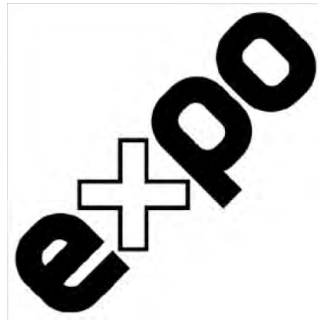




日煬科技有限公司
JD Auspice Co., Ltd



MiniPurge 類型 X，Y，Z DP 手冊 ML449

本手冊內容涵蓋 MiniPurge 類型 X，Y，Z 粉塵防護

尺寸： 1

安裝選購件： bp，pm，nm，ss

輸出選購件： IS，PO

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1. 規格表 - MiniPurge 類型 X, Y, Z DP 系統

型號 (範例):

07 1XDP / ss / IS

(注意: 並非所有代號皆適用)

吹掃系統類型

07 = MiniPurge

尺寸

1

許可 / 認證

X

Y

Z

歐洲

EN 60079-0 · EN 60079-2

EN 61241-4

Sira 01ATEX1295X

0518  II 2 (2) D

0518  II 2 (2) D

0518  II 3 (2) D

Ex [p] III T85°C Db
環境溫度 -20°C +55°C

Ex [p] III T85°C Db
環境溫度 -20°C +55°C

Ex [p Dc] III T85°C Db
環境溫度 -20°C +55°C

IEC

IEC 60079-0 · IEC 60079-2

IEC 61241-4

IECEx SIR 07.0027X

Ex [p] III C T85°C Db
環境溫度 -20°C +55°C

Ex [p] III C T85°C Db
環境溫度 -20°C +55°C

Ex [p Dc] III C T85°C Db
環境溫度 -20°C +55°C

巴西

INMETRO - TÜV 12.1462 X

Ex [p] III C T85°C Db
環境溫度 -20°C +55°C

Ex [p] III C T85°C Db
環境溫度 -20°C +55°C

Ex [p Dc] III C T85°C Db
環境溫度 -20°C +55°C

美國 / 加拿大 NFPA 496

FM 1X8A4AE

二級, 第一分類
類別 E、F 和 G

二級, 第一分類
類別 F 和 G

二級, 第二分類
類別 F 和 G

若要了解使用限制和條件, 請參閱本手冊頁末的適用證書。

輸出

IS = NI - Ex nA 或 IS - Ex i 電路
「警報」: 乾式, VFC, SPST N/O 觸點

PO = 氣動輸出
「警報」: 失壓 = 無訊號
「已加壓」= 達供應壓力

MiniPurge 外罩

bp = 背板 (上方 / 側面座架) 316L
不鏽鋼 (NROB 加工)

pm = 面板座架 (側面 / 前方座架) 316L
不鏽鋼 (NROB 加工)

nm = 非金屬 (上方 / 側面座架)
聚苯乙烯 c/w 透明蓋

ss = 316L 不鏽鋼 (NROB 加工)
氯丁二烯橡膠「上方」座架墊圈, 未固定

加壓方法

DP = 粉塵防護

供應壓力 60 psig / 0.4MPa / 4 barg 必須於入口處調節。
最大供應壓力 115 psig / 0.8MPa / 8 barg。
壓縮空氣 / 氮氣

低壓感知器 1 "WC / 250 Pa / 2.5 mbarg

釋放閥
型號 RLV25/ss with 3mm hole through spring
開啟壓力 4" WC / 1 kPa / 10 mbar
原料 316L 不鏽鋼, 火花抑制器: 不鏽鋼網, 氯丁二烯橡膠墊圈

「失壓」時的動作
X 系統 - 「警報和跳脫」
Y 系統 - 「只有警報」
Z 系統 - 「只有警報」

2. 應用適宜性

MiniPurge® 系統已通過認證，可於非礦業（地表作業）的危險場所（含粉塵的環境）使用。

Mini-X-Purge® 粉塵系統可用於 IECEx、ATEX 第二十一區第二類以及 NEC 500 二級第一分類類別 E、F 和 G 的危險場所。

Mini-Y-Purge® 粉塵系統可用於 IECEx、ATEX 第二十一區第二類以及 NEC 500 二級第一分類類別 F 和 G 的危險場所。

Mini-Z-Purge® 粉塵系統可用於 IECEx、ATEX 第二十二區第三類以及 NEC 500 二級第二分類類別 F 和 G 的危險場所。

MiniPurge® 粉塵系統可用於以上所有粉塵類別的危險場所。但是有一些 MiniPurge® 系統的相關設備，如：非點燃且本質安全的發訊電路，以及含開關裝置的防火外殼等，可能還是被限制歸類在其粉塵類別內。務必要檢查所有這類裝置隨附的證明文件，以確保裝置的適用性。

本系統主要是使用壓縮空氣進行操作。在操作其他惰性壓縮氣體（如：氮氣）的場所作業時，作業人員必須採取適當的預防措施，以避免累積的惰性氣體對健康造成危害。請參閱操作氣體的控制有害健康物質 (COSHH) 資料表。若是在有窒息風險的場所作業時，請務必在加壓外殼上貼上警告標籤。

MiniPurge® 系統的結構含有以下原料。如果周遭環境含有會對這些原料產生不良影響的物質，請諮詢 Expo 以了解處理方式。

結構原料：

• 不鏽鋼	• 鋁	• 丙烯酸
• 軟 (碳) 鋼	• 尼龍	• 聚矽氧橡膠
• 黃銅	• 聚氨酯	• 氯丁二烯橡膠

3. DP 系統的安裝、操作和維護

在 IEC / ATEX 分類的場所使用時，ML386 內提及 NFPA 496 的部分應由 IEC / EN 60079-2 的等效條款取代之。

Expo Technologies 的安裝、操作和維護手冊
適用於二級的粉塵防護 (型號 DP) 加壓系統

符合

2003 版的 NFPA496

「MiniPurge」是註冊商標。本文件受著作權法保護

重要注意事項

為了確保符合標準，Expo Technologies 系統的使用者必須遵守以下指示：
請參閱標準的詳細規定和定義。

標準內提及條款的部分會以斜體字顯示。

(附註：這些指示僅適用於加壓系統。加壓外殼製造商需為外殼提供適當指示。)

目錄：

第 0 節	操作說明和原理
第 1 節	安裝 DP 系統
第 2 節	操作 DP 系統
第 3 節	維護 DP 系統
第 4 節	故障排除
第 5 節	附錄 (若有)

第 0 節 操作說明和原理

所有的 Expo DP 加壓系統都提供對加壓外殼 (PE) 加壓，同時補償任何洩漏的方法。

所有的系統都有以下兩個主要項目：

- **控制單元 (CU)** (以類型「Y」和「Z」加壓系統來說) 包含最低流量控制閥 (FCV)、最低壓力感知裝置、「已加壓」/「警報」指示燈以及顯示 PE 壓力是否滿足的輸出訊號。

類型「X」加壓系統控制單元除了上述組件以外，另外還包含電機電源開關互鎖。

- 安裝於加壓外殼 (PE) 的**釋放閥 (RLV)** 可用於限制運作過程中 PE 所承受的最大壓力。RLV 型號有代表閥孔直徑 (單位為公分) 的後綴，如：RLV25 (= 內徑 1")。以外還有表示結構主要原料的後綴，如：/cs (碳鋼) 或 /ss (不鏽鋼)。所有的 RLV 都配有發泡金屬火花抑制器，可避免 PE 內的火花從 RLV 孔發射出來。本釋放閥已取得專利。

有緩慢而持續氣流 (如：冷卻氣流) 的 DP 系統擁有調校過的出口孔口，其位置可能位於釋放閥 (/CF 後綴) 內，或是作為獨立項目類型 SA 或 SAU 的存在。

本手冊內容涵蓋型號 DP 的 Expo Technologies 系統。以下將說明這些系統。

0.1 型號 DP 的粉塵防護系統

型號 DP 的粉塵防護系統通常不會有緩慢而持續的氣流。其加壓外殼 (PE) 已盡可能地做到密封，因而 DP 系統僅補償外殼洩漏的部分。本系統可能包含出口孔口，在這樣的情況下，系統可以提供持續性氣流 (如：冷卻用途)。

本釋放閥在正常運作情況下為關閉狀態。

「流量控制閥」(FCV) 經過調整，使得流量正好足以補償加壓外殼 (PE) 的任何洩漏。外殼壓力必須先經過校正，系統才會產生已加壓訊號。

第 1 節 安裝系統

1.1 安裝 Expo DP 系統

- .1 DP 系統應直接安裝於加壓 (防粉塵) 外殼 (PE) 上或附近位置。若非安裝在 PE 上，則應挑選盡可能靠近的安裝位置。安裝位置應符合系統指示燈能夠迅速觀測的要求。
- .2 所有連接至 PE 的管路、導管和接頭都應為金屬材質；若非金屬材質，則應為可燃性等級符合當地規範的材質。將 DP 系統連接至 PE 的任何管路都不可安裝任何閥。
- .3 如果需要將釋放閥的排放或持續氣流出口孔口的排放洩放至非分級場所，則其管道連接應符合 4.2.2 洩放保護性氣體。
- .4 每一次洩壓之後，都應在開啟電源之前徹底清潔加壓 (防粉塵型) 外殼。淨化過程不應使用保護性氣體。
- .5 單一系統能夠保護一個以上的 PE。若是多個 PE 以「串聯」的方式連接 (如：「菊鍊」)，則釋放閥應安裝於第一個外殼上。

外殼間用以互連之管路或導管的內徑和長度很重要，這些變數會決定串聯中第一個外殼所承受的最大壓力。如需尺寸調整的建議，可洽詢 Expo Technologies 系統的營業據點。

若是多個 PE 間採取並聯的方式連接，則外殼可共用釋放閥和壓力感知器。

1.2 加壓空氣供應或惰性氣體供應的品質和安裝

- .1 壓縮空氣的來源必須取自非分級場所。如不使用壓縮空氣，可改用惰性氣體。
- .2 除非 DP 系統內有特別安裝供應關閉閥，否則應從外部安裝螺紋尺寸等同或大於 DP 系統入口接頭的閥，同時也應為「Y」和「Z」加壓系統貼上適當的標示牌，請參閱條款：

4-8.2 可隔離氣體供應的外殼

4.11.5 「警告-保護性氣體供應閥」

- .3 所使用的管路和接頭必須符合上述的 1.1.2。
- .4 務必遵守以下 NFPA496 (2003 版) 的條款：
 - 4.4.1 保護性氣體的品質和汙染。
 - 4.4.1.2 保護性氣體的類型
 - 4.4.2 保護性氣體的管路
 - 4.4.3 空氣壓縮機在非分級地點進氣。
 - 4.4.4 空氣壓縮機進氣管規定。
 - 4.4.5 空氣壓縮機電源供應規定。

1.3 準備和安裝警報裝置

- .1 Expo DP 系統有根據二級危險粉塵特定顆粒密度而定，壓力設定為至少 0.1 "WC 或 0.5 "WC (0.25 mbarg 或 1.3 mbarg) 的最低壓力感知器。當 PE 的壓力高於此設定值時，感知器就會產生氣動「已加壓」訊號。這個訊號會透過安裝於 DP 系統上的紅光 / 綠光指示燈顯示出來，這個訊號也能用來操作遠端「警報」的電觸點。氣動訊號會發送至以下其中一處

- a) 電壓力作動開關 (選購件代碼 /IS)，本開關適用於符合 Expo 配置圖 EP80- 2-11 的本質安全電路 (或適用於第二分類非點燃電路)。
- b) 可供使用者選購的隔板接頭 (選購件代碼 /PO)。然後可以從系統 (若已適當防護，如：防爆處理) 以本機方式，或是從非分級場所遠端方式，用於操控外部電開關。

當外殼壓力降到感知器的設定值以下時，「已加壓」訊號就會被移除；也就是說當這個訊號消失時，就表示系統進入「警報」(「壓力失效」) 的狀態。若是系統「警報」指示燈並沒有位在易於觀察的位置，根據 NFPA496，2003 的規定，使用者必須使用此外部警報功能。

範例：利用將傳統「壓力開關」設定為在約 15 psig (1 barg) 時作動的方式，就能使用「已加壓」訊號讓系統產生「警報」的動作。

控制單元的「已加壓」訊號 (壓力為 30 psi (2 barg) 或以上) 會讓開關維持在作動位置, 直到控制單元偵測到加壓外殼進入低壓狀態, 並且清除「已加壓」訊號為止。此時的警報開關會重設, 而其觸點能用來作動遠端電子警報。

若是使用開關的地點位於危險場所, 則開關必須是本質安全電路的一部分, 或是已作好適當防護 (如: 第一分類的防爆處理或第二分類的非點燃處理)。即使壓力開關安裝於加壓外殼內部, 仍應具有本質安全、防爆或非點燃的特性。

Expo Technologies 提醒: 例外情況: 只要電力供應是來自於加壓外殼內部 (不含乾式觸點的情況), 安裝於第二分類場所的「Z-淨化」系統就能使用安裝於加壓外殼內部的非分級開關。於加壓外殼運作時, 警報可接收配備選購件「PO」之控制單元的氣動訊號正常作動。加壓外殼關閉時, 則無需使用警報! 請參閱電路圖。

警報開關也能設置於附近的非分級地點。為了取得最佳反應時間, 開關應該要盡可能地靠近控制單元, 並且除了有使用「快速排放閥」的情況 (請洽詢有關單位), 控制單元和警報開關之間的管路最長不應超過 150 英尺 (30 公尺)。請參閱條款:

4.8.1 裝置的壓力失效警告或 4.10 自動切斷電源

4.8.2 規定的保護性氣體供應失效警報

「Y」和「Z」加壓系統方面

4.8.3 如有使用警報.....

4.8.4 如有使用警示燈.....

Expo DP 系統與警報開關之間不可安裝任何閥。

1.4 電源供應和電源隔離

1.1 所有進入 PE 的電源都應進行隔離處理。這項規定同樣也適用於所有連接至設備的外部電源, 如: PE 內的「乾式觸點」或「無電壓觸點」。

例外情況: 本質安全設備的電源或是其他適用於危險地點之設備的電源, 都無需使用 Expo DP 系統進行隔離。

Expo Technologies 提醒: 將乾式或無電壓觸點安裝於非分級場所, 或是安裝在防爆箱內, 會遠比安裝在加壓外殼內安全。請向有關單位諮詢「MiniPurge 介面單元」(MIU)。

在使用「X」加壓系統的情況下, 必須以相似於上述 1.3.1 的方式, 利用「已加壓」氣動訊號作動「電源開關」, 然後透過 Expo DP 系統控制電源的隔離。

在使用「Y」或「Z」加壓系統的情況下, 使用者可以自行使用本機隔離開關來手動控制電源。

2 電氣設備應符合當地規範以及以下 NFPA496 (2003 年版) 的條款。

4.4.6 「雙重加壓」設備的電源供應。

4.10.1 讓所有電路斷電的電源切斷開關.....

例外情況: 如果立即切斷電源可能會導致更危險的情況, 而且如果隨時有人駐守的地點有聲音警報和視覺警報, 電源就會在切斷後維持連接一小段時間。

3 電源 (切斷) 開關應通過核可才能使用在危險地點, 否則就應放置於非分級場所。

4 電源開關與 Expo DP 系統之間不可安裝任何閥。

5 使用「X」加壓系統的加壓外殼門應使用緊固件, 使其僅能使用工具或鑰匙開啟, 否則應遵守以下 NFPA496 (2003 年版) 的條款: -

5.5.2 門開關互鎖

5.5.2.1 核可用於第一分類

1.5 標示

1.1 DP 系統貼有提供規格資料的標示牌, 其上標示了如序號、型號和壓力感知器設定的資訊。系統隨附的規格表也標示了同樣的資訊。

2 其他由標準規定必須提供的標示包括: -

5.3 加壓外殼

「警告 - 加壓外殼的電源不應於外殼開啟時恢復, 必須先清除可燃性粉塵, 並待外殼重新加壓後方可重啟電源。」

Expo Technologies 提醒: 據了解, 4.11.2 要求一律將所有不適用於危險地點的裝置 (如: 非防爆或非本質安全的裝置) 斷電。

舉例來說，防爆且防冷凝的加熱器則不必斷電。

- 3 若是使用惰性氣體作為保護性氣體，並存有窒息的風險，則應將適當的警告標示牌安裝至加壓外殼。

第 2 節 操作系統

2.1 首次試運轉

- 1 確認系統有依照本手冊第 1 節的指示進行安裝。
- 2 斷開入口至 DP 控制單元的供應管路，並且每一英尺的管路都要吹入至少 5 秒的空氣 (15 秒 / 公尺)，以清除碎片、油滴和凝結水珠。
- 3 暫時在加壓外殼或 Expo DP 系統壓力測試點 (在感知器至 4 mm OD 尼龍管這一段上) 接上壓力計或液體壓力計。

2.2 試運轉粉塵防護系統

請依下列說明進行操作：-

- 1 確認流量控制閥已關閉 (順時針轉到底)。
- 2 開啟供應關閉閥。
- 3 開啟流量控制閥 (FCV)，直至「已加壓」指示燈轉為綠光為止。
- 4 等待加壓外殼的壓力上升至釋放閥 (RLV) 開啟為止。確認 RLV 在壓力滿足或低於文件中規定的數字時開啟。反覆進行測試數次。
- 5 再次關閉並重新調整 FCV，直至加壓外殼壓力滿足所需操作等級，並且「已加壓」指示燈轉為綠光為止。
- 6 釋放閥在正常運作情況下應為關閉狀態。
- 7 如果釋放閥間歇性開啟，就表示 FCV 略微過度開啟。稍微關閉 FCV 直至 RLV 維持關閉為止。
- 8 我們建議在此時檢查最低壓力感知器的設定。

進一步關閉 FCV，讓加壓外殼壓力緩緩下降。注意「已加壓」指示燈轉為紅光時的壓力，確認其讀數不低於文件中規定的數字。另外也要檢查「警報」電觸點 (如有安裝)。

使用「X」加壓粉塵防護系統的情況下，一旦「已加壓」指示燈轉為紅光，外殼電源就會被關閉。

最後，視需要重新調整 FCV。

- 9 如果調整 FCV 的結果顯示難以達成正確壓力，很可能是因為外殼有明顯的洩漏，此時應盡力嘗試減少洩漏。

2.2 一般操作

- 1 「X」DP 加壓。確認外殼沒有堆積有害的可燃性粉塵，並且已緊緊地關閉。開啟或關閉空氣供應閥以啟動或停止系統。在此之後的加壓程序完全是自動進行的。
- 2 警告：尚未確認外殼沒有累積有害的可燃性粉塵之前，以及「已加壓」指示燈為綠光的時候，絕對不可開啟電源！
- 3 「Y」和「Z」DP 系統的啟動和停止方式與「X」DP 系統並無二異，但是使用者必須在確認外殼沒有堆積可燃性粉塵並且已加壓後才能關閉電源開關。
- 4 壓力失效後應盡快關閉電源。這同樣也是使用者的責任。

第 3 節 維護系統

建議的系統維護包括以下項目，再加上任何額外由相關主管機關所強制執行的當地規定項目。

3.1 試運轉

本手冊第 2 節說明試運轉時所要執行的測試。這些測試包括檢查釋放閥的開啟壓力、檢查最低壓力感知器的設定，以及檢查外殼的「正常工作壓力」。

3.2 例行維護

.1 Expo Technologies 建議六個月內應再次執行試運轉測試。此外，Expo 建議執行試運轉測試時，也要進行以下檢查：-

- 檢查 RLV 和所有其他火花抑制器。清除所有碎片或鏽蝕情況，或是使用備件更換新品。
- 檢查空氣供應過濾器元件的情況。如有必要，請進行清潔或更換。

.2 至少每兩年檢查以下額外項目一次：-

- 檢查設備是否還適用於危險地點
- 系統上沒有任何未經許可的修改
- 檢查空氣來源是否仍無污染
- 檢查互鎖和警報功能是否能正確運作
- 檢查許可標籤是否清晰可見，並且完整無缺
- 是否還備有足夠的備件

第 4 節 故障排除 - DP 系統

4.1 一般 如果系統沒有如上述般地運作，就表示系統發生故障。如果依照以下所列的程序操作後仍無法解決問題，請洽詢 Expo Technologies 或是供應商尋求解決方法。

DP 系統的設計易於進行故障排除，同時許多安裝的組件皆為內嵌式或是底盤座安裝。以替換方式檢查組件，只有在確認必須更換才予以更換組件。如果系統機齡少於 12 個月，則保固期內的零件應連同完整的故障報告和系統序號一起送回 Expo Technologies 進行調查。

注意：就像所有的氣動系統一樣，空氣供應如果有水氣、油滴和塵土，很容易造成系統的損壞。

基於這個原因，空氣供應務必安裝粉塵和水氣過濾器。但是，碎片還是有可能以其他方式進入系統，因此，在首次使用系統之前，或是在每次斷開配管之後，落實第 1 節所描述的程序就極其重要。若是沒有確實執行程序，有可能對系統造成不屬於保固範圍內的損壞。

故障排除

注意：在進行以下檢查之前，請先確認 DP 控制單元的主要供應壓力介於 60 (4 barg) 至 115 psi (8 barg) 之間。

4.2 最低壓力警報持續作響 (「已加壓」指示燈為紅光)

可能原因 1：加壓外殼 (PE) 壓力不足。試著提高 FCV (流量控制閥) 的設定，以提高加壓外殼的壓力。

可能原因 2：外殼故障？

- 「實際」加壓外殼的壓力是否低於最低壓力感知器的設定？
請使用壓力計檢查。
- 釋放閥盤面上是否因為可能有磁鐵而吸附住碎片？
- 加壓外殼門是否已關閉？所有的導管 / 電纜接頭是否都已密封？
- 加壓外殼是否洩漏過度
- 壓力感知管是否有受損的情況？

可能原因 3：系統故障？

若是上述 (可能原因 2) 的檢查結果顯示加壓外殼正確運作，則故障可能發生在 DP 控制單元。旋開拆下直徑 2.4" (60 mm) 的膜片，然後用手指堵住閥模組頂端的螺紋安裝孔，就能檢查最低壓力感知器的基本運作。這時應該就會作動閥，同時指示燈也應該轉成綠光。如果上述檢查的結果顯示系統正確運作，但是外殼壓力卻高於最低壓力感知器的設定，那麼壓力感知器膜片很可能就需要重新調校或更換。(請參閱以下內容)

4.3 釋放閥開啟 (持續性開啟或間歇性開啟)

可能原因 1：加壓外殼壓力過高。

流量控制閥 (FCV) 過度開啟。

依照上述第 2 節的說明調整流量控制閥。

可能原因 2：因為 RLV 盤上有碎片，使得空氣從閥洩漏出去。

請拆下 RLV 蓋，然後清潔閥盤。

使用鉛筆就能在不影響校準的情況下從 RLV 拆下閥盤和彈簧，請在閥盤周圍做記號，這樣重新裝回閥盤的時候就能維持在同樣的位置。

4.4 系統無法在加壓後開啟電源 (僅限「X」 DP 系統)

可能原因 1：是否有電源？電源是否已斷開或關閉？保險絲或斷路器是否正常。

可能原因 2：控制單元上的電源開關輸出隔板和電源開關本身是否有壓力？開關是否設定為 15 psi (1 barg)？

可能原因 3：電源開關的管路是否氣密？送往電源開關隔板的訊號有節流的功能，能夠限制管路的允許洩漏量。如果可以，請使用肥皂水找出洩漏的源頭，然後重新測試系統。

可能原因 4：電源開關故障。檢查電源開關的運作。電源開關應於壓力高於 20 psi (1.4 barg) 時關閉。

4.5 壓力感知器校準

若是已作出最低壓力感知器需要重新調校的決定，可以將其送回 Expo Technologies 進行調校，或是使用者可依以下指示自行調校：

從膜片頂端斷開壓力感知管路。(這是「省力型」快速釋放接頭；用力朝內按住接入接頭處之管路周圍的軸環不放，然後朝外拔出管路)。從感知器頂端旋開拆下直徑 2.4" (60 mm) 的膜片外罩。

將其倒置並且要小心不要損壞中央的黃銅調整螺絲。朝內 (順時針) 轉動螺絲會降低設定值。螺絲因為有鎖定密封劑，因此很可能會非常難以轉動。若是無法轉動螺絲，通常只要在黃銅螺絲的區域稍微加熱即可轉動螺絲。千萬不可過度加熱！

4.6 清潔過濾器。

如需清潔過濾器元件，可以先從 DP 系統關閉空氣供應，然後再旋開拆下透明杯。此外，過濾器元件可以旋開，並使用肥皂水清潔。過濾器總成上的所有零件都不可使用溶劑清潔。

Expo Technologies 提醒：如果發現透明杯緊到轉不動，有時候直接整個拆下將過濾器固定在控制單元內的接頭會比較容易。在某些 Sub Mini-X-Purge 系統上，可能就會需要先拆下最低壓力感知器膜片，然後才能拆下過濾器。

第 5 節 適用選購件附錄

如需任何 DP 系統型號代碼編號的適用選購件資訊，請參閱本手冊的附錄

Expo Technologies Ltd
Unit 2 The Summit,
Hanworth Road,
Sunbury-On-Thames,
TW16 5DB. UK.

Expo Technologies Inc
9140 Ravenna Road Unit #3,
Twinsburg,
OH 44087,
U.S.A.

4. 配置圖

請根據選用的系統查閱適用的配置圖。

系統 *XDP, ZDP	/bp/IS	/bp/PO	/pm/IS	/pm/PO	/nm/IS	/nm/PO	/nm/PO	/ss/PO
XBR-8TD0-012	✓	✓						
MZ-1CF-17-CL	✓	✓						
SD7568	✓	✓						
XBR-8TD0-010			✓	✓				
MZ-1CF-23-GA			✓	✓				
MZ-1CF-26-GA					✓	✓		
XBR-8TD0-014							✓	✓
MZ-1CF-02-GA							✓	✓
MZ-1CF-01-CL							✓	✓
MZ-1CF-01-CT	✓	✓	✓	✓	✓	✓	✓	✓
EP80-2-11	✓		✓		✓		✓	
XSD-RTD0-001 sht 1	✓	✓	✓	✓	✓	✓	✓	✓
XSD-RTD0-001 sht 2	✓	✓	✓	✓	✓	✓	✓	✓

5. 配置圖

系統	許可機構	證書字號
MiniPurge®	IECEX	SIR 07.0027X
	Sira	01ATEX 1295X
	INMETRO/TÜV	TÜV 12.1462X
	FM	1X8A4.AE
	UL	E190061



3rd ANGLE
PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

UNSPECIFIED NO DEC PLACE ±0.5
TOLERANCES 1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

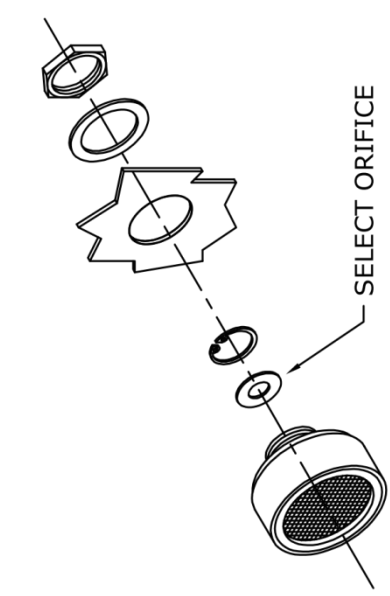
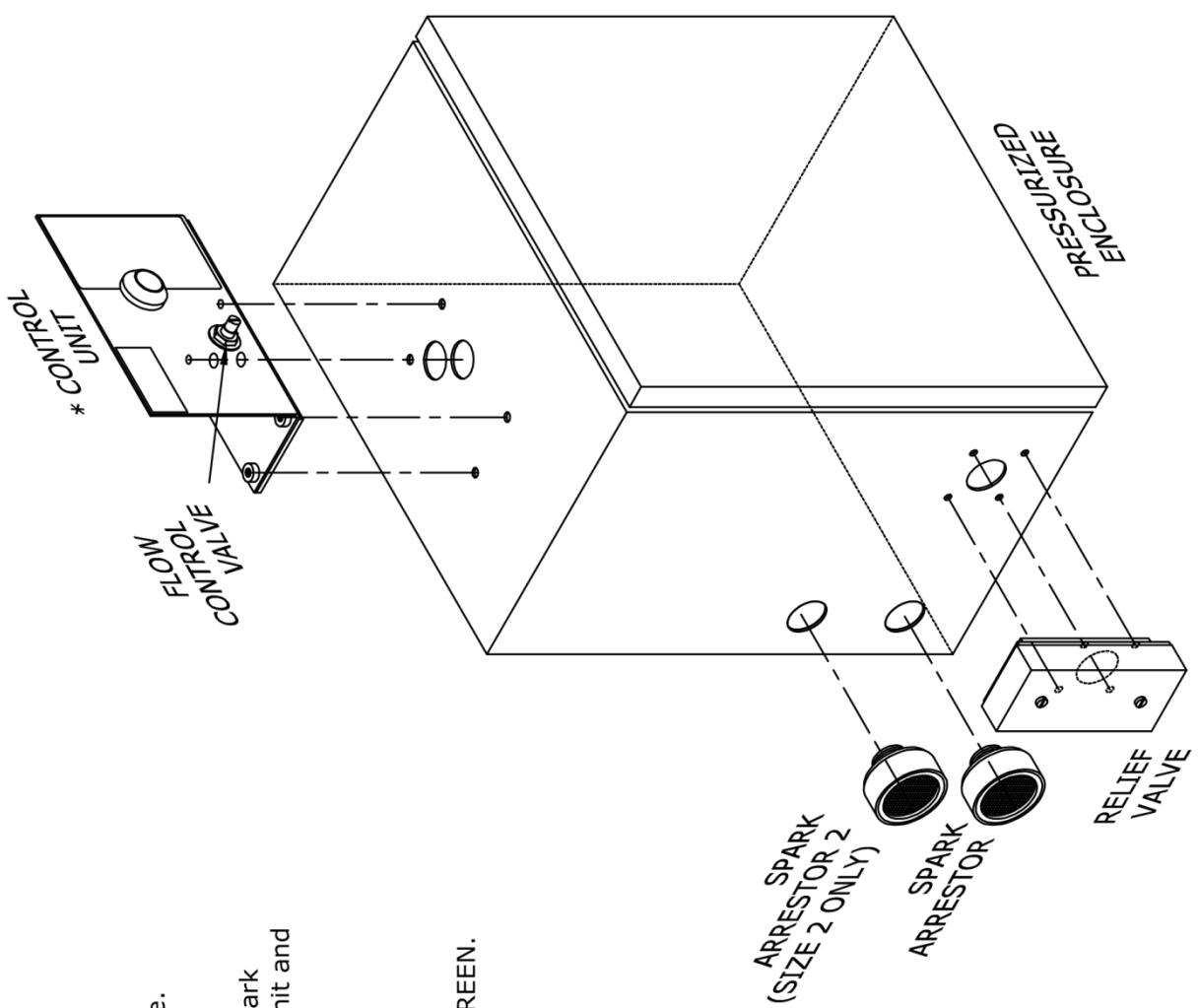
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Quick Installation Guide FOR CF or DP systems:

1. With aid of supplied mounting template cut mounting holes into the enclosure.
2. Fix MiniPurge Control Unit to enclosure.
3. Fix Relief Valve to enclosure.
4. For CF systems only, select orifice for required purge flow rate and fit into Spark Arrestor with circlip. Fix Spark Arrestor to enclosure ensuring that Control Unit and Spark Arrestor Unit are diagonally opposing.
5. Connect Output option, /IS or /PO as required, refer to manual.
6. Connect isolated air supply to MiniPurge Control Unit
7. Ensure enclosure door is closed and sealed from leaks.
8. Turn on air supply 60 psig (4 barg).
9. Slowly increase Flow Control Valve until Alarm Indicator turns from RED to GREEN.
10. After Purge time has been completed power can be applied to enclosure.
11. All queries refer to manual for assistance in the first instance.

NOTE: Spark arrestors are only used in CF systems.

* /PO option shown



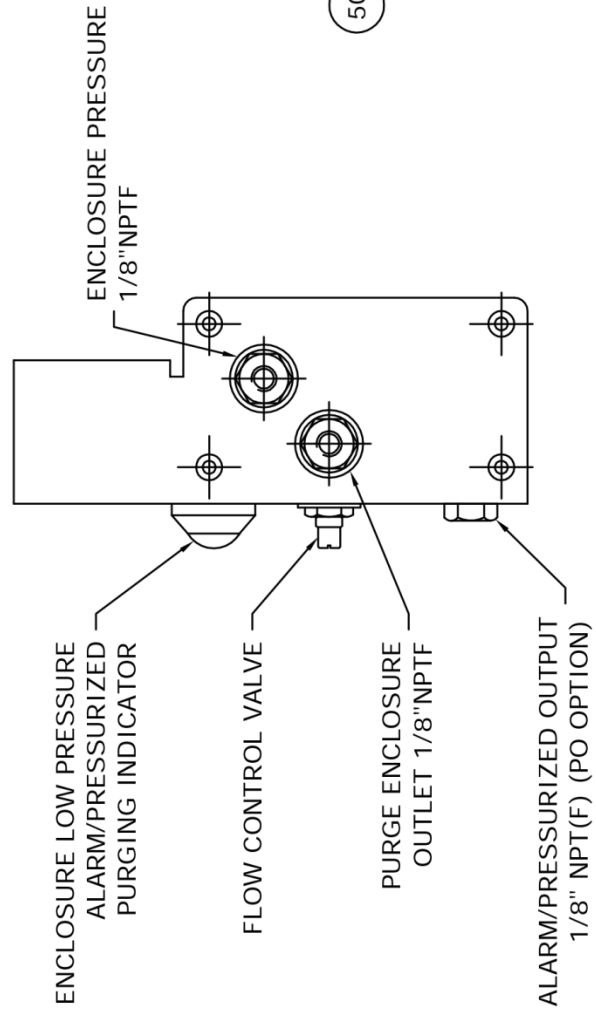
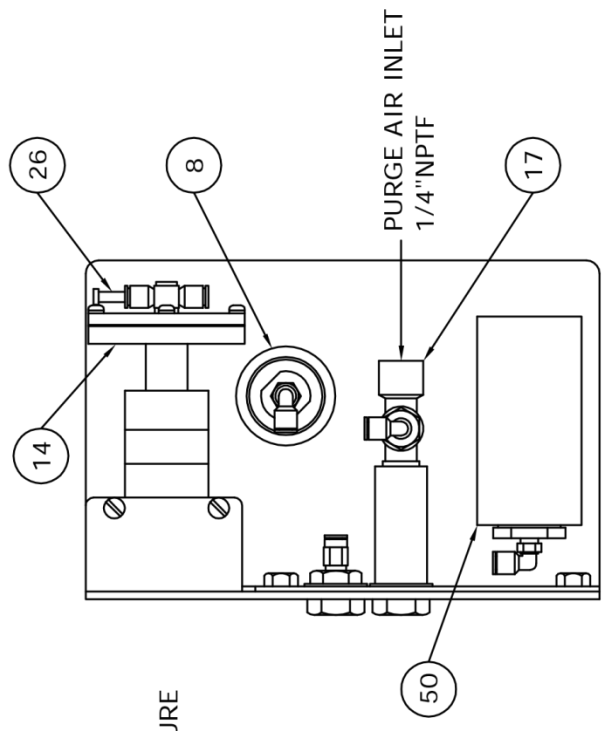
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CHKD	PA0	MOD. No:	DRAWN	4.4.06	4.4.2		Z(Y)CF & DP /bp QUICK INSTALLATION GUIDE	SURREY KT7 0RH UNITED KINGDOM	DRAWING No.	XBR-8TD0-012		
DRWN	CDM	DATE:	05/01/04	08/02/08	18/3/08				JOB No:		SHEET No.	1 OF 1
		APPROVED:	PA0	MLC	MLC				CUSTOMER:			

3rd ANGLE
PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

UNSPECIFIED NO DEC PLACE ±0.5
TOLERANCES 1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

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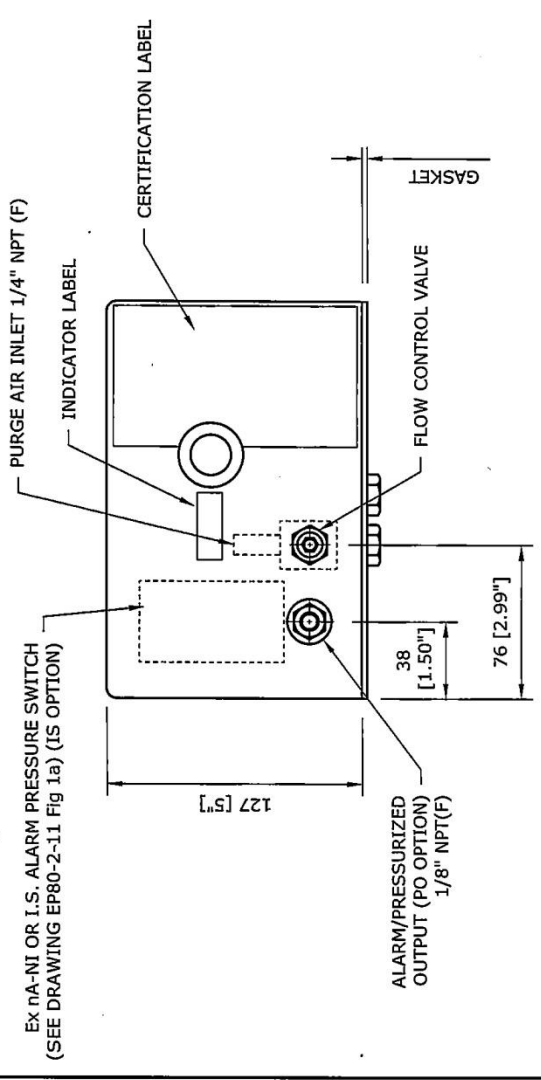
17	FLOW CONTROL VALVE
8	INDICATOR "ALARM/PRESSURIZED"
14	SENSOR, MINIMUM PRESSURE
26	PLUG 4mm (PE TEST POINT)
50	IS PRESSURE SWITCH (IS OPTION)

- NOTES:
- APPLICABLE MODEL NUMBERS:
 1Z(Y)CF/bp/IS
 1Z(Y)CF/bp/PO
 1Z DP/bp/IS
 1Z DP/bp/PO
 1X DP/bp/PO

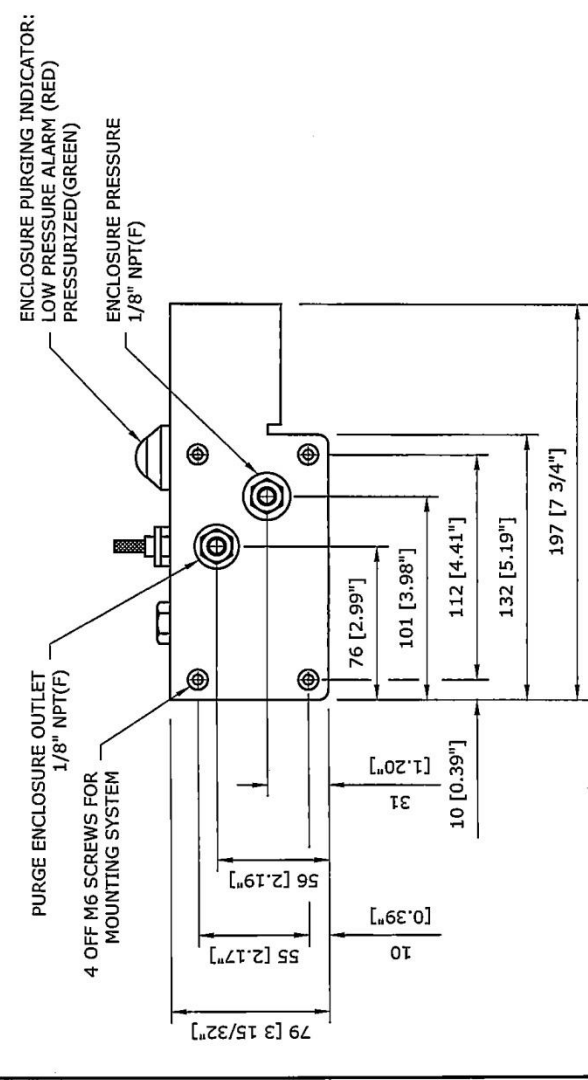
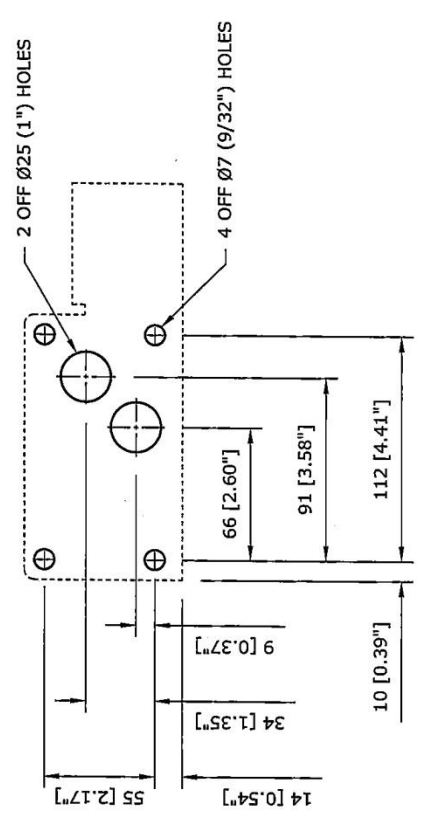
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CHKD	MC	MOD. No:	DRAWN	1962	4406		TITLE MINIPURGE 1Z(Y)CF&DP/bp/IS & PO		DRAWING No. MZ-1CF-17-CL	
DRWN	ACD	DATE:	08.07.97	03.02.98	08/02/08	FINISH	JOB No:		SHEET No. 1 OF 1	
		APPROVED:	MC	MC	MLC		CUSTOMER:			
		DRAWING STATUS:								



3rd ANGLE PROJECTION
 DIMENSIONS IN mm
DO NOT SCALE
 UNSPECIFIED NO DEC PLACE ±0.5
 TOLERANCES 1 DEC PLACE ±0.2
 2 DEC PLACE ±0.1
 FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH
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CUTOUT DETAIL



- NOTES:**
- APPROX WEIGHT: 2kg (4.4 lbs)
 - APPLICABLE MODEL NUMBERS:
 - 1Z(Y)CF/bp/IS
 - 1Z(Y)CF/bp/PO
 - 1ZDP/bp/IS
 - 1ZDP/bp/PO
 - 1XDP/bp/PO

APP'D	ISSUE:	1	MATERIAL	SCALE	NTS
CHK'D	MOD. No:	DRAWN	FINISH	DRAWING No.	SD7568
DRWN	DATE:	06/02/08		SURREY KT7 0RH UNITED KINGDOM	
	APPROVED:			TITLE MINIPURGE Z(Y)CF & DP/bp/IS & PO	
	DRAWING STATUS:	CERT RELATED		JOB No: CUSTOMER:	
				SHEET No. 1 OF 1	



3rd ANGLE PROJECTION
DIMENSIONS IN mm
DO NOT SCALE

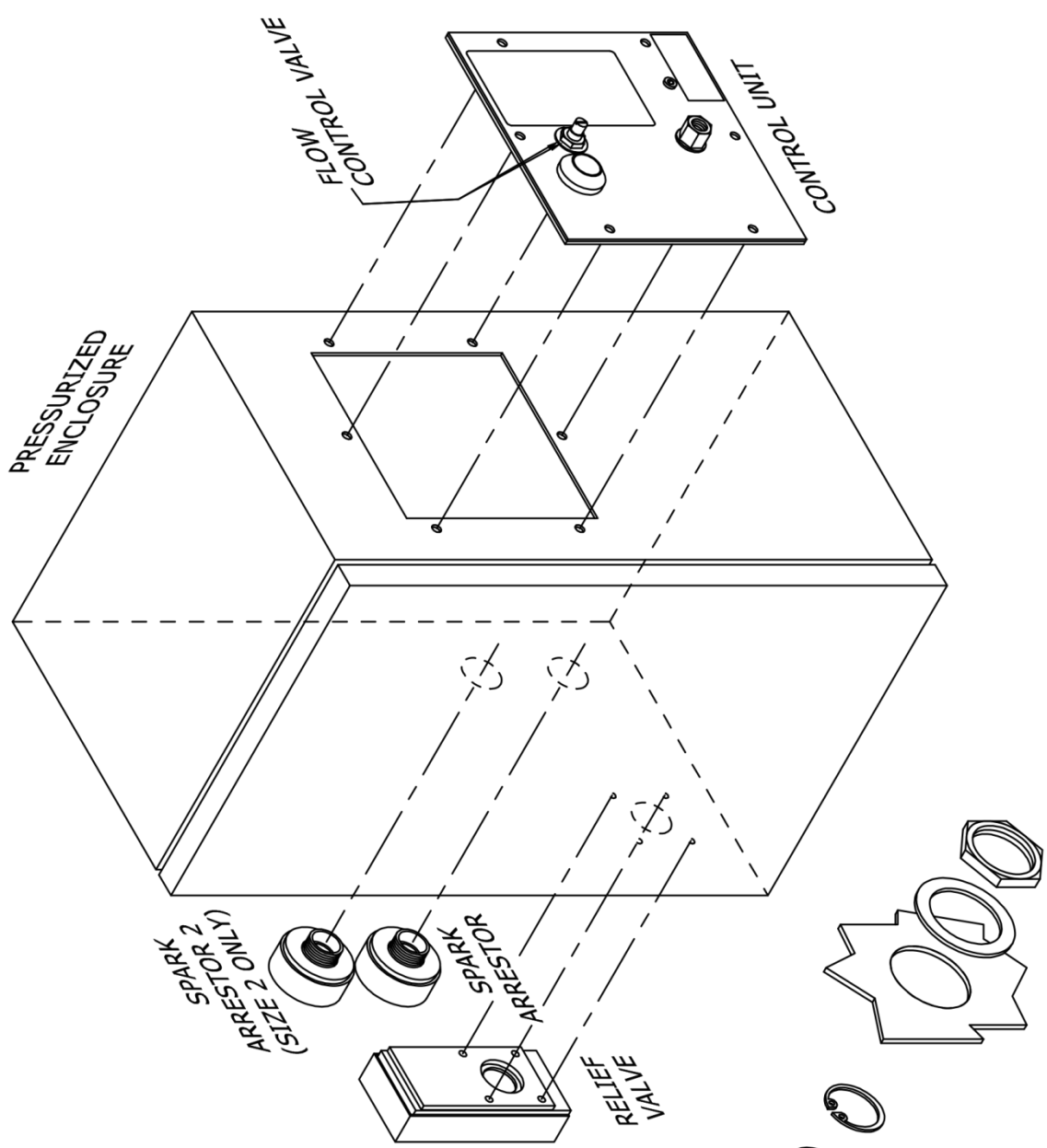
UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

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Quick Installation Guide FOR CF or DP systems:

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3. Fix Relief Valve to enclosure.
4. For CF systems only, select orifice for required purge flow rate and fit into Spark Arrestor with circlip. Fix Spark Arrestor to enclosure ensuring that Control Unit and Spark Arrestor Unit are diagonally opposing.
5. Connect Output option, /IS or /PO as required, refer to manual.
6. Connect isolated air supply to MiniPurge Control Unit
7. Ensure enclosure door is closed and sealed from leaks.
8. Turn on air supply 60 psig (4 barg).
9. Slowly increase Flow Control Valve until Alarm Indicator turns from RED to GREEN.
10. After Purge time has been completed power can be applied to enclosure.
11. All queries refer to manual for assistance in the first instance.

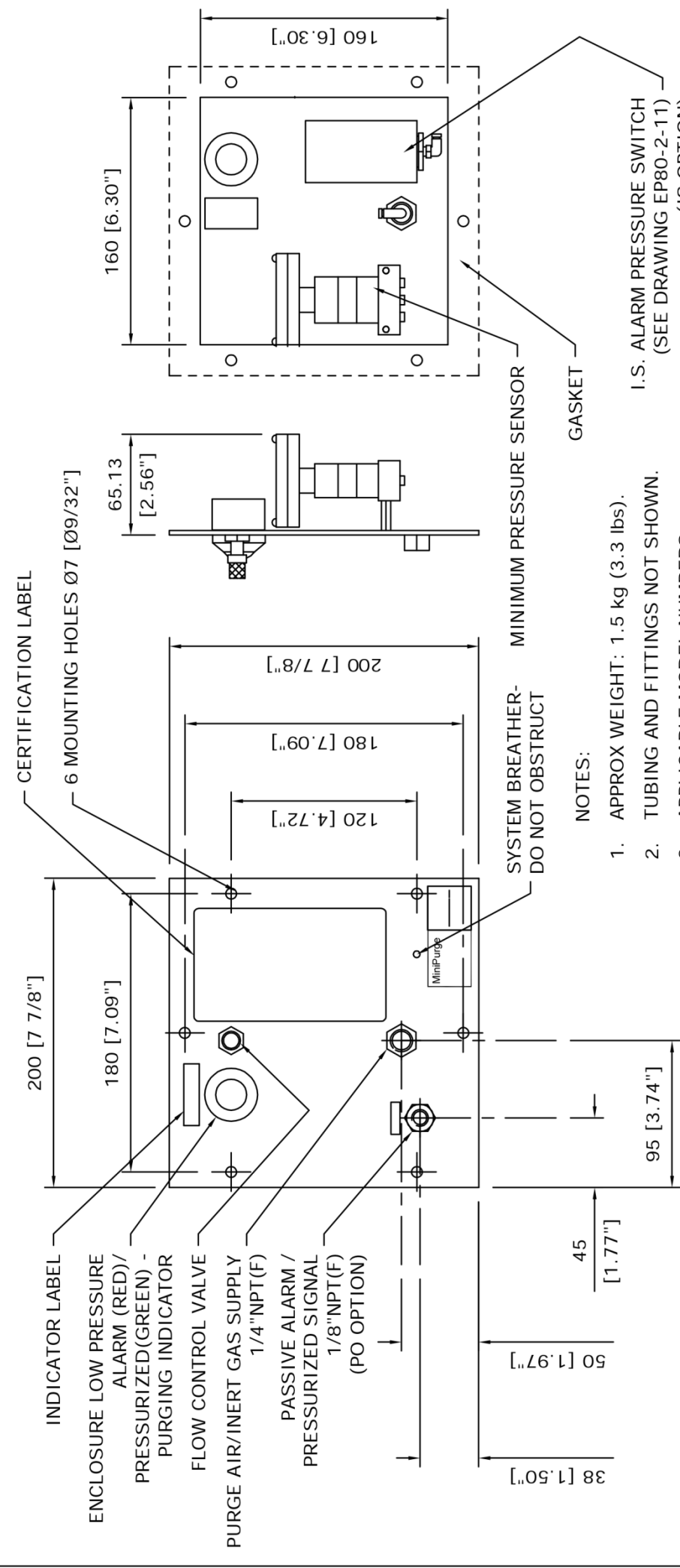
NOTE: Spark arrestors are only used in CF systems.



APPD	PA0	ISSUE:	1	2	3	MATERIAL	Expo Technologies Limited		SCALE	NTS
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DRWN	CDM	DATE:	23/12/03	08/02/08	18/3/08	FINISH	TITLE		SHEET No.	1 OF 1
		APPROVED:	PA0	MLC	MLC		Z(Y)CF&DP/pm QUICK INSTALLATION GUIDE			
		DRAWING STATUS:	JOB No: CUSTOMER:							



3rd ANGLE PROJECTION
 DIMENSIONS IN mm
 DO NOT SCALE
 UNSPECIFIED TOLERANCES
 NO DEC PLACE #0.5
 1 DEC PLACE #0.2
 2 DEC PLACE #0.1
 FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH
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NOTES:
 1. APPROX WEIGHT: 1.5 kg (3.3 lbs).
 2. TUBING AND FITTINGS NOT SHOWN.
 3. APPLICABLE MODEL NUMBERS:
 1X DP/pm/PO
 1Z(Y)CF/pm/IS
 1Z(Y)CF/pm/PO
 1Z DP/pm/IS
 1Z DP/pm/PO
 I.S. ALARM PRESSURE SWITCH (SEE DRAWING EP80-2-11) (IS OPTION)

APPD	BRD	ISSUE:	1	2	3	MATERIAL	Expo Technologies Limited	SCALE	NTS
CHK'D	BRD	MOD. No:	DRAWN	3955	4406	FINISH	SURREY KT7 0RH UNITED KINGDOM	DRAWING No.	MZ-1CF-23-GA
DRWN	NRB	DATE:	16/07/1999	1/3/05	08/02/08	TITLE	MINIPURGE 1Z(Y)CF&DP/PM/IS & PO	SHEET No.	1 OF 1
APPROVED:			BRD	HE	MLC	JOB No:	CUSTOMER:		
DRAWING STATUS:			CERT RELATED						

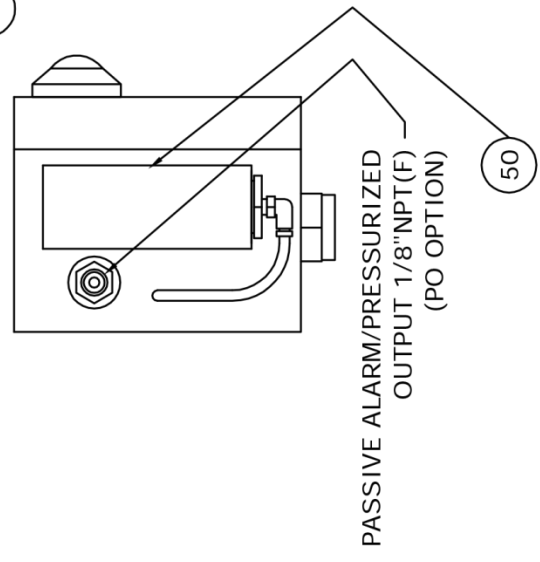
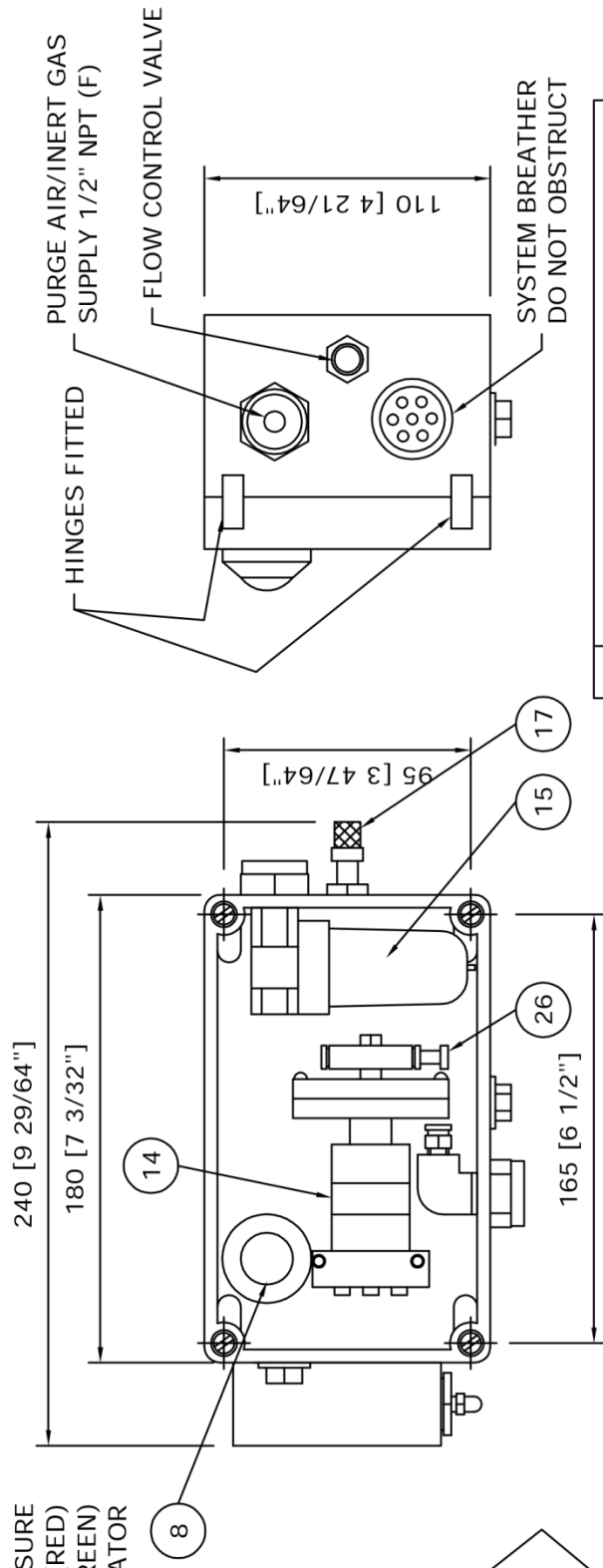
3rd ANGLE PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

UNSPECIFIED NO DEC PLACE ±0.5
TOLERANCES 1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

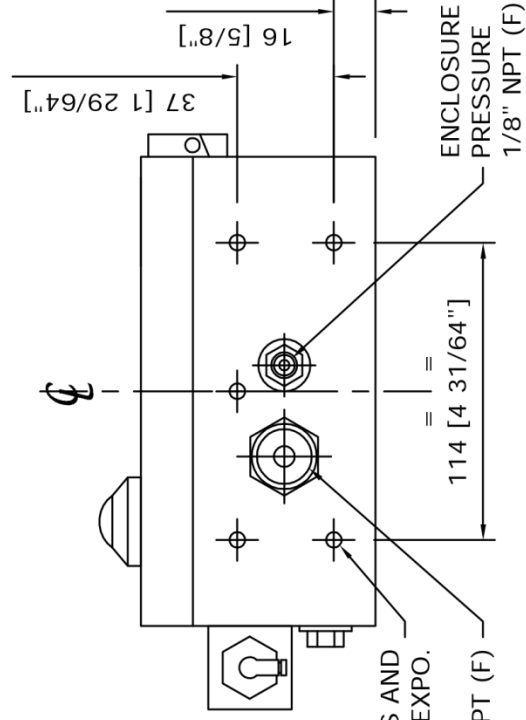
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ENCLOSURE
LOW PRESSURE ALARM (RED)
PRESSURIZED (GREEN)
PURGING INDICATOR



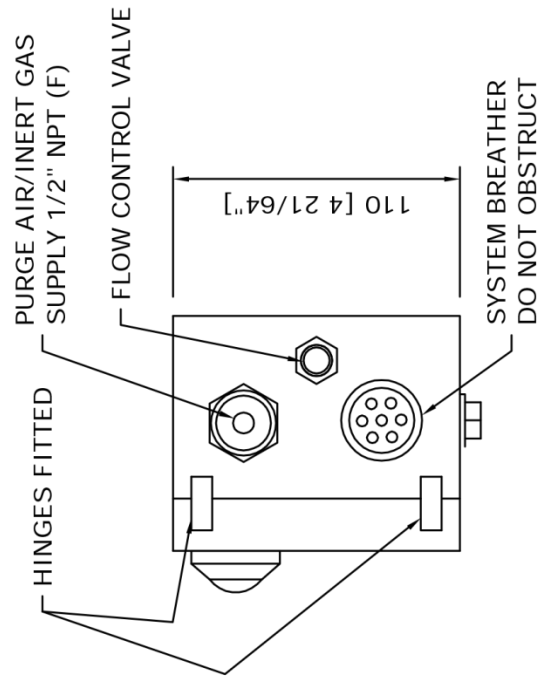
PASSIVE ALARM/PRESSURIZED OUTPUT 1/8"NPT(F) (PO OPTION) (50)

I.S. ALARM PRESSURE SWITCH (SEE DRAWING EP80-2-11) (IS OPTION)



5 OFF M4 MOUNTING HOLES: SCREWS AND SEALOC WASHERS SUPPLIED BY EXPO.

PURGE OUTLET 1/2" NPT (F)



8	INDICATOR "ALARM/PRESSURIZED"
14	SENSOR, MINIMUM PRESSURE
15	FILTER, MANUAL DRAIN
17	FLOW CONTROL VALVE
26	PLUG 4mm (PE TEST POINT)
50	I.S. PRESSURE SWITCH (PO OPTION)

NOTES:

- SUB MINI-Z-PURGE / SUB MINI-Y-PURGE MUST BE MOUNTED IN THE ATTITUDE SHOWN.
- APPROX WEIGHT: 1.4 Kg (3 POUNDS)
- EQUIVALENT IMPERIAL DIMENSIONS ARE SHOWN IN BRACKETS
- APPLICABLE MODEL NUMBERS:
1Z(Y)CF/nm/IS 1Z DP/nm/IS 1X DP/nm/PO
1Z(Y)CF/nm/PO 1Z DP/nm/PO

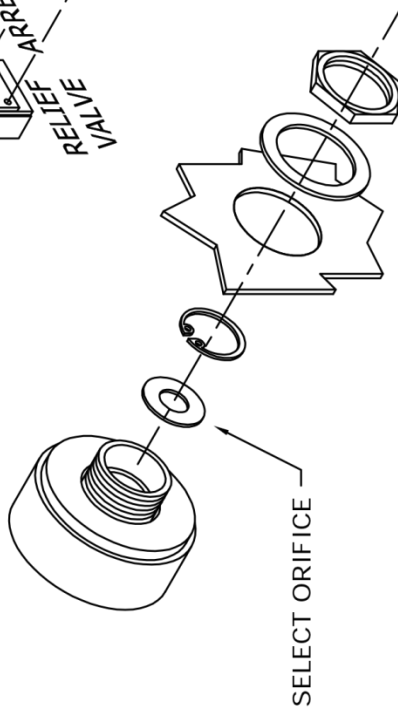
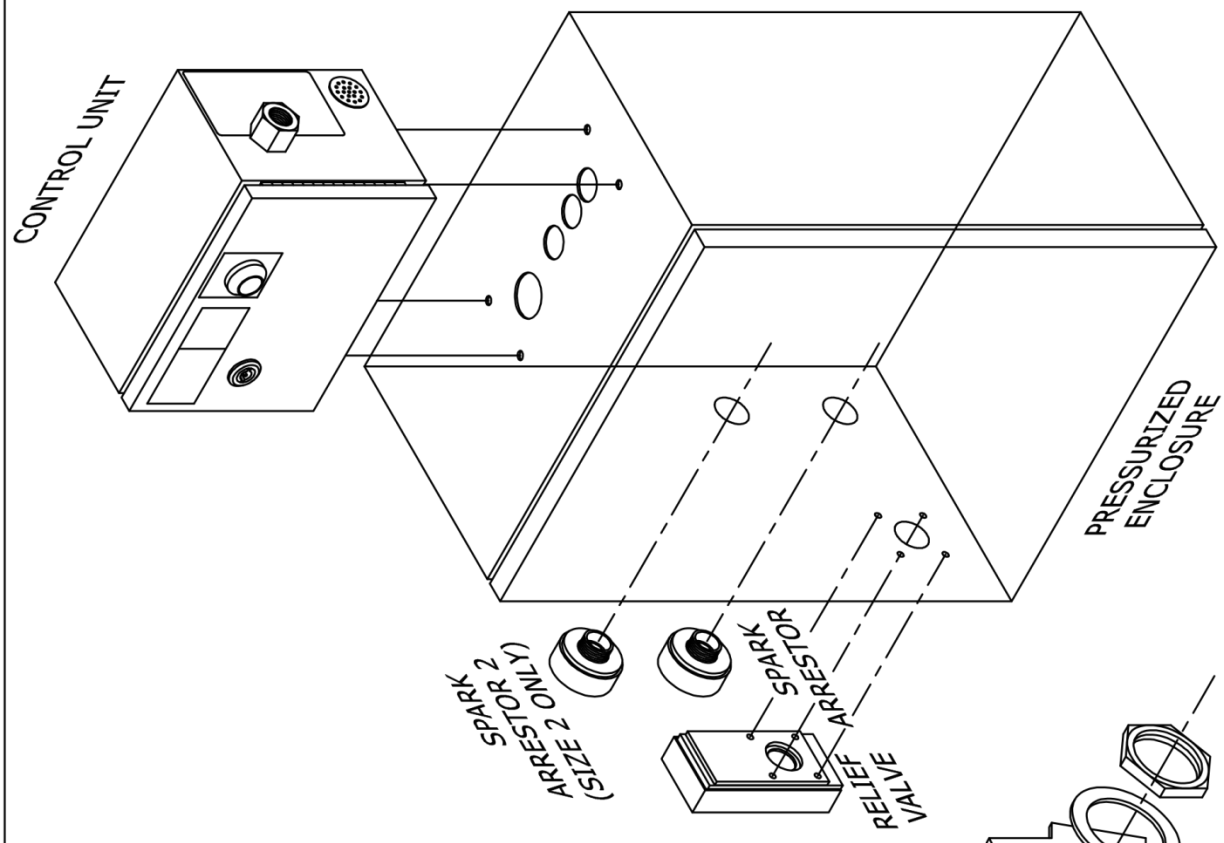
APP'D	MLC	ISSUE: 1	MATERIAL	SCALE	N.T.S
CHK'D	MLC	MOD. No: DRAWN	FINISH	DRAWING No. MZ-1CF-26-GA	
DR'WN	NRB	DATE: 18/2/08		SHEET No. 1 OF 1	
APPROVED: MLC			CUSTOMER: MINIPURGE 1Z(Y)CF/NM/IS & P0		
DRAWING STATUS: CERT RELATED			SURREY KT7 0RH UNITED KINGDOM		



Quick Installation Guide FOR CF or DP systems:

1. With aid of supplied mounting template cut mounting holes into the enclosure.
2. Fix MiniPurge Control Unit to enclosure.
3. Fix Relief Valve to enclosure.
4. For CF systems only, select orifice for required purge flow rate and fit into Spark Arrestor with circlip. Fix Spark Arrestor to enclosure ensuring that Control Unit and Spark Arrestor Unit are diagonally opposing.
5. Connect Output option, /IS or /PO as required, refer to manual.
6. Connect isolated air supply to MiniPurge Control Unit
7. Ensure enclosure door is closed and sealed from leaks.
8. Turn on air supply 60 psig (4 barg).
9. Slowly increase Flow Control Valve until Alarm Indicator turns from RED to GREEN.
10. After Purge time has been completed power can be applied to enclosure.
11. All queries refer to manual for assistance in the first instance.

NOTE: Spark arrestors are only used in CF systems.



APPD	PA0	ISSUE:	1	2	3	MATERIAL	Expo Technologies Limited		SCALE	NTS
CHK'D	PA0	MOD. No:	DRAWN	4406	4442		SURREY KT7 0RH UNITED KINGDOM		DRAWING No. XBR-8TD0-014	
DRWN	CDM	DATE:	12/01/04	08/02/08	18/3/08	FINISH	TITLE Z(Y)CF & DP/ss QUICK INSTALLATION GUIDE		SHEET No. 1 OF 1	
			APPROVED:	PA0	MLC	MLC	JOB No:		CUSTOMER:	

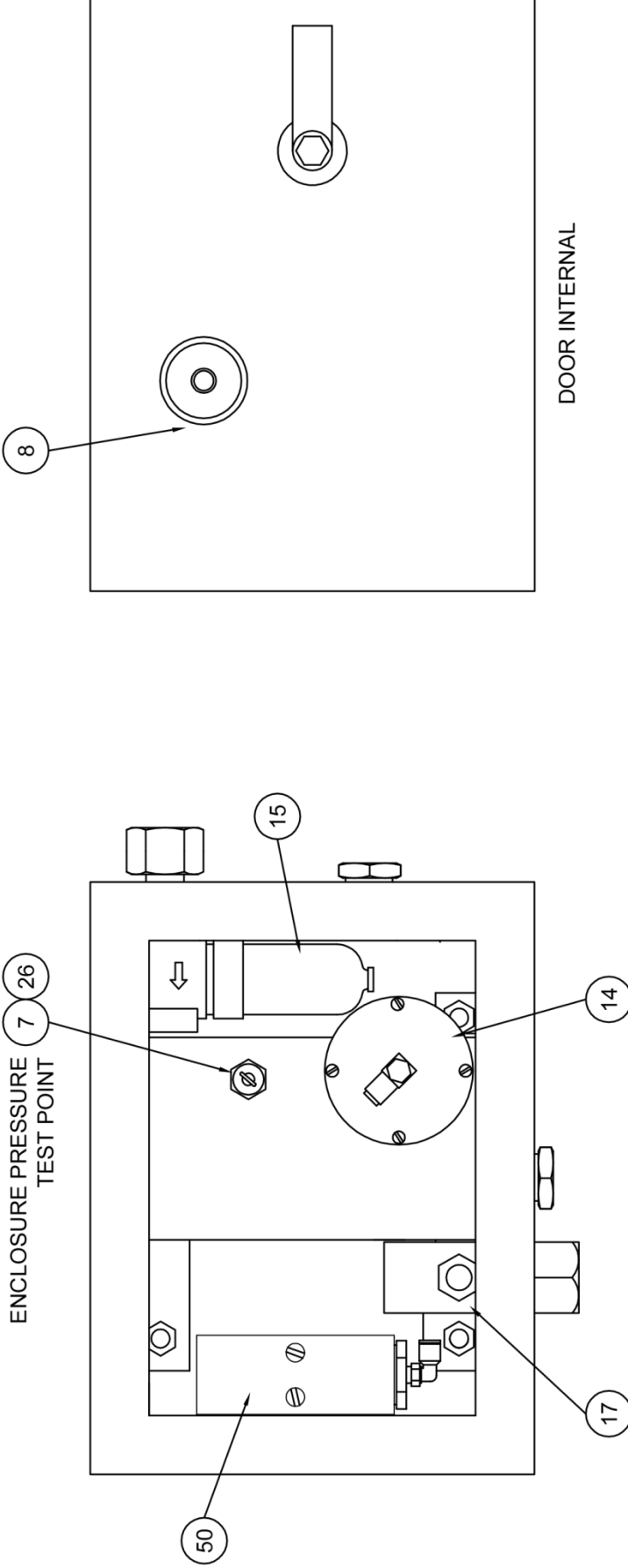


3rd ANGLE
PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

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DOOR INTERNAL

7	BLACK COLLAR (PLUGGED)
8	INDICATOR "ALARM/PRESSURIZED"
14	SENSOR, MINIMUM PRESSURE
15	FILTER, MANUAL DRAIN
17	FLOW CONTROL VALVE
26	PLUG 4mm (PE TEST POINT)
50	I.S. PRESSURE SWITCH (IS OPTION ONLY)

- NOTES:
1. APPLICABLE MODEL NUMBERS:
 1Z(Y)CF/ss/IS
 1Z(Y)CF/ss/PO
 1Z DP/ss/IS
 1Z DP/ss/PO
 1X DP/ss/PO

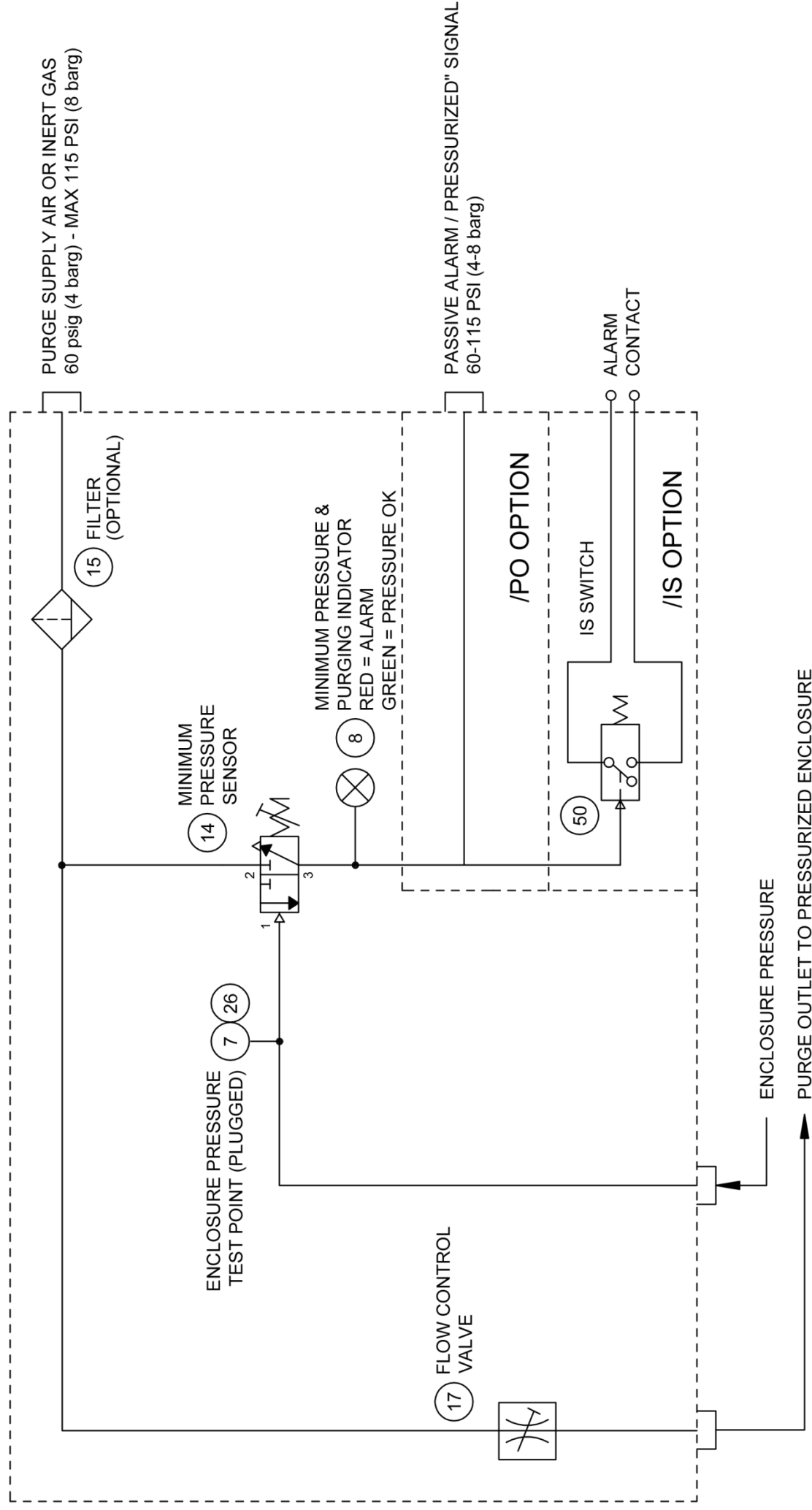
APPD	ACD	ISSUE:	1	3	4	5	MATERIAL	SURREY KT7 0RH UNITED KINGDOM		SCALE	NTS
CHKD	ACD	MOD. No:	DRAWN	3614	3935	4406		Expo Technologies Limited		DRAWING No.	MZ-1CF-01-CL
DRWN	BRD	DATE:	12/08/1994	18/9/03	17/2/05	8/2/08	FINISH	MINIPURGE Z(Y)CF/ss/IS & PO		SHEET No.	1 OF 1
		APPROVED:	ACD	BRD	PA0	MLC		CUSTOMER:			
		DRAWING STATUS:									

3rd ANGLE PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

UNSPECIFIED NO DEC PLACE ±0.5
TOLERANCES 1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

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APPD	BRD	ISSUE:	1	3	4	5	MATERIAL	SURREY KT7 0RH UNITED KINGDOM		SCALE	N.T.S	
CHKD	BRD	MOD. No:	DRAWN	3614	3935	4406		Expo Technologies Limited		DRAWING No.	MZ-1CF-01-CT	
DRWN	BRD	DATE:	01/04/1999	18/9/03	17/2/05	06/02/08	FINISH	MINIPURGE Z(Y)CF & DP		SHEET No.	1 OF 1	
	BRD	APPROVED:	BRD	BRD	BRD	MLC		JOB No: CUSTOMER:				
	BRD	DRAWING STATUS: CERT RELATED							TITLE			





DIMENSIONS IN mm
DO NOT SCALE

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Fig 1a Single channel interface circuit
e.g. "Y" or "Z" Pressurization Alarm circuit

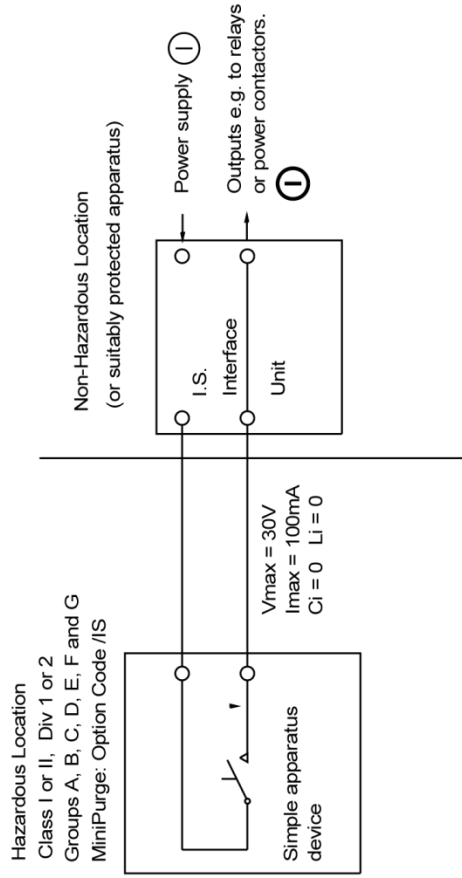
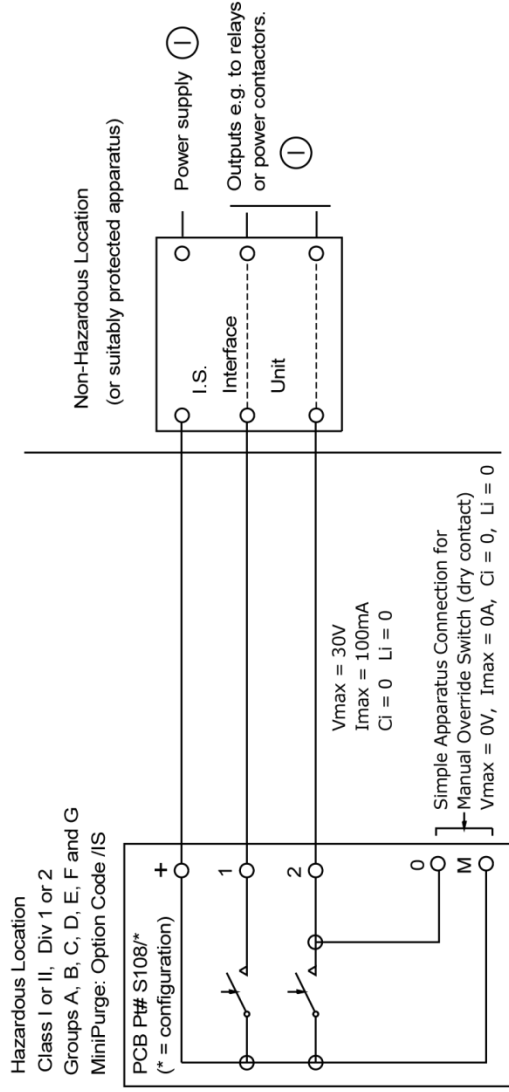


Fig 1b Multi-channel interface circuit
e.g. "X" Pressurization Alarm & Power Control



Notes for both Fig 1a and Fig 1b

- 1 Electrical equipment connected to associated apparatus should not use or generate more than 250 volts
- 2 Installation shall be in accordance with the manufacturer's instructions and the National Electrical Code (ANSI/NFPA 70)
- 3 For guidance on Installation see ANSI/ISA RP12.6. (Installation of IS Instrument Systems in Class I Hazardous Locations)

① 4 Voc or Vt of associated apparatus is less than Vmax

Isc or It of associated apparatus is less than Imax

Ci plus capacitance of interconnecting cabling is less than Ca of the associated apparatus

Li plus inductance of interconnecting cabling is less than La of the associated apparatus

5 "Simple Apparatus" is a device that will not generate or store more than 1.2V, 0.1A, 25mW or 20uJ

6 For Gas Groups A, B permitted Imax for I.S., for V peak = 30V is 101 mA

Alternatively: For Gas Group A, B with Vpeak = 19.2V Imax for I.S. is 350mA.

REV.	MOD NUMBER	APPROVED DATE	APPROVED	DRAWN DATE:	13/07/2007	THIS IS A CERTIFICATION DOCUMENT. ANY UNAUTHORISED CHANGE INVALIDATES APPROVAL.	
4	4330	13/7/2007	MLC	DRAWING STATUS:	Certified		
05	5076	01/11/2010	AMO	APP'D	CHK'D	DR'WN	
06	5297	20/07/2011	AMO	AMO	AMO	AMO	

Expo Technologies Limited		SURREY KIT 0RH UNITED KINGDOM	
TITLE MINIPURGE OPTION 'IS'		SCALE NTS	
JOB No:		REV: 06	
CUSTOMER:		DRAWING No. EP80-2-11	
		SHEET No. 1 OF 1	

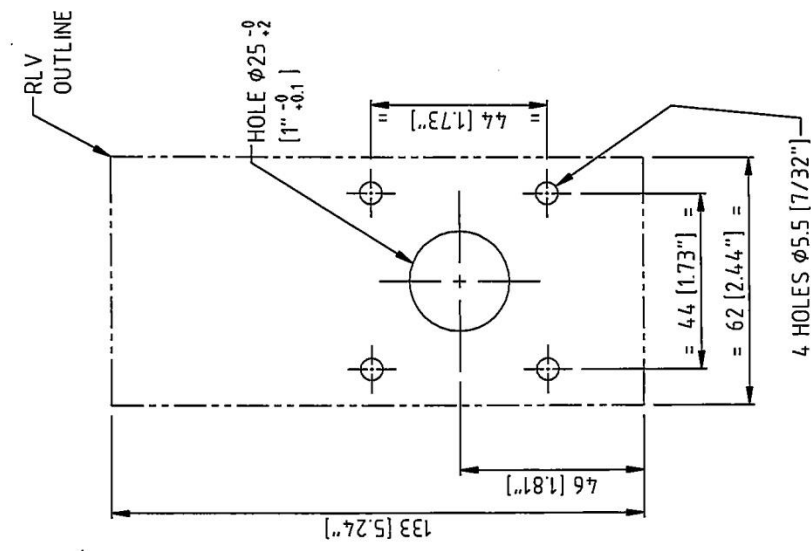


3rd ANGLE PROJECTION
 DIMENSIONS IN mm
 DO NOT SCALE

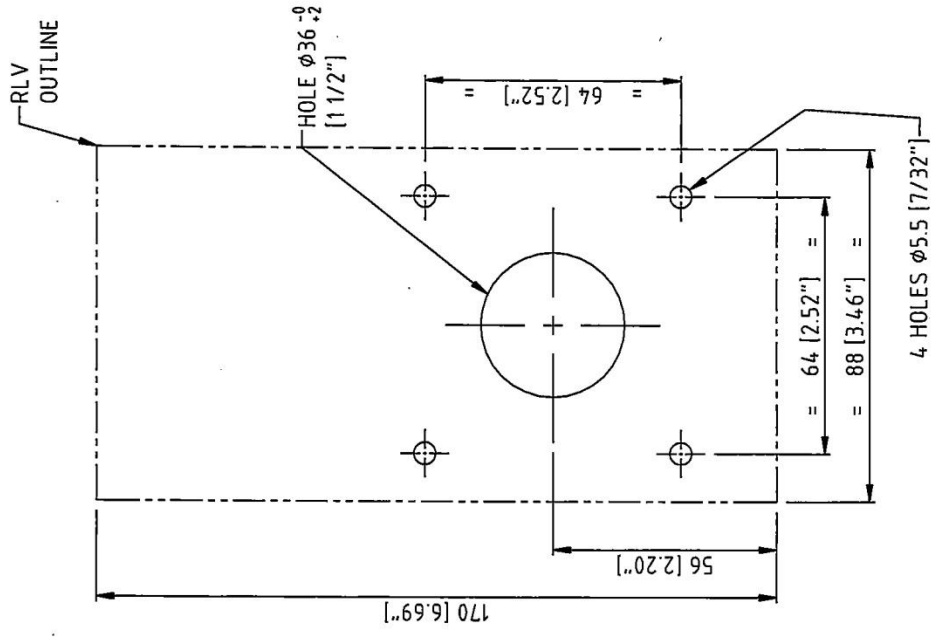
UNSPECIFIED NO DEC PLACE ±0.5
 TOLERANCES 1 DEC PLACE ±0.2
 2 DEC PLACE ±0.1
 FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

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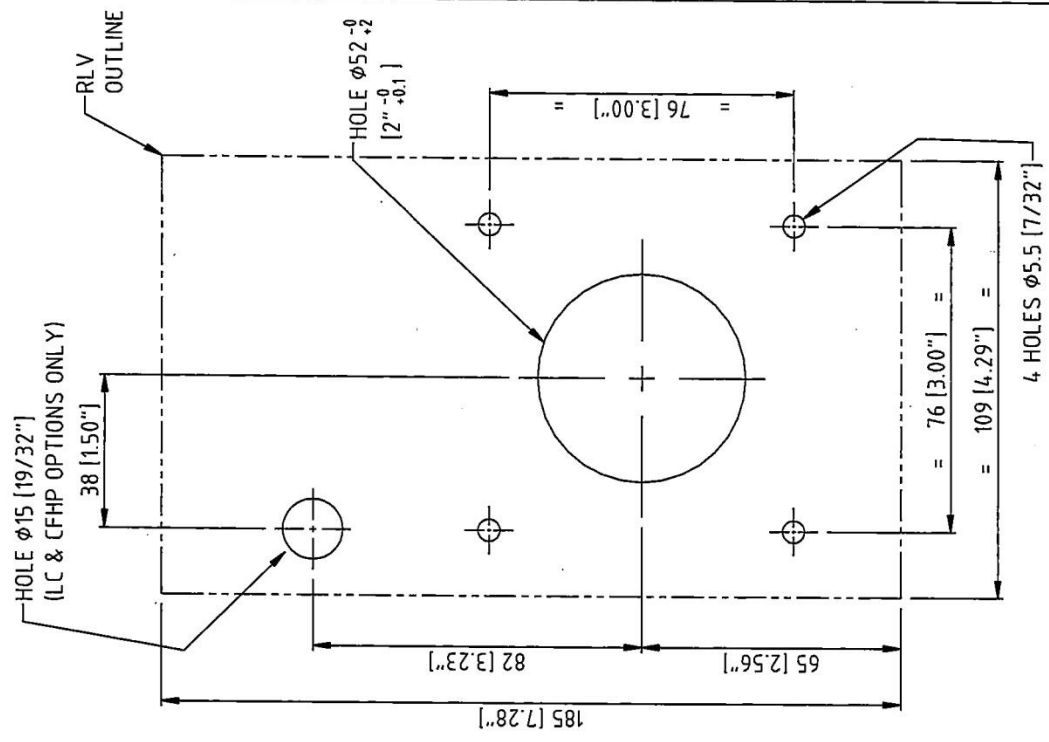
DETAIL 'A'
 RLV25 CUTOUT



DETAIL 'B'
 RLV36 CUTOUT



DETAIL 'C'
 RLV52 CUTOUT



APPD	PAO	ISSUE:	1	3	4	5	MATERIAL	SURREY, KT7 0RH UNITED KINGDOM	SCALE N.T.S
CHK'D	PAO	MOD. No:	DRAWN	3416	3715	4406	FINISH		
DRWN	MC	DATE:	14.03.2001	06.11.2002	22.04.2004	08/02/08		Expo Technologies Limited TITLE RLV25&RLV36 for 1&2 Z(Y)CF SYSTEM JOB No: CUSTOMER:	DRAWING No. XSD-RTD0-001 SHEET No. 2 OF 2
		APPROVED:	PAO	PAO	PAO	1000			
DRAWING STATUS: CERT RELATED									



IECEX Certificate of Conformity



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.:8
 Status: **Current**
 Date of Issue: 2012-11-27 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. 8 (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)

Electrical Apparatus:
Optional accessory:

MiniPurge Purge Controller

Type of Protection:

Pressurised

Marking:

Standard versions:
(Ta -20°C to +55°C)

Ex [px] IIC T6 Gb
Ex [py] IIC T6 Gb
Ex [p] IIC T85°C Db or
Ex [pz Gc] IIC T6 Gb
Ex [p De] IIC T85°C Db
Ex [px] Ia IIC T6 Gb
Ex [p] Ia IIC T95°C Db
Ex [px] dem IIC T3 or T4 Gb
Ex [p] IIC T200°C or T135°C Db
Ex [px] dem Ia IIC T3 or T4 Gb
Ex [p] Ia IIC T200°C or T135°C Db

Standard/IET versions:
(Ta -20°C to +55°C)

Low temp. versions:
(Ta -50°C to +55°C)

Low temp./JET versions:
(Ta -50°C to +55°C)

C Eliaby

Deputy Certification Manager

Approved for issue on behalf of the IECEx
Certification Body:

Position:

Signature:
(for printed version)

Date:

C. Eliaby
2012-11-27

- This certificate and schedule may only be reproduced in full.
- This certificate is not transferable and remains the property of the issuing body.
- The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

SIRA Certification Service
 Rake Lane
 Eccleston
 Chester
 CH4 9JN
 United Kingdom



Certificate No.: IECEx SIR 07.0027X

Date of Issue: 2012-11-27

Issue No.: 6

Page 2 of 4

Manufacturer:

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

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 : 2007-02 Explosive Atmospheres - Part 2 Equipment protection by pressurized enclosure 'p'
 Edition: 5
IEC 61241-4 : 2001 Electrical apparatus for use in the presence of combustible dust - Part 4: Type of protection 'pD'
 Edition: 1

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/EXTR11.0003/00

Quality Assessment Report:

GB/SIR/QAR07.0012/00 GB/SIR/QAR07.0012/04
 GB/SIR/QAR07.0012/03



IECEx Certificate of Conformity



IECEx Certificate of Conformity

Certificate No.:

IECEx SIR 07.0027X

Date of Issue:

2012-11-27

Issue No.: 6

Page 3 of 4

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

See Annexes for more information.

CONDITIONS OF CERTIFICATION: 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 safety related system that ensures that it cannot be energised if the temperature of the air inlet 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 (Note: These RTDs have not been assessed as a safety related device).

Certificate No.:

IECEx SIR 07.0027X

Date of Issue:

2012-11-27

Issue No.: 6

Page 4 of 4

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

Issue 1 – this issue introduced the following changes:	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:	
1 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.	
2 The dust marking was changed to be consistent with the marking for gases and vapours.	
3 The introduction of a high pressure sensor for the LC option.	
Issue 3 – this issue introduced the following changes:	
1 The marking section was amended to add information that had been omitted in error.	
Issue 4 – this issue introduced the following changes:	
1 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:	
1 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 changes:	
1 issued to allow GB/SIR/ExTR12.02517/00 to be replaced by GB/SIR/ExTR12.0251/01	

The MiniPurge control unit may be supplied within a heated enclosure to permit the use of the system within an ambient temperature down to -50°C. The MiniPurge option pD is for use in combustible dust

Model Number Designation for ATEX approved MiniPurge systems	
a	Size of 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
CHFP	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
AA	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

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, RLV36, RLV52, 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. 1/4" 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 version shall appear in the product marking applied to outer stainless 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.



EC TYPE-EXAMINATION CERTIFICATE

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC
 2 Certificate Number: **Sira 01ATEX1295X** Issue: **8**
 3 **Purge Controllers: Sub-MiniPurge, MiniPurge, Super-MiniPurge, Super-MiniPurge 1800/3500/7000/7000X**
 4 **EXPO Technologies Limited**
 5 Address: Unit 2, The Summit, Hanworth Road, Sunbury on Thames, Surrey TW16 5DB UK
 6 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
 7 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

8 The examination and test results are recorded in the confidential reports listed in Section 14.2.
 9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:
 IEC 60079-0:2011 EN 60079-2:2007 EN 61241-4: 2006

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
 11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.
 12 The marking of the equipment shall include the following:

Standard versions

II 2(2) GD
 Ex [px] IIC T6 Gb
 Ex [py] IIC T6 Gb
 Ex [p] IIC T85°C Db
 (Ta -20°C to +55°C)
 II 2(3) GD
 Ex [pz Gc] IIC T6 Gb
 Ex [p Dc] IIIC T85°C Db
 (Ta -20°C to +55°C)

Standard /ET versions

II 2(2) GD
 Ex [px] Ia IIC T6 Gb
 Ex [p] Ia IIIC T95°C Db
 (Ta -20°C to +55°C)

Low temperature /ET versions

II 2(2) GD
 Ex [px] dem Ia IIC T3 or T4 Gb
 Ex [p] Ia IIIC T200°C or T135°C Db
 (Ta -50°C to +55°C)

Project Number 29097

C Eliaby
 Deputy Certification Manager

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1295X
 Issue 8

DESCRIPTION OF EQUIPMENT

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
- GFHP-Continuous (lower) flow after initial high purge

The MiniPurge control unit may be supplied within a heated enclosure to permit the use of the system within an ambient temperature down to -50°C.

The MiniPurge option pD is for use in combustible dust.

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, RLV36, RLV52, 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. 1/4" 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 pressurized 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.

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1295X
Issue 8

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
AA	Option codes (Added only if used)
AC	Active Alarm output fitted.
AO	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

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1295X
Issue 8

Variation 1 This variation introduced the following changes:

- The purge controller to be fitted inside an additional, heated, stainless steel enclosure that allows it to be used down to -50°C.

The heater (500 W maximum) is manufactured by Intertec-Hess GmbH and coded Ex d m IIC T3 (max) under PTB 02ATEX1041X. If the outer enclosure is reduced in size the power of the heater may be reduced in proportion to the reduction in surface area. Other alternative heaters may be used as a replacement if they are suitably certified, carry the same or greater ambient temperature range, occupy the same or smaller physical space, have the same certification code and have the same or more restrictive Temperature Class.

The enclosure is made from 1.5mm or 2.5 mm thick stainless or mild steel painted and the lid is made from 1.5 mm thick stainless steel, lined with 38 mm thick insulation, or other materials with equivalent insulating properties. The purge inlet, purge outlet and pressure sensing lines are similarly insulated. The door may optionally be hinged with quick release catches, these will be fitted with a padlock. An enclosure breather tube is fitted to help prevent condensation. A plastic clear viewing window may optionally be fitted to the door.

RTDs are fitted to the air inlet pipe-work and inside the purge controller enclosure.

An Ex e terminal box is provided within the main enclosure for connection of the heater leads. This polyester box is manufactured by Bartec and coded Ex e II T6 under BAS 98ATEX3008X. Other alternative ATEX terminal boxes may be used as a replacement if they are suitably certified, carry the same or greater ambient temperature range, occupy the same or smaller physical space, have the same certification code and have the same Temperature Class.

Any suitably ATEX, Category 2 approved cable gland may be used, if it can be used with the ambient temperature range.

- A change of the Applicant's name on the certificate and the substitution of the new name for the old name on the approved label affixed to the purge controllers:

Old Name:
Expo Telektron Safety System Limited

New name:
Expo Technologies Limited

Variation 2 This variation introduced the following change:

- To permit the pressurisation of enclosures for the exclusion of combustible dusts in accordance with IEC61241-4:2001 and modification of the marking to include one of the following:

[Ex pD] II T200°C 21 (Ta = -20°C to +55°C) - (used with the low temperature versions)
[Ex pD] II T85°C 21 (Ta = -20°C to +55°C) - (used with the standard temperature versions)

The ATEX coding is modified to: II 2(2) G D

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1295X
Issue 8

Variation 3 - This variation introduced the following changes:

- Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents originally listed in section 9, EN 50014:1997 (amendments A1 to A2) and EN 50016:1995, were replaced by EN 60079-0:2006, EN 60079-1:2004, EN 61241-0:2006 and EN 61241-1:2006, the markings in section 12 were updated accordingly.
- The removal of special conditions for safe use that were not specifically associated with the equipment covered by this certificate.

Variation 4 - This variation introduced the following changes:

- To permit the inclusion of the following coding for the Low Temperature MiniPurge Enclosure:
Ex [p] dem IIC T4
Ex pb II Z1 T135°C
(Ta -50°C to +55°C)

Variation 5 - This variation introduced the following changes:

- 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 'a' marking when the ETM is fitted.
- The dust marking was changed to be consistent with the marking for gases and vapours.
- The introduction of a high pressure sensor for the LC option.

Variation 6 - This variation introduced the following changes:

- Following appropriate re-assessment to demonstrate compliance with the requirements of the latest EN 60079 series of standards, the documents previously listed in section 9, EN 60079-0:2006 and EN 60079-2:2004 were replaced by those currently listed (EN 61241-0:2006 was removed as this is incorporated into the current version of 60079-0), the markings in section 12 were updated accordingly and a new condition of certification was added.

Variation 7 - This variation introduced the following changes:

- 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.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexes.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	3 July 2002	R53A7169A	The release of prime certificate.
1	29 March 2004	R53V11342A	The introduction of Variation 1.
2	30 September 2004	R51A11080A	The introduction of Variation 2.
3	19 September 2006	R51A15629A	The re-issue of Variation 2 to include the changes described in report number R51A15629A.

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1295X
Issue 8

Issue	Date	Report no.	Comment
4	7 June 2007	R51L15966B	This Issue covers the following changes: <ul style="list-style-type: none"> All previously issued certification was rationalised into a single certificate, Issue 4, Issues 0 to 3 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format. The introduction of Variation 3.
5	18 February 2009	R51L19695A	The introduction of Variation 4.
6	22 December 2010	R23665A/00	This Issue covers the following changes: <ul style="list-style-type: none"> This certificate history was modified to recognise that Variation 2 was re-issued, subsequent Variations have therefore been re-numbered. The introduction of Variation 5.
7	07 December 2011	R25983A/00	The introduction of Variation 6.
8	05 October 2012	R29097A/00	The introduction of Variation 7.

15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

- When using the AO, AS and DT options, the recommendations for the additional requirements of Ex p apparatus contained within EN 60079-14 shall be applied.
- 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.
- 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.
- This MiniPurge Control Unit shall be incorporated into equipment and the appropriate Conformity Assessment Procedures applied to the combination as defined by Directive 94/9/EC. This certificate does not cover the combination.
- The purge controller, low temperature version, shall be protected by a safety related system that ensures that it cannot be energised if the temperature of the air inlet 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, i.e. a level of operational safety of Cat 3 according to EN 954-1 for ATEX Category 2 (Zone 1) applications; note that these RTDs have not been assessed as a safety related device in accordance with EHSR 1.5 of Directive 94/9/EC.
- ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (EHSRs)**
The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed reports listed in Section 14.2.
- CONDITIONS OF CERTIFICATION**
17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
17.2 Holders of Type Examination Certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1295X
Issue 8

- 17.3 The switches incorporated in the PA option shall be suitably certified for Category 2.
17.4 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.

- 17.5 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.

- 17.6 The certification code that is appropriate to Purge Controllers low temperature version shall appear in the product marking applied to outer stainless steel enclosure.

- 17.7 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.

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Certificate Annexe

Certificate Number: Sira 01ATEX1295X

Equipment:

Purge Controllers
Sub-MiniPurge, MiniPurge, Super-MiniPurge, Super-MiniPurge, CERTIFICATION
Super-MiniPurge 1800/3500/7000/7000X

Applicant: EXPO Technologies Limited

Issue 0 (The drawings associated with this issue were replaced by those listed in Issue 4)

Number	Sheet	Rev.	Date	Description
SD7281	1 to 4	3	02 Jul 02	MiniPurge ATEX Certification Labelling
SD7282	1 to 2	2	21 May 01	MiniPurge ATEX Certification Type Numbering Scheme
EP99-2-17	1 of 1	1	21 Sep 00	MiniPurge, Continuous Flow with /HP Sensor - Schematic diagram
EP99-7-7	1 of 1	1	21 Sep 00	RLV, outlet orifice
EP99-7-9	1 of 1	1	21 Sep 00	Outlet Valve Control Circuit Diagram

Issue 1 (The drawings associated with this issue were replaced by those listed in Issue 4)

Number	Sheet	Rev.	Date	Description
SD7448	1 of 1	3	22 March 04	Low Temperature Housing - General Arrangement

Issue 2 (The drawings associated with this issue were replaced by those listed in Issue 4)

Number	Sheet	Rev.	Date	Description
SD7281*	1 to 5	4	17 Dec 03	Certification label
SD7449	1 of 1	1	18 Dec 03	Low temperature housing wiring certification drawing.

* Modified by Sira 30 September 2004

Issue 3 (The drawings associated with this issue were replaced by those listed in Issue 4)

Number	Sheet	Rev.	Date	Description
SD7281	1 to 5	5	30 Aug 06	Certification label

Issue 4

Number	Sheet	Rev.	Date	Description
EP99-3-1	1 of 1	02	15 Mar 07	MiniPurge Control Unit - General Assembly
EP99-2-1	1 of 1	03	09 Jul 07	Schematic - Type x Leakage Compensation
EP99-2-3	1 of 1	02	15 Mar 07	Sequence Diagram - Type x Leakage Compensation
EP99-2-2	1 of 1	02	15 Mar 07	Schematic - Type x Continuous Flow
EP99-2-7	1 of 1	02	15 Mar 07	Schematic - Separate Supply and Mechanical Timer
EP99-2-8	1 of 1	02	15 Mar 07	Schematic - Delay Before Trip and On/Off
EP99-2-9	1 of 1	02	15 Mar 07	Schematic - Twin Output and Manual Override
EP99-2-10	1 of 1	03	15 Mar 07	Schematic - Pressure Control Leakage Compensation
EP99-2-11	1 of 1	03	15 Mar 07	Internal "IS" Switches
EP99-2-12	1 of 1	02	15 Mar 07	Schematic - Containment System and Secondary pressurisation
EP99-2-14	1 of 1	02	15 Mar 07	Schematic - Continuous Flow with 2 Flow Rates
EP99-2-17	1 of 1	02	15 Mar 07	Schematic - Continuous Flow with High Pressure
EP99-2-16	1 of 1	02	15 Mar 07	Schematic - Outlet Valve Control
SD7533	1 of 1	01	15 Mar 07	Schematic - Dust Protection
SD7535	1 of 1	01	15 Mar 07	Spark Arrestor
SD7536	1 of 1	01	18 Apr 07	Differential Flow Monitor
SD7538	1 of 1	01	27 Mar 07	Continuous Flow Outlet Orifice
SD7449	1 of 1	02	15 Mar 07	Wiring Diagram - Low temperature
SD7500	1 of 1	01	25 Apr 07	Outlet Orifice Closing Device
SD7448	1 of 1	04	15 Mar 07	Low Temperature Housing
SD7281	1 to 2	06	20 Feb 07	Certification Label Details
SD7282	1 to 2	03	20 Feb 07	MiniPurge Data Sheet

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Certificate Annexes



Certificate Number: Sira 01ATEX1295X

Equipment: Purge Controllers
Sub-MiniPurge, MiniPurge, Super-MiniPurge,
Super-MiniPurge 1800/3500/7000/7000X

Applicant: EXPO Technologies Limited

Number	Sheet	Rev.	Date	Description
SD7537	1 to 3	01	20 Feb 07	Fault Evaluation
EP99-7-9	1 of 2	02	15 Mar 07	Outlet Valve Circuit N/O
EP99-7-9	2 of 2	01	15 Mar 07	Outlet Control Valve N/C
SD7531	1 of 1	02	09 Jul 07	Schematic – Type Z or Y leakage compensation
SD7532	1 of 1	01	15 Mar 07	Schematic Type Z or Y Continuous Flow
EP99-2-4	1 of 1	02	15 Mar 07	Sequence Diagram – Type X Continuous Flow
EP99-2-5	1 of 1	02	15 Mar 07	Schematic – Alarm only and Alarm Action Selector
EP99-2-6	1 of 1	02	15 Mar 07	Schematic – Door Switch Active Alarm and Alarm Cancel
SD7555	1 to 4	01	05 Jul 07	RLV Configurations
SD7556	1 of 2	01	09 Jul 07	Alternative Z&Y LC System
SD7556	2 of 2	01	09 Jul 07	Alternative Z&Y LC System

Issue 5

Number	Sheets	Rev.	Date (Sira stamp)	Description
SD7281	1 to 2	7	12 Feb 09	Minipurge ATEX/IECEx Certification Label
SD7448	1 of 1	05	12 Feb 09	Minipurge Low Temperature Housing

Issue 6

Number	Sheets	Rev.	Date (Sira stamp)	Description
SD7281	1 to 2	8	23 Dec 10	Minipurge ATEX/IECEx Certification Label
SD7282	1 to 2	4	21 Dec 10	Minipurge Data Sheet
SD7913	1 of 1	2	21 Dec 10	Minipurge electronic timer
SD7914	1 of 1	2	21 Dec 10	Minipurge HP sensor

Issue 7

Number	Sheets	Rev.	Date (Sira stamp)	Description
SD7448	1 of 1	6	23 Nov 11	Minipurge Low Temperature Housing
SD7282	1 & 2	5	23 Nov 11	Minipurge Data Sheets
SD7281	1 to 3	9	23 Nov 11	Minipurge ATEX/IECEx Certification Label
SD7533	1 of 1	2	23 Nov 11	Minipurge Dust Protection Schematic

Issue 8

Number	Sheets	Rev.	Date (Sira stamp)	Title
SD7281	1 to 3	10	05 Oct 12	Minipurge Certification Label

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Certificado de Conformidade

Certificate of Compliance • Certificado de Conformidade

Certificado nº: TÜV 12.1462 X

Certificate #/Certificado nº

Válido até: 28/09/2015

Validity Term/Fecha de Vencimiento

CONTROLADOR DE PURGA

MiniPurge

EXPO TECHNOLOGIES LTD.
Summer Road, Thames Ditton
Surrey KT7 0RH – United Kingdom

EXPO TECHNOLOGIES LTD.
Summer Road, Thames Ditton
Surrey KT7 0RH – United Kingdom

**ABNT NBR IEC 60079-0:2008, ABNT NBR IEC 60079-2:2009,
ABNT NBR IEC 60079-11:2009 e ABNT NBR IEC 60529:2009.**

SIRA Certification Service.

**GB/SIR/EXTR07.0046/00 de 08/09/2009;
GB/SIR/EXTR09.0021/00 de 12/02/2009;
GB/SIR/EXTR11.0003/00 de 12/2010;
GB/SIR/EXTR11.0304/00 de 11/2011.**

Certificado emitido com base no Modelo com Avaliação do Sistema de Gestão da Qualidade do Fabricante e Ensaio no Produto, conforme cláusula 6.1 do Regulamento de Avaliação da Conformidade, anexo à Portaria nº 179 do INMETRO, publicada em 18 de maio de 2010.

INMETRO nº 179 de 18/05/2010.

São Paulo, 28 de Setembro de 2012.

Produto:
Product/Producto

Tipo / Modelo:
Type - Model/Tipo - Modelo

Solicitante:
Applicant/Solicitante

Fabricante:
Manufacturer/Fabricante

Normas Técnicas:
Standards/Normas

Laboratório de Ensaio:
Testing Laboratory/Laboratorio de Ensayo

Nº do Relatório de Ensaio:
Test Report Number/Nº del Informe de Ensayo

Observações:
Notes/Observaciones

Portaria:
Governmental Regulation/Regulación Oficial

Data de Emissão:
Date of Issue/Fecha de Otorgamiento

João Gustavo L. Junqueira
Gerente Técnico
Technical Manager / Gerente Técnico

Igor Moreno
Gerente de Certificação
Certification Manager / Gerente de Certificación



Certificado de Conformidade

Certificate of Compliance • Certificado de Conformidade

Certificado nº: TÜV 12.1462 X

Certificate #/Certificado nº

Válido até: 28/09/2015

Validity Term/Fecha de Vencimiento

Especificações:

Os controladores de purga modelo MiniPurge são dispositivos pneumáticos, destinados a fornecer uma determinada vazão de gás de purga por um tempo predeterminado para equipamentos elétricos com o tipo de proteção Ex p. Esse controlador de purga possui também uma unidade de interface onde estão instalados os contatos para a verificação do status da pressurização (Certificado de Conformidade AEX-13099).

As unidades de controle MiniPurge fornecem um dos seguintes quatro métodos de operação de purga.

- LC - Compensação de perda após purga inicial elevada;
- CF - Fluxo contínuo (mesma vazão durante e após a purga);
- CF2 - Dois sistemas de fluxo CF com uma taxa de purga inicial de alta apenas em um orifício;
- CFHP - Fluxo (mais baixo) contínuo após purga inicial elevada.

Válvula de Alívio

O controlador de purga MiniPurge é fornecido com uma válvula de alívio de sobrepressão, para ser instalada no equipamento Ex p para evitar uma sobrepressão interna acima da sobrepressão máxima do equipamento. Os 14 modelos existentes de válvula estão relacionados às suas dimensões nominais em mm, de RLV3 a RLV200.

A saída de cada válvula de alívio é equipada com uma barreira contra centelhas, que existem em quatro tipos opcionais como segue: Espuma metálica formando caminhos tortuosos com curvas de pelo menos 4 x 90° ou 2 x 180°, malha de aço inoxidável com multi-camadas e malha tricotada.

Orifício de saída

Três tipos de orifício são utilizados:

- Orifícios roscados (ex.: 1/4" NPT ou 2" BSP) com uma barreira contra centelhas embutida. Estes são selecionados para manter a pressão desejada dentro do equipamento Ex p quando utilizado com as opções de fluxo contínuo. A designação de cada orifício de saída indica o diâmetro nominal de entrada. As denominações são as seguintes: SA3, SA6, SA9, SA12, SA19, SA25, SA32, SA38 e SA50.
- Furos planos no disco da válvula de alívio, dimensionados de acordo com a vazão necessária.
- Orifício substituível tipo SAU **.

Regra de formação do modelo:

Modelo: a b cc / mm / código de opções

- a = Tamanho ou Capacidade
 - 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 = Tipo de pressurização
 - X = Pressurização X
 - Y = Pressurização Y
 - Z = Pressurização Z

Certificado de Conformidade

Certificate of Compliance • Certificado de Conformidade

Certificado nº: TÜV 12.1462 X

Certificate #/Certificado nº

Válido até: 28/09/2015

Validity Term/Fecha de Vencimiento

mm = Material do invólucro da unidade de controle
al = Liga de alumínio
cs = Aço carbono, pintado
ss = Aço inoxidável
bp = Somente placa traseira
co = Somente chassis
pm = Montagem em painel
nm = Não metálico

ac = Ação após purga inicial
c = Compensação de perda após purga inicial elevada
f = Fluxo contínuo (mesma vazão durante e após a purga).
f2 = Dois sistema de fluxo CF com uma taxa de purga inicial de alta apenas em um orifício.
fhp = Fluxo (mais baixo) contínuo após purga inicial elevada
p = Proteção contra poeira (somente pressurização)

Código de opções (Adicionado somente se utilizado)

AA = Equipado com saída de alarme ativa	AC = Circuito de cancelamento de alarme
AO = "Somente Alarme" em falha de fluxo ou pressão	AS = "Alarme" falha de fluxo ou pressão, válvula seletora
CS = Monitor do sistema de contenção	DS = Equipado com sensor de intertravamento para abertura da porta
DT = Temporizador de desligamento (Delayed Trip) depois de uma falha de pressão ou fluxo	DXXX = Projeto especial para as taxas de fluxo específico
ET = Temporizador eletrônico	FM = Equipado com medidor(es) de vazão
HP = Fluxo contínuo com sensor de pressão alta	IS = Chaves internas adequadas para circuitos Ex I
MO = Equipado com chave manual de by-pass	MT = Purga mecânica ou temporizador de atraso
OA = Chave liga/desliga controlando o gás de proteção e suprimento de ar da unidade de controle	OB = Chave liga/desliga para controlar o suprimento de ar da unidade de controle
OC = Chave liga/desliga controlando somente o fornecimento de gás de proteção	OS = Saída (Orifício), válvula seletora
OV = Válvula de saída, acionamento pneumático	PA = Switch(es) "Ex" embutido(s), com/sem caixa de ligação "Ex"
PC = Válvula de controle para compensação de perda (CLAPS System)	PO = Sinais de saída pneumáticos para controle de alimentação e alarme
SP = Pressurização secundária, opções de alimentação	SS = Alimentação separada para o sistema de controle lógico e para gás de proteção do invólucro
TW = Duas (ou mais) saídas para dois ou mais invólucros pressurizados purgados em paralelo	

Análise e ensaios realizados:

As análises e os ensaios realizados encontram-se no relatório técnico nº AEX-13098.

Documentação descritiva do produto:

- Relatório de ensaios Sira nº GB/SIR/EXTR07.0046/00 de 06/09/2007;
- Relatório de ensaios Sira nº GB/SIR/EXTR09.0021/00 de 12/02/2009;
- Relatório de ensaios Sira nº GB/SIR/EXTR11.0003/00 de 12/2010;
- Relatório de ensaios Sira nº GB/SIR/EXTR11.0304/00 de 11/2011.

Certificado de Conformidade

Certificate of Compliance • Certificado de Conformidade

Certificado nº: TÜV 12.1462 X

Certificate #/Certificado nº

Válido até: 28/09/2015

Validity Term/Fecha de Vencimiento

Documento	Pág.	Descrição	Rev.	Data
EP99-3-1	1	Minipurge Control Unit - GA	2	15/03/2007
EP99-2-1	1	Schematic - Type "X" Leakage Compensation	3	09/07/2007
EP99-2-3	1	Sequence Diagram - Minip Type X LC systems	2	15/03/2007
EP99-2-2	1	Minipurge Type "X" Continuous Flow	2	15/03/2007
EP99-2-4	1	Sequence Diagram - Minip Type X CF systems	2	15/03/2007
EP99-2-5	1	Alarm Only "AO" and Alarm Action Selector "AS"	2	15/03/2007
EP99-2-6	1	Door switch "DS", Active Alarm "AA" and Alarm cancel "AC"	2	15/03/2007
EP99-2-7	1	Separate Supply "SS" and Mech Timer "MT"	2	15/03/2007
EP99-2-8	1	Delay before trip "DT" and On/Off controls	2	15/03/2007
EP99-2-9	1	Twin Output "TW" and Manual Override "MO"	2	15/03/2007
EP99-2-10	1	Pressure Control Leakage Compensation "PC"	3	15/03/2007
EP99-2-11	1	Internal Ex switches "IS"	3	15/03/2007
EP99-2-12	1	Options "CS" and "Sp"	2	15/03/2007
EP99-2-14	1	Minipurge CF2 and CFHP	2	15/03/2007
EP99-2-16	1	Outlet Selector Valve, Oprtion "OS"	2	15/03/2007
EP99-2-17	1	Minipurge Continuous Flow with HP sensor	2	15/03/2007
EP99-7-9	1 de 2	Outlet Valve Circuit N/O	2	15/03/2007
EP99-7-9	2 de 2	Outlet Valve Circuit N/C	1	15/03/2007
SD7531	1	Minipurge type "Z" or "Y" Leakage Compensation	2	09/07/2007
SD7532	1	Minipurge type "Z" or "Y" Continuous Flow	1	15/03/2007
SD7533	1	Minipurge, Dust Protection schematic	2	14/11/2011
SD7555	4	RLV Configurations	1	05/07/2007
SD7535	1	Spark arrester	1	15/03/2007
SD7536	1	Differential Flow Monitor	1	18/04/2007
SD7538	1	CF Outlet Orifice	1	27/03/2007
SD7500	1	Outlet Orifice Closure Device	1	25/04/2007
SD7537	3	Minipurge Fault Evaluation	1	20/02/2007
SD7556	2	Alternative Z&Y LC system	1	09/07/2007
SD7282	2	Minipurge data sheet	5	14/11/2011
SD7913	1	Minipurge electronic timer	2	17/12/2010
SD7914	1	Minipurge HP sensor	2	14/12/2010
SD7649	2	Minipurge TÜV Certification Label	6	26/09/2012
SD7652	12	Minipurge Portuguese Handbook Extracts	4	25/09/2012



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Válido até: 28/09/2015

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Marcação:

O controlador de purga modelo MiniPurge foi aprovado nos ensaios e análise, nos termos das normas adotadas, devendo receber a marcação, levando-se em consideração o item observações.

Ex [px] IIC T6 Gb
Ex [py] IIC T6 Gb
Ex [p] IIIC T85 °C Db
Ex [pz Gc] IIC T6 Gb
Ex [p Dc] IIIC T85 °C Db
-20 °C ≤ T_a ≤ +55 °C

Versão com opção ET

Ex [px] ia IIC T6 Gb
Ex [pb] ia IIIC T95 °C Db
-20 °C ≤ T_a ≤ +55 °C

Observações:

1. O número do certificado é finalizado pela letra X para indicar as seguintes restrições no uso:
Quando o controlador de purga MiniPurge é incorporado a um equipamento, as implicações da operação dos indicadores e/ou sinais opcionais de alarme e a aplicação das etiquetas apropriadas de aviso e identificação devem ser incluídas na avaliação do equipamento.
O instalador/usuário deve garantir que o controlador de purga MiniPurge seja instalado de acordo com o certificado do equipamento que cobre a combinação do invólucro pressurizado com o controlador de purga MiniPurge.
Os valores dos parâmetros de segurança devem ser ajustados de acordo com o certificado do equipamento que cobre a combinação do invólucro pressurizado e do controlador de purga MiniPurge.
Ao utilizar as opções AO, AS e DT, as recomendações para os requisitos adicionais do equipamento Ex p contido na ABNT NBR IEC 60079-14 devem ser aplicadas.
2. Este Certificado de Conformidade é válido para os produtos de modelo e tipo idêntico ao protótipo ensaiado. Qualquer modificação de projeto ou utilização de componentes e materiais diferentes daqueles descritos na documentação deste processo, sem autorização prévia da TÜV Rheinland, invalidará o certificado.
3. Os produtos devem ostentar, na sua superfície externa e em local visível, a Marca de Conformidade e as características técnicas da mesma de acordo com as especificações da ABNT NBR IEC 60079-0 / ABNT NBR IEC 60079-2 / ABNT NBR IEC 60079-11 e Regulamento de Avaliação de Conformidade, anexo à Portaria nº 179 do INMETRO, publicada em 18 de maio de 2010. Esta marcação deve ser legível e durável, levando-se em conta possível corrosão química.



Certificado de Conformidade

Certificate of Compliance • Certificado de Conformidade

Certificado nº: TÜV 12.1462 X

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Válido até: 28/09/2015

Validity Term/Fecha de Vencimiento

4. As atividades de instalação, inspeção, manutenção, reparo, revisão e recuperação dos produtos são de responsabilidade do usuário e devem ser executadas de acordo com os requisitos das normas técnicas vigentes e com as recomendações do fabricante.

Histórico:

28/09/2010 - Certificação inicial - Efetivação:
25/04/2012 - Adequação do certificado AEX-13098-X à Portaria nº 179.

aXLCbc. Mini-X-Purge Type LC Control System.
 APX / 1 / 1 / ABCD — ML384 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6.
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, ET, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.
 Note: All LC Systems must include an RLV Series Relief Valve matched to the specific control system.

aYCFbc. Mini-Y-Purge Type CF Control System.
 APY / 1 / 1 / ABCD — ML383 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6.
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.
 Note: All CF Systems must include an RLV Series Relief Valve matched to the specific control system with either an internal or separate Outlet Orifice.

aYCFHPbc. Mini-Y-Purge Type CFHP Control System.
 APY / 1 / 1 / ABCD — ML384 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6.
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.
 Note: All CFHP Systems must include an RLV Series Relief Valve matched to the specific control system with either an internal or separate Outlet Orifice.

aYDPbc. Mini-Y-Purge Type DP Control System.
 APY / 1 / 1 / EFG — ML386 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6.
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.

aYLCbc. Mini-Y-Purge Type LC Control System.
 APY / 1 / 1 / ABCD — ML384 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6.
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.
 Note: All LC Systems must include an RLV Series Relief Valve matched to the specific control system.

aZCFbc. Mini-Z-Purge Type CF Control System.
 APZ / 1 / 2 / ABCD — ML383 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6.
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related option such as color or enclosure mounting arrangements.
 Note: All CF Systems must include an RLV Series Relief Valve matched to the specific control system with either an internal or separate Outlet Orifice.

FM Approvals
 1151 Boston Providence Turnpike
 P.O. Box 9102, Norwood, MA 02062 USA
 T: 781 762 4300 F: 781-762-9375 www.fmapprovals.com

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

aXCFbc. Mini-X-Purge Type CF Control System.

APX / 1 / 1 / ABCD — ML383 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, ET, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.
 Note: All CF Systems must include an RLV Series Relief Valve matched to the specific control system with either an internal or separate Outlet Orifice.

aXCFHPbc. Mini-X-Purge Type CFHP Control System.

APX / 1 / 1 / ABCD — ML384 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, ET, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.
 Note: All CFHP Systems must include an RLV Series Relief Valve matched to the specific control system with either an internal or separate Outlet Orifice.

aXDPbc. Mini-X-Purge Type DP Control System.

APX / 1 / 1 / EFG — ML386 / EP80-2-11
 a = Model size 1, 2, 3, 4, 5 or 6
 b = Enclosure type cs, ss, bp, pm or nm.
 c = Option code AA, AC, AO, AS, CT, DS, DT, ET, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **.

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.



This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600 1998
Class 3620 2000

Original Project ID: 1X8A4.AE Approval Granted: April 8, 1994

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
083A3.AE	November 5, 1996		
3010469	June 25, 2001		
071029	June 23, 2008		
080905	September 24, 2008		
101230	March 3, 2011		

FM Approvals LLC

J.E. Marquardt
J.E. Marquardt
Group Manager, Electrical

3 March 2011
Date



aZCFHPbc. Mini-Z-Purge Type CFHP Control System.

APZ / I / 2 / ABCD — ML384 / EP80-2-11

a = Model size 1, 2, 3, 4, 5 or 6

b = Enclosure type cs, ss, bp, pm or nm.

c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.

Note: All CFHP Systems must include an RLV Series Relief Valve matched to the specific control system with either an internal or separate Outlet Orifice.

aZDPbc. Mini-Z-Purge Type DP Control System.

APZ / I / 2 / FG — ML386 / EP80-2-11

a = Model size 1, 2, 3, 4, 5 or 6

b = Enclosure type cs, ss, bp, pm or nm.

c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.

aZLChc. Mini-Z-Purge Type LC Control System.

APZ / I / 2 / ABCD — ML384 / EP80-2-11

a = Model size 1, 2, 3, 4, 5 or 6

b = Enclosure type cs, ss, bp, pm or nm.

c = Option code AA, AC, AO, AS, CT, DS, DT, IS, FM, MO, MT, NO, OA, OB, OC, OS, PC, PO, SS, TW, and/or **

** Denotes special, non-Approval related options such as color or enclosure mounting arrangements.

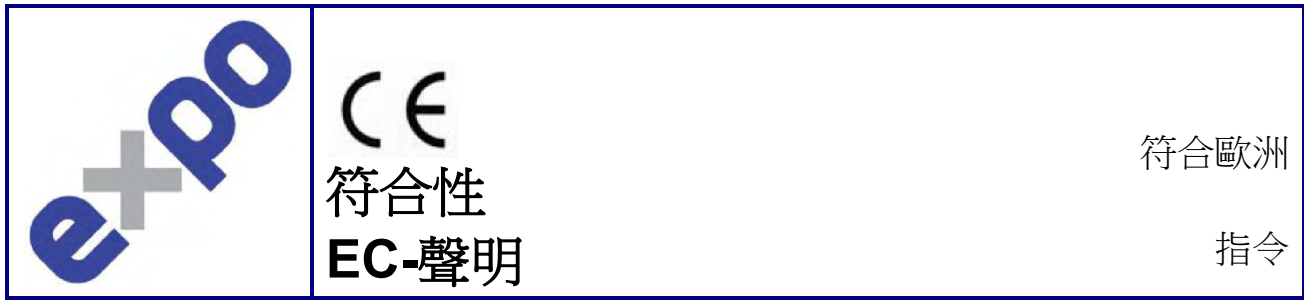
Note: All LC Systems must include an RLV Series Relief Valve matched to the specific control system.

Equipment Ratings:

Control Apparatus Associated with Pressurized Electrical Equipment for hazardous (classified) locations.

FM Approved for:

Expo Technologies Ltd.
Thames Ditton, Surrey, United Kingdom



**Expo Technologies Ltd
Unit 2, The Summit, Hanworth Road
Sunbury on Thames TW16 5DB, UK**

**本證書聲明
淨化控制器類型「MiniPurge」係依照以下歐洲指令和標準
生產製造：**

電磁兼容性指令 2004/108/EG

類型號碼中有 /PO 後綴的 MiniPurge 系統為非電氣系統，不在 EMC 指令的範圍內。
後綴為 /PA 或 /IS 的 MiniPurge 系統含有一個或以上的無電壓（「乾式」）觸點，可在第三方廠商指定的電路中作業。這些電路在正常運作下為「良性」，因此可以不貼 CE 標記。
配備電子計時器（選購件 /ET）之 MiniPurge 系統的設計符合 EMC 指令、EN 61000-6-4:2007 以及 EN 61000-6-2:2005 (Intertek Report EM10048000)。

低電壓指令 2006/95/EC

MiniPurge 系統的用途是在有潛在爆炸性氣體（危險場所）的環境下使用，因此不適用低電壓指令。

壓力設備指令 97/23/EC

根據本指令第 9 條規定，MiniPurge 系統的分類不高於第一類；此外，MiniPurge 系統的用途是在有潛在爆炸性氣體（危險場所）的環境下使用，因此不適用高壓設備指令。

ATEX 指令 94/9/EC


MiniPurge 系統的設計符合 ATEX 指令，並且遵守：

EN 60079-0 : 2012 + A11:2013 EN 60079-2 : 2007 EN 61241-4 : 2006

根據 EC Type-Examination Certificate SIRA 01ATEX1295X 的規定，MiniPurge 系統通過了 SIRA Certification Service、Rake Lane、Eccleston、Chester CH4 9JN 和英國的認證，並遵守：

IEC 60079-0 : 2011 EN 60079-2 : 2007 EN 61241-4 : 2006

根據型號而定，MiniPurge 系統已通過分類，應該標示為：

MiniPurge，X 和 Y 型號	類別 II 的 2G 和 2G 類	 II 2(2) GD
MiniPurge，Z 型號	類別 II 的 3G 和 3D 類	 II 2(3) GD

MiniPurge 系統是根據驗證機構第 0518 號 SIRA Certification Service 所發布，製程品質保證公告的 SIRA 99 ATEX M043 所製造。



John Paul de Beer
常務董事

日期：2014 年 2 月 9 日
機密評估檔案參考 SC004

S:\Files\QA\CERTS\C-OF-C\Minipurge CE SC004 Issue6.doc