



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.:	<b>IECEx BAS 17.0030X</b>	Page 1 of 4	<b>Certificate history:</b> Issue 4 (2019-12-19) Issue 3 (2019-02-04) Issue 2 (2018-06-28) Issue 1 (2017-11-30) Issue 0 (2017-04-13)
Status:	<b>Current</b>	Issue No: 5	
Date of Issue:	2020-07-30		
Applicant:	<b>KEIT Limited</b> 4 Zephyr Building Eighth Street Harwell Oxford Didcot OX11 0RL <b>United Kingdom</b>		
Equipment:	<b>IRmadillo FTIR Spectrometer</b>		
Optional accessory:			
Type of Protection:	<b>Flameproof and Flameproof and Equipment with equipment protection level GA</b>		
Marking:	<b>Ex db IIB+H<sub>2</sub> T4 Ga/Gb (T<sub>amb</sub> = see schedule)</b>		

Approved for issue on behalf of the IECEx  
Certification Body:

**R S Sinclair**

Position:

**Technical Manager**

M POWNEY  
Certification  
Manager

Signature:  
(for printed version)

Date:

30-7-2020

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Certificate issued by:

**SGS Baseefa Limited**  
Rockhead Business Park  
Staden Lane  
Buxton, Derbyshire, SK17 9RZ  
United Kingdom





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Manufacturer: **KEIT Limited**  
4 Zephyr Building  
Eighth Street  
Harwell Oxford  
Didcot  
OX11 0RL  
**United Kingdom**

Additional  
manufacturing  
locations:

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 equipment 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 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-1:2014-06** Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

**IEC 60079-26:2014-10** Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga  
Edition:3.0

This Certificate **does not** indicate compliance with 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 Reports:

[GB/BAS/ExTR16.0290/00](#)  
[GB/BAS/ExTR19.0018/00](#)

[GB/BAS/ExTR17.0297/00](#)  
[GB/BAS/ExTR19.0048/00](#)

[GB/BAS/ExTR18.0158/00](#)  
[GB/BAS/ExTR20.0090/00](#)

Quality Assessment Report:

[GB/BAS/QAR17.0007/03](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

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.

For full details of the link between model numbers and permitted ambient temperatures and analyte parameters, please see Annex.

## **SPECIFIC CONDITIONS OF USE: YES as shown below:**

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: Please see Annex
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.



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## DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

### Variation 5.1

Introduction of a new High Temperature DIP probe assembly. The new assembly has been designed for new process temperatures and pressure values as follows:

Minimum analyte temperature	-15°C
Maximum analyte temperature	220°C
Minimum analyte pressure	0.3 bara
Maximum analyte pressure	42.37bara

### Variation 5.2

Introduction of alternative materials for the ATR cone glass element at the end of the probe assembly.

### Variation 5.3

Revisions to the Specific Conditions of Use.

ExTR: **GB/BAS/ExTR20.0090/00**

File Reference: **20/0085**

## Annex:

[IECEX BAS 17.0030X-5 - Annex\\_1.pdf](#)

**Link between model numbers and permitted temperatures:**

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

<b>Ambient and analyte temperature</b>			
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 $+220^{\circ}\text{C}$
<b>Analyte pressure</b>			
Min.	1 barg	1 barg	0.3 bara
Max.	20 barg	20 barg	42.37bara

**Specific Conditions of Use relating to the connection arrangement:**

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

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.