



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 03ATEX1294X

4 Equipment: Transmitter Head TH43 (used in the products TankRadar Pro and 5600 Series Radar Level Transmitter) and Transmitter Head TH40 (used in the product TankRadar Pro)

5 Applicant: SAAB Marine Electronics AB

6 Address: Gamlestadvägen 18  
Box 130 45  
402 51 Göteborg  
Sweden

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

8 Sira Certification Service, notified body number 0518 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 R52A8937A.

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

EN 50014:1997 + Amendments A1 to A2      EN 50020:2002  
EN 50018:2000 + Amendment A1      EN 50284:1999  
EN 50019:2000

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 and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

**TH 43**



II 1/2 G  
EEx de IIC T6 (-40° to +70°C)



II (2) (1) 1/2 G  
EEx de [ib] [ia] IIC T6 (-40° to +70°C)



II (1) 1/2 G  
EEx de [ia] IIC T6 (-40° to +70°C)

**TH 40**



II (2) 1/2 G  
EEx de [ib] ib IIC T4 (-40° to +70°C)  
EEx de [ib] IIC T6 (-40° to +70°C)

Project Number 52a8937  
Date 8 July 2003  
C. Index 12

M D Shearman  
Certification Manager

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**Sira Certification Service**

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## SCHEDULE

### EC TYPE-EXAMINATION CERTIFICATE

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#### 13 DESCRIPTION OF EQUIPMENT

The Type TH 40 and TH 43 Transmitter Heads comprise a cast aluminium alloy casing incorporating three separate chambers: a main flameproof chamber and two increased safety connection chambers.

The main flameproof enclosure has an aluminium alloy screw-on lid and extension tube. The chamber of the enclosure contains control circuitry, monitoring circuitry and a radar emission device. The extension tube, which is intended to go into the category 1 area to act as a waveguide through which the radar emissions pass, houses a spigot fitting bushing with a non-metallic insert pressed into it.

The two Increased Safety connection enclosures have aluminium alloy screw-on lids. The chambers contain certified terminal facilities. Connection to external circuits is by means of apertures in the wall for the fitting of suitable cable glands or conduit. Connection to the main chamber is by means of certified multicore cable bushings screwed into the inter-compartmental wall.

#### I.S. parameters

##### TH 40 Electrical Parameters

##### XA40 analogue circuit

For the purposes of a system assessment the circuit has the following safety description:

U <sub>i</sub>	=	30 V
I <sub>i</sub>	=	200 mA
C <sub>i</sub>	=	0
L <sub>i</sub>	=	0
U <sub>o</sub>	=	0
I <sub>o</sub>	=	0
U <sub>m</sub>	=	250 V

When used in conjunction with the IS 40 power supply the safety description is:

U <sub>i</sub>	=	23.1 V
I <sub>i</sub>	=	125.7 mA
P <sub>o</sub>	=	0.726 W
C <sub>ext</sub>	=	0.14 µF
L <sub>ext</sub>	=	2.2 mH
C <sub>i</sub>	=	0
L <sub>i</sub>	=	0

##### HM 40 HART modem

For the purposes of a system assessment the circuit has the following safety description:

U <sub>i</sub>	=	30 V
I <sub>i</sub>	=	200 mA
C <sub>i</sub>	=	0
L <sub>i</sub>	=	0
U <sub>o</sub>	=	0
I <sub>o</sub>	=	0
U <sub>m</sub>	=	250 V

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When used in conjunction with the IS 40 power supply the supply description is:

U <sub>i</sub>	=	23.1 V
I <sub>i</sub>	=	125.7 mA
P <sub>o</sub>	=	0.726 W
C <sub>ext</sub>	=	0.14 µF
L <sub>ext</sub>	=	2.2 mH
C <sub>i</sub>	=	0
L <sub>i</sub>	=	0

#### IS 40 intrinsically safe galvanically isolating supply

For the purposes of a system assessment the circuit has the following safety description:

U <sub>i</sub>	=	23.1 V
I <sub>i</sub>	=	125.7 mA
P <sub>o</sub>	=	0.726 W
C <sub>ext</sub>	=	0.14 µF
L <sub>ext</sub>	=	2.2 mH
C <sub>i</sub>	=	0
L <sub>i</sub>	=	0 V

#### DI 40 display interface

For the purposes of a system assessment the circuit has the following safety description:

U <sub>i</sub>	=	7.21 V
I <sub>i</sub>	=	336 mA
P <sub>o</sub>	=	0.547 W
C <sub>ext</sub>	=	25 µF
L <sub>ext</sub>	=	0.315 mH
C <sub>i</sub>	=	0
L <sub>i</sub>	=	0
L <sub>o</sub> /R <sub>o</sub>	=	65 µH/Ohm

#### Apparatus mounted outside flameproof enclosure

##### DP 40 display panel

For the purposes of a system assessment the circuit has the following safety description:

U <sub>i</sub>	=	7.21V
I <sub>i</sub>	=	336mA
P <sub>i</sub>	=	0.547W
C <sub>i</sub>	=	21.26µF
L <sub>i</sub>	=	0

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#### TH43 Electrical Parameters

The output parameters of the TH43 are the same as for the TH40 described above, but introduce another connection as follows:

The addition of an extra line out to the display interface circuit, with the addition of safety components and modification of the output parameters at connector X2 (formerly X7). The maximum combined parameters at this connector are as follows:

Connector X2

U<sub>o</sub> = 7.84 V  
I<sub>o</sub> = 385.6 mA  
P<sub>o</sub> = 0.678 W

This output meets the requirements for an intrinsically safe level of protection [Ex ia]

#### 14 DESCRIPTIVE DOCUMENTS

##### 14.1 Drawings

Drawing No.	Sheet	Rev.	Date*	Title
9150073-951	1 to 7	4	0016	Cert dwg Principle Dwg (TH40..)
9150073-953	1 of 1	2	0016	Certification Drawing. Block Diagram Electronics Unit
9150073-954	1 to 3	1	9727	Certification Drawing HART Modem (HM 40..)
9150073-955	1 of 1	1	9727	Certification Drawing Extra Analog Out (XA 40..)
9150073-956	1 of 1	1	9727	Certification Drawing Display Interface (DI 40..)
9150073-957	1 of 1	1	9727	Certification Drawing IS Supply (IS 40..)
9150074-951	1 to 3	6	0301	Flameproof Snclosure (TH40)
9150074-952	1 of 1	1	9718	Cert. Dwg.
9150074-953	1 to 7	1	9727	Cert. Drawing Display Board (DB 40..)
9150074-963	1 to 4	1	9836	Certification Drawing Hart Modem (HM 40..)
9150074-993	1 to 7	1	0209	TGE Adaptorboard
9150074-995	1 of 1	1	0209	Block Diagram Electronics Unit
9150074-996	1 to 5	1	0144	Principle Drawing TH43
9150076-921	1 of 1	1	0313	Cone/Pipe Antenna
9150076-922	1 of 1	1	0313	Cone Purging Antenna
9150076-923	1 of 1	1	0313	Parabolic Antenna
9150076-924	1 of 1	1	0313	Still Pipe Array Antenna
9150076-925	1 of 1	1	0313	Rod 100/250 Antenna
9150076-926	1 of 1	1	0313	Rod Antenna
9150076-927	1 of 1	1	0313	Process Seal Antenna
9150076-930	1 of 1	1	0313	Cert. Drawing Antenna Label
9150076-931	1 of 1	1	0318	TH43, Main Label
9150076-932	1 of 1	1	0318	TH40, Main Label
GST2003-0018	1 and 2	2	08 May 03	List Of Seal Types Antenna, And Operating Temperature and Pressure Ranges

\* Dates in the form of four numbers e.g. 0016 refer to the year/week

14.2 Report No. R52A8937A

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- 15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)
- 15.1 As light alloys may be used as the enclosure (or other parts) they may be at the accessible surface of this equipment, in the event of rare incidents, ignition sources due to impact and friction sparks could occur. This shall be considered when the equipment is being installed in locations that specifically require group II, category 1G equipment.
- 15.2 Under certain extreme circumstances, the non-metallic parts of the equipment may be capable of generating an ignition-capable level of electrostatic charge. Therefore, when used for applications that specifically require group II, category 1 equipment, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. Additionally, the equipment non-metallic parts shall only be cleaned with a damp cloth.
- 16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)  
The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in Report No. R52A8937A.
- 17 **CONDITIONS OF CERTIFICATION**
- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.
- 17.3 This certificate relies on the following previously certified products. When used as part of the Transmitter Head Type TH43, the key attributes listed in the table below shall still be maintained by their original certificate.

Description	Certificate No	Key attributes
Rosemount Fieldbus Comm. board	BAS01ATEX1358U	Provides connection to external circuits, clamping voltage and limiting current and power.

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