

1 EC-TYPE EXAMINATION CERTIFICATE



2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 94/9/EC**

3 **EC-Type Examination Certificate No:** FM08ATEX0060X

4 **Equipment or protective system:** Type-WLS Water Level Sensor
(Type Reference and Name) Type-NL Multi-spot thermometers

5 **Name of Applicant:** Senmatic A/S

6 **Address of Applicant:** Industrivej 8
DK-5471 Sonderso
Denmark

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Ltd, notified body number 1725 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3032389EC dated 15th July 2010

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN 60079-0:2006, EN 60079-11:2007 and EN 60079-26:2004

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment 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:



II 1 G Ex ia IIC T4/T6 WLS Modbus version
II 1 G Ex ia IIB T4 WLS HART version
II 1 G Ex ia IIC T* Type NL Multispot Thermometer

* See Description

Mick Gower
Certification Manager, FM Approvals Ltd.

Issue date: 19th October 2012

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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13 Description of Equipment or Protective System:

The Type WLS can consist of two types of sensors; a water level sensor and a multi spot temperature sensor.

The Type WLS is configurable with respect to dimensions, number of sensors and positioning of sensors to suit a broad range of applications.

The water level sensor is placed at the end of a flexible stainless steel tube and up to 16 RTDs can be integrated in the length of the tube. The vertical position of the sensors and the length of the water level sensing device are variable and can be specified by the user within the limits set out in the datasheet.

There are two versions of the level sensing device:

Type WLS HART version using HART communication technology and being a 2 wire device.

Type WLS MODBUS version utilizing ModBus communication protocol and being a 4 wire device.

If the WLS is ordered without the capacitive level sensor, up to 20 RTDs can be ordered in the flexible tube. The Type NL sensors are available as: NLI, NLV, or NL-Cryo depending on the specific application.

Temperature class:

TYPE-WLSa1bcdefg1hi1 Water Level Sensor

a = overall length in mm;

b = Connection: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 47, 48, 61, 62, 63, 64, 65, 66, 67, 71, 72, 73, 74, 75, 76, 77, 81, 82, 83, 84, 85, 86, 87 or 88.

c = Level sensor; 0, 1, 2, 3, 4, 5, 6, A, B, C, D, E, F or G

d = anchor weight 0, 1, 2, or 3

e = number of conductors 3 or 5

f = number of elements

g = tolerance class 0, 1, 2, 3, 4 or 5

h = temperature range 1

i = lead out (total length) 1

WLS ModBus Ambient temperature range:

Above Flange: -50 °C to 70 °C

Below flange: -50 °C to 120 °C

WLS HART Ambient temperature range:

Above Flange: -50 °C to 70 °C

Below flange: -50 °C to 120 °C

Type-NLI ab1defghij Multi-spot thermometer

a = overall length in mm;

b = Sheath Diameter 1 or 2

d = Flange Connection Type: 1, 7, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 47, 48, 61, 62, 63, 64, 65, 66, 67, 71, 72, 73, 74, 75, 76, 77, 81, 82, 83, 84, 85, 86, 87 or 88.

e = Number of conductors 3, 4 or 5

f = number of spots

g = sensing element 1, 2, 3 or 4

h = tolerance class

i = temperature range 0, 1 or 4

j = cable lead out (total length)

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Type-NLI Temperature Class and Ambient temperature range:

Temperature Class: T4

Above Flange: -50 °C to 70 °C

Below flange: -50 °C to 130 °C

Type-NLI ab1defghij Multi-spot thermometer

a = overall length in mm;

b = Sheath Diameter 1 or ¾

d = Flange Connection Type: 1, 7, 21, 2, 22, 23, 24, 25, 26, 27, 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 47, 48, 61, 62, 63, 64, 65, 66, 67, 71, 72, 73, 74, 75, 76, 77, 81, 82, 83, 84, 85, 86, 87 or 88.

e = Number of conductors 3, 4 or 5

f = number of spots

g = sensing element

h = tolerance class

i = temperature range 2 or 3

j = cable lead out (total length)

Type-NLI Temperature Class and Ambient temperature range:

Temperature Class: T2

Above Flange: -50C to 70°C

Below flange: -50°C to 250°C

Type-NLV a11def1h1 Multi-spot thermometer

a = Overall length in mm;

d = Flange Connection Type: 1, 2, 3, 4, 5, 6 or 7.

e = Number of conductors 3, or 4

f = number of spots

h = tolerance class

Type-NLV Temperature Class and Ambient temperature range:

Temperature Class: T4

Above Flange: -50C to 70°C

Below flange: -50°C to 130°C

Type-NL-Cryo ab1def111j Multi-spot thermometer

a = overall length in mm;

b = Sheath Diameter 1 or 2

d = Flange Connection Type: 1, 2 or 3.

e = Number of conductors 3, 5 or 6

f = number of spots

j = cable lead out (total length)

Type-NL-Cryo Temperature Class and Ambient temperature range:

Temperature Class T5

Above Flange: -50C to 70°C

Below flange: -200°C to 95°C

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Electrical Parameters:

<i>WLS Modbus</i>	<i>U_i</i>	<i>I_i</i>	<i>P_i</i>	<i>L_i</i>	<i>C_i</i>
<i>main supply and communication</i>	7.2V	250 mA	700 mW	130 uH	0
<i>temperature elements with a common return (up to 16 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF
<i>temperature elements 3-wire (up to 16 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF
<i>temperature elements 4-wire (up to 16 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF

<i>WLS HART version</i>	<i>U_i</i>	<i>I_i</i>	<i>P_i</i>	<i>L_i</i>	<i>C_i</i>
<i>WLS main supply</i>	28V	100 mA	700 mW	2.5 mH	20 nF
<i>temperature elements with a common return (up to 16 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF
<i>temperature elements 3-wire (up to 16 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF
<i>temperature elements 4-wire (up to 16 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF

<i>NL Sensors</i>	<i>U_i</i>	<i>I_i</i>	<i>P_i</i>	<i>L_i</i>	<i>C_i</i>
<i>temperature elements with a common return (up to 20 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF
<i>temperature elements 3-wire (up to 20 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF
<i>temperature elements 4-wire (up to 20 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF
<i>Pt100 Average or Cu 90. 48 average with common return (up to 5 elements)</i>	7.2V	400 mA	700 mW	40 uH	500 nF

14 Specific Conditions of Use:

- 1) *The WLS and the RTDs are intrinsically safe circuits. At connection facilities the requirements in clause 6.2.1 in EN 60079-11 for separation between intrinsically safe circuits and possibly non-intrinsically safe circuits shall be strictly followed.*
- 2) *The WLS and the RTDs are two separate intrinsically safe circuits. They must not be interconnected and the requirements for separation listed in clause 6.2.1 in EN 60079-11 shall be followed.*
- 3) *Terminating and connecting the WLS cable and the wires from the RTDs, requirements in the local installation codes shall be followed.*
- 4) *When connecting the WLS and junction box adequate strain relief shall be provided.*

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15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16 Test and Assessment Procedure and Conditions:

This EC-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's ATEX Certification Scheme.

17 Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
15 th July 2010	Original Issue.
19 th October 2012	<u>Supplement 1:</u> Report Reference: 3032389rev111125 dated 8 th October 2012. Description of the Change: <i>Addition of welded and threaded flange connections were added to Models WLS and NLI.</i>

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