Semitron Esd 420 to be used in the lid of the antenna.

[16] Report No. 29881

Descriptive Documents

Name/Title	Drawing No.	Rev.	Date	Sheets
Assembly drawing	GB-456	B	2003-04-02	1
Assembly drawing	GB-457	C	2003-04-02	1
Sammenstillingstegning	GB-463	B	2003-04-03	1

Oslo, 2005-05-03

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SUPPLEMENT 3 TO EC-TYPE EXAMINATION CERTIFICATE

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 03ATEX016X

[15] Description of Equipment or Protective System

The certificate is extended to include alternative fuse rating and alternative component types, as described in the descriptive documents.

[16] Report No. 102270

Descriptive Documents

Name/Title	Drawing No.	Rev.	Date	Sheets
Sentry Ex-protection schematics	GBX-1	D	11.02.2008	4
Sentry/Ex.Materialliste for Ex beskyttelseskort GBX-1	PCB: 7212C391.0000	D	11.02.2008	2
Sentry/Ex. Beskrivelse av sikkerhetskomponenter	-	V5	11.02.2008	1

[17] Special Conditions for Safe Use

The ambient temperatures and temperature classes for the antenna and the sensor are
Ta= -20°C to + 80°C ➔ T6
Ta= -20°C to + 95°C ➔ T5
Ta= -20°C to + 100°C ➔ T4

Oslo, 2008-02-19

Asle Vaerstad

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SUPPLEMENT 4 TO EC-TYPE EXAMINATION CERTIFICATE

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 03ATEX016X

e Description of Equipment or Protective System

The certificate is extended to include alternative layout and design of the electronic circuitry.

Type Designation

GBP200/abccde
The letters abccde denote the following:
a: type of communication protocol
b: software option
cc: number of sensors input
d: labelling
e: Ex version

[16] Report No. 102818

Descriptive Documents

Name/Title	Drawing No.	Rev.	Date	Sheets
Schematic Drawings GBX-2	GB-1062_C	C	22.04.08	6
PCB Layout Drawings GBX-2	7212-435.0002	2	22.04.08	4
Bill of Materials GBX-2	7212-435.0002	2	22.04.08	2
PCB Specification GBX-2	7212-435.0002	2	22.04.08	1
Schematic Drawings GBA-200	GB-1065_A	A	08.12.07	16
PCB Layout Drawings GBA-200	7212-433.0001	1	05.02.08	11
Bill of Materials GBA-200	7212-433.0001	1	05.02.08	6
PCB Specification GBA-200	7212-433.0001	1	05.02.08	2
Schematic Drawings GBK-2	GB-1066_A	A	15.12.07	3
PCB Layout Drawings GBK-2	7212-451.0002	2	15.12.07	4
Bill of Materials GBK-2	7212-451.0002	2	15.12.07	1
PCB Specification GBK-2	7212-451.0002	2	15.12.07	1
Schematic Drawings GBF-1	GB-1061_A	A	30.01.08	6

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PCB Layout Drawings GBF-1	7212-453.0001	1	22.08.07	3
Bill of Materials GBF-1	7212-453.0000	0	22.08.07	1
PCB Specification GBF-1	7212-453.0000	0	27.08.07	1
Schematic Drawings GB-200	GB-1069_C	C	09.10.08	3
PCB Layout Drawings GB-200	7212-438.0001	1	09.10.08	4
Bill of Materials GB-200	7212-438.0001	1	09.10.08	1
PCB Specification GB-200	7212-438.0001	1	09.10.08	1
Schematic Drawings GBS-1	3.02.0005.2.00	2	07.10.00	1
PCB Layout Drawings GBS-1	7212-372.0001	1	03.12.01	1
Bill of Materials GBS-1	7212-372.0002	2	28.11.06	1
PCB Specification GBS-1	7212-372.0001	1	03.12.01	1
Schematic Drawings GBW-4	GBW-4_RevA	A	15.01.02	1
PCB Layout Drawings GBW-4	7212-379.0000	0	15.01.02	3
Bill of Materials GBW-4	7212-379.0000	0	13.01.03	1
PCB Specification GBW-4	7212-379.0001	1	15.01.02	1
Name label for GBP200/-----X and GBP200/-----Y	E-2685	C	29.01.09	1
Name label GBW3../Sensors	GB-408	E	08.12.03	1
Name label GBS15./Stationary antennas	GB-427	B	21.11.03	1
Order key for GBP200	GB-1064	A	03.12.07	1

[17] **Special Conditions for Safe Use**

The ambient temperatures and temperature classes for the antenna and the sensor are
Ta= -20°C to + 80°C ➔ T6
Ta= -20°C to + 95°C ➔ T5
Ta= -20°C to + 100°C ➔ T4

Oslo, 2009-02-17

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SUPPLEMENT 5 TO EC-TYPE EXAMINATION CERTIFICATE

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 03ATEX016X

[15] Description of Equipment or Protective System
Various technical changes and changes of documentation. The technical changes has no influence on the Ex safety of the apparatus.

[16] Report No. **133909**

Descriptive Documents

Name/Title	Drawing No.	Rev.	Date	Sheets
Sentry GBP100/----2X Ex utgave Sammenstillingstegning	GB-410	D	20.11.2003	1
Name label for GBP100/-----X EEx-version Detail drawing	E-2619	F	11.06.2004	1
Koblingsskjema Sentry – Ex GBP100/-----X Detaljtegning	GB-409	C	20.11.2003	1
Koblingsskjema Sentry GBP1--/-----X SPU – Ex Protection – Power Supply Detaljtegning	GB-449	A	20.11.2003	1
Sentry stationary antenna..... Assembly Drawing	GB-456	C	28.10.2009	1
Sentry rotating sensor.... Assembly Drawing	GB-457	D	07.09.2009	1
Sentry trådløs temperaturføler sammenstillingstegning	GB-463	B	28.04.2005	1
Montering av jordingsklemme for GBP100 EX	GB-467	B	23.11.2005	1
Styreklo / Guide disc Detaljtegning	UT-199	A	21.11.2003	1
GBK-2. Master Sheet	GB-1066	B	14.10.2008	3
BOM for GBK-2	GBK-2_BOM	B	14.10.2008	2
BOM for GBA-200	GBA-200_BOM	C	02.09.2009	-
PCB Specification for GBA-200	GBA-200_PCB Spec	A	15.11.2010	2
PCB specification for GBK-2	GBK-2_PCB Spec	A	15.11.2010	1
PCB layout for GBK-2	7212-451	0003	14.10.2008	4
PCB layout for GBX-2	7212-435	0003	16.01.2009	4
PCB specification for GBX-2	GBX-2_PCB Spec	A	15.11.2010	1
PCB layout for GBA-200	7212-433	0002	11.11.2008	9
PCB specification for GBA-200	7212-433	0002	17.11.2008	2
Ex marking of GBW3--/--, EEx IIC	GB-408	F	04.09.2009	1
Order key for GBP200	GB-1064	C	03.09.2009	1
BOM for GBX-2	GBX-2_BOM	E	02.09.2009	-
GBX-2 Schematic drawing	GB-1062	E	02.09.2009	6
GBF-1 Schematic drawing	GB-1061	B	20.01.2009	6

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GBA-200 Schematic drawing	GB-1065	C	02.09.2009	16
PCB specification for GBF-1	GBF-1_PCB Spec	0001	21.01.2009	1
BOM for GBF-1	GBF-1_BOM	B	21.01.2009	-
BOM GBS-1	GBS-1_BOM	A	08.12.2006	-
GBE-200 Schematic drawing	GB-1069	C	09.10.2008	3
Sammenstillingstegning for GBS-1	7212-372.000	1	03.12.2001	1
PCB specification GBW-4	7212-379.000	1	15.01.2002	1
BOM for GBE-200	GBE-200_BOM	C	09.10.2008	1
PCB specification for GBE-200	GBE-200_PCB Spec	A	15.11.2010	1
BOM for GBP-1A	GBP-1A_BOM	B	10.11.2003	4
PCB layout for GBP-1A	7212-394.0001	D	27.06.2003	10
PCB specification for GBP-1A	GBP-1A_PCB Spec	B	03.05.2010	2
PCB layout for GBF-1	7212-453.000	1	21.01.2009	3
SENTRY Stationary antenna..... Dimensional sketch	GB-140	K	03.09.2009	1
SENTRY wireless temperature sensor and stationary antennas	342530	A	12.12.2009	1
PCB specification for GBX-1	7212C391.0000	D	15.11.2010	1

[17] Special Conditions for Safe Use

The ambient temperatures and temperature classes for the antenna and the sensor are
Ta= -20°C to + 80°C ➔ T6
Ta= -20°C to + 95°C ➔ T5
Ta= -20°C to + 100°C ➔ T4

Oslo, 2010-11-17

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SUPPLEMENT 6 TO EC-TYPE EXAMINATION CERTIFICATE

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 03ATEX016X

[15] Description of Equipment or Protective System

This changes concern reduction of ambient temperature from 85°C to 70°C for Signalprocessing / barrier unit GBP200 and changes of documentation. The technical changes has no influence on the Ex safety of the apparatus.

Signal processing / barrier unit:

GBP200/abccde

The letters abccde denote the following:
a: type of communication protocol
b: software option
cc: number of sensors input
d: labelling
e: Ex version

Code: Ex II (1) GD [EEx ia] IIC Tamb: 70°C

[16] Report No. **207575**

Descriptive Documents

Name/Title	Drawing No.	Rev.	Date	Sheets
Schematic Drawings GBX-2	GB-1062	F	03.01.2012	6
PCB Layout Drawings GBX-2	7112-435	4	03.01.2012	4
Bill of Materials GBX-2	GBX-2 BOM	F	03.01.2012	3
PCB Specification GBX-2	GBX-2 PCB Spec	A	03.01.2012	1
Bill of Materials GBA-200	GBA-200 BOM	D	24.02.2012	6
Bill of Materials GBK-2	GBK-2 BOM	C	23.02.2012	2
Name label for GBP200/-----X and GBP200/-----Y	E-2685	E	06.02.2012	1

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[17] Special Conditions for Safe Use

The ambient temperatures and temperature classes for the antenna and the sensor are
Ta= -20°C to + 80°C ➔ T6
Ta= -20°C to + 95°C ➔ T5
Ta= -20°C to + 100°C ➔ T4

Oslo, 2012-05-30

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