

# EU-TYPE EXAMINATION CERTIFICATE



Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU

EU-Type Examination Certificate No: FM18ATEX0046X

Equipment or protective system: CGR Series Centurion Guided Radar Level Measurement  
(Type Reference and Name)

Name of Applicant: Hawk Measurement Systems Pty. Ltd

Address of Applicant: 15-17 Maurice Ct  
Nunawading, Victoria 3131,  
Australia

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

FM Approvals Ltd, notified body number 1725 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, 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:

3057129 dated 21<sup>st</sup> November 2018

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 60079-0:2012 + A11:2013, EN 60079-1:2014, EN 60079-11:2012,  
EN 60079-26:2015, EN 60079-31:2014, and EN 60529:1991 + A1: 2000

If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. 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.

The marking of the equipment or protective system shall include:



II 1/2 G Ex ia/db IIC T6...T2 Ga/Gb Ta = T\* to +60°C

II 1/2 D Ex ia IIIC T85°C...T250°C Da / Ex tb IIIC T85°C Db Ta = T\* to +60°C

T\* = See Safety Instructions SI0056

Nicholas Ludlam  
Deputy Certification Manager, FM Approvals Ltd.

Issue date: 30<sup>th</sup> November 2018

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F ATEX 020 (Apr/16)

Page 1 of 7

# SCHEDULE

to EU-Type Examination Certificate No. FM18ATEX0046X

## 13 Description of Equipment or Protective System:

General – HAWK CGR series equipment is a continuous Level and Interface Measurement unit. It uses low power high frequency RF pulses based on the TDR principle to measure liquids and solids in contact with the sensing probe. These units are usually mounted directly at the level measurement point – at the top of a storage vessel – with the probe directed downwards in contact with the material product surface. HAWK CGR units are available with either 2 wire loop power or 4 wire option.

Construction – The HAWK CGR enclosure has a dual compartment with segregated flameproof and cable connection sections. The equipment includes cylindrical Dual Compartment Housing with a glass window, comprising a base with two covers with an approximate internal volume of 450 cm<sup>3</sup>. The two compartments are separated by a central internal wall that may have one 8 mm thru hole for electronics. The enclosures are manufactured from copper-free aluminium or stainless steel, and the aluminium versions may have an epoxy paint coating of maximum thickness 0.20 mm. The amplifier is located inside the Flameproof/Protection by enclosure compartment and the user connections are terminated in the rear compartment. The sensing probe is protected using the Intrinsic Safety method, where the energy supplied from the amplifier is limited to a safe level according to the standards. The enclosure has an ingress protection rating of IP66.

The enclosure is manufactured by International Metal Engineering Pty. Ltd and carries the following certification:

ATEX certified as Ex d IIC Gb, Ex tb IIIC Db; See ATEX Certificate SIRA ATEX 12ATEX1363U Issue 1.

### Operation Temperature Ranges:

The HAWK CGR series equipment are rated for use in an ambient temperature range of -10°C to +60°C. Low ambient temperature range is based on O-ring selected, See Safety instructions SI0056.

### Electrical data:

Ratings - Um = 250 VAC. Un= 14VDC to 28VDC, In= 4 to 20mA, Pn= 0.9W.

**Table #1 Process Temperature and Pressure Range for Gas Application**

Temp Class	Process Temperature Range	Barrier Conduit Fitting Type	Requirement for extension	Probe Model	O-ring material	Part code for letters "h" and "i"	Maximum Process Pressure
T6	-40°C to +80°C	Hawk Barrier Conduit Fitting with Sealing Compound  Or  Hawke SB474 Barrier Fitting	With or without extension	X8	NBR	B1 or BA	40bar
					EPDM	E1 or EA	
					VITON	V1 or VA	
					SILICON	S1 or SA	
				X6 X4	NBR	B1 or BA	100bar
					EPDM	E1 or EA	
					VITON	V1 or VA	
					SILICON	S1 or SA	
T6	-10 °C to +80 °C			X6 X4	MARKEZ (FFKM)	M1 or MA	100bar
T5	-40 °C to +100 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8	EPDM	E2 or EB	6bar
					SILICON	S2 or SB	
					VITON	V2 or VB	40bar

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to EU-Type Examination Certificate No. FM18ATEX0046X

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Temp Class	Process Temperature Range	Barrier Conduit Fitting Type	Requirement for extension	Probe Model	O-ring material	Part code for letters "h" and "i"	Maximum Process Pressure
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension	X6	EPDM	E2 or EB	100bar
					VITON	V2 or VB	
				X4	EPDM	E2 or EB	100bar
					VITON	V2 or VB	
					SILICON	S2 or SB	6bar
				X8	EPDM	E2 or EB	6bar
					SILICON	S2 or SB	
					VITON	V2 or VB	40bar
				X6	EPDM	E2 or EB	100bar
					VITON	V2 or VB	
				X4	EPDM	E2 or EB	100bar
					VITON	V2 or VB	
T5	-10 °C to +100 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X6 X4	MARKEZ (FFKM)	M2 or MB	100bar
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension				
T4	-40 °C to +130 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8	EPDM	E3 or EC	6bar
					SILICON	S3 or SC	
					VITON	V3 or VC	40bar
				X6	EPDM	E3 or EC	100bar
					VITON	V3 or VC	
				X4	EPDM	E3 or EC	100bar
					VITON	V3 or VC	
					SILICON	S3 or SC	6bar
T4	-40 °C to +130 °C	Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension	X8	EPDM	E3 or EC	6bar
					SILICON	S3 or SC	
					VITON	V3 or VC	40bar
				X6	EPDM	E3 or EC	100bar
					VITON	V3 or VC	
				X4	EPDM	E3 or EC	100bar
					VITON	V3 or VC	
					SILICON	S3 or SC	6bar

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Temp Class	Process Temperature Range	Barrier Conduit Fitting Type	Requirement for extension	Probe Model	O-ring material	Part code for letters "h" and "i"	Maximum Process Pressure
T4	-10 °C to +130 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X6 X4	MARKEZ (FFKM)	M3 or MC	100bar
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension				
T3	-40 °C to +150 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6; X4	VITON	V4 or VD	100bar
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension				
T3	-10 °C to +150 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6 X4	MARKEZ (FFKM)	M4 or MD	100bar
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension				
T3	-10 °C to +200 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6; X4	MARKEZ (FFKM)	M5 or ME	100bar
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension				
T2	-5 °C to +250 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6; X4	MARKEZ (FFKM)	M6 or MF	40bar
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension				

**Note:** O-ring selection also depends on O-ring material suitability with respect to process medium.

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to EU-Type Examination Certificate No. FM18ATEX0046X

**Table #2 Max Process Temperature Range for Dust Application**

Max Surface Temperature	Process Temperature Range	Barrier Conduit Fitting Type	Requirement for extension	Probe Model	O-ring material	Part code for letters "h" and "i"
T85 °C	-40 °C to +80 °C	Hawk Barrier Conduit Fitting with Sealing Compound Or Hawke SB474 Barrier Fitting	With or without extension	X8 X6 X4	NBR	B1 or BA
					EPDM	E1 or EA
					VITON	V1 or VA
					SILICON	S1 or SA
T85 °C	-10 °C to +80 °C			X6 X4	MARKEZ (FFKM)	M1 or MA
T100 °C	-40 °C to +100 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8 X6 X4	EPDM	E2 or EB
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension		VITON	V2 or VB
		Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8 X4	SILICON	S2 or SB
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension			
T100 °C	-10 °C to +100 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X6 X4	MARKEZ (FFKM)	M2 or MB
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension			
T135 °C	-40 °C to +130 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8 X6 X4	EPDM	E3 or EC
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension		VITON	V3 or VC
		Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8 X4	SILICON	S3 or SC
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension			
T135 °C	-10 °C to +130 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X6 X4	MARKEZ (FFKM)	M3 or MC

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to EU-Type Examination Certificate No. FM18ATEX0046X

Max Surface Temperature	Process Temperature Range	Barrier Conduit Fitting Type	Requirement for extension	Probe Model	O-ring material	Part code for letters "h" and "i"
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension			
T150 °C	-40 °C to +150 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6 X4	VITON	V4 or VD
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension			
T150 °C	-10 °C to +150 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6 X4	MARKEZ (FFKM)	M4 or MD
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension			
T200 °C	-10 °C to +200 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6 X4	MARKEZ (FFKM)	M5 or ME
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension			
T250 °C	-5 °C to +250 °C	Hawk Barrier Conduit Fitting with Sealing Compound	Minimum Ø34x50 mm extension	X6 X4	MARKEZ (FFKM)	M6 or MF
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension			

**Note:** O-ring selection also depends on O-ring material suitability with respect to process medium.

## Model Code:

### *CGRabcdeefggghijklm Centurion Guided Radar*

- a = 2 (for 2 wire) or 4 (for 4 wire)
- b = A to Z – (Communication)
- c = 0 - 5 – (Housing)
- d = 0 (none), 1 (½"NPT), 2 (¾" NPT), 3 (M20), 4 (M25), 5-9 (various sizes) – (Gland Entry)
- eee = Axx, Bxx, Cxx, Dxx, Exx, Fxx, Jxx and Kxx – (Probe type)
- f = A to Z – (probe variant/materials)
- gggg = X (mounting options for threads and flanges)
- h = B, E, V, S or M – (O-ring seal)
- i = 1-9 or A-Z – (Temperature Class)
- j = 1-9 – (Process Pressure)
- kk = 1A and 2A – (Approval standard)
- lll = 0-9999 – (Probe length)
- m = OEM company Code (optional)

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to EU-Type Examination Certificate No. FM18ATEX0046X

## **14 Specific Conditions of Use:**

1. The equipment includes flameproof joints, contact Hawk Measurement Systems Pty. Ltd. for information specific to the flameproof joints.
2. When the equipment is used in gas applications with various process temperatures and different ambient temperature ranges, the selection of the materials, use of extension and temperature class for the equipment must be in accordance with Safety Instructions SI0056.
3. When the equipment is used in dust applications with various process temperatures and different ambient temperature ranges, the selection of the materials, use of extension and the maximum surface temperature of the equipment must be in accordance with Safety Instructions SI0056.
4. For Group III application, the aluminium Ex tb housing with epoxy finish has a non-conducting coating and may generate an ignition capable level of electrostatic charge under certain extreme conditions. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
5. CGR equipment can be installed at boundary wall across Zone 0/1 (EPL Ga/Gb) or Zone 20/21 (EPL Da/Db) with the sensing probe in Zone 0 (EPL Ga) or Zone 20 (EPL Da) and electronics housing in Zone1 (EPL Gb) or Zone 21 (EPL Db).

## **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 EU-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
30 <sup>th</sup> November 2018	Original Issue.

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# Blueprint Report

**Hawk Measurement Systems Pty Ltd. (1000000280)**

**Class No 3610**

**Original Project I.D. 3057129**

**Certificate I.D. FM18ATEX0046X**

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
HAW-S-BCF-S6-TM25-XXXXX	04	Hawk Barrier Conduit Fitting	3057129
HAW-S-CGR-EXD-OV	09	CGR Exd Configuration Overview	3057129
HAW-S-CGR-FM-OV	02	CGR FM Configuration Overview	3057129
HAW-S-CGR-PROBE-ORING-VAR	05	CGR Probe O-ring Material Options	3057129
HAW-S-CGR-X04-SEAL	04	CGR 4mm Probe Seal	3057129
HAW-S-CGR-X06-SEAL	04	CGR X06 Probe Seal	3057129
HAW-S-CGR-X08-SEAL	05	8MM CGR Probe Seal	3057129
HAW-S-EXT-SS-CGR-XXX	04	Minimum Length of CGR Extension	3057129
HAW-S-LABEL-CGR-FM	04	CGR Label with FM Approvals for US, CAN & ATEX	3057129
HAW-S-PCB-HOLDER	02	Plastic PCB Holder	3057129
HAW-S-TDR2.5-EXIA-PRB	09	TDR 2.5 Ex ia Probe Illustration	3057129
HAW-S-TDR2.5-EXIA	08	TDR 2.5 Probe Ex 'ia'	3057129
HAW-S-TDR2.5-PARTNO-STRUCTURE-FM	03	TDR 2.5 Part No Structure Illustration - FM	3057129
PCB-CGRa	01	CENTURION GUIDED RADAR PCB	3057129
SCH-CGRa	04	CENTURION GUIDED RADAR CIRCUIT	3057129
SI0056	1.0	56 Safety Instr - CGR - ATEX - Gas & Dust	3057129