1 # UK-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3	UK-Type Examination Certificate Number:	**BAS21UKEX0042X**
4	Product:	**Range of Sheet Metal Junction Boxes**
5	Manufacturer:	**Hawke International**
6	Address:	**A Division of Hubbell Limited, A Member of the Hubbell Group of Companies, Oxford Street West, Ashton-under-Lyne, Lancashire, OL7 0NA**

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

8 SGS Baseefa, Approved Body number 1180, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

The examination and test results are recorded in confidential Report No. **21(C)0033**

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

EN IEC 60079-0:2018 EN IEC 60079-7: 2015: +A1: 2018 EN 60079-11: 2012 EN 60079-31: 2014

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This UK-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ex II 2G Ex eb IIC T (see schedule) Gb **See schedule for Mining and Intrinsic Safety marking**

Ex II 2D Ex tb IIIC T80°C Db Tamb (see schedule)

SGS Baseefa Customer Reference No. **0500** Project File No. **21/0033**

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UKAS PRODUCT CERTIFICATION
0191

R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 # Schedule

14 ## Certificate Number BAS21UKEX0042X

15 Description of Product

This certificate covers the following 5 types of junction box range:

~ S* range (Size 1 to 17) and M* range (Size 1 to 9)
~ SFI*, SFE*, MFI* and MFE* range (Size 1 to 9).
~ EA* and MEA* range
~ EJB* and MEJB* range
~ EJBM1 and EJBM2 (Group I) range.

S* range (Size 1 to 17) and M* range (Size 1 to 9) and the SFI*, SFE*, MFI* and MFE* range (Size 1 to Size 9):

The S*, M*, SFI*, SFE*, MFI* and MFE* are all a range of sheet metal junction boxes consisting of the Hawke type ZS1 to ZS17 and ZM1 to ZM9 range and the ZSFI1 to 9, ZSFE1 to 9, ZMFI1 to 9 and ZMFE1 to 9 range of sheet metal empty enclosures covered by SGS Baseefa Certificate Number BAS21UKEX0034U coded Ex eb IIC and Ex tb IIIC.

Size 1 to Size 9:

The Size 1 to Size 9 junction boxes may be fitted with a variety of different rail mounted terminal arrangements. All terminals are covered by their own component certificates and are coded Ex eb IIC. The terminals permitted are listed on Drawing Number D9160 held on Baseefa General Technical File 0500 and on the Assembly Instructions. The terminals shall be used within their relevant temperature range and ratings and installed by Hawke International.

For the Size 1 to Size 9, the maximum number of terminals that may be fitted into each enclosure is calculated using the following formula:
Power = I^2 x N(R_t + R_c) Watts

Where:
I = Actual current through the conductor up to the maximum certified current for that terminal when fitted in an Ex eb enclosure (Amps)
N = Number of terminals
Rt = Terminal resistance (Ohms @ 20°C)
Rc = Resistance of one solid copper conductor (ohms @ 20°C) when using the maximum box diagonal

The junction boxes are IP66.

The marking is as follows:
Ⓔx II 2G Ex eb IIC T6 Gb
Ⓔx II 2D Ex tb IIIC T80°C Db IP66
Tamb (see schedule)

OR

Ⓔx II 2G Ex eb IIC T5 Gb
Ⓔx II 2D Ex tb IIIC T95°C Db IP66
Tamb (see schedule)

The maximum dissipated wattage for the Size 1 to Size 9 junction boxes are as follows:

Enclosure Type	Maximum Dissipated Power (Watts)						Cable length per terminal (m) (Max box diagonal)
	T6	T5	T6	T5	T6	T5	
	Amb -60°C +40°C	Amb -60°C +55°C	Amb -60°C +55°C	Amb -60°C +40°C	Amb -60°C +65°C	Amb -60°C +65°C	
Size 1: S1, M1, SFI1, SFE1, MFI1, MFE1	13.95		8.7	19.1	5.2	10.4	0.307
Size 2: S2, M2, SFI2, SFE2, MFI2, MFE2	18.15		11.3	24.9	6.8	13.6	0.425
Size 3: S3, M3, SFI3, SFE3, MFI3, MFE3	23.7		14.8	32.5	8.8	17.7	0.515
Size 4: S4, M4, SFI4, SFE4, MFI4, MFE4	29.95		18.7	41.1	11.2	22.4	0.579
Size 5: S5, M5, SFI5, SFE5, MFI5, MFE5	32.85		20.5	45.1	12.3	24.6	0.662
Size 6: S6, M6, SFI6, SFE6, MFI6, MFE6	40		25	55	15	30	0.792
Size 7: S7, M7, SFI7, SFE7, MFI7, MFE7	52		32.5	71.5	19.5	39	0.945
Size 8: S8, M8, SFI8, SFE8, MFI8, MFE8	65		40.6	89.3	24.3	48.7	1.09
Size 9: S9, M9, SFI9, SFE9, MFI9, MFE9	79.35		49.5	109.1	29.7	59.5	1.238

Alternative mid-range sizes in landscape orientation of S/M1 to 9 and ST/MT 1 to 9 range may be supplied. The junction boxes will be coded as follows: S*L, M*L, ST*L, MT*L e.g. S4L

When required, the junction box may be fitted with optional metallic or plastic trunking inside the junction box providing it is suitable for 80°C, meets the creepage and clearance requirements of EN IEC 60079-7: 2006, does not affect the IP rating of the junction box and the maximum permitted current rating of power terminals is limited to a maximum of 90% of the maximum terminal rating shown on D9160.

When required, the junction box may be coated in K-MASS Passive Fire Protection as a 13mm to 15mm thick coating on the outside face of the enclosure body and lid. Gland plates, sealing areas, mounting feet and earths are not coated. The maximum permitted current rating of power terminals shall be no more than 80% of the maximum terminal rating shown on D9160 for 2.5mm² terminals and above.

OPTION ~ Size 4 to Size 9 (S, M, SFI, SFE, MFI and MFE) Junction Boxes (for EPL Gb only):
These types of junction box may be fitted with Optical Fibre Fusion Splice Cassettes along with standard power and earth terminals. The junction boxes' maximum wattage value is reduced by the percentage of space taken up by the fusion slice cassette/s i.e. half fibre optics and half power terminals will reduce the wattage for the power terminals to 50%, one quarter fibre and three quarters power will reduce the wattage for the power terminals to 75%.

When Power Terminals and Optical Fibre Fusion Splice Cassettes are fitted, the marking is as follows:
Ⓔx II 2G Ex eb op pr IIC T(see schedule) Gb

Size 15 and Size 17:

The Size 15 and Size 17 junction boxes have special terminal arrangements as shown on Drawing Number 9720. The marking is as follows:

Size 15
Ⓔx II 2G Ex eb IIC T5 Gb
Ⓔx II 2D Ex tb IIIC T100°C Db IP66
Tamb -20°C to +**°C

Size 17
Ⓔx II 2G Ex eb IIC T4 Gb
Ⓔx II 2D Ex tb IIIC T135°C Db IP66
Tamb -20°C to +**°C

The maximum dissipated wattage for the Size 15 and Size 17 junction boxes are as follows:

Enclosure Type	Ratings				Maximum cable length per crimp connection
Size15: S15 and M15	T5 Amb -60°C +40°C	T5 Amb -60°C +45°C	T5 Amb -60°C + 50°C	T5 Amb -60°C +55°C	570 mm
Maximum Dissipated Power	199.78 Watts				
Minimum Cable Insulation Rating	80°C	80°C	80°C	80°C	
Size17: S17 and M17	T4 Amb -60°C +40°C	T4 Amb -60°C +45°C	T4 Amb -60°C + 50°C	T4 Amb -60°C +55°C	570 mm
Maximum Dissipated Power	221.39 Watts				
Minimum Cable Insulation Rating	90°C	90°C	100°C	100°C	

Note:- The Minimum Cable Insulation Ratings are based upon the maximum permitted current ratings. For lower current applications, calculations can be applied to assess lower cable insulation ratings.

EA* and type MEA* range:

The EA* and MEA* are a range of sheet metal junction boxes consisting of the Hawke type ZEA* and ZMEA* range of sheet metal empty enclosures covered by SGS Baseefa Certificate Number BAS21UKEX0034U coded Ex eb IIC Ex tb IIIC.

The enclosures may be fitted with a variety of different rail mounted terminal arrangements. All terminals are covered by their own component certificates and are coded Exe* II. The terminals permitted are listed on Drawing Number D9160 held on Baseefa General Technical File 0500 and on the Assembly Instructions. The terminals shall be used within their relevant temperature range and ratings and installed by Hawke International.

The EA & MEA junction box range shall not be fitted with the ‘screwless’ type terminal designs.

The junction boxes are IP66.

The marking is as follows:
Ex II 2G Ex eb IIC T6 Gb
Ex II 2D Ex tb IIIC T80°C Db IP66
Tamb (see schedule)
or
Ex II 2G Ex eb IIC T5 Gb
Ex II 2D Ex tb IIIC T95°C Db IP66
Tamb (see schedule)

The maximum dissipated wattage for the EA* and MEA* junction boxes are as follows:

Enclosure Type	Maximum Dissipated Power (Watts)						Cable length per terminal (m) (Max box diagonal)
	T6	T5	T6	T5	T6	T5	
	Amb -60°C +40°C	Amb -60°C +55°C	Amb -60°C +55°C	Amb -60°C +40°C	Amb -60°C +65°C	Amb -60°C +65°C	
EA231513 and MEA231513	7.09		4.4	9.7	2.6	5.3	0.300
EA262620 and MEA262620	15.92		9.9	21.8	5.9	11.9	0.390
EA303020 and MEA303020	4.4		2.7	6.0	1.6	3.3	0.455
EA352620 and MEA352620	4.3		2.6	5.9	1.6	3.2	0.455
EA403020 and MEA403020	5.7		3.5	7.8	2.1	4.2	0.520
EA463820 and MEA463820	10.0		6.2	13.7	3.7	7.5	0.610
EA484820 and MEA484820	17.0		10.6	23.3	6.3	12.7	0.690
EA553522 and MEA553522	31.0		19.3	42.6	11.6	23.2	0.670
EA624522 and MEA624522	27.0		16.8	37.1	10.1	20.2	0.780

The EA* and MEA* range of junction boxes uses the Ex e marking, power dissipation method, labelling, internal/external earth facilities, entry hole data, trunking and accessories, in-line with the existing S1 to 9 and M1 to 9 range of junction boxes.

EJB* and MEJB1, MEJB* range:

The EJB* and MEJB* are a range of sheet metal junction boxes consisting of the Hawke type ZEJB* and ZMEJB* range of sheet metal empty enclosures covered by SGS Baseefa Certificate Number BAS21UKEX0034U coded Ex eb IIC and Ex tb IIIC.

The junction boxes may be fitted with a variety of different rail or direct mounted terminal arrangements. All terminals are covered by their own component certificates and are coded Exe II or Ex eb IIC. The terminals permitted are listed on Drawing Number D9160 held on Baseefa General Technical File 0500 and on the Assembly Instructions. The terminals shall be used within their relevant temperature range and ratings and installed by Hawke International.

The junction boxes are IP66 and IPX7

The marking is as follows:
Ex II 2G Ex eb IIC T6 Gb
Ex II 2D Ex tb IIIC T80°C Db IP66
Tamb (see schedule)

Or

Ex II 2G Ex eb IIC T5 Gb
Ex II 2D Ex tb IIIC T95°C Db IP66
Tamb (see schedule)

The maximum dissipated wattage for the EJB* & MEJB* junction boxes are as follows:

Junction box Type	Maximum Dissipated Power (Watts)						Cable length per terminal (m) (Max box diagonal)
	T6	T5	T6	T5	T6	T5	
	Amb -60°C +40°C	Amb -60°C +55°C	Amb -60°C +55°C	Amb -60°C +40°C	Amb -60°C +65°C	Am -60°C +65°C	
EJB1 and MEJB1	4.74		2.96	6.5	1.7	3.5	0.185
EJB2 and MEJB2	6.64		4.15	9.1	2.4	4.9	0.228
EJB3 and MEJB3	6.64		4.15	9.1	2.4	4.9	0.300

The maximum number of terminals calculation, certification label fixing, use of intrinsically safe (i.s.) circuits, internal/external earth stud requirements, breather drain requirements, trunking options, are as specified for the Size 1 to 9 junction boxes.

To suit the application the junction box mounting may be by 4 off M6, M8 or M10 studs welded to the rear of the junction box body.

EJBM1 and EJBM2 (Group I) range:

The EJBM1 and EJBM2 are a range of sheet metal junction boxes consisting of the Hawke type ZEJBM1 and ZEJBM2 range of sheet metal empty enclosures covered by to Baseefa Certificate Number BAS21UKEX0034U coded Ex eb I.

The EJBM1 and EJBM2 junction boxes are identical to the existing Group II EJB1 and EJB2 junction boxes, but these Group I junction boxes are only permitted in stainless steel and are 2.0mm thick minimum.

The junction boxes uses the power dissipation calculation method, internal/external earth facilities, entry hole configurations, marking methods and accessories in-line with the existing Group II EJB1 and EJB2 junction boxes.

The junction boxes are IP66

The Group I marking is as follows:
Ⓔx I M2 Ex eb I Mb

GENERAL ENCLOSURE INFORMATION:

The certification label may be stainless steel riveted, high bond tape secured, M3 or M5 nyloc screwed, stainless steel blind and clinch seal nut-cert, spot welded threaded stud, screwed to an intermediate riveted plate or self-adhesive foil or laser etched direct on to the lid. Additional labels may be fitted externally or internally for certification or general marking use.

When required, an alternative intermediate ‘top hat’ section label mounting bracket may be fitted to the lid, for use by the end user/installer to fit additional labels.

When required, optional M3, M4 or M5 studs on the outside of the lid may be used to fit additional labels.

The internal/external earth stud facilities are as described in the empty enclosure certificate BAS21UKEX0034U. The enclosures may be fitted with rail mounted or direct mounted suitably certified earth terminals to suit the application. When required a power terminal may be used as a ‘clean earth’ to suit the application.

Entry sizes and positions are as described in the empty enclosure certificate BAS21UKEX0034U and in the Assembly Instructions. All unused entry holes shall be fitted with a suitable certified stopping plug as listed on the empty enclosure certificate BAS21UKEX0034U.

When required, a component certified Breather/Drain device as described in the empty enclosure certificate BAS21UKEX0034U may be fitted in the bottom face of the enclosure.

When required to suit the application, the enclosure lid and/or gland plate gaskets may be supplied fitted with a self-adhesive backed fine wire mesh for EMC purposes.

For commercial purposes to suit the end users' application, the manufacturer has requested an optional alternative Gas and Dust Group marking code for non-mining applications.
The Gas Group code in the marking may be changed from IIC to that of either IIA or IIB on all non-mining products.
The Dust Group code in the marking may be changed from IIIC to that of either IIIA or IIIB on all non-mining products.

Junction boxes used for Intrinsically Safe applications:

When required, the Ex eb marked junction box may be used for intrinsically safe (I.S.) applications. It shall be fitted with an additional external label stating 'Intrinsically Safe Circuits Enclosed'. The I.S. terminals may be blue in colour to suit the application.

When required, junction boxes containing Ex e terminals may be used for both Ex eb circuits and Ex i intrinsically safe (I.S.) circuits provided the relevant barrier or air gap is included and an additional external label stating 'Intrinsically Safe and Non-Intrinsically Safe circuits enclosed'. The I.S. terminals may be blue in colour to suit the application.

For commercial purposes to suit the application, the full range of sheet metal junction boxes may be marked with Intrinsically Safety (I.S.) Ex i* coding. The manufacturer may opt to show both Ex eb and Ex i coding or just show Ex i coding on the certification label.

Marking options:

a) When only Ex eb coding is marked on the certification label with the addition of a traffolyte label stating 'Intrinsically Safe circuits enclosed' or 'Intrinsically Safe and Non- Intrinsically Safe circuits enclosed', then the manufacturer shall show the ratings as the standard Ex e wattage, current and voltage ratings.

b) When both Ex eb and Ex i coding is marked on the certification label, then the manufacturer shall show the ratings as the standard Ex e wattage, current and voltage ratings.

c) When only Ex i* coding is marked on the junction box, then the manufacturer shall show the ratings as the reduced I.S. wattage, current and voltage ratings in-line with EN 60079-11.

For Group II junction boxes, the marking is as follows:
Ⓔx II 2G Ex ib IIC T6 Gb
Ⓔx II 2D Ex ib IIIC T80°C Db

or
Ⓔx II 1G Ex ia IIC T6 Ga
Ⓔx II 1D Ex ia IIIC T80°C Da

For Group I EJBM1 and EJBM2 junction boxes only, the marking is as follows:
Ⓔx I M1 Ex ia I Ma

16 Report Number

21(C)0033

17 Specific Conditions of Use

1. Unused entry holes shall be fitted with stopping plugs as listed on the component certificate BAS21UKEX0034U, or fitted with suitable stopping plugs having an equipment certificate, or having a component certificate subject to the confirmation by the end user/installer of the ingress protection rating and the permitted service temperature of the component. The operating temperature range and ingress protection rating of the enclosure is limited to that of the stopping plug fitted.

2. Only component certified breather/drain devices listed on the component certificate BAS21UKEX0034U may be used, or any other suitable breather/drain devices having an equipment certificate that are suitable for the wall thickness of the enclosure to ensure draining can occur, subject to the confirmation by the end user/installer of the ingress protection rating and the permitted service temperature. The breather/drain devices must be installed in their correct orientation in the bottom face. The operating temperature range and Ingress Protection rating of the enclosure is limited to that of the breather/drain device fitted.

3. All terminal screws, used and unused, shall be tightened down by the end user.

4. Insulation of conductors must extend to within 1mm of the metal of the terminal throat unless specified otherwise on the terminal certificate.

5. No more than one single or multi-stranded lead shall be connected to either side of any terminal unless multiple conductors have been joined in a suitable manner, e.g. two conductors into a single insulated bootlace ferrule, or any method indicated on the terminal certificate.

6. Terminals shall be installed in such a manner that the creepage and clearance distances between the terminal and adjacent components, enclosure walls and covers complying with the requirements of EN IEC 60079-7 for the rated voltage of the equipment.

7. Terminal temperatures must not exceed the operating range specified on the component certificate.

8. All terminals, and accessories such as cross-connectors, shall be installed in accordance with the terminal manufacturer's instructions. Hawke International will supply the relevant terminal manufacturer’s instructions with each junction box covered by this certificate.

9. The maximum voltage, current and dissipated power shown on the rating label must not be exceeded.

10. When connecting conductors of cross section below the maximum allowed for the particular terminal then the maximum amps per pole must be reduced in-line with the maximum amps permitted for a terminal equivalent to the conductor size fitted e.g. If a terminal that can take a 6mm² conductor at 29Amps is fitted with a 2.5mm² conductor then the current shall be reduced to a maximum of 17Amps, or the rating marked on the apparatus label, whichever is the lower.

11. When metallic and non-metallic trunking is provided inside the junction box the maximum operating current in any circuit within the trunking is limited to 1A.

12. When a self-adhesive certification label is fitted, the minimum ambient temperature shall be -40°C.

13. When the junction box is coated with K-MASS, the maximum permitted current shall be limited no more than 80% of the maximum terminal rating shown on D9160 for 2.5mm² terminals and above. Also, there shall be a label stating ‘Warning: Static Hazard, clean only with a damp cloth’.

14. Size 15 and Size 17 Junction Boxes:- The minimum cable insulation ratings shall be as shown in the table above.

15. For the Group I EJBM1 and EJBM2, the accessories shall be suitable certified Group I equipment.

16. When optional additional non-metallic labels greater than 0.2mm thick are fitted, they shall be mounted direct on to the metal enclosure and there shall be at least 10mm between adjacent non-metallic labels.

17. For Dust Applications ~ When a non-metallic coating is applied to the enclosure: WARNING: Electrostatic hazard, clean only with a damp cloth.

18. When Power Terminals and Optical Fibre Fusion Splice Cassettes are fitted:

    The Power Dissipation method shall only be applied to the power terminals. The optical fibres and connections shall be protected from mechanical damage. The junction boxes' maximum wattage value is reduced by the percentage of space taken up by the fusion slice cassette/s i.e. half fibre optics and half power terminals will reduce the wattage for the power terminals to 50%, one quarter fibre and three quarters power will reduce the wattage for the power terminals to 75%.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
1.2.7	LVD type requirements
1.4.1	External effects
1.4.2	Aggressive substances

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
C2535	1 to 6	K	18/05/21	General Arrangement Sheet Metal Junction Boxes (S1-9)
Baseefa08ATEX0208X IECEx BAS 08.0065X				