



# 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.: **IECEX SGS 23.0052X** Page 1 of 3 [Certificate history:](#)  
Status: **Current** Issue No: 0  
Date of Issue: 2024-01-12  
Applicant: **ITW Air Management**  
10125 Carver Road  
Cincinnati  
Ohio 45242  
**United States of America**  
Equipment: **Zone 2/22 Vortex A/C Enclosure Cooler**  
Optional accessory:  
Type of Protection: **Non-Electrical**  
Marking: **Ex h IIC T4 Gc**  
**Ex h IIIC T135 Dc**  
**Tamb -20°C to +80°C**

Approved for issue on behalf of the IECEx  
Certification Body:

**G Manifold**

Position:

**Accreditation Manager**

Signature:  
(for printed version)

pp M. Powney

Date:  
(for printed version)

17/1/2024

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





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Manufacturer: **ITW Air Management**  
10125 Carver Road  
Cincinnati  
Ohio 45242  
**United States of America**

Manufacturing locations: **ITW Air Management**  
10125 Carver Road  
Cincinnati  
Ohio 45242  
**United States of America**

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

[ISO 80079-36:2016](#) Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic methods and requirements  
Edition:1.0

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 Report:

[GB/SGS/ExTR23.0047/00](#)

Quality Assessment Report:

[US/ETL/QAR23.0014/00](#)



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## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Vortex A/C" enclosure coolers are compressed air powered devices that are intended to cool electronic/electrical enclosures that are located in Zone 2 and Zone 22 areas. The products will be classified as Group II Category 3 equipment.

There are no electric/electronic components in these products - they are purely mechanical devices - they are entirely non-electrical. The cooling that they produce is driven by an internal vortex tube which is located inside of a certified non-metallic carbon loaded enclosure, which serves as the external housing for the product. A vortex tube is a compressed air powered device that has no moving parts. From a high pressure (6.2 to 6.9 bar) clean and dry compressed air source, the vortex tube creates a cold air stream and a hot air stream, both of these air streams are at low pressure (less than 0.2 bar.) The vortex tube's cold air stream is directed inside the (customer's) protected enclosure while the hot air stream is exhausted outside of the Vortex A/C to the ambient environment. The hot exhaust air is vented out of the Vortex A/C through an opening in the non-metallic housing. The opening in the non-metallic housing is protected from jets of water and dust by a baffled shroud on the back of the product. The Vortex A/C is mounted directly on the top or side of the enclosure to be cooled via a 49mm diameter hole (two holes are required for the 7370/7470/7370BSP/7470BSP models) in the enclosure. A nitrile gasket between the Vortex A/C and the enclosure maintains an air and liquid tight seal at this interface. The cold airstream is directed inside the enclosure through a one-way check valve and then through a "cold air ducting kit" which can be used to distribute the cold air evenly throughout the enclosure, if desired. As the cold air stream cools the air inside the enclosure, it loses its refrigeration ability and warms up. This warmer air must be vented outside of the protected enclosure so as not to over-pressurize the enclosure.

When the Vortex A/C is not providing cooling (see below), the air path through the cold outlet of the unit is closed off and sealed via the one-way check valve on the unit.

The Vortex A/C utilizes a built-in mechanical thermostat (thermal actuator) that monitors and controls the temperature inside the customer's enclosure within a set temperature range. The thermostat senses the temperature inside the enclosure and then opens or closes an internal valve that controls the compressed air flow to the internal vortex tube. When high temperatures (32 to 38°C) inside the customer's enclosure are sensed, the thermal actuator opens the internal valve which allows compressed air to flow into the vortex tube and start cooling the enclosure. Once the temperature inside the enclosure drops to approximately 25 to 28°C, the thermal actuator closes the valve and the compressed air flow to the vortex tube is stopped, therefore stopping the flow of cold air into the protected enclosure. At this point, the purge system maintains a safe level of enclosure pressure.

The main ignition source from the Vortex A/C is from the hot air exhaust temperatures that it can develop. The temperature of the hot air exhaust is dependent on the temperature and the pressure of the compressed air that is supplied to the product. When the compressed air pressure is limited to a maximum of 6.9 bar (100 psig) and a maximum temperature of 49°C (120°F), then the hot exhaust air temperature and corresponding surface temperatures on or inside the product will not exceed 135°C (275°F). This corresponds to a temperature classification of T4. It is imperative that the compressed air supply conditions be stated and adhered to.

Continued in Annex

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

1. When the equipment is to be used on an enclosure intended to be protected by a concept according to IEC 60079-2 the pressurised air supply to the equipment must be of the same quality as that used to purge and pressurise the enclosure to which it is installed on.
2. When the equipment is to be used on an enclosure intended to be protected by a concept according to IEC 60079-2 the equipment shall be fitted to, and assessed/tested, as part of the enclosure.
3. The equipment shall be suitably earthed (grounded) prior to operation. Earth continuity shall be maintained between the equipment and the enclosure to which it is installed on.
4. The equipment shall be mounted to the top or side face of the enclosure to which it is installed.
5. Inlet pressure shall not exceed 6.9 Bar (100PSIG).
6. Inlet air temperature shall not exceed 49°C (120°F).
7. WARNING: Potential Electrostatic charging hazard ~ cleaned only with a damp cloth.
8. When installed, consideration shall be given to the guidance given in PD CLC/TR 60079-32-1 'Explosive atmospheres - Electrostatic hazards, guidance'.

## Annex:

[IECEX SGS 23.0052X Annex.pdf](#)

The Vortex A/C is available in four different cooling capacities: 900, 1500, 2500 and 5000 BTUH (264, 440, 732 and 1465 watts). Sixteen different models are offered:

Model No.	Cooling Capacity (BTUH)	Compressed air inlet thread size and type	Compressed Air Consumption (scfm)	Supplied with a compressed air filter?
7315	900	3/8" NPT	15	No
7415	900	3/8" NPT	15	Yes
7325	1500	3/8" NPT	25	No
7425	1500	3/8" NPT	25	Yes
7335	2500	3/8" NPT	35	No
7435	2500	3/8" NPT	35	Yes
7370	5000	3/8" NPT	70	No
7470	5000	3/8" NPT	70	Yes
7315BSP	900	3/8" BSPP	15	No
7415BSP	900	3/8" BSPP	15	Yes
7325BSP	1500	3/8" BSPP	25	No
7425BSP	1500	3/8" BSPP	25	Yes
7335BSP	2500	3/8" BSPP	35	No
7435BSP	2500	3/8" BSPP	35	Yes
7370BSP	5000	3/8" BSPP	70	No
7470BSP	5000	3/8" BSPP	70	Yes