



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx TSA 14.0037X

Issue No: 3

Certificate history:

Status: **Current**

Issue No. 3 (2018-10-11)

Issue No. 2 (2018-05-11)

Date of Issue: **2018-10-11**

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Issue No. 1 (2016-02-17)

Issue No. 0 (2014-10-24)

Applicant: **Hawk Measurement Systems Pty. Ltd.**
15-17 Maurice Court, Nunawading
VIC 3131
Australia

Equipment: **CGR Series Centurion Guided Radar**

Optional accessory:

Type of Protection: **flameproof d, intrinsic safety I, dust protection t**

Marking:

Ex ia/db [ia Ga] IIC T6...T2 Ga/Gb
Ex ia tb [ia Da] III C T85 °C...T250 °C Da Db
- ** °C to + 60 °C
** Refer to the EQUIPMENT description

Approved for issue on behalf of the IECEx
Certification Body:

Ujen Singh

Position:

Quality & Certification Manager

Signature:
(for printed version)

Date:

11 OCTOBER 2018

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

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Manufacturer: **Hawk Measurement Systems Pty. Ltd.**
15-17 Maurice Court, Nunawading
VIC 3131
Australia

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26 : 2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[AU/TSA/ExTR15.0038/00](#)

[AU/TSA/ExTR15.0038/01](#)

[AU/TSA/ExTR18.0031/00](#)

Quality Assessment Report:

[AU/SIM/QAR13.0004/05](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Hawk Centurion Guided Radar series equipment is a continuous Level and Interface Measurement unit. The Hawk CGR unit uses low power high frequency RF pulses using TDR principles to measure liquids and solids in contact with the sensing probe. The CGR series consists of a sensing probe and an electronic control amplifier mounted in a flameproof and dust protection housing. These units are mounted directly at the level measurement point – usually at the top of a vessel with the probe directed downwards in contact with the material product surface. The Ex db tb housing with control amplifier is intended to be installed in Gb or Db hazardous locations and the "ia" sensing probe in Ga or Da hazardous location. The electronic control amplifier provides intrinsic safety output that supplies the probe, which is an intrinsic safety simple device.

Units are available as a process transmitter with either 2 wire loop power (CGR2) or 4 wire options (CGR4). Intrinsic safety probe is a metallic cylindrical shape which can vary in length and diameter and is connected to the Ex db tb housing via probe seal and a Barrier Conduit Fitting either Hawk Barrier Conduit Fitting or Hawke (SB474) gland (IECEx BAS 06.0013X).

The transmitter enclosure is a dual compartment housing 9080 series made of stainless steel or aluminium with epoxy finish and is fitted with electronics and a terminal block. The housing 9080 Series is of a cylindrical shape comprising a base with two covers making threaded joints with the base. One cover is blind metal and another is with a cemented tempered glass window. This enclosure is component certified for Ex db IIC and Ex tb IIC under IECEx SIR 12.0150U (IEC 60079-0:2011, IEC 60079-1:2014 and IEC 60079-31:2013).

The equipment provides three threaded entries (M20×1.5 or M25×1.5 or ½" NPT or ¾" NPT) for external connection. Two threaded entries can be used for connecting input power via any suitable Ex certified gland. One of threaded entries is used for connecting transmitter output to intrinsic safety probe via either Hawk Barrier Conduit Fitting or Hawke (SB474) gland (IECEx BAS 06.0013X), and probe seal. Unused entry will be closed by separately suitable Ex certified blanking elements.

The equipment is provided with Instruction document SI0050 for Gas application or SI0051 for Dust application.

Rating of the equipment:

Um =250V AC,

Un=14 V to 28 V DC, In=4 to 20mA, Pmax= 0.9 W

The equipment part structure is presented below:

CGR a b c d e e f g g g g h i j k k l l l (m),

where the code letters mean the following:

a= Model type (A=1-9 or A-Z) for number of wires and/or software variation

b= communication option (A-Z)

c= housing material code (0-5)

d= gland entry (½" NPT; ¾" NPT ; M20, M25)

e e e= Probe type

f= probe material variant

g g g g= mounting options

h= Process O-ring seal/rated temperature (B-M): NBR, EPDM, Viton, Silicone FFKM; up to +250 °C

i= Temperature class/maximum process temperature/enclosure extension (1-9 or A - Z)

j= process pressure

k k= Approvals

l l l= probe length

(m)= OEM company code

In addition the product is intended to be used in applications with higher process temperature up to 250°C. For the process temperature higher than + 80 °C, the equipment is fitted with Extension piece between probe seal and Hawke cable gland or Hawk Barrier conduit fitting. Extensions are cylindrical in shape with Ø34 mm, made from SS316L with minimum length 50 mm. Longer extensions are available and are used in conjunction with higher process temperature and/or as display extension. Table 2 and Table 3 outline temperature class/maximum surface temperature details together with process temperatures/pressures.

Refer to Annexe for more details.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. 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 Table 1 and Table 2 in the Annexe.



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2. 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 Table 1 and Table 3 in the Annexe.

3. 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.



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DETAILS OF CERTIFICATE CHANGES (for Issues 1 and above):

Issue 1:

1. Inclusion of IEC 60079-26:2014 for Group II application and resulting change of marking.
2. Inclusion of IEC 60079-31:2013 for the housing and cable gland and addition of Group III marking.
3. Inclusion of Group III assessment for IEC 60079-11:2011 report.
4. Condition regarding cable selection is removed due to the reduced maximum power dissipation of 0.9W specified by the manufacturer.
5. Um specified in the condition of this certificate issue 0 is now moved to Annex and listed with other electrical safety parameters
6. Minor drawing changes.

Issue 2:

1. Previously used O-ring material for probe seal was replaced with different O-ring materials such as: VITON, EPDM, MARKEZ (FFKM), SILICONE and NBR, which have an extended temperature ranges. Marking of ambient temperature range has been modified to cover different materials options. The relevant certification drawings and instruction were revised accordingly.
2. In addition the product is intended to be used in applications with higher process temperature up to 250°C. For the process temperature higher than 80°C, the equipment is fitted with Extension piece. Extensions are cylindrical in shape with Ø34 mm, made from SS316L with minimum length 50mm. Longer extensions are available and are used in conjunction with higher process temperature and/or as display extension. Table 2 and Table 3 outline temperature class/maximum surface temperature details together with process temperatures/pressures.
3. The equipment part structure was modified to include optional materials for probe seal and different process temperatures/pressures, and is presented as: CGR a b c d e e e f g g g h i j k k l l l l (m)
4. Conditions of specific use are consolidated and they include two additional conditions listed in point 1 and point 2 in this certificate. These were added to clearly identify temperature class/maximum surface temperature/process temperature.

Issue 3:

1. Inclusion of optional Hawk Barrier Conduit Fitting installed between enclosure port and the sensing probe, as same as the previously certified HAWKE Ex d cable gland SB474.
2. For upper O ring of probe seal, Viton material to be used.
3. For the Hawk Barrier Conduit Fitting, the 95 mm length extension piece previously used in the SB474 Ex d cable gland assembly is to be replaced with the 50 mm length extension piece for high temperature options. The Hawk Barrier Conduit Fitting with the 50 mm extension attached has a longer body than the SB474 cable gland with the 95 mm extension.
4. Minor changes to the Specific Conditions of Use.
5. Process temperature Table 2 and Table 3 are amended.
6. Update to the latest standard IEC 60079-1:2014.

Annex:

[Annexe IECEx TSA 14.0037X-3.pdf](#)



IECEX Certificate of Conformity Annexe

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Equipment description - continue

Table 1. Ambient temperature of Tamb for the probe with different O-ring materials in probe seal:

Material	Material Variant	Tamb, min (°C)	Tamb, max (°C)
Markez (FFKM)	Z1028	-10	60
EPDM	E1055	-40	60
NBR	M1000	-40	60
Silicone	S1000	-40	60
Viton	V1038	-40	60

Table 2 - Temperature Class, Maximum process temperature for Group II, Gas Application

Temperature 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 (kPa)
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 of BA	4000
					EPDM	E1 or EA	
					VITON	V1 or VA	
					SILICON	S1 or SA	
				X6 X4	NBR	B1 of BA	10000
					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	10000
T5	-40 °C to +100 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8	EPDM	E2 or EB	600
					SILICON	S2 or SB	
					VITON	V2 or VB	4000
				X6	EPDM	E2 or EB	10000
					VITON	V2 or VB	
				X4	EPDM	E2 or EB	10000
					VITON	V2 or VB	
					SILICON	S2 or SB	600
				X8	EPDM	E2 or EB	600

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		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension		SILICON	S2 or SB	4000
					VITON	V2 or VB	
				X6	EPDM	E2 or EB	10000
					VITON	V2 or VB	
				X4	EPDM	E2 or EB	10000
					VITON	V2 or VB	
					SILICON	S2 or SB	600
T5	-10 °C to +100 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X6	MARKEZ (FFKM)	M2 or MB	10000
		Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension	X4			
T4	-40 °C to +130 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X8	EPDM	E3 or EC	600
					SILICON	S3 or SC	
					VITON	V3 or VC	4000
				X6	EPDM	E3 or EC	10000
					VITON	V3 or VC	
				X4	EPDM	E3 or EC	10000
					VITON	V3 or VC	
					SILICON	S3 or SC	600
T4	-40 °C to +130 °C	Hawke SB474 Barrier Fitting	Minimum Ø34x50 mm extension	X8	EPDM	E3 or EC	600
					SILICON	S3 or SC	
					VITON	V3 or VC	4000
				X6	EPDM	E3 or EC	10000
					VITON	V3 or VC	
				X4	EPDM	E3 or EC	10000
					VITON	V3 or VC	
					SILICON	S3 or SC	600
T4	-10 °C to +130 °C	Hawk Barrier Conduit Fitting with Sealing Compound	With or without extension	X6 X4	MARKEZ (FFKM)	M3 or MC	10000

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		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	10000
		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	10000
		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	10000
		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	4000
		Hawke SB474 Barrier Fitting	Minimum Ø34x95 mm extension				

Table 3 - Maximum Surface temperature, Maximum process temperature for Group III, Dust Application

Maximum 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	With or without extension	X8 X6 X4	NBR	B1 of BA
		Or			EPDM	E1 or EA

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		Hawke SB474 Barrier Fitting			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	X4	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	X4	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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		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			

Electrical Safety Parameters

Supply circuit

U_m = 250 V AC.
 U_n = 14 V to 28 V DC.
 I_n = 4 to 20 mA.
 Max. power dissipation = 0.9 W

Surface temperature increases

Electronics enclosure = ambient temperature + 2.5 K
 Sensor Probe = process/ambient temperature + 2.4 K

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