



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

Certificate No.:	IECEX SIR 07.0027X	Page 1 of 4	<u>Certificate history:</u>
Status:	Current	Issue No: 13	Issue 12 (2021-02-02)
Date of Issue:	2021-12-14		Issue 11 (2018-11-09)
Applicant:	EXPO Technologies Ltd Unit 2, The Summit Hanworth Road Sunbury on Thames Surrey TW16 5DB United Kingdom		Issue 10 (2017-03-31)
Equipment:	MiniPurge Purge Controller		Issue 9 (2016-10-25)
Optional accessory:			Issue 8 (2016-06-15)
Type of Protection:	Pressurised		Issue 7 (2015-07-22)
Marking:	Refer to the Annexe		Issue 6 (2012-11-27)
			Issue 5 (2012-10-23)
			Issue 4 (2011-12-09)
			Issue 3 (2011-03-09)

Approved for issue on behalf of the IECEx
Certification Body:

Neil Jones

Position:

Certification Manager

Signature:
(for printed version)

Date:

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2. This certificate is not transferable and remains the property of the issuing body.
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Unit 6, Hawarden Industrial Park
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United Kingdom





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Date of issue: 2021-12-14

Issue No: 13

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

Additional manufacturing locations: **Expo Technologies, Inc.**
9140 Ravenna Road
Unit 3
Twinsburg Ohio 44087
United States of America

Qingdao Expo Mechanical and Electrical Technologies Ltd
329 Huashan Er Lu, Jimo City
Qingdao, Shandong Province 266200
China

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 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
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 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/CSAE/ExTR21.0187/00](#)
[GB/SIR/ExTR11.0003/00](#)
[GB/SIR/ExTR15.0200/00](#)
[GB/SIR/ExTR17.0049/00](#)

[GB/SIR/ExTR07.0046/00](#)
[GB/SIR/ExTR11.0304/00](#)
[GB/SIR/ExTR16.0114/00](#)
[GB/SIR/ExTR18.0198/00](#)

[GB/SIR/ExTR09.0021/00](#)
[GB/SIR/ExTR12.0251/01](#)
[GB/SIR/ExTR16.0243/00](#)
[GB/SIR/ExTR21.0003/00](#)

Quality Assessment Report:

[GB/SIR/QAR07.0012/17](#)



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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)
8. When using the 'LD' option, the LEDs have the following IS input parameters and it shall be supplied from a suitable intrinsically safe power supply for Zone 1 or Zone 2 depending on which zone the purge controller is being installed.
 $U_i = 30V$, $I_i = 100mA$, $P_i = 1W$, $C_i = 0$ and $L_i = 0$.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

This issue, Issue 13, recognises the following change; refer to the certificate annex to view a comprehensive history:

1. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-0:2011 Ed.6 was replaced by EN IEC 60079-0:2017 Ed.7.

Annex:

[IECEX SIR 07.0027X annexe lss 13 .pdf](#)

Annexe to: IECEx SIR 07.0027X Issue 13

Applicant: EXPO Technologies Limited

Apparatus: Purge Controller



Standard versions:

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

Standard/ET/ES 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] db e 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] db e IIC T3 or T4 Gb
(Ta -60°C to +60°C)
[Purge air temp. up to +70°C]

Standard versions LD:

Ex [pxb] IIC T4 Gb
(Ta -20°C to +55°C)

Standard ET/ES/LD Versions

Ex [pxb] ia IIC T3 or T4 Gb
(Ta -20°C to +55°C)

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

Low temperature versions:

Ex [pxb] db e IIC T3 Gb
Ex [pxb] db e IIC T4 Gb
(Ta -60°C to +55°C)

High temperature/ET/ES versions – H6

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

High temperature/ET/ES 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 Et/ES

Ex [pxb] db e 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 Et/ES

Ex [pxb] db e 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/ES versions

Ex [pxb] db e ia IIC T3 Gb
Ex [pxb] db e ia IIC T4 Gb
(Ta -60°C to +55°C)

Annexe to: IECEx SIR 07.0027X Issue 13

Applicant: EXPO Technologies Limited

Apparatus: Purge Controller



Model Number Designation for IECEx approved MiniPurge systems	
a	Size or Capacity Option codes (Added only if used)
1	MiniPurge with Purge Flow Capacity up to 225 NI/min.
2	MiniPurge with Purge Flow Capacity up to 450 NI/min.
3	MiniPurge with Purge Flow Capacity up to 900 NI/min.
4	MiniPurge with Purge Flow Capacity up to 2000 NI/min.
5	MiniPurge with Purge Flow Capacity up to 6000 NI/min.
6	MiniPurge with Purge Flow Capacity up to 8000 NI/min.
7	MiniPurge with Purge Flow Capacity above 8000 NI/min.
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Model Number: 1 X LC cs DS SS AA MO FM OA TW Key: a b cc mm Example option codes </div>	
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.
ES	Electronic Timer with EPPS
ET	Electronic Timer (not EPPS option)
FM	Flow Meter(s) fitted.
H6	High Temperature Tamb -20°C to +60°C, Air Supply Max Temp +60°C.
H7	High Temperature Tamb -20°C to +60°C, Air Supply Max Temp +70°C.
HP	System LC or CF with High Pressure Sensor.
IS	Internal Switches suitable for Ex i circuits.
LS	Local Sensing.
LD	LED Option
LT	Low Temperature.
MO	Manual Override fitted.
MT	Mechanical Purge or Delay 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.
DXXX	Special design for specific flow rates, or other non-certification related options.

Annexe to: IECEx SIR 07.0027X Issue 13

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 arrestor, 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 arrestor. 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.

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Applicant: EXPO Technologies Limited

Apparatus: Purge Controller



- 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 MiniPurge Controller shall not be marked as suitable for use in explosive dust atmospheres when a non-metallic or painted housing is used.
- 6 When the optional electronic timer (IECEX FME 10.0001) is fitted the manufacturer shall take into account any certification restrictions or special conditions for safe use that are applicable to the certified device.
- 7 When an Ex d junction box with flange openings is used in the low temperature (LT) versions of the MiniPurge controller, the manufacturer shall ensure that it is installed such that there are no obstructions within 40mm of the Ex d junction box flameproof flanged joints.

Full certificate change history

Issue 1 – this Issue introduced the following changes:

- i. To permit the inclusion of the following codings for the Low Temperature Minipurge Enclosure
Ex [p] dem IIC T4
Ex pD II 21 T135°C
(Ta -50°C to +55°C)

Issue 2 – this Issue introduced the following changes:

- i. The introduction of the /ET version, an alternative to the pneumatic or mechanical timer system, this incorporates an Electronic Timer Module ETM-IS**-*** in the Mini Purge, the certification includes 'ia' marking when the ETM is fitted.
- ii. The dust marking was changed to be consistent with the marking for gases and vapours.
- iii. The introduction of a high pressure sensor for the LC option.

Issue 3 – this Issue introduced the following change:

- i. The marking section was amended to add information that had been omitted in error.

Issue 4 – this Issue introduced the following change:

- i. Following appropriate re-assessment to demonstrate compliance with the requirements of the latest IEC 60079 series of standards, the documents previously listed IEC 60079-0: 2004 Ed 4.0, and IEC 60079-2: 2001 Ed 4 were replaced by those previously listed (IEC 61241-0: 2004 Ed 1 was removed as this is incorporated into the current version of IEC 60079-0), the markings were updated accordingly and a new condition of certification was added

Issue 5 – this Issue introduced the following changes:

- i. The recognition of the Applicant's address change from Summer Road, Thames Ditton, Surrey KT7 0RH to Unit 2, The Summit, Hanworth Road, Sunbury on Thames, Surrey TW16 5DB.

Issue 6 – this Issue introduced the following change:

- i. Issued to allow GB/SIR/ExTR12.0251/00 to be replaced by GB/SIR/ExTR12.0251/01

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Issue 7 – this Issue introduced the following changes:

- i. The inlet air temperature sensing system was changed; as a consequence, a Special Condition For Safe Use was amended.
- ii. A Local Sensing (LS) option was introduced.
- iii. The RLV configuration was changed to show an optional alternative position of the flow sensing connection.
- iv. 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.
- v. The minimum ambient temperature limit for the Low Temperature and Low Temperature/ET versions was lowered from -50°C to -60°C.
- vi. 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:

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.

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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.
- 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.

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Apparatus: Purge Controller



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.

Issue 10 – this Issue introduced the following change:

- i. 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.

Issue 11 – this Issue introduced the following changes:

- i. To align the manufacturer's product name between certificates, resulting in the model designation table being amended in the certificate annex and a Condition of Manufacture being amended.
- ii. The (ES) option was introduced. This is the (ET) electronic timer option complete with an Electro Pneumatic Power Supply (EPPS), covered by certificate IECEx FME 10.0001X, resulting in the model designation table being amended in the certificate annex, to recognise the new (ES) option and amend the (ET) option. The assessment for the introduction of the (ES) option is against the listed electrical standards. A non-electrical assessment has not been conducted.
- iii. The RLV configuration was changed to show an alternative position of the flow sensing connection.
- iv. The main certification coding for the low temperature versions of the mini-purge controller, certified for use in gas atmospheres, were amended with 'd' being replaced with 'db' and 'm' being removed in recognition of the change of heater certification coding introduced in Issue 7 of certificate IECEx SIR 07.0027X.
- v. The withdrawal of the dust certification coding from the main certification coding for the low temperature versions of the mini-purge controller.
- vi. The withdrawal of approved drawing SD8196.
- vii. To assess and document minor modifications to the drawings in the certification package for this equipment, resulting in the introduction of a Condition of Manufacture

Issue 12 – this Issue introduced the following changes:

- i. To recognise a new option code (LD) for addition of LED, resulting in the introduction of a change to the marking, the introduction of a Specific Condition of Use and the introduction of IEC 60079-11:2011 Edition 6.0 assessment standard.
- ii. To extend the range of overpressure relief valve (RLV) sizes up to RLV400 and to include all possible RLV sizes, within minimum 25 mm and maximum 400 mm RLV bore size.
- iii. To introduce an alternative configuration for the Delay Trip (DT) option.
- iv. To introduce an alternative configuration for the leakage compensation system.

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- v. To record the addition of alternative manufacturing sites as follows:
 - Expo Technologies, Inc. 9140 Ravenna Road, Unit 3 Twinsburg Ohio OH 44087 United States of America
 - Qingdao Expo Mechanical and Electrical Technologies Ltd 329 Huashan Er Lu, Jimo City Qingdao, Shandong Province 266200 China

Issue 13 – this Issue introduced the following change:

- i. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-0:2011 Ed.6 was replaced by EN IEC 60079-0:2017 Ed.7.