



Nitrogen Buffer System Models 1,2 & 3

ML579

IMPORTANT NOTE:

It is essential for safety that the installer and user of the Expo system follow these instructions.

Please refer to the standard for principles and definitions.

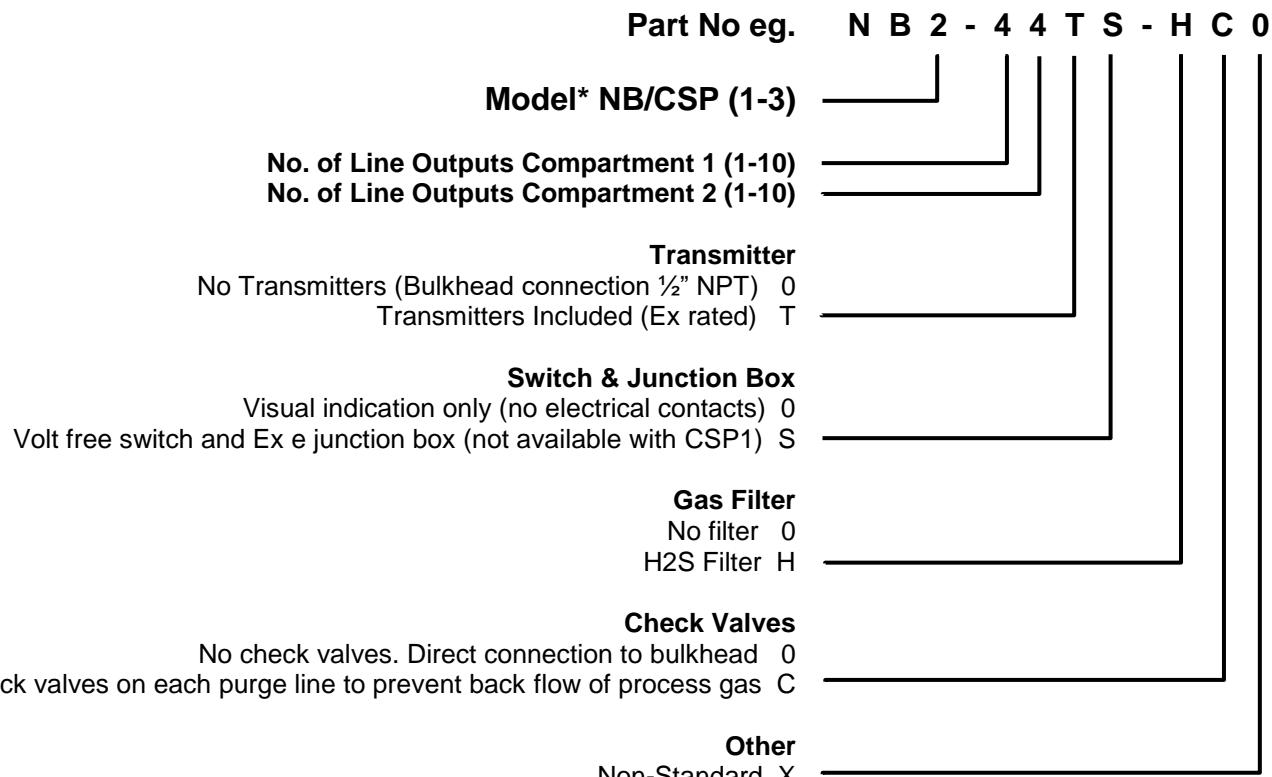
(N.B. These instructions apply only to the N2 Buffer System. It is the responsibility of the manufacturer of the Compressor to provide appropriate instructions for the Compressor.)

Contents

- 1. General System Specification**
- 2. Application Suitability**
- 3. Description and Principle of Operation**
- 4. Main Components (see GA drawing)**
- 5. Installation of the System**
- 6. Commissioning**
- 7. Maintenance of the System**
- 8. Fault Finding**
- 9. Recommended Spares List**
- 10. Drawings and Diagrams**
- 11. Certificates**

1. General System Specification

Model* 1 (Panel)	Model* 2 (Enclosure)	Model* 3 (Enclosure)
Suitable for Type D Compressors, panel mounted instruments with local indication only. Dual chamber output with 1-off DPCV and 1-off PCV. Multiple output channels on the DPCV line and single out put on PCV line	Suitable for Type D Compressors, instruments mounted in enclosure with local indication as standard. Dual chamber output with 1-off DPCV and 1-off PCV. Multiple output channels on each of the DPCV and the PCV lines	Suitable for Type D and Type C Compressors, instruments mounted in enclosure with local indication as standard. Dual chamber output with 2-off DPCV. Multiple output channels on each of the DPCVs lines.



Technical Specifications

Pressurization Medium	: Compressed inert gas (generally Nitrogen) Clean, dry and free of corrosive gases or vapors.
Temperature Range	: -20°C to +55°C (-4°F to +131°F)
Supply Pressure	: 4 - 10 Barg (58 To 145 psi)
Supply Connection	: 1/2" NPT(F)
Maximum Flow Rate	: 500 NL/min (1059 SCFH)
Nominal Flow rate (Per output)	: 1-25 NL/min (2- 54 SCFH)
Filter Condition Indicator	: RED – Replace Filter GREEN – Filter OK
Buffer Gas Differential Pressure Gauge	: RED ZONE – Pressure below set-point GREEN ZONE – Pressure above set-point
System Pressure Gauge	: 0-10 bar
Differential Pressure Gauge DPG	: 0-5 bar
Constant Pressure Gauge	: 0-10 bar
Housing Material	: 316 Stainless Steel
Option: /PO Pneumatic Output	: 1/2" NPT connection for Pressure Transmitter (by others)
Option: /PA Electrical Output	: Sealed Switch SPCO, rated 250Vac 4A / 24VDC 4A

Junction Box

Protection Ex d IIC T6 Gb / Ex tb IIIC T80°C Db
 Stainless Steel IP66, c/w Exe terminals, front access cover,
 removable gland plate supplied undrilled.
 Protection Ex e IIC T5 Gb / Ex tb IIIC T100°C Db IP66
 : 5 NI/min

Maximum Leakage Rate

Approvals

The Expo Nitrogen Buffer system conforms to API-618 5th Ed. Appendix I (*Distance Piece Vent, Drain & Buffer Systems to Minimize Process Gas Leakage*).

Expo Technologies also confirms suitability of the system for installation in ATEX Zone 1 with respect to both mechanical hazards and electrical hazards.

2. Application Suitability

The Nitrogen Buffer System is designed for use in normal industrial conditions of ambient temperature, humidity and vibration, and in either hazardous or non-hazardous locations. Please consult Expo before installing this equipment in conditions that may cause stresses beyond normal industrial conditions. For example, it is designed to be mounted onto framework in the close vicinity of a reciprocating compressor, but not directly onto the machine itself where it would be exposed to high vibration and temperatures.

This system is designed for use primarily with compressed inert gases, predominantly Nitrogen (N₂). Where inert compressed gasses are used, the user must take suitable precautions so that any buildup of inert gas does not present a hazard to health. Consult the Control of Substances Hazardous to Health (COSHH) data sheet for the gas used. Where risk of asphyxiation exists, a warning label must be fitted to the Pressurized Enclosure.

The following materials are used in the construction of the N2 Buffer System. If substances that will adversely affect any of these materials are present in the surrounding environment, please consult Expo Technologies for further guidance.

Stainless Steel	Polycarbonate	Aluminium
Mild (Carbon) Steel	Polyamide	Polyurethane
Brass	ABS	Silicone Rubber
Copper	PVC	

3. Description and Principle of Operation

The N2 Buffer System is designed to dilute any leakage of process gasses from a reciprocating compressor by purging the distance and packing pieces to be above the line pressure in any common drain or vent line. API-618 Appendix I requires that pressure to be maintained at least 15psi (1 Bar) above the drain pressure, even though that pressure may vary due to other process systems injecting gas into the drain line (usually to flare).

The N2 Buffer system takes N2 (or other inert gas) at 5bar nominal and uses a signal from the common drain line as a set-point to a pressure regulator. That pressure regulator has an offset of 1 bar minimum, with the result that the injected buffer gas will be above the drain pressure by the required amount, even with variations in drain line pressure.

Inlet gas should be clean & dry and supplied via a dedicated pressure regulator. Based on ISO 8573-1, air quality should be Class 3:3:3: 5 micron filter, -20°C dewpoint and <1mg/m³ oil.

class	max. residual dust content		max. residual water content		max. oil content mg/m ³
	dust density mg/m ³	dust size μm	dew point °C	residual water g/m ³	
1	0,1	0,1	-70	0,003	0,01
2	1	1	-40	0,117	0,1
3	5	5	-20	0,88	1
4	8	15	+3	5,953	5
5	10	40	+7	7,732	25
6	-	-	+10	9,356	-
7	-	-	not specified	not specified	-

4. Main Components (see GA drawing)

Inlet Connections:

Connection for supply gas, ½" NPT(F)

Connection for external reference (Drain line) ¼" NPT(F)

Outlet Connections:

Buffer Gas Outlets per distance piece ¼" NPT(F)

Buffer Gas Outlet Pressure to external transmitter ½" NPT(F)

Filter/Drain line ¼" NPT(F)

Inlet Filter:

The user must ensure that the inert gas supply is clean & dry, and this component is fitted as a precaution. It has a 5 micron filter, replaceable by the end-user as required.

5. Installation of the System

The N2 Buffer System is designed to install vertically with the gauges and indicators to the front. Mounting Lugs are provided, and these can be used on walls, Uni-Strut or other modular mounting framework. Vibration-isolating washers and shims should be used.

The user needs to install piping connections to the compressor connection points, and it is expected that high quality 316SST tubing will be used.

Ensure that the N2 Buffer System is not located where the visual indicators are obscured.

On completion of installation, ensure that the main door is closed and secured with the key provided.

If the system includes electrical signal outputs, an Ex e junction box will be provided which will be below the main system housing and either.

Inert gas connection

Connect the inert gas supply to bulkhead fitting using a suitable ½" NPT fitting.

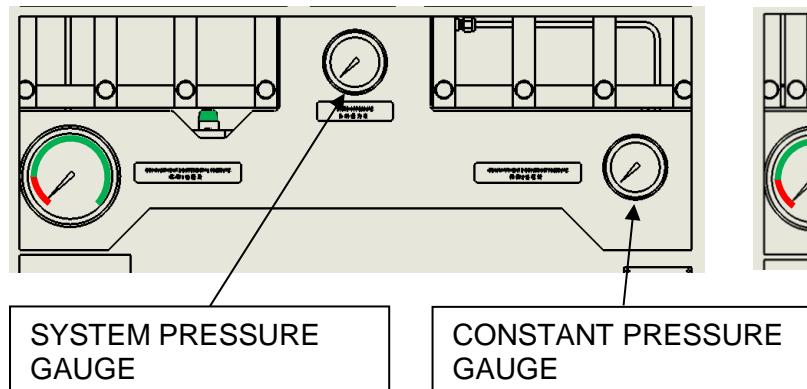
ML579 | v3

Earthing

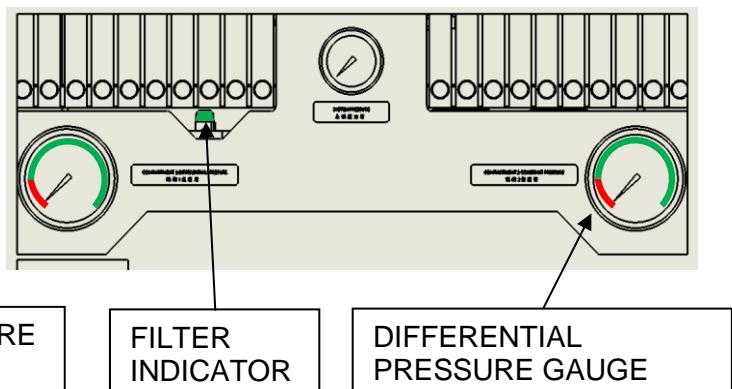
The N2 Buffer System should be earthed using the M8 earth stud provided; earth cable cross-sectional area must be suitable for the local installation standards.

Panel Diagram

Model 2 Chassis Plate



Model 3 Chassis Plate



6. Commissioning

1. Open the N2 Buffer door with key provided.
2. All gauges and indicators should read as follows (When not connected to supply pressure)
 - a. Differential Pressure : RED ZONE
 - b. Filter OK : GREEN
 - c. Supply Pressure : 0 Barg
 - d. Constant Pressure (Model 1&2) : 0 Barg
3. Refer the TI sheet for specific values of the valves and flow meters.
4. Connect the system to the supply pressure 4-10 Barg (58 to 145 psi);
5. Check that the Isolation Valve is Open;
 - a. To open the Isolation Valve, turn 90° anti-clockwise.
 - b. To close the Isolation Valve, turn 90° clockwise.
6. The Pressure Control Valve is pre-set to 2.7 Barg; check the supply pressure gauge. If necessary, re-set the supply pressure, pull the cap outwards and;
 - a. Turn the Cap/Knob clockwise to increase the pressure.
 - b. Turn the Cap/Knob anti clockwise to decrease the pressure.
7. The Rotameters are typically set to 54 SCFH or 25 LPM. The lines can be adjusted in balance to suit the requirement of customer.
 - a. Turn the Knob clockwise to reduce the flowrate.
 - b. Turn the Knob anti clockwise to increase the flowrate.
8. The Differential Pressure Control Valve is pre-set to 1.25Barg (approx.) above Drain Pressure Gauge. The Differential Pressure Control Valve can be adjusted to suit customer requirement on site by competent Engineers. If the pressures is less than 1 Barg, slowly increase the Differential Pressure Control Valve (clockwise) until the Differential Pressure Gauge dial turns to GREEN ZONE. Turn further until it is at 1.25 Barg.

Note: The Differential Pressure Control Valve should only be set on the rising pressure because of the hysteresis.

9. Lock Differential Pressure Control Valve using the nut on the valve stem.
10. All gauges and indicators should read as follow: In ideal working condition.
 - a. Differential Pressure Gauge (6) : GREEN ZONE (1.25 bar)
 - b. Filter OK (3) : GREEN
 - c. Supply Pressure (10) : 2.7 Barg
 - d. Constant Pressure : As required by customer
11. Close the N2 Buffer door and lock with key provided.

7. Maintenance of the System

The maintenance recommended for the system consists of the following, supplemented by any additional local requirements imposed by the local Code of Practice.

Initial Maintenance

Expo recommends that the functionality of the flow control valve is inspected 6 months after installation.

Routine Maintenance

At least every two years, the following additional checks are recommended:

- Inspect the Filter.
- There are no unauthorized modifications
- The flow control valve cap is present
- Seals are undamaged
- The source of air is uncontaminated
- Adequate spares are carried
- Flow lines are still balanced & adjust if needed.
- Functional check: reduce the pressure via the DPCV and verify that the pressure sensor is triggered. Then reset that DPCV pressure as above, back to normal value of 1.25 Barg.

Pressure Sensor Calibration

If it is decided that the pressure sensor(s) needs recalibrating, they must be returned to Expo for this service. To remove the sensor, depress the collet on the connection fitting and pull out the pipe. (With the collet depressed, the pipe will come out easily). Unscrew the sensor (anticlockwise).

Before conducting any maintenance on the system, make sure the isolation valves are completely shut, and the system is depressurized.

Replacing Sensor

1. Remove the plastic tubing terminating into the push in fittings on the sensor as shown in the photo (hint: take a photo of the tubing before you remove it, so you know how it goes back).



2. Firmly grip the sensor alloy housing with your hand and rotate anticlockwise to unscrew the sensor from the base (yellow block).
3. Screw in the new sensor. Make sure it has been calibrated before screwing it in. There should be a calibration sticker on the sensor which will show if/when it has been calibrated, and to what pressure.
4. Connect the plastic tube back to the sensors and make sure they are switching at the correct pressures. Refer to the Manual and TIS for procedure on this.

Replacing Gauge

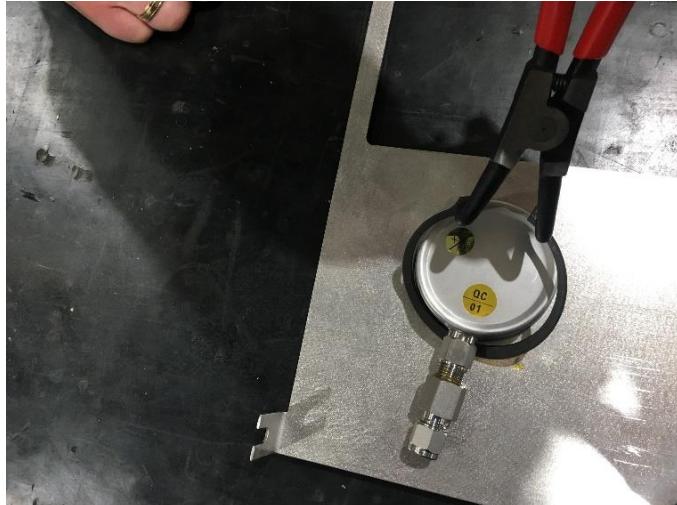
1. Unscrew the nuts on the bottom of each gauge. You will need 14mm spanner to do this.



2. Unscrew the 4 hex screws holding the chassis plate to the sides of enclosure. These do not need to be unscrewed and removed, just unscrewed by around 10mm.
3. Remove the chassis plate and lie face down



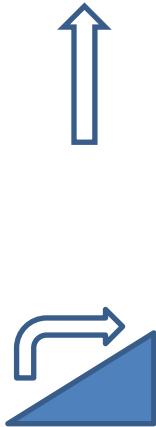
4. Use circlip pliers and remove the circlip holding the gauge onto the chassis plate. If it is the larger DP gauge, there will be a hose clip holding it on. Unscrew the hose clip and remove the gauge.
5. Replace the gauge with the new one.
6. Place the circlip or hose clip back on, and re insert the chassis plate.



7. Tighten the 4 hex screws and the nuts on the gauges.
8. Turn the pressure.

Replacing Filter

1. Remove the filter bowl by pushing it up and twisting 90 degrees clockwise.



2. Remove the filter element by unscrewing it.



3. Replace with the new element and push the bowl back up and twist until it is set back in place.

8. Fault Finding

If the system does not behave in the manner described above, please call your local Expo distributor or the Expo factory for further assistance.

9. Recommended Spares List

HF1-A03N-010	Filter
HGA-0000-074	Differential Pressure Gauge, 0-5 bar
HGA-0000-075	Pressure Gauge, 0-10 bar
HRP-0000-004	Rotameter, 0-30 NL/min
S0015/292	Pressure Relief Valve (PRV)
HPG-NCB0-000	Pressure Control Valve (PCV)
HRA-0000-016	Differential Pressure Control Valve (DPCV)
HVP-A000-025	Check Valve
AGM-PA00-148	Pressure Sensor
AGM-PA00-135	Differential Pressure Sensor

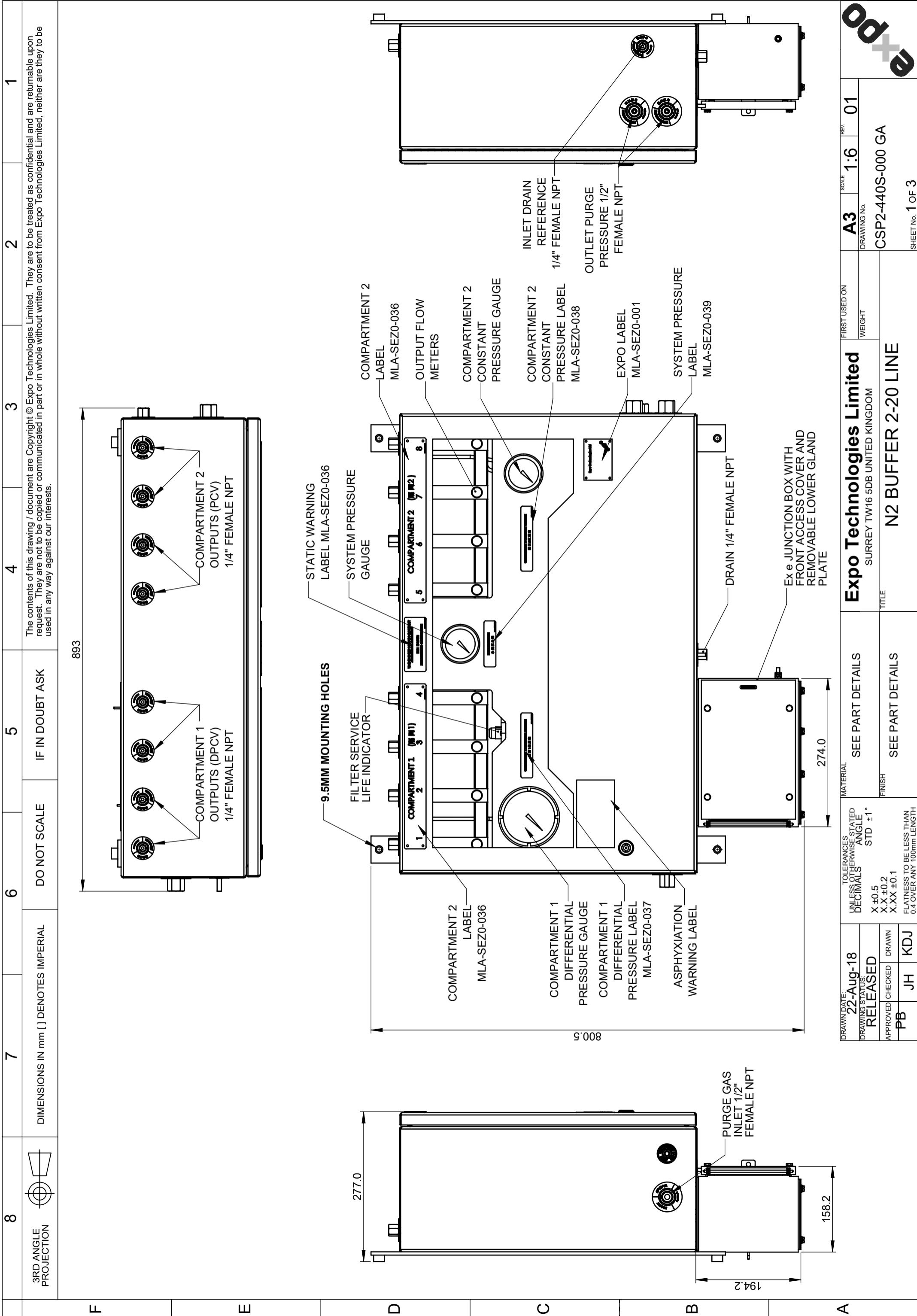
10. Drawings and Diagrams

Title	Drawing Number	Sheet(s)
N2 BUFFER 2-20 LINE	CSP2-440S-000-GA	3
NITROGEN BUFFER P AND I DIAGRAM	CSP2-440S-000-PI	1
CSP/NB 2 N2 BUFFER HOOK-UP	NB Model 2-HU	1

Drawings for various models can be provided upon request. Contact EXPO for further information.

11. Certificates

Component	Certificate Number
Ex e Junction Box	ITS 10ATEX37092X
Ex e Terminal Block	DEMKO 14 ATEX 1338U
Pyropress Pressure Transmitter	KDB 12ATEX0009X
Bartec Limit Switch	EPS 14ATEX 1 766 X
EU -Declaration of Conformity	SC043 EXPO 18ATEX1376X ExVeritas 18FILE0415



	8	7	6	5	4	3	2	1
	3RD ANGLE PROJECTION		DIMENSIONS IN mm [] DENOTES IMPERIAL		DO NOT SCALE		IF IN DOUBT ASK	
ITEM	PART NUMBER	DESCRIPTION	No Door/QTY.	NOTES				
F	1 AGM-HS00-074 2 AGM-PA00-068 3 AGM-PA00-145 4 AGM-GM00-559 5 AMA-AA00-000 6 AGM-PA00-150	HOUSING ASSY N2 BUFFER D758 - TERMINAL BOX SPINE ASSEMBLY DOOR ASSY N2 BUFFER FLOW METER AND PIPING ASSY Ex d LIMIT SWITCH	1 1 1 1 2 1	1. DOOR (AGM-GM00-559) REMOVED TO SHOW INTERNAL COMPONENTS.				
E	7 AGM-PA00-149 8 S0015-133 9 S0015-292 10 HGA-0000-074 11 MLA-PDZ0-006 12 HGA-0000-075 13 MLA-SEZ0-030 14 MLA-SEZ0-031 15 MLA-SEZ0-033 16 MLA-SEZ0-029 17 MLA-SEZ0-032	1 BAR PRESSURE SENSOR BRACKET ASSY REGULATOR 0-7 BAR Relief Valve "pop" Type Series 1002 100MM DIFFERENTIAL PRESSURE GAUGE 0-5 BAR LABEL MAINS EARTH CIRCULAR N2 DRAIN REFERENCE LABEL ENG/CHINESE N2 PURGE OUT LABEL ENG/CHINESE N2 INLET LABEL ENG/CHINESE N2 PURGE PRESSURE LABEL ENG/CHINESE N2 FILTER DRAIN LABEL ENG/CHINESE	1 1 2 1 2 1 1 1 1 1 1 1 1 1 1 1					
D	12	13	14	15	16	17	1	2
C	3	6	10	5	11	9	12	13
B	14	15	16	17	1	2	3	4
A	5	7	8	10	11	12	13	14

The contents of this drawing / document are Copyright © Expo Technologies Limited. They are to be treated as confidential and are returnable upon request. They are not to be copied or communicated in part or in whole without written consent from Expo Technologies Limited, neither are they to be used in any way against our interests.

Expo Technologies Limited
SURREY TW16 5DB UNITED KINGDOM

N2 BUFFER 2-20 LINE

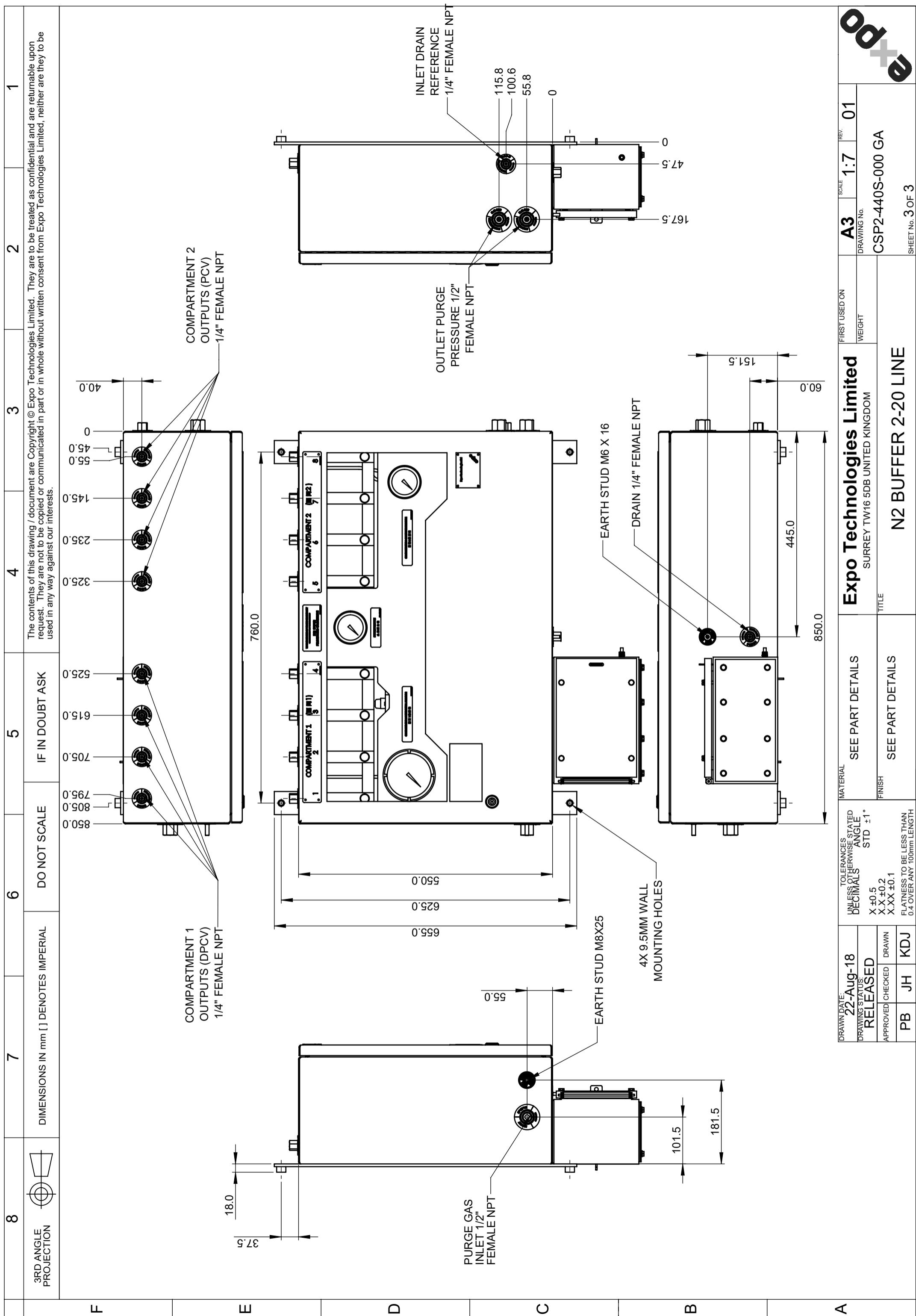
22-Aug-18 DRAWN DATE
RELEASED DRAWING STATUS
APPROVED CHECKED DRAWN
PB JH KDJ FINISH

UNLESS OTHERWISE STATED
DECIMALS
STD ±1°
X ±0.5
XX ±0.2
X.XX ±0.1
FLATNESS TO BE LESS THAN
0.4 OVER ANY 100mm LENGTH

A3 DRAWING NO.
1:4 SCALE
01 REV.

CSP2-440S-000 GA

SHEET No. 2 OF 3

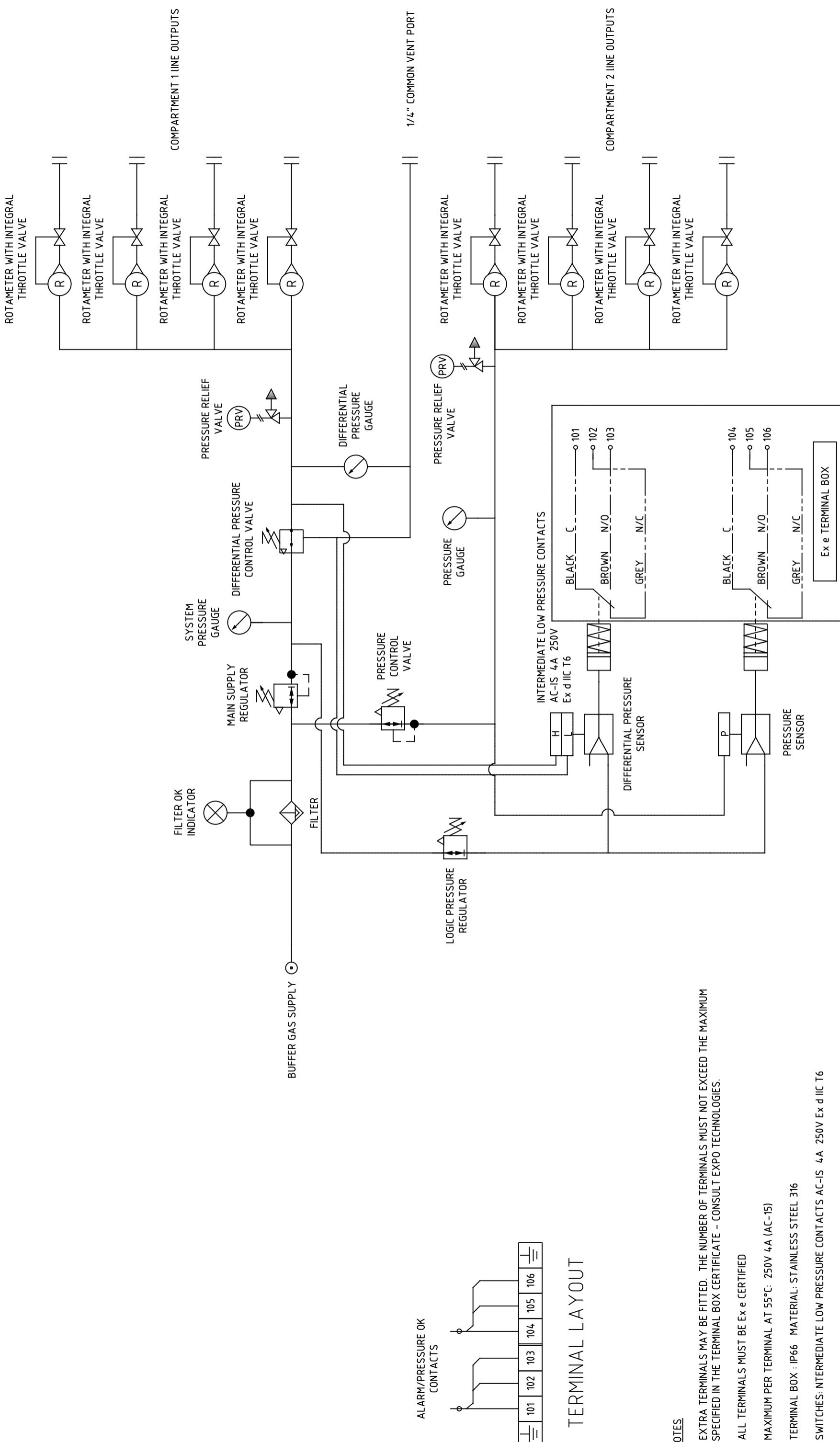


DIMENSIONS IN mm
DO NOT SCALE

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

The contents of this drawing / document are Copyright © Expo Technologies Limited. They are to be treated as confidential and are returnable upon request. They are not to be copied or communicated in part or in whole without written consent from Expo Technologies Limited, neither are they to be used in any way against our interests.



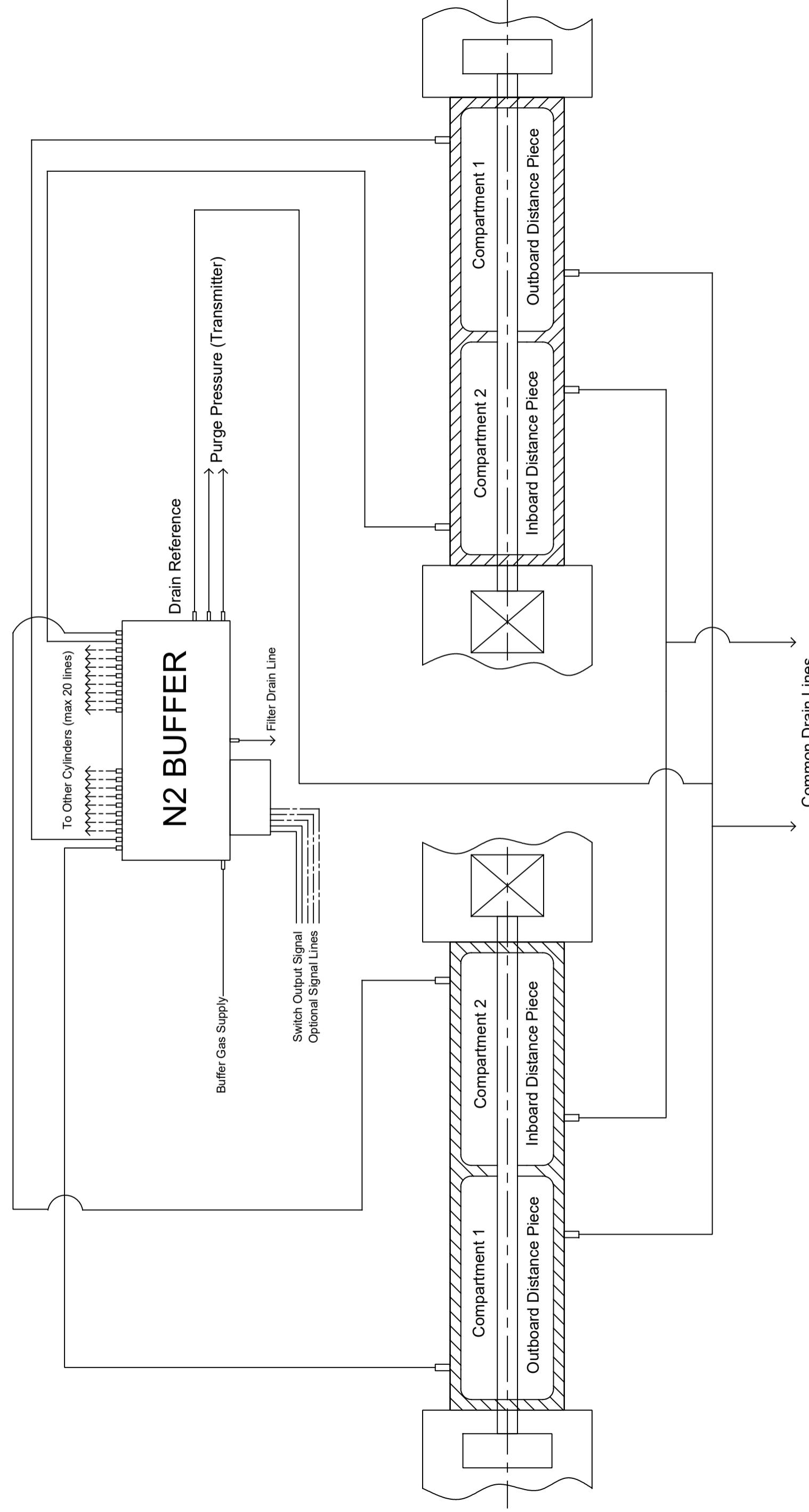
Expo Technologies Limited		SURREY KT7 0RH UNITED KINGDOM	SCALE NTS
TITLE NITROGEN BUFFER P AND I DIAGRAM			DRAWING No. CSP2-440S-000-P1
JOB No:	53468	CUSTOMER:	SHEET No. 1 OF 1

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

The contents of this drawing / document are Copyright © Expo Technologies Limited. They are to be treated as confidential and are returnable upon request. They are not to be copied or communicated in part or in whole without written consent from Expo Technologies Limited, neither are they to be used in any way against our interests.



Note: Drawing is not to scale

APP'D	JPDB	ISSUE:	1	SCALE	NTS
CHKD	AW	MOD. No:	DRAWN	DRAWING No.	
DRWN	KDJ	DATE:	01/08/18	NB Model 2-HU	
DRWN	KDJ	APPROVED:	30/11/18	CUSTOMER:	
DRWN	KDJ	DRAWING STATUS:	RELEASED		

Expo Technologies Limited

TITLE

CSP/NB 2 N2 Buffer H00K-UP

JOB No: 53468

CUSTOMER:

DATE:

01/08/18



DRAWING No.
NB Model 2-HU
SHEET No. 1 OF 1

Intertek**EC-TYPE EXAMINATION CERTIFICATE****SCHEDULE**

EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS10ATEX37092X Issue 3

1. Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 94/9/EC
 2. EC-Type Examination Certificate Number: ITS10ATEX37092X Issue 3
 3. Manufacturer: EXPO TECHNOLOGIES LIMITED
 4. Equipment or Protective System: MiniPurge Interface Units
 5. Address: Unit 2, The Summit, Hanworth Road, Sunbury on Thames, Surrey, TW16 5DB
 6. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
 7. Intertek Testing and Certification Limited, notified body number 03569 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
 8. The examination and test results are recorded in confidential Intertek Report Ref 10046284 dated September 2010 and Intertek Report Ref G101278915 dated February 2014.
 9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN 60079-0:2012, EN 60079-7:2007 and EN 60079-31:2009 except in respect of those requirements referred to at item 16 of the Schedule.
 10. If the sign "XX" is placed after the certificate number, it indicates that the equipment or protective system 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, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.
 12. The marking of the equipment or protective system shall include the following:-
- | | | | | | |
|------------------------------|--------------------------------|---------------------------------|---------------------|--------------------|--------------|
| MIU/e1 and MIU/e2 | II 2 G D Ex e IIC T5 Gb | Ex tb IIC T100°C Db IP66 | Drawing No.: | Rev. Level: | Date: |
| | | | SD7850 | 1 | 02/08/2010 |
| MIU/e1/M0 | II 2 G D Ex e IIC T5 Gb | Ex tb IIC T100°C Db IP66 | Drawing No.: | Rev. Level: | Date: |
| | | | SD7851 | 1 | 02/08/2010 |
| MIU/e1/M0 | II 2 G D Ex e IIC T5 Gb | Ex tb IIC T100°C Db IP66 | Drawing No.: | Rev. Level: | Date: |
| | | | SD7861 | 1 | 02/08/2010 |
| MIU/e1/M0 | II 2 G D Ex e IIC T5 Gb | Ex tb IIC T100°C Db IP66 | Drawing No.: | Rev. Level: | Date: |
| | | | SD7623 | 1 | 19/08/2010 |
| MIU/e1/M0 | II 2 G D Ex e IIC T5 Gb | Ex tb IIC T100°C Db IP66 | Drawing No.: | Rev. Level: | Date: |
| | | | SD7624 | 1 | 18/08/2010 |
| MIU User Instructions | | | Drawing No.: | Rev. Level: | Date: |
| | | | SD7644 | 1 | 18/08/2010 |
-
- AT Austin
Certification Officer
06 February 2014
- Intertek Testing & Certification Limited
Intertek House, Cleeve Road, Leatherhead, Surrey, KT22 7SB
Tel: +44 (0)1372 370900 Fax: +44 (0)1372 370977
www.intertek.com
- Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.**
- This certificate may only be reproduced in its entirety and without any change, schedule included and is subject to Intertek Testing and Certification's Conditions for Granting Certification.

Intertek Testing & Certification Limited
Intertek House, Cleeve Road, Leatherhead, Surrey, KT22 7SB
Tel: +44 (0)1372 370900 Fax: +44 (0)1372 370977
www.intertek.com

Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.

This certificate is the property of Intertek Testing and Certification Ltd and is subject to Intertek Testing and Certification's Conditions for Granting Certification.

Intertek

13. **Description of Equipment or Protective System**
14. **Report Number**
15. **Conditions of Certification**
 - (a) Special Conditions for safe use
 - Cable glands, breathers, drains and plugs shall be appropriately ATEX certified types, suitable for the cable and conditions for use and installed in accordance with their manufacturer instructions. They shall maintain the IP66 rating of the enclosure.
 - (b) Conditions of Manufacture
 - None
16. **Essential Health and Safety Requirements (EHSR's)**

The relevant EHSR's have been identified and assessed in Intertek Report Ref 10046284 dated September 2010.
17. **Drawings and Documents**

Title	Drawing No.:	Rev. Level:	Date:
Minipurge Interface Unit	SD7850	1	02/08/2010
Minipurge Interface Unit	SD7851	1	02/08/2010
MIU with Manual Override	SD7861	1	02/08/2010
MIU/e Permitted Contents	SD7623	1	19/08/2010
MIU IECEx & ATEX Certificate Label	SD7624	1	18/08/2010
MIU User Instructions	SD7644	1	18/08/2010

Intertek Testing & Certification Limited
Intertek House, Cleeve Road, Leatherhead, Surrey, KT22 7SB
Tel: +44 (0)1372 370900 Fax: +44 (0)1372 370977
www.intertek.com

Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.

This Certificate is the property of Intertek Testing and Certification Ltd and is subject to Intertek Testing and Certification's Conditions for Granting Certification.



SCHEDULE

EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS10ATEX37092X Issue 3

18. Revisions
Original Certificate Issued September 8, 2010

Certificate Issue 2 Issued May 7, 2013

To permit the following Changes:-

Change of Manufacture address

Certificate Issue 3 Issued February 6, 2014

To permit the following Changes:-

1. ATEX updates to existing product as per previous certificate ITS10ATEX37092X using latest applicable standards EN 60079-0: 2012, EN 60079-7:2007 and EN 60079-31:2009.
2. To include ambient temperature range -20°C ≤ Ta ≤ +60°C for MiniPurge MIU/e1 and MIU/e2 with temperature class dropped from T5 to T4.
3. Current rating for MIU/e1/MO dropped down to 2A from 6A.
4. Changes to appropriate documents to reflect the above changes.

Title	Drawing No.:	Rev. Level:	Date:
MIU IECEx & ATEX Certificate Label (2 Sheets)	SD7624	3	06/02/14
MIU User Instructions (2 Sheets)	SD7644	2	06/02/14
MINIPURGE INTERFACE UNIT	SD7850	2	10/12/13
MINIPURGE INTERFACE UNIT	SD7851	2	10/12/13
MIU WITH MANUAL OVERRIDE	SD7861	2	10/12/13
MIU/e Permitted Contents	SD7623	1	02/08/10

This Certificate is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to permit copying or distribution of this Certificate and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek.

Intertek Testing & Certification Limited
Intertek House, Cleeve Road, Leatherhead, Surrey, KT22 7SB
Tel: +44 (0)1372 379800 Fax: +44 (0)1372 370977
www.intertek.com

Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.
This Certificate is the property of Intertek Testing and Certification Ltd and is subject to Intertek Testing and Certification's Conditions for Granting Certification.

EU-TYPE EXAMINATION CERTIFICATE



[1] Component intended for use on/in Equipment or Protective System
Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU

[2] EU-Type Examination Certificate Number: DEMKO 14 ATEX 1338U Rev. 2

[3] EU-Type Examination Certificate Number: DEMKO 14 ATEX 1338U Rev. 2

[4] Component: Feed through and protective conductor terminal blocks, types WDU and WPE

[5] Manufacturer: Weidmüller Interface GmbH & Co. KG

[6] Address: Klingenbergstrasse 16, 32758 Detmold, Germany

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the Council Directive 2014/34/EU of the European Parliament and the Council dated 26 February 2014, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to design and construction of components intended for use in potentially explosive atmospheres given in Annex II to the Directive.

[9] The examination and test results are recorded in confidential report no. 478519345

[10] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012+A11:2013 EN 60079-7:2007

[11] The sign "U" is placed after the certificate number. It indicates that this certificate must not be mistaken for a certificate intended for an equipment or protective system. This partial certification may be used as a basis for certification of an equipment or protective system.
This EU-Type Examination Certificate relates only to the design and construction of the specified component. Further requirements of the Directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.

[12] The marking of the component shall include the following:



Certification Manager
Jan-Erik Størgaard

Jan-Erik Størgaard
Date of issue: 2014-10-06
Re-issued: 2016-11-22

Notified Body
UL International Demko A/S, Ballerup 5A, 2750 Ballerup, Denmark
Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

Schedule EU-TYPE EXAMINATION CERTIFICATE No. DEMKO 14 ATEX 1338U Rev. 2

[13] [14] [15] Description of Component:
Feed through terminal blocks type WDU and protective conductor terminal blocks type WPE are for the connection of copper conductors in enclosures. The type of protection is increased safety, "e", insulating parts made of Wetland, with optional accessories, type WQW screw in cross-connectors, type ZQW plug-in cross-connectors, type LS2.8 shield bus, type WEW end brackets, type WTV partitions and type WAP end plates for fixing on mounting rails.

Types & electrical data:

TYPE	Rated voltage (V)	Rated Current (A)	Resist. across terminals (Ω)	Strip length for min wire size (mm)	Solid wire size (mm ²)	Stranded wire size (mm ²)	Flexible wire size (mm ²)	2 wires in one terminal (mm ²)
WDU1.5/R3.5	275	15	430	7	0.14-1.5	0.14-1.5	0.14-1.5	0.5-0.75
WDU1.5/ZZ	550	17.5	740	7	0.14-2.5	0.14-2.5	0.13-1.5	0.5-1.0
WDU2.5N	440	24	430	10	0.14-4.0	0.14-4.0	0.5-2.5	0.5-5
WDU2.5/ZR	550	20	720	10	See NTI	See NTI	See NTI	See NTI
WDU2.5	690	24	369	10	0.14-4.0	0.14-4.0	0.14-4.0	0.5-1.5
WDU2.5/T/C B	55	8	3300	10	0.14-2.5	0.14-2.5	0.14-2.5	0.5-1.5
WDU2.5/T/C E	55	8	8950	10	0.14-2.5	0.14-2.5	0.14-2.5	0.5-1.5
WDU2.5/T/C J	55	8	5908	10	0.14-2.5	0.14-2.5	0.14-2.5	0.5-1.5
WDU2.5/T/C K	55	8	6705	10	0.14-2.5	0.14-2.5	0.14-2.5	0.5-1.5
WDU2.5/T/C N	55	8	9104	10	0.14-2.5	0.14-2.5	0.14-2.5	0.5-1.5
WDU2.5/T/C	55	8	2055	10	0.14-2.5	0.14-2.5	0.14-2.5	0.5-1.5
SR								
WDU2.5/T/C T	55	8	4611	10	0.14-2.5	0.14-2.5	0.14-2.5	0.5-1.5
WDU4	690	32	298	10	0.14-	0.14-6.0	0.14-	0.5-2.5
WDU4 N	352	31	270	11	0.13-	6.0	0.14-6.0	0.5-1.5
WDU4	690	31	440	10	0.14-	6.0	0.14-6.0	0.5-2.5
WDU4/ZR	690	31	440	10	0.14-	6.0	0.14-6.0	0.5-2.5
WDU4/ZZZ	690	29.5	560	10	0.14-	6.0	0.14-6.0	0.5-1.5
WDU4 SL	440	32.0	300	13	0.14-	6.0	0.14-6.0	0.5-1.5
WDU4 SLEN	690	32.0	390	13	0.14-	6.0	0.14-6.0	0.5-1.5
WDU6	690	41	176	12	0.14-	10.0	0.14-10.0	0.5-2.5
WDU6 SLSL	275	40	360	16	0.14-	10.0	0.14-10.0	0.5-2.5
WDU6 SLEN	440	40	360	16	0.14-	10.0	0.14-10.0	0.5-2.5
TS 32								
WDU6 SLEN	690	40	360	16	0.14-	10.0	0.14-10.0	0.5-2.5
TS 35								
WDU10	690	57	152	12	1.31-	16.0	1.31-16.0	1.31-16.0

This is to certify that the sample(s) of the Component described herein ("Certified Component") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the component sample(s) submitted by the manufacturer. UL did not inspect the manufacturer's production facility or other surveillance of the product. The manufacturer is solely and fully responsible for conformity of all products to all applicable Standards, specifications, requirements and directives. The test results may not be used in whole or in part, in any other document without UL's prior written approval.



[13] Schedule
EU-TYPE EXAMINATION CERTIFICATE No.
DEMKO 14 ATEX 1338U Rev. 2

[13]
[14]

Schedule

EU-TYPE EXAMINATION CERTIFICATE NO.
DEMKO 14 ATEX 1338U Rev. 2

WDU10 SL /EN TS 32	550	55	280	17	1.5-16.0	0.5-1.5-4.0							
WDU10 SL /EN TS 35	690	55	280	17	1.5-16.0	0.5-1.5-4.0							
WDU10 SL	352	55	280	17	1.5-16.0	0.5-1.5-4.0							
WDU16	690	76	161	16	1.5-16.0	0.5-10.0							
WDU35	690	115	145	18	2.5-16.0	1.5-25.0	2.5-25.0	2.5-16.0					
WDU35N	352	110	122	18	2.5-16.0	2.5-50.0	2.5-50.0	2.5-6.0					
WDU50N	690	126	151	24	5.26-16.0	5.26-70.0	5.26-70.0	6.0-16.0					
WDU70N/35	690	184	142	22	10-16	10-95	10-70	10-25					
WDU70N/95	1100	218	53	30	16	16-120	16-95	16-35					
WDU95N/120N	880	221	129	27	16	16-150	16-120	10-35					
WDU120/150	1100	265	44	35	16	35-150	35-150	35-70					
WFE 1.5/R3.5	N/A	N/A	1150	7	0.14-1.5	0.14-1.5	0.14-1.5	0.5-0.75					
WFE1.5/ZZ	N/A	N/A	660	7	0.14-2.5	0.14-2.5	0.13-1.5	0.5-1.0					
WFE 2.5/1.5/ZR	N/A	N/A	833	10	0.14-	0.14-4.0	0.14-4.0	0.5-1.5					
WFE 2.5	N/A	N/A	833	10	4.0	4.0	4.0	4.0					
WFE 2.5N	N/A	N/A	380	10	0.14-4.0	0.14-4.0	0.14-4.0	0.5-1.5					
WFE 4	N/A	N/A	643	10	6.0	6.0	6.0	0.5-2.5					
WFE 4/ZZ	N/A	N/A	584	10	0.14-	0.14-6.0	0.14-6.0	0.14-6.0					
WFE 4/ZR	N/A	N/A	570	10	6.0	0.14-	0.14-6.0	0.14-6.0					
WFE 4N	N/A	N/A	740	11	6.0	0.13-	0.13-6.0	0.13-6.0					
WFE 6	N/A	N/A	256	12	6.0	0.14-	0.14-10.0	0.14-10.0					
WFE 10	N/A	N/A	221	12	10.0	10.0	10.0	0.5-2.5					
WFE 16	N/A	N/A	178	16	15-	1.31-16.0	1.31-16.0	1.31-16.0					
WFE 35	N/A	N/A	173	18	16.0	1.31-	1.31-16.0	1.31-16.0					
WFE 35N	N/A	N/A	147	18	16.0	1.31-	1.31-16.0	1.31-16.0					
WFE 50N	N/A	N/A	189	24	5.26-	5.26-70.0	5.26-70.0	5.26-70.0					
WFE 70/95	N/A	N/A	76	30	16	16-120	16-120	16-35					

NOTE: NTI = Notice to Installer

Temperature range
The ambient temperature range is
• T6 (-60°C ≤ Tamb ≤ +40 °C)

[13] **Schedule**
EU-TYPE EXAMINATION CERTIFICATE No.
DEMKO 14 ATEX 1338U Rev. 2

- T5 (-60°C ≤ Tamb ≤ +55 °C)
- T4 (-60°C ≤ Tamb ≤ +70 °C)

Installation instructions:
For ambient temperatures below -10 °C and above +60 °C use field wiring suitable for both minimum and maximum ambient temperature.

Mounting instructions:
See schedule of limitations [17].

Routine tests

According to EN 60079-7 clause 7.1 in combination with clause 6.1, a dielectric strength test has to be carried out. The routine test may be performed on a statistical basis according to ISO 2859-1 with an acceptance quality limit (AQL) of 0.04. Routine test is to be carried out according to Weidmüller procedure "High voltage test" Document -NR: A_10_54.

Descriptive Documents

The scheduled documents are listed in the report no. provided under item no. [8] on page 1 of this EU-Type Examination Certificate.

Schedule of limitations

- The feed through and protective conductor terminal blocks are suitable for use in enclosures in atmospheres with flammable gases and combustible dust. For flammable gases these enclosures must satisfy the requirements according to EN 60079-0 and EN 60079-7. For combustible dust these enclosures must satisfy the requirements according to EN 60079-31.
- The terminal blocks shall be placed inside a suitable ATEX certified IP54 enclosure for gas atmosphere. For dust atmosphere the terminal blocks shall be mounted inside a suitable ATEX certified ' enclosure (EN60079-31).
- The enclosure shall be constructed to block all sun and UV light from affecting the terminal blocks.
- Under normal operating conditions the temperature rise of the terminal blocks is max +40 K, measured with the max permitted rated current. Due to the above mentioned the terminal blocks may be used in apparatus of temperature classes T6...T4 as long as the terminal block ambient temperature range is not exceeded as shown below. No part of terminal block must exceed 110 °C under any condition.
 - T6 (-60°C ≤ Tamb ≤ +40 °C)
 - T5 (-60°C ≤ Tamb ≤ +55 °C)
 - T4 (-60°C ≤ Tamb ≤ +70 °C)
- When using the types WDU and WPE with other terminal blocks series or sizes or accessories, the requirements for clearance and creepages distances according to table I of EN 60079-7 must be observed. Regarding the use of covers, cross-connectors and end brackets the instructions of the manufacturer must be followed.
- For terminal jumpers accessories please refer to the table under "types & electrical rating" above. Details on creepage and clearance values and the required torque values are in the respective "Notice to installers".
- The terminal can be used with either one or two wires into either side of the terminal. When two wires are used they must be of the same type, and of equal sizes. No other wire sizes or types than the ones specified in the table must be used. The terminal blocks must either be mounted next to another block of the same type and size or with an end plate.
- If smaller conductor cross sections than the rated conductor cross sections are used, then the corresponding lower current shall be stated in the Certificate of the complete apparatus
- Unused terminals shall be tightened.

Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9

Additional Information

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.



EU DECLARATION OF CONFORMITY

PE163/5

Issuer: Pyropress Engineering
Bell Close, Plympton, Plymouth, Devon, England, PL7 4JH

The Manufacturer hereby declares that the flameproof products types:-
 PYRP-2000ALWD, PYRP-2000ALWD Ex Safety
 PYRD-2000ALWD, PYRD-2000ALWD Ex Safety
 PYRD-2000GALWD, PYRD-2000GALWD Ex Safety
 PYRD-2200ALWD
 PYRL-2000YALWD

As being in compliance with the requirements of EU Directive 2014/34/EU, for the use in potentially explosive atmospheres:

I M2 Ex db ia I Mb (316 housing version only)
 II 1/2G Ex iad/b IIC T6/T5 Ga/Gb

II 1/2D Ex iad/b IIC T85°C/T100°C Da/Db

Or
I M2 Ex iba I Mb (316 housing version only)

II 2G Ex iad/b IIC T6/T5 Ga/Gb

II 2D Ex iad/b IIC T85°C/T100°C Da/Db

When used within the limitations & conditions of the product specifications, working instructions & EC Type Examination Certificate Number: KDB 12ATEX009X
IECEx Type Examination Certificate Number: IECEx KDB 17.0002X

Harmonised standards applied:

EN 60079-0-2012 + A11:2013, EN 60079-1-2014, EN 60079-26:2015,
 EN 60079-31:2014

Other Directives applied:

EMC – 2014/30/EU, modules, HID + HI (category IV).

Other standards applied:

IEC 60079-0-2011, IEC 60079-1-2014-06, IEC 60079-11:2011, IEC 60079-26:2006,
 IEC 60079-31:2013, EN61326-1:2009

Notified Body responsible for EC & IECEx Type Examination Certificates:

Główny Instytut Górnictwa, 40-166 Katowice, Plac Gwarków 1, Poland.
 Notified body No 1453.

Notified Body responsible for Quality Assurance:

Intertek Testing & Certification Ltd, Intertek House, Cleeve Road, Leatherhead, Surrey, England
 KT22 7SB. Notified body No 0359.

Notified Body responsible for PED assessment:

Bureau Veritas S.A., Newtime – 52 Boulevard du Parc – Lle de la Jatte, 92200, Neuilly Sur Seine, France. Notified body No 0062.

Equipment Specification: Product specifications are listed in the Technical file TCF 1061
 This Declaration may only be used in its entirety & without change.
 Modification of this equipment / product without prior approval from Pyropress Engineering will render this declaration null & void.

Stephen Burns, General Manager, On Behalf of Pyropress Engineering
 Signed..... Dated...27th October 2017.

EU-TYPE EXAMINATION CERTIFICATE

[1] Equipment and protective systems intended for use in potentially explosive atmospheres.

[2] Directive 2014/34/EU

[3] EU – type examination certificate (module B):

KDB 12ATEX009X

issue 1

[4] Equipment:

Smart Pressure Transmitter type PYRP-2000ALWD, PYRP-2000ALWD Ex Safety
 Smart Differential Pressure Transmitter type PYRD-2200ALWD, PYRD-2200ALWD Ex Safety
 PYRD-2000ALWD, PYRD-2000ALWD Ex Safety
 Smart Level Probe type PYRL-2000YALWD

Pyropress Engineering

[5] Manufacturer:

Bell Close, Plympton, Plymouth, Devon PL7 4JH

United Kingdom

[6] Address: This product and any acceptable variation thereto is specified in the schedule to this certificate.

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate.
 [8] Główny Instytut Górnictwa, Notified Body number 1453 in accordance with Directive 2014/34/EU of 26 February 2014, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive 2014/34/EU. The examination and test results are recorded in confidential report **KDB Nr 12.010-2 [T-6847]**

[9] Compliance with the Essential Health and Safety Requirements has been met by compliance with:
 EN 60079-0:2012 + A11:2013; EN 60079-1:2014;
 EN 60079-11:2012; EN 60079-26:2015; EN 60079-31:2014

[10] In case if the sign „X“ is placed after the certificate number, it indicates special conditions for safe use, specified in the schedule to this certificate.
 [11] This EU-type examination certificate relates only to the construction, evaluation and tests of the product accordance with Directive 2014/34/EU. The certificate does not include other requirements of the Directive relating to manufacturing process and putting into the market of the equipment or protective device.

[12] Marking of the equipment shall include:

X I M2 Ex db ia I Mb
 II 1/2G Ex ia/db IIC T6/T5 Ga/Gb
 II 1/2D Ex ia/tb IIC T85°C/T100°C Da/Db
 OR
X II 1/2G Ex ia/db IIC T6/T5 Ga/Gb
 II 1/2D Ex ia/tb IIC T85°C/T100°C Da/Db

KDBEX.eu



Date of issue: **31.01.2017**
 Główny Instytut Górnictwa, 40-166 Katowice, Plac Gwarków 1, POLAND, www.gig.eu
 (Certification Body Accredited by PCA, Nr AC038)

This certificate may be reproduced only in its entirety with schedule. The next issue of the certificate replaces the earlier editions.
 Issue 0 is the initial certification. The document without signatures and seals is invalid.
 PE/CA-ALEX-01/Exen ed.02/2016

Page 1 of 4



[15] Description:

Pressure transmitters type PYRP-2000ALWD, PYRP-2000ALWD Ex Safety and differential pressure transmitters type PYRD-2000ALWD, PYRD-2200ALWD, PYRD-2000GALWD, PYRD-2000ALWD Ex Safety, PYRD-2000GALWD Ex Safety and level probes type PYRL-2000YALWD work by converting proportional to the measured pressure resistance changes of piezoresistive bridge, located in the single crystal of silicon diaphragm, into a standard current signal 4 ÷ 20 mA with HART communications signal.

The basic units of the transmitter and probe is a measuring head (Ex 1) with a silicon diaphragm sensor. Measuring head can be equipped with different pressure connections. Inside the head there is the "pressure chamber" filled with manometer liquid. On the side of measured medium it is limited by a diaphragm welded tightly to the head's body (differential pressure transmitters have two separated diaphragms for the inputs: "+" and "-"). The measuring head is mounted in the housing and secured with two screws.

In the heads to measure differential pressure and absolute pressure the tight bushings are applied. For overpressure measurements at a pressure range head to 7MPa, bushings are used with the opening from which a tube connecting the rear side of the measuring diaphragm to the atmosphere is pulled out; there are cylindrical flameproof joints used additionally in this case and in some versions of pressure difference heads. The transmitters with the head versions described above have category 1/2G, 1/2D.

In the versions pressure transmitters PYRP... and differential pressure transmitters PYRD... of category 2G and 2D (measured in zone 1 or 21) all pressure heads are allowed, including those without additional flame-proof joints.

Enclosures of transmitters are made of die-cast aluminium alloy or stainless steel. Enclosure consists of a body and two screwed covers (display and electrical connection). The cable line is introduced into the enclosure by Flameproof cable gland with thread M20x1,5 or 1/2NPT depending on the version of the housing body. In the non-used opening the explosion-proof plug (cap) prod. Pyroprocess Engineering is mounted.

The transmitters may be fitted with diaphragm seals, which enable them to be used in a variety of conditions such as thick or highly reactive media, high and low temperatures. Elements of the diaphragm seals can be coated with Teflon.

Marking:

version with steel enclosure:

Ex I M2 Ex db ia I Mb

Ex II 1/2G Ex ia/db IIC T6/T5 Ga/Gb
II 1/2D Ex ia/tb IIIC T85°C/T100°C Da/Db
or

Ex I M2 Ex db ia I Mb

Ex II 2G Ex ia/db IIC T6/T5 Gb
II 2D Ex ia/tb IIIC T85°C/T100°C Db

version with aluminium alloy enclosure:

Ex II 1/2G Ex ia/db IIC T6/T5 Ga/Gb

Ex II 1/2D Ex ia/tb IIIC T85°C/T100°C Da/Db
or

Ex II 2G Ex ia/db IIC T6/T5 Gb

Technical parameters:

Range of the measured pressure:

-100kPa ÷ 100MPa (PYRP-2000ALWD, PYRP-2000ALWD Ex Safety)
-160kPa ÷ 7MPa (PYRD-2000ALWD, PYRD-2200ALWD, PYRD-2000ALWD Ex Safety)
-10 kPa ÷ 10 kPa (PYRD-2000GALWD, PYRD-2000GALWD Ex Safety)

Range of the measured liquid level:

0 ÷ 10mH₂O (PYRL-2000YALWD)

Output signal:

4÷20mA in a two-wire system + HART

Supply voltage:

13,5V ÷ 55V- standard version
16V ÷ 45V- safety version

Ingress Protection:

IP66 / IP67

Ambient temperature:
-40 °C ÷ 45°C/75°C (depending on the temperature class)



[13]

SCHEDULE
EU-type Examination Certificate
KDB 12ATEX009X issue 1

[16] Test report:

"Sprawozdanie z oceny ATEX" KDB Nr 12.010-2

[17] Special conditions for safe use:

- Only those elements can be used as replacing ones which are specified in the descriptive documentation;
- Some of the permitted gaps in the flameproof joints are smaller and the lengths of the flameproof joints are greater than the ones specified in table 1 EN 60079-1. The relevant information for the user is included in the manual;
- In areas where there is a risk of dust explosion, transmitters in aluminium alloy casing covered with lacquer and transmitters with plastic rating plates or with diaphragm seals covered by Teflon should be installed in a way to prevent electrostatic charging according to the operation manual.

[18] Essential health and safety requirements:

Met by compliance with standards listed below:

EN 60079-0:2012 + A11:2013; EN 60079-1:2014;
 EN 60079-11:2012; EN 60079-26:2015; EN 60079-31:2014;
 (PN-EN 60079-0:2013-03 + A11:2014-03; PN-EN 60079-1:2014-12;
 PN-EN 60079-11:2012; PN-EN 60079-26:2015-04; PN-EN 60079-31:2014-10)

Document's history:

- EC-Type Examination Certificate KDB 12ATEX009X of 25.01.2012 with all supplements, initial certification (issue 0).
- EU-Type Examination Certificate KDB 12ATEX009X issue 1, this document, there is a modification in the construction of the pressure transmitters type PYRP-2000ALWD, PYRD-2000ALWD, PYRD-2200ALWD, and Level probes type PYRL-2000ALWD. Pressure transmitters and differential pressure transmitters of category 2 have been introduced. The new performances of the pressure transmitters and differential pressure transmitters PYRD-2000ALWD Ex Safety, PYRP-2000ALWD Ex Safety, PYRD-2000GALWD Ex Safety have been introduced. The changes in the parameters of power supply to 55V have been introduced.

Marking:
 version with steel enclosure:
 Ex db ia I Mb, Ex iadib IIIC T65°C/I100°C Da/Db or
 Ex db ia I Mb, Ex iadib IC T6/75 Gb, Ex iadib IIIC T65°C/I100°C Db
 version with aluminum alloy enclosure:
 Ex iadib IC T6/75 Gb, Ex iadib IIIC T85°C/I100°C Da/Db or
 Ex iadib IC T6/75 Gb, Ex iadib IIIC T85°C/I100°C Db/Db or

Approved for issue on behalf of the IECEX
Certification Body:

Position:

Signature:
(for printed version)

Date:

C.
31.01.2012



1. This certificate and schedule may only be reproduced in full.

2. This certificate is not transferable and remains the property of the issuing body.

3. The status and authenticity of this certificate may be verified by visiting the Official IECEX Website.

Certificate issued by:

Główny Instytut Górnictwa, Kopalnia Dostawcza "BARBARA"
(Central Mining Institute Experimental Mine "Barbara")
ul. Podleńska 72
43-190 Mikołów
Poland

IECEx Certificate of Conformity



IECEx Certificate of Conformity



Certificate No: IECEx KDB 17.0002X

Date of Issue: 2017-01-31

Manufacturer: Pyroress Engineering
Bell Close, Plympton, Plymouth, Devon PL7 4JH
United Kingdom

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standards 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

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

IEC 60079-11 :2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

IEC 60079-26 :2006 Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga

IEC 60079-31 :2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

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:

P/L/KDB/ExTR17.0002/00

Quality Assessment Report:

GB/T/IS/QAR11.0004/04

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:

Pressure Transmitters type PYRP-2000ALWD, PYRP-2000ALWD Ex Safety and differential pressure transmitters type PYRD-2000ALWD, PYRD-2200ALWD, PYRD-2000GALWD, PYRD-2000ALWD Ex Safety, PYRD-2000ALWD Ex Safety and level probes type PYRL-2000ALWD work by converting proportional to the measured pressure resistance changes of piezoresistive bridge, located in the single crystal of silicon diaphragm, into a standard current signal 4 - 20 mA with HART communications signal. The basic units of the transmitter and probe is a measuring head (Ex e) with a silicon diaphragm sensor. Measuring head can be supplied with different pressure connections. Inside the head there is the "pressure chamber" filled with manometer liquid. On the side of measured medium it is limited by a diaphragm wedged tightly to the head's body differentia pressure transmitters have two separated diaphragms for the inputs: "d" and "t". The measuring head is mounted in the housing and secured with two screws. In the heads to measure differential pressure and absolute pressure the tight bushings are applied. For overpressure measurements at a pressure range head to 7MPa, bushings are used with the opening from which a tube connecting the rear side of the measuring diaphragm to the atmosphere is pulled out; there are cylindrical flange/no joints used additionally in this case and in some versions of pressure difference heads. The transmitters with the head versions described above have EPL Gc/Gb and Dc/Db. The transmitters with the head versions described above have EPL Gc/Gb and Dc/Db.

CONDITIONS OF CERTIFICATION: YES as shown below.

- Only those elements can be used as replacing ones, which are specified in the descriptive documentation;
- Some of the permitted gaps in the flameproof joints are smaller and the lengths of the flameproof joints are greater than the ones specified in table 1 IEC 60079-1. The relevant information for the user is included in the manual;
- In areas where there is a risk of dust explosion, transmitters in aluminum alloy casing covered with lacquer and transmitters with plastic rating plates or with diaphragm seals covered by Teflon should be installed in a way to prevent electrostatic charging according to the operation manual.



IECEx Certificate of Conformity

Certificate No.: IECEx KDB 17.0002X

Date of Issue: 2017-01-31

Issue No: 0

Page 4 of 4

EQUIPMENT (continued):

In the versions pressure transmitters PYRP, ... and differential pressure transmitters PYRD, of EPL Gb and Db (measured in zone 1 or 2) all pressure heads are allowed, including those without additional flame-proof joints. Enclosures of transmitters are made of die-cast aluminium alloy or stainless steel. Enclosure consists of a body and two screwed covers (display and electrical connection). The cable line is introduced into the enclosure by flameproof cable gland with thread M20x1.5 or 1/2NPT (depending on the version of the housing body). In the non-used opening the explosion-proof plug (cap) prod. Pyropress Engineering is mounted. The transmitters may be fitted with diaphragm seals, which enable them to be used in a variety of conditions such as thick or highly reactive media, high and low temperatures. Elements of the diaphragm seals can be coated with Teflon.

Technical parameters:

Range of the measured pressure:

-100kPa + 100kPa (PYRP-2000ALW, PYRP-2000ALW Ex Safety)
-160kPa + 7kPa (PYRD-2000ALW, PYRD-2200ALW, PYRD-2000ALW Ex Safety)
-10 kPa + 10 kPa (PYRD-2000GALW, PYRD-2000GALW Ex Safety)

Range of the measured liquid level:

0 + 10mH2O (PTRI-2000ALWD)

Output signal:

4+20mA in a two-wire system + HART

Supply voltage:

13.5V / 55V - standard version

16V / 45V - safety version

Ingress protection:

IP66 / IP67

Ambient temperature:

-40 °C + 45 °C/75 °C (depending on the temperature class)



BUREAU
VERITAS

EC-Type Examination Certificate

(1) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – Directive 94/9/EC

(3) EC-Type Examination Certificate Number

EPS 14 ATEX 1 766 X

Revision: 0

(4) Equipment: Limit switch type 07-251-*****/****
Position switch type 07-291-*****/****
BARTEC GmbH

Max-Eyth-Straße 16
97980 Bad Mergentheim

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) Bureau Veritas Consumer Products Services Germany GmbH, Notified Body No. 2004 in accordance with Article 9 of the Council Directive 94/9/EC of March 23rd 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 and protective systems intended for use in potentially explosive atmospheres, given in Annex II of the Directive. The examination and test results are recorded in the confidential report 14TH090.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012
EN 60079-31:2014
(IEC 60079-1-12/2014)

(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 the construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

II 2G Ex d IIC T6, T5 Gb or II 2G Ex db IIC T6, T5
II 2D Ex tb IIIC T80°C, T95°C Db or II 2D Ex tb IIIC T80°C, T95°C

Nürnberg, 2014-12-03



Certification department of explosion protection
D. Zitzmann
BUREAU VERITAS
Consumer Products Services Germany GmbH
Businesspark A96, 94642 Türkheim, Germany
Phone: +49 8076 0141-0

Certificates without signature are void. This certificate is allowed to be distributed only if not modified.
Exacts or modifications must be authorized by Bureau Veritas Consumer Products Services Germany GmbH.
EPS 14 ATEX 1 766 X Rev. 0

Annex e

(13) (14) EC-Type Examination Certificate EPS 14 ATEX 1 766 X Rev. 0

(15) Description of equipment:

The limit switch type 07-251-*****/**** and 07-2581-*****/**** as well as the position switch type 07-291-*****/**** is used as equipment or utility power switch for signal and control circuits. The connection is made by cemented hose cables. The position switch is designed with a guard (protective enclosure) which protects against the risk of high mechanical hazards according to the EN 60078-0, Table 13b, group II.

Technical data:

Type	max. Rated current ⁽¹⁾	max. Rated voltage
07-2511-1*****/****, 07-2581-1*****/****, 07-2511-5*****/****, 07-2981-1*****/****, 07-2511-7*****/****, 07-2881-1*****/****, 07-2911-*****/****, 07-2915-*****/****, 07-2917-*****/****	AC 2 A AC 7 A DC 0.5 A DC 7 A	AC 400 V AC 250 V DC 250 V DC 30 V
07-2511-3*****/****, 07-2581-3*****/****, 07-2511-6*****/****, 07-2881-6*****/****, 07-2511-8*****/****, 07-2881-8*****/****, 07-2913-*****/****, 07-2916-*****/****, 07-2918-*****/****	0.4 A	30 V
		1 or 2 0.5 mm ² up to 1.5 mm ²

Number of hose cables⁽¹⁾:

Gross section⁽¹⁾:

Ambient temperature range⁽¹⁾:

(11) = type depending values :

The classification of a specific temperature class depends on ambient temperature, current load, cable type and cross section. These data are defined on the marking plate and they are also provided by the manufacturer within the technical documents and instruction manual.

(16) Test report: 14TH090

Certificates without signature are void. This certificate is allowed to be distributed only if not modified.
Exacts or modifications must be authorized by Bureau Veritas Consumer Products Services Germany GmbH.
EPS 14 ATEX 1 766 X Rev. 0

Page 2 / 3

BUREAU VERITAS
Consumer Products Services Germany GmbH
Businesspark A96, 94642 Türkheim, Germany
Phone: +49 8076 0141-0

www.bureauveritas.com
cps-turnthueme@de.bureauveritas.com

BUREAU VERITAS
Consumer Products Services Germany GmbH
Businesspark A96, 94642 Türkheim, Germany
Phone: +49 8076 0141-0



EC-Type Examination Certificate EPS 14 ATEX 1 766 X Rev. 0

- (17) Special conditions for safe use:
- The limit switch and position switch shall be used within its operating range and rating according to manufacturer's documents and marking.
 - The limit switch shall be installed by a guard against the risk of high mechanical danger, which meets at least the requirements of IEC 60079-0, Table 13 b), group II, Resistance to light exposure is fulfilled by the housing material according to EN 60079-0.
 - The specific installation standards and manufacturer's instructions must be respected.

- (18) Essential health and safety requirements:

Met by standards:
Certification department of explosion protection



Nürnberg, 2014-12-03

Certificates without signature are void. This certificate is allowed to be distributed only if not modified.
Events or modifications must be authorized by Bureau Veritas Consumer Products Services Germany GmbH
EPS 14 ATEX 1 766 X Rev. 0

Page 3 / 3

Büroveritas AG, Büro 2 Tübingen, Germany
Phone: +49 7071 9004-0
www.bureauveritas.com

BUREAU VERITAS
Consumer Products Services Germany GmbH



CE
EU-Declaration of Conformity

With
European
Directives

Issued under the sole responsibility of
Expo Technologies Ltd
Unit 2, The Summit, Hanworth Road
Sunbury on Thames TW16 5DB, UK

This is to declare that the products listed below are manufactured in conformity with the following European Directives and Standards:

1. Product:

Nitrogen Buffer System
Models: NB*-*** and CSP*-***

2. Directives:

Equipment for explosive atmospheres ATEX Directive 2014/34/EU

3. Applicable Standards for ATEX Directive 2014/34/EU:

BS EN 60079-0:2012
BS EN ISO 80079-36:2016

4. The Nitrogen Buffer System shall be marked as follows:

4.1. Standard unit

CE 0518 Ex II 2 G Ex h IIB T5 Gb
Tamb -20°C to +55°C

4.1.1. Including a Pressure Transmitter

CE 0518 Ex II 2 G Ex h db ia IIB T5 Gb
Tamb -20°C to +55°C

4.2. Low Pressure and Differential Pressure Sensor Alarm Switch Option

CE 0518 Ex II 2 G Ex h db eb IIB T5 Gb
Tamb -20°C to +55°C

4.2.1. Including a Pressure Transmitter

CE 0518 Ex II 2 G Ex h db eb ia IIB T5 Gb
Tamb -20°C to +55°C

The Nitrogen Buffer System documentation is lodged with ExVeritas Limited, Unit 16-18, Abenbury Way, Wrexham Industrial Estate, Wrexham, LL13 9UZ, United Kingdom, Notified Body No. 2585, under the Technical Documentation Storage ExVeritas 18FILE0415.

Formal assessment and reports are compiled with the certificate EXPO 18ATEX1376X.
Technical documentation and assessment are in the Expo technical file SC043.

Signed for and on behalf of Expo Technologies Ltd

Signed
Managing Director

Date 27/11/2018

Annex to Declaration of Conformity EXPO 18ATEX1376X

(1) Declaration of Conformity

(2) Expo Technologies certificate number EXPO 18ATEX1376X Issue 0.

(3) This certification is issued for the Non-electrical equipment:

**Nitrogen Buffer System
Models: CSP*-*** and NB*-*****

(4) Manufacturer:

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

United Kingdom

(5) This non-electrical equipment and any acceptable variation thereto is specified in the Annex to this certificate and the documents therein referred to.

(6) This certification and schedule confirm compliance of each unit with the following standards, as applicable:

Standard	Title	Ex Certificate (ATEX / IECEx)	Marking	Tamb
BS EN 60079-0:2012	General Requirements	ITS 10ATEX37092X IECEx ITS 10.0003X	II 2 G Ex e IIC T5 Gb	-20°C to +55°C
BS EN 60079-14:2014	Electrical installations design, selection and erection			
BS EN ISO 60079-36:2016	Non-electrical equipment for explosive atmospheres - basic method and requirements	DEMKO 14ATEX1338U IECEx ULD 14.0005U	II 2 G Ex eb IIC T5 Gb	-60°C to +55°C
(7)	The Nitrogen (N2) Buffer System is a non-electrical equipment, which fulfil all the requirements for Group II Category 2 equipment in accordance with European Directive 2014/34/EU. The construction of the N2 Buffer System is inherently safe to be used in Zone 1 Hazardous Areas.	Pyropress Pressure Transmitter PYRP-2000ALW	KDB 12ATEX0009X IECEx KDB 17.0002X	II 2 G Ex iardb IIC T5 Gb
(8)	This assessment is documented in Expo Technologies Ltd. technical file number 53468 and lodged with ExVeritas Limited, Unit 16-18, Aberbury Way, Wrexham Industrial Estate, Wrexham, LL13 9UZ, United Kingdom, Notified Body No. 2585, under the Technical Documentation Storage ExVeritas 18FILE0415.	Bartec Limit Switch 07-2511	EPS 14ATEX1766X IECEx EPS 14.0092X	II 2 G Ex db IIC T6 Gb
(9)	The N2 Buffer System shall be marked as follows:			
	Model	Marking	Tamb	
	CSP*-*** / NB*-***0-***	II 2 G Ex h IIB T5 Gb	-20°C to +55°C	
	CSP*-**T0-*** / NB*-**T0-***	II 2 G Ex h db ia IIB T5 Gb	-20°C to +55°C	
	CSP*-**OS-*** / NB*-**OS-***	II 2 G Ex h db eb IIB T5 Gb	-20°C to +55°C	
	CSP*-**TS-*** / NB*-**TS-***	II 2 G Ex h db eb ia IIB T5 Gb	-20°C to +55°C	

**RISK OF STATIC ELECTRICITY
CLEAN ONLY WITH A DAMP CLOTH
SOLVENTS MUST NOT BE USED**

WARNING

The N2 Buffer enclosure may have a polycarbonate window (non-metallic). The window is 5mm thick with a total surface area of 230,550 mm².

Therefore, a warning sign is placed close to the window as defined in BS EN ISO 80079-36:2016 Table 11.

Static Electricity

The N2 Buffer enclosure may have a polycarbonate window (non-metallic). The window is 5mm thick with a total surface area of 230,550 mm².

Therefore, a warning sign is placed close to the window as defined in BS EN ISO 80079-36:2016 Table 11.

(10) Description

The N2 Buffer System is designed to minimize the leakage of process gasses from a reciprocating compressor by controlling the pressure within the distance pieces to be above the line pressure in any common drain or vent line. The standard API-618 on Appendix I, always requires the pressure in the distance piece to be maintained at least 15 psi (1.03 bar) above the drain pressure, even when the pressure varies due to other process systems injecting gas into the drain line (usually to flare).

The N2 Buffer system takes N2 (or other inert gas) and uses a pneumatic signal from the common drain line as a set-point to a pressure regulator. That pressure regulator has an offset of 1 bar minimum, with the result that the injected buffer gas will be above the drain pressure by the required amount even with variations in drain line pressure.

The N2 Buffer is essentially pneumatic and does not require any electro-electronic power source to work, the use of electro-electronic instruments may happen according with the variation of the product selected by the end user, therefore the N2 Buffer System may contain one or more of the following Ex certified apparatus, suitable for use in Zone 1 without further assessment

(11) Special conditions of safe use

Static Electricity

The N2 Buffer enclosure may have a polycarbonate window (non-metallic). The window is 5mm thick with a total surface area of 230,550 mm².

Therefore, a warning sign is placed close to the window as defined in BS EN ISO 80079-36:2016 Table 11.

Annex to Declaration of Conformity EXPO 18ATEX1376X

An external equipotential bonding connection is provided, and all the metal parts are bonded to the enclosure wall. A cable lug shall be used so that the conductor is secured against loosening or twisting and that contact pressure is permanently secured.

(12) Installation instructions

The connection of power and communication signals are the sole responsibility of the user. Any cable entry devices into the Ex e Junction Box and/or Pressure Transmitter shall be of a type suitable for area classification and shall meet the required standards and/or local codes of practice.

(13) Revision

Issue	Date	Comment
0	27 th November 2018	Initial release of the Declaration of Conformity

(14) Schedule drawings

Document	Title	Revision	Sheets
SD8341	N2 Buffer - Non-Electrical Assessment	02	5
SD8345	Nitrogen Buffer System - Typical Certification Label	02	1
SD8365	N2 Buffer System GA (Typical)	01	2
SD8366	N2 Buffer System Mk2 - P&ID	01	1



1. Technical Documentation Receipt and Storage
2. Module A | Annex VIII of ATEX 2014/34/EU
3. File Number: ExVeritas 18FILE0415
4. Equipment: N2 Buffer System
5. Manufacturer: Expo Technologies Ltd
6. Address: Unit 2, The Summit, Hanworth Road,
Sunbury On Thames, Surrey, TW16 5DB
7. The Referenced Dossier has been received and stored at ExVeritas, Notified Body Number 2585.
8. ExVeritas takes no responsibility for the validity of any information or data supplied within the file by the manufacturer on which parts of the ATEX assessment may be based upon. ExVeritas undertakes that all documents lodged in its care will not be opened or reviewed.
9. Any modification to the product affecting the product as described in the Referenced Dossier must be include in the Referenced Dossier via the ExVeritas File Change process.
10. The file will be held for 10 years after the expiry date, but no further products can be placed on the market after the expire date.
11. File Receipt Date: 19th November 2018
12. Manufacture Period: 5 Years
13. File Lodge Expire Date: 19th November 2033

On behalf of ExVeritas

Sam F.
Certification Manager

Date: 19th November 2018

[This Page Intentionally Left Blank]

Expo Technologies USA

Expo Technologies Inc.
9140 Ravenna Road Unit #3
Twinsburg,
OH 440878, USA
T: +1 440 247 5314
F: +1 330 487 0611
E: sales.na@expoworldwide.com

Expo Technologies UK

Expo Technologies Ltd.
Unit 2 The Summit, Hanworth Road
Sunbury-On-Thames,
TW16 5DB, UK
T: +44 20 8398 8011
F: +44 20 8398 8014
E: sales@expoworldwide.com

Expo Technologies China

Qingdao Expo M&E Technologies Co. Ltd
329 Huashan Er Lu
Jimo City, Qingdao,
266200 China
T: +86 532 8906 9858
F: +86 532 8906 9858
E: qingdao@expoworldwide.com