



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 SIR 07.0027X** issue No.:10

Status: **Current**

Date of Issue: **2017-03-31** Page 1 of 4

Applicant: **EXPO Technologies Ltd**
Unit 2, The Summit
Hanworth Road
Sunbury on Thames Surrey TW16 5DB
United Kingdom

Certificate history:
Issue No. 10 (2017-3-31)
Issue No. 9 (2016-10-25)
Issue No. 8 (2016-6-15)
Issue No. 7 (2015-7-22)
Issue No. 6 (2012-11-27)
Issue No. 5 (2012-10-23)
Issue No. 4 (2011-12-9)
Issue No. 3 (2011-3-9)
Issue No. 2 (2011-1-12)
Issue No. 1 (2009-3-16)
Issue No. 0 (2007-9-20)

Equipment: **MiniPurge Purge Controller**
Optional accessory:


Type of Protection: **Pressurised**

Marking: **Refer to the Annexe**

Approved for issue on behalf of the IECEX Certification Body: **N Jones**

Position: **Certification Manager**

Signature:
(for printed version)



2017-03-31

Date:

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).

Certificate issued by:

SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

sira
CERTIFICATION





IECEX Certificate of Conformity

Certificate No.: IECEX SIR 07.0027X

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Manufacturer: **EXPO Technologies Ltd**
Unit 2, The Summit
Hanworth Road
Sunbury on Thames
Surrey TW16 5DB
United Kingdom

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 electrical 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 Explosive atmospheres - Part 0: General requirements
Edition: 6.0

IEC 60079-2 : 2014-07 Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"
Edition: 6

*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:

GB/SIR/ExTR07.0046/00
GB/SIR/ExTR11.0304/00
GB/SIR/ExTR16.0114/00

GB/SIR/ExTR09.0021/00
GB/SIR/ExTR12.0251/01
GB/SIR/ExTR16.0243/00

GB/SIR/ExTR11.0003/00
GB/SIR/ExTR15.0200/00
GB/SIR/ExTR17.0049/00

Quality Assessment Report:

GB/SIR/QAR07.0012/00



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Purge Controllers are pneumatically operated devices, which are intended to provide a given flow rate of purging gas for a predetermined time to unspecified Ex p protected electrical equipment. The MiniPurge Control Units provide one of the following four methods of purge operation.

- * LC-Leakage compensation only after initial high purge
- * CF-Continuous flow (same flow rate during and after purging)
- * CF2-Two flow CF system with initial high purge rate only at one orifice
- * CFHP-Continuous (lower) flow after initial high purge
- * DP – Dust Protection (for pressurization only)

The MiniPurge control unit may be supplied within a heated enclosure to permit the use of the system within an ambient temperature down to -60°C.

See Annexe for more information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. When using the AO, AS and DT options, the recommendations for the additional requirements of Ex p apparatus contained within IEC 60079-14 shall be applied.
2. The installer/user shall ensure that the MiniPurge Control Unit is installed in accordance with the equipment certificate that covers the combination of the pressurised enclosure(s) and MiniPurge Control Unit.
3. The values of the safety parameters shall be set in accordance with the equipment certificate that covers the combination of the pressurised enclosure(s) and MiniPurge Control Unit.
4. This MiniPurge Control Unit shall be incorporated into equipment and the appropriate Conformity Assessment Procedures applied to the combination. This certificate does not cover the combination.
5. The purge controller, low temperature version, shall be protected by a system that ensures that it cannot be energised if the temperature of the controller logic air or purge controller falls below -20°C. This system shall utilise the RTDs that are fitted to the purge controller to provide the appropriate level of system integrity.
6. Where a Vortex cooler is fitted the hot air outlet pipe shall be kept free from obstructions and blockage.
7. The following routine tests are to be carried out:
 - The vortex cooler is functioning correctly. (H6 and H7 options ONLY)
 - The pneumatic logic isolator is functioning correctly (H6 and H7 options ONLY)



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

Issue 1 to Issue 6 – for changes refer to Issue 6

Issue 7 – this Issue introduced the following changes:

- 1 The inlet air temperature sensing system was changed; as a consequence, a Special Condition For Safe Use was amended.
- 2 A Local Sensing (LS) option was introduced.
- 3 The RLV configuration was changed to show an optional alternative position of the flow sensing connection.
- 4 The recognition of minor drawing modifications; the addition of notes and the clarification of the markings etc., these amendments are administrative that do not affect the aspects of the product that are relevant to explosion safety.
- 5 The minimum ambient temperature limit for the Low Temperature and Low Temperature/ET versions was lowered from -50°C to -60°C.
- 6 Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-2:2007, IEC 61241-4:2001 Edition 1 and EN 61241-4:2006 were replaced by IEC 60079-2:2014 Edition 6, the markings were updated accordingly.

Issue 8 – this Issue introduced the following changes:

- 1 Refer to the Annexe for this change

Issue 9 – this Issue introduced the following changes:

- 1 Refer to the Annexe for this change

Issue 10 – this Issue introduced the following changes:

1. A solenoid in the Expo Technologies Electronic Timer (ET) Module ETM-IS**-*** covered by certificate IECEx FME 10.0001X was replaced due to obsolescence resulting in a change of the temperature classification. The ET Module ETM-IS**-*** is incorporated in 'ET versions' of the purge controller covered by certificate IECEx SIR 07.0027X, as a result of this update, only the temperature class/markings of the 'Standard/ET versions' were affected and were therefore amended as follows, raising T6 to T5 and T95°C to T100°C.

Annex to: IECEx SIR 07.0027X Issue 10
Applicant: EXPO Technologies Limited
Apparatus: Purge Controller



The full marking is shown below:

Standard versions:

Ex [pxb] IIC T6 Gb
Ex [pxb] IIIC T85°C Db
(Ta -20°C to +55°C)

Standard/ET versions:

Ex [pxb] ia IIC T5 Gb
Ex [pxb] ia IIIC T100°C Db
(Ta -20°C to +55°C)

High temperature versions – H6:

Ex [pxb] IIC T4 Gb
(Ta -20°C to +60°C)
[Purge air temp. up to +60°C]

High temperature versions – H7:

Ex [pxb] IIC T4 Gb
(Ta -20°C to +60°C)
[Purge air temp. up to +70°C]

Combined Versions

Low temp. with High temp. H6:

Ex [pxb] d e m IIC T3 or T4 Gb
(Ta -60°C to +60°C)
[Purge air temp. up to +60°C]

Low temp. with High temp. H7:

Ex [pxb] d e m IIC T3 or T4 Gb
(Ta -60°C to +60°C)
[Purge air temp. up to +70°C]

Ex [pyb] IIC T6 Gb
Ex [pyb] IIIC T85°C Db
(Ta -20°C to +55°C)

Low temperature versions:

Ex [pxb] d e m IIC T3 Gb
Ex [pxb] d e m IIC T4 Gb
Ex [pxb] IIIC T200°C Db
Ex [pxb] IIIC T135°C Db
(Ta -60°C to +55°C)

High temperature/ET versions – H6:

Ex [pxb] ia IIC T4 Gb
(Ta -20°C to +60°C)
[Purge air temp. up to +60°C]

High temperature/ET versions – H7:

Ex [pxb] ia IIC T4 Gb
(Ta -20°C to +60°C)
[Purge air temp. up to +70°C]

Low temp. with High temp. H6 and E. Timer:

Ex [pxb] d e m ia IIC T3 or T4 Gb
(Ta -60°C to +60°C)
[Purge air temp. up to +60°C]

Low temp. with High temp. H7 and E. Timer:

Ex [pxb] d e m ia IIC T3 or T4 Gb
(Ta -60°C to +60°C)
[Purge air temp. up to +70°C]

Ex [pzc] IIC T6 Gb
Ex [pzc] IIIC T85°C Db
(Ta -20°C to +55°C)

Low temperature/ET versions:

Ex [pxb] d e m ia IIC T3 Gb
Ex [pxb] d e m ia IIC T4 Gb
Ex [pxb] ia IIIC T200°C Db
Ex [pxb] ia IIIC T135°C Db
(Ta -60°C to +55°C)

Annex to: IECEx SIR 07.0027X Issue 10
Applicant: EXPO Technologies Limited
Apparatus: Purge Controller



Model Number Designation for ATEX approved MiniPurge systems	
a	Size or Capacity
1	Sub-MiniPurge
2	MiniPurge
3	Super-MiniPurge
4	Super-MiniPurge 1800
5	Super-MiniPurge 3500
6	Super-MiniPurge 7000
7	Super-MiniPurge xxxx
b	Pressurization Type
X	X Pressurization
Y	Y Pressurization
Z	Z Pressurization
cc	Action after initial purging
LC	Leakage Compensation only after initial High Purge
CF	Continuous Flow (same flow rate during and after purging)
CF2	Two Flow CF system with initial High Purge rate but only one orifice
CFHP	Continuous (lower) Flow after initial High Purge
DP	Dust Protection (pressurization only)
mm	Material of the Control Unit Enclosure
al	Aluminium alloy
cs	Mild steel, painted
ss	Stainless steel
bp	Back Plate only
co	Chassis only
pm	Panel mounting
nm	Non-Metallic
	Option codes (Added only if used)
AA	Active Alarm output fitted.
AC	Alarm cancellation circuit.
AO	"Alarm Only" Action on Pressure or Flow Failure.
AS	Alarm "Action on Pressure or Flow failure", Selector valve.
CS	Containment System Monitor.
DS	Door switch Power Interlock fitted.
DT	Delayed Trip after Pressure or Flow failure.
DXXX	Special design for specific flow rates
ET	Electronic Timer
FM	Flow Meter(s) fitted.
HP	System LC or CF with High Pressure Sensor
IS	Internal Switches suitable for Ex i circuits.
MO	Manual Override fitted.
MT	Mechanical Timer.
OA	On/Off switch controlling Protective gas and logic supply.
OB	On/Off switch controlling logic supply only.
OC	On/Off switch controlling Protective gas supply only.
OS	Outlet (Orifice) Selector valve.
OV	Outlet valve, pneumatically operated.
PA	"Ex" switch(es) built-in, with/without "Ex" junction box.
PC	PE Pressure Control Leakage Compensation Valve (CLAPS System.)
PO	Pneumatic Output signals for Power and Alarm control.
SP	Secondary Pressurization supply options.
SS	Separate Supply for Protective gas and Logic air.
TW	Twin (or more) outputs for two or more separate pressurized enclosures purged in parallel
LS	Local Sensing for internal overpressure monitoring
LT	Low Temperature
H6	High Temperature Version permitting 60°C purge air
H7	High Temperature Version permitting 70°C purge air

Model Number:
1 X LC cs DS SS AA MO FM OA TW
 Key:
 a b cc mm Example option codes

Annex to: IECEx SIR 07.0027X Issue 10
Applicant: EXPO Technologies Limited
Apparatus: Purge Controller



Relief Valve - The MiniPurge controller is supplied with an optional overpressure relief valve, which is to be fitted to the Ex p protected apparatus to prevent an internal overpressure above the maximum overpressure rating of the apparatus. There are 14 models of relief valve; the designation of each relief valve refers to its nominal bore in mm, as follows: RLV3, RLV6, RLV9, RLV12, RLV19, RLV25, RLV26, RLV52, RLV36, RLV75, RLV104, RLV125, RLV150 and RLV200.

The outlet of each relief valve is fitted with a spark arrester, of which there are four optional types:

- Metal foam
- Tortuous path with at least 4 x 90° or 2 x 180° bends
- Multi-layer stainless steel mesh
- Knitted mesh

Outlet Orifice - Three types of orifice are used:

- Threaded Orifices e.g. ¼" NPT or 2" BSP with a built in spark arrester. These are selected to maintain a desired back pressure within the Ex p protected apparatus when used with the Continuous Flow options. The designation of each outlet orifice indicates the nominal inlet diameter. The designations are as follows: SA3, SA6, SA9, SA12, SA19, SA25, SA32, SA38 and SA50.
- Plain holes in the Relief Valve disk, sized according to the flow rate required.
- Replaceable orifice type SAU**.

High Pressure Sensor for CF Systems (HP code) - If the pressure in the pressurized enclosure rises above the setting of the High Pressure sensor, the controller resets cutting the power to the enclosure. On detecting the overpressure an optional facility is available for the generation of an alarm or indicator. On systems with a High Pressure sensor, the relief valve may be omitted.

High Pressure Sensor for LC Systems (HP code) - If the pressure in the pressurized enclosure rises above the setting of the High Pressure sensor, the purge gas flow is isolated from the pressurised enclosure. The valve isolates both the leakage compensation and the purge streams. On detecting the overpressure, an optional facility is available for the generation of an alarm or indicator. On systems with a High Pressure sensor, the relief valve may be omitted.

Pneumatically Operated Outlet Valve - The pneumatically operated outlet valve is used to positively open or close the outlet of the purged enclosure by means of a spring return pneumatic cylinder. Systems fitted with the Pneumatically Operated Outlet Valve will carry the option OV.

Conditions of Manufacture

- 1 The switches incorporated in the PA option shall be suitably certified for Zone 1.
- 2 The following routine tests shall be performed by the manufacturer:

Verification of Minimum Overpressure Cut Off

An overpressure loss shall be simulated whilst the MiniPurge Control Unit is cycling, it shall be verified that the controller provides the appropriate output and resets.

Verification of Purge Failure Protection

A purge failure shall be simulated whilst the MiniPurge Control Unit is cycling, it shall be verified that the controller provides the appropriate output and resets.

Verification of Air Supply Failure Protection

An air supply failure shall be simulated whilst the MiniPurge Control Unit is cycling, it shall be verified that the controller provides the appropriate output and resets.

Verification of Purging Overpressure protection

Where the HP is specified an overpressure shall be simulated whilst the MiniPurge Control Unit is cycling, it shall be verified that the controller provides the appropriate output and resets.

- 3 The products covered by this certificate incorporate previously certified devices, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform Sira of any modifications of the devices that may impinge upon the explosion safety design of the products.
- 4 The certification code that is appropriate to Purge Controllers Low Temperature and High Temperature H6 or H7 versions shall appear in the product marking applied to outer stainless steel or painted mild steel enclosure.
- 5 The Purge Controllers: Sub-MiniPurge, MiniPurge, Super-MiniPurge, Super-MiniPurge 1800/3500/7000/7000X shall not be marked as suitable for use in explosive dust atmospheres when a non-metallic or painted housing is used.

Date: 31 March 2017

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Form 9530 Issue 1

Sira Certification Service

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Annex to: IECEx SIR 07.0027X Issue 10
Applicant: EXPO Technologies Limited
Apparatus: Purge Controller



Issue 8 – this Issue introduced the following changes:

- i. The introduction of the:
- H6 - high temperature variant of the MiniPurge Purge Controller with an ambient temperature range of -20°C to +60°C, and permitting a maximum purge air temperature of 60°C. Optionally this may include an intrinsically safe electronic timer (/ET).

The MiniPurge and other components are fitted inside the same enclosure which is made from stainless steel or painted (0.2mm maximum thickness) mild steel with a minimum thickness of 1.5mm or 2.5 mm, and earth (ground) terminal compliant with the listed standards, with the Vortex hot air outlet pipe exiting on any face which permits free venting. Also transiting the walls of the enclosure are the main purge air inlet, fitted to the regulator, and outlet entries, the optional pneumatic outputs, and optionally, the terminal box. This terminal box may contain intrinsically safe barriers and/or terminals, with electrical cables entering it via cable glands.

The Vortex Cooler is set to operate at +50°C and is used to cool the MiniPurge pneumatic logic controller.

A heat exchanger may optionally be fitted in the vortex cool air pipe supplying the MiniPurge system control unit logic circuit.

The optional terminal box (T/B) may be any suitable IECEx certified Ex e or Ex d T/B, which is suitable for the ambient temperature range (-20°C to +60°C), with a minimum Temperature Class of T4 (135°C).

- H7 - high temperature variant of the MiniPurge Purge Controller with an ambient temperature range of -20°C to +60°C, and permitting a maximum purge air temperature of 70°C. Optionally this may include an intrinsically safe electronic timer (/ET).

The MiniPurge and other components are fitted inside an enclosure which is separated into two chambers, this is made from stainless steel or painted (0.2mm maximum thickness) mild steel with a minimum thickness of 1.5mm or 2.5 mm, and earth (ground) terminal compliant with the listed standards, with the Vortex hot air outlet pipe exiting on any face which permits free venting. Also transiting the walls of the enclosure are the main purge air inlet, fitted to the regulator, and outlet entries, the optional pneumatic outputs, and optionally, the terminal box. This terminal box may contain intrinsically safe barriers and/or terminals, with electrical cables entering it via cable glands.

One cooled chamber contains the system control logic circuit, the Vortex Cooler and the logic isolator. The other hot chamber contains all of the purge air flow path parts rated for continuous operation at a minimum of 70°C. The two chambers are thermally insulated from each other.

The Vortex Cooler is set to operate at +50°C and is used to cool the MiniPurge pneumatic logic controller.

A heat exchanger may optionally be fitted in the vortex cool air pipe supplying the MiniPurge system control unit logic circuit.

The optional terminal box (T/B) may be any suitable IECEx certified Ex e or Ex d T/B, which is suitable for the ambient temperature range (-20°C to +60°C), with a minimum Temperature Class of T4 (135°C).

Issue 9 – this Issue introduced the following changes:

- i. The introduction of the Combined Low Temperature (/LT) and High Temperature (/H6 or /H7) options:
- Combined Low Temperature (/LT) and High Temperature (/H6) options – Combination of the previously certified Low temperature and High temperature (H6) versions, with an ambient temperature range of -60°C to +60°C and permitting a maximum purge air temperature of 60°C. Optionally this may include an intrinsically safe electronic timer (/ET).

This version has two separate variants, as detailed below:

- The MiniPurge and other components are fitted inside the same enclosure which is made from stainless steel or painted (0.2mm maximum thickness) mild steel with a minimum thickness of 1.5mm or 2.5 mm, and earth (ground) terminal compliant with the listed standards, with the Vortex hot air outlet pipe exiting on any face which permits free venting. Also transiting the walls of the enclosure are the main purge air inlet which is fitted to the regulator and outlet entries, the optional pneumatic outputs, and optionally, the terminal box. This terminal box may contain intrinsically safe barriers and/or terminals, with electrical cables entering it via cable glands.

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Form 9530 Issue 1

Sira Certification Service

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Annex to: IECEx SIR 07.0027X Issue 10
Applicant: EXPO Technologies Limited
Apparatus: Purge Controller



- The MiniPurge and other components are fitted inside an enclosure which is separated into two chambers, this is made from stainless steel or painted (0.2mm maximum thickness) mild steel with a minimum thickness of 1.5mm or 2.5 mm, and earth (ground) terminal compliant with the listed standards, with the Vortex hot air outlet pipe exiting on any face which permits free venting. Also transiting the walls of the enclosure are the main purge air inlet which is fitted to the regulator and outlet entries, the optional pneumatic outputs, and optionally, the terminal box. This terminal box may contain intrinsically safe barriers and/or terminals, with electrical cables entering it via cable glands.

The Vortex Cooler is set to operate at +50°C and is used to cool the MiniPurge pneumatic logic controller.

A heat exchanger may optionally be fitted in the vortex cool air pipe supplying the MiniPurge system control unit logic circuit.

At the bottom of the enclosure is fitted the heater, which is identical to that used in the Low Temperature version. This will operate at +5°C.

The optional terminal box (T/B) may be any suitable ATEX certified Ex e or Ex d T/B, which is suitable for the ambient temperature range (-60°C to +60°C), with a minimum Temperature Class of T4 (135°C).

Combined Low Temperature (/LT) and High Temperature (/H7) options – Combination of the previously certified Low temperature and High temperature (H7) versions, with an ambient temperature range of -60°C to +60°C and permitting a maximum purge air temperature of 70°C. Optionally this may include an intrinsically safe electronic timer (/ET).

The MiniPurge and other components are fitted inside an enclosure which is separated into two chambers, this is made from stainless steel or painted (0.2mm maximum thickness) mild steel with a minimum thickness of 1.5mm or 2.5 mm, and earth (ground) terminal compliant with the listed standards, with the Vortex hot air outlet pipe exiting on any face which permits free venting. Also transiting the walls of the enclosure are the main purge air inlet which is fitted to the regulator and outlet entries, the optional pneumatic outputs, and optionally, the terminal box. This terminal box may contain intrinsically safe barriers and/or terminals, with electrical cables entering it via cable glands.

One cooled chamber contains the system control logic circuit, the Vortex Cooler and the logic isolator. The other hot chamber contains all of the purge air flow path parts rated for continuous operation at a minimum of 70°C. The two chambers are thermally insulated from each other.

The Vortex Cooler is set to operate at +50°C and is used to cool the MiniPurge pneumatic logic controller.

A heat exchanger may optionally be fitted in the vortex cool air pipe supplying the MiniPurge system control unit logic circuit.

At the bottom of the enclosure is fitted the heater, which is identical to that used in the Low Temperature version. This will operate at +5°C.

The optional terminal box (T/B) may be any suitable IECEx certified Ex e or Ex d T/B, which is suitable for the ambient temperature range (-60°C to +60°C), with a minimum Temperature Class of T4 (135°C).

- ii. To remove IS marking which was incorrectly applied in a previous variation.
- iii. To permit the addition of a previously assessed drawing which was not listed in a previous variation.