

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU**

3 EU - Type Examination Certificate **Baseefa17ATEX0037X – Issue 5**
Number:

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **IRmadillo FTIR Spectrometer**

5 Manufacturer: **KEIT Limited**

6 Address: **4 Zephyr Building, Eighth Street, Harwell Oxford, Didcot, OX11 0RL**

7 This re-issued certificate extends EC Type Examination Certificate No. **Baseefa17ATEX0037X** to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 Annex II to the Directive.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **(See Certificate History)**

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

EN IEC 60079-0: 2018 EN 60079-1: 2014 EN 60079-26: 2015

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 EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive 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:

 **II 2G Ex db IIB+H₂ T4 Ga/Gb (Tamb = See Schedule)**

SGS Fimko Oy Customer Reference No. **7369**

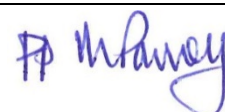
Project File No. **20/0085**

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M POWNEY
Certification
Manager

R S SINCLAIR

Authorised Signatory for SGS Fimko Oy
Re-issued 10th August 2020 to replace the original.

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Schedule

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Certificate Number Baseefa17ATEX0037X – Issue 5

15 Description of Product

The IRmadillo™ is a Fourier Transform Infrared (FTIR) spectrometer for real-time chemical reaction monitoring of industrial processes at the point of production

The equipment has been designed so its rigidly attached probe can be inserted into reaction vessels or pipelines which are zone 0 while the instrument is in zone 1. Optionally, a flange or lap joint flange is present around the DIP Probe tube. The flanges are for connection to suitable ANSI/ASME B16.5, or to BS EN 1092-1, or to ISO7005-1 process connections.

The equipment's input is single phase mains power (100-240V, 50/60Hz); an optional dry air purge is provided for functional reasons. Its only output is a wired USB or fibre-optic signal. There are two flameproof enclosures, the main one for the electronics and one for the infrared emitter which is housed in the rigid probe.

The equipment is outside the scope of IEC 60079-28: 2015 because at no point does unassessed optical radiation enter areas where absorbers are expected, and the optical connector (if present) meets IEC/EN 60825-1 class 1 limits.

When an optical data connector is fitted, the connected data equipment must meet IEC/EN 60825-1 class 1 limits.

When an electrical data connector is fitted, the connected data equipment should be USB compatible.

The link between model numbers and permitted temperatures and process pressure is: -

ASM0627-08 - E - A - x - x - xx $T_{amb} = -15^{\circ}\text{C}$ to $+40^{\circ}\text{C}$. $T_{ANALYTE} = -15^{\circ}\text{C}$ to $+80^{\circ}\text{C}$

ASM0627-08 - E - C - x - x - xx, See below table

Ambient and analyte temperature			
Connector option M =	Sample Interface option 25 =		
	= 25	= D	= K
M	$T_{amb} = -15^{\circ}\text{C}$ to $+49.5^{\circ}\text{C}$ $T_{ANALYTE} = -15^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	$T_{amb} = -20^{\circ}\text{C}$ to $+49.5^{\circ}\text{C}$ $T_{ANALYTE} = -20^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	$T_{amb} = -15^{\circ}\text{C}$ to $+49.5^{\circ}\text{C}$ $T_{ANALYTE} = -15^{\circ}\text{C}$ to $+220^{\circ}\text{C}$
H or T	$T_{amb} = -15^{\circ}\text{C}$ to $+54.5^{\circ}\text{C}$ $T_{ANALYTE} = -15^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	$T_{amb} = -20^{\circ}\text{C}$ to $+54.5^{\circ}\text{C}$ $T_{ANALYTE} = -20^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	$T_{amb} = -15^{\circ}\text{C}$ to $+54.5^{\circ}\text{C}$ $T_{ANALYTE} = -15^{\circ}\text{C}$ to $+220^{\circ}\text{C}$
G	$T_{amb} = -15^{\circ}\text{C}$ to $+60.9^{\circ}\text{C}$ $T_{ANALYTE} = -15^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	$T_{amb} = -20^{\circ}\text{C}$ to $+60.9^{\circ}\text{C}$ $T_{ANALYTE} = -20^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	$T_{amb} = -15^{\circ}\text{C}$ to $+60.9^{\circ}\text{C}$ $T_{ANALYTE} = -15^{\circ}\text{C}$ to $+220^{\circ}\text{C}$
Analyte pressure			
Min.	1 barg	1 barg	0.3 bara
Max.	20 barg	20 barg	42.37 bara

16 Report Number

(See Certificate History)

17 Specific Conditions of Use

1. The media to be monitored must be in an area where dust particles are excluded.
2. The DIP probe must be mounted so that it is protected from impact.

3. Model Dependant Specific Conditions of Use:

The link between model numbers and Specific Conditions of Use relating to the connection arrangement is:

ASM0627-07 – E – A/C – o/U – M/H/T/G – xx

Option	Applicable Specific Condition of Use
M	Isolate equipment from power supply before disconnecting either connector.
H	Fit protective caps to connectors immediately following separation. When wired data communications (Option U) also chosen, equipment must be isolated from power supply before data connector is disconnected.
T	(no additional conditions)
G	When used for terminating braided cables, glands are only suitable for fixed applications. Cables must be effectively clamped to prevent pulling or twisting.

4. On equipment fitted with DIP probe option ‘K’, the rate of change of temperature on the end of the probe must be limited to 50°C per minute maximum.
5. It is responsibility of the manufacturer, installer and end user to ensure chemical compatibility between the process analyte and the cone glass and sealing O-ring materials.

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:

Clause	Subject	Compliance
1.2.7	LVD type requirements	The standards require a declaration by the manufacturer
1.2.8	Overloading of equipment (protection relays, etc.)	Covered by installation rules and manufacturer’s instruction.
1.4.1	External effects.	The purchaser should make the manufacturer aware of such conditions.
1.4.2	Aggressive substances, etc.	The purchaser should make the manufacturer aware of such conditions.

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
*ASM0627-08 ATEX	1 to 4	01	13/03/2020	IRmadillo FTIR Spectrometer
*ASM1328-01 ATEX	1 to 4	01	15/11/2019	High temperature dia25 probe assembly
*PRT0673-07 ATEX	1	01	28APR2020	IRmadillo Product Label

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
ASM0627-07 ATEX	1 to 4	01	11/02/2019	IRMadillo FTIR Spectrometer
ASM1169-01 ATEX	1 to 4	01	21/01/2019	Diamond Ex Probe
ASM1174-01 ATEX	1	01	17/04/2019	Diamond Bulb Assembly
DOC0659	1 to 5	-	04 Dec 2019	Model Number Formatting

Number	Sheet	Issue	Date	Description
PRT1260-01 ATEX	1 & 2	01	08/07/2019	EJB23 Enclosure Machined
ASM0329-08 ATEX	1	08	24/05/2018	Ex d Emitter Bulb Assembly
ASM0572-06 ATEX	1 to 4	06	08/08/2018	DIP Probe Tube Assembly

The above drawings are common to Baseefa17ATEX0037X and IECEx BAS 17.0030X and are held on the latter.

20 Certificate History

Certificate No.	Date	Comments
The information below is an example of what may be included – simple but informative		
Baseefa17ATEX0037X	12 April 2017	The release of the prime certificate. The associated test and assessment against the requirements of EN 600790:2012 + A11:2013, EN 60079-11:2012 and EN 60079:26:2015 is documented in Test Report GB/BAS/ExTR16.0290/00 for project 14/0980
Baseefa17ATEX0037X Issue 1	29 November 2017	This issue of the certificate permits several minor mechanical changes and incorporates the primary certificate and this supplementary certificate into one certificate. The assessment is documented in report GB/BAS/ExTR17.0297/00 for project 17/0562.
Baseefa17ATEX0037X Issue 2	28 June 2018	This issue of the certificate permits mechanical changes and minor drawing changes not affecting certification. The assessment is documented in report GB/BAS/ExTR18.0158/00 for project 18/0350.
Baseefa17ATEX0037X Issue 3	4 February 2019	This issue of the certificate permits the optional addition of a process connection flange to the DIP probe, mechanical changes to the DIP probe tube, mechanical changes to the main enclosure, the use of alternative equipment certified glands, and an assessment against the requirements of EN IEC 60079-0:2018. The assessment is documented in report GB/BAS/ExTR19.0018/00 for project 18/0413.
Baseefa17ATEX0037X Issue 4	19 December 2019	This issue of the certificate permits the addition of a model with a diamond sensor window, mechanical changes to the main enclosure, and the use of alternative equipment certified connectors and glands. The assessment is documented in report GB/BAS/ExTR19.0048/00 for project 18/0718.
Baseefa17ATEX0037X Issue 5	30 July 2020	This issue of the certificate permits the addition of a model with various material options for the cone glass, and other mechanical changes to the DIP probe tube for use in alternative process parameters, sample interface type K. It also includes revised ambient temperature ranges for all variations. Revised Specific Conditions of Use. The assessment is documented in report GB/BAS/ExTR20.0090/00 for project 20/0085.
For drawings applicable to each issue, see original of that issue.		