

# Pre-Start Ventilation System

## Manual

### ML 513

**Important Note:**

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

Please refer to the applicable standards for principles and definition.

These instructions apply only to the ventilation system. It is the responsibility of the manufacturer of the machine to provide instructions for the enclosure.



<b>Section 1: Pre-Start Ventilation System - General Specification .....</b>	<b>1</b>
Ventilation Control Unit Data .....	2
Outlet Valve with Integral Spark Arrestor (contains overpressure Relief Valve). ....	3
<b>Section 2: Quick User Guide .....</b>	<b>4</b>
Operation of the System .....	4
<b>Section 3: Application Suitability .....</b>	<b>5</b>
<b>Section 4: Description and Principle of Operation .....</b>	<b>6</b>
Local Operation.....	6
Remote control operation (Optional).....	7
.....	8
<b>Section 5: Main Components .....</b>	<b>8</b>
Air Supply Filter .....	8
Ventilation Flow Regulator.....	8
Ventilation Control Pilot Operated Regulator .....	8
Logic Air Supply Regulator.....	8
Visual indicators .....	9
/PA Terminal Box .....	9
/IS Intrinsically Safe (Ex i).....	9
/PO Pneumatic Output Signals.....	9
Outlet Valve.....	9
<b>Section 6: Installation of the System .....</b>	<b>10</b>
Air Supply Quality .....	10
Pipe Work .....	11
Multiple Enclosures .....	11
Power Supplies and their Isolation .....	11
<b>Section 7: Commissioning .....</b>	<b>11</b>
Commissioning the System .....	11
Procedure for increasing air flow .....	12
<b>Section 8: Maintenance of the System .....</b>	<b>14</b>
General maintenance .....	14
Maintenance of Electronic Timer.....	14
<b>Section 9: Fault Finding .....</b>	<b>15</b>
General Information.....	15
Pre-Start Ventilation System has sufficient flow but no "System Ventilating" signal.....	15
Ventilation does not start or fails to complete .....	16
Ventilation Time Insufficient.....	16
Flow Sensor Calibration.....	17
<b>Section 10: Recommended Spares List .....</b>	<b>17</b>
<b>Section 11: Glossary .....</b>	<b>17</b>
<b>Section 12: Drawings and Diagrams .....</b>	<b>18</b>
<b>Section 13: Certification .....</b>	<b>18</b>

## Section 1: Pre-Start Ventilation System - General Specification

Model Number: **#PV** **ss** **LS** **N** **ET** **PA** **Other Options**

PV Sizes - Capacity		Tolerance
<b>3PV</b>	500 to 1500 NI/min	-0 +20%
<b>5PV</b>	2000 to 6000 NI/min	-0 +20%
<b>7PV</b>	7000 to 14000 NI/min	-0 +20%

Construction Material	
<b>ss</b>	316 Stainless Steel

Starting Mode					
<b>LS</b>	Local Start	Via internal Push Button			
<b>RS</b>	Remote Start	Via internal EX rated solenoid valve			
		24 VDC	115 VAC	230 VAC	24 VDC (IS)
RS options include a local start					

Air Inlet Connection						
	Air Supply			Air Outlet to Motor		
	3PV	5PV	7PV	3PV	5PV	7PV
<b>N = NPT (F)</b>	3/4"	1"	2"	3/4"	1"	2"
<b>A = ANSI</b>	1"	1"	N/A	1"	1"	N/A
<b>G = BSPP</b>	3/4"	1"	2"	3/4"	1"	2"
<b>D = DIN</b>	DN 20	DN 25	N/A	DN 20	DN 25	N/A
Reference points and signals: 1/8" NPT(F)						

Timing Method	
<b>ET</b>	Electronic Timer
<b>ES</b>	Electronic Timer with EPPS

Output Signals	
<b>IS</b>	Switch contacts in Exe Junction Box for IS circuit connection.
<b>PA</b>	Switch contacts in Exe Junction Box for non-IS connection.
<b>PO</b>	Pneumatic Output signals

Options Codes (Added if applicable)	
<b>CV</b>	Continuous Ventilation
<b>HS</b>	High Supply Pressure Up to 16 barg (Size 5 & Size 7 only)
<b>OV</b>	Pneumatically Operated Outlet Valve
<b>HP</b>	High Pressure





Hazardous Area Classification	
<p>FOR ALL OPTIONS COVERED IN THIS MANUAL, (Except Pneumatic Output /PO and LT options)</p> <p>ExVeritas 20ATEX0717X EN 60079-0, EN 60079-7 &lt;ex&gt; II 2 G Ex e ia IIC T5 Gb Tamb -20°C to +59°C or II 2 G Ex e ia IIC T4 Gb Tamb -20°C to +60°C or II 2 G Ex db e ia IIC T3 or T4* Gb Tamb -60°C to +60°C * dependent on heater used.</p> <p>IECEX EXV 20.0050 EN 60079-0, EN 60079-7 Ex e ia IIC T5 Gb Tamb -20°C to +59°C or Ex e ia IIC T4 Gb Tamb -20°C to +60°C or Ex db e ia IIC T3 or T4* Gb Tamb -60°C to +60°C * dependent on heater used.</p>	<p>FOR ALL OPTIONS (Including Pneumatic Output /PO)</p> <p>EUROPE - EXPO 13MDOC1314 Suitable for use with Ex e &amp; Ex n electrical rotating machines</p> <p>IECEX - EXPO 13MDOC1313 Suitable for use with Ex E &amp; Ex n electrical rotating machines</p>

## SPECIAL CONDITIONS FOR SAFE USE / CONDITIONS OF CERTIFICATE

(applicable to the options covered by this manual - Do not include Low temperature option).

- This system is intended for use as a Pre-Start Ventilation system, to be used with motors separately approved (by others). It is not a purge & pressurization system for hazardous area motors.
- When the apparatus incorporates a remote start function via an intrinsically-safe solenoid, the installer and user must ensure that the I.S. parameters of the associated apparatus and wiring (by others) meet the certification parameters of that solenoid valve.

### Ventilation Control Unit Data

Ventilated Machine Enclosure:	Ex e, Ex n Rotating Electrical Machines.	
Enclosure Test Pressure:	Maximum working = Outlet Valve opening pressure x 1.5.	
Ventilation Time:	User selectable up to 99 minutes (Tolerance: -0 + 3s).	
Ventilation Initiation:	Local Switch (LS):	Internal Push Button Operator.
	Remote Start (RS) Optional:	Internal EX-rated solenoid valve: 24V DC, 110V AC or 230V AC.
Indicators:	Black  / Flashing Yellow  :	Stand By / System Ventilating.
	Red  / Green  :	Not Ventilated / Ventilation Complete.
Pneumatic Signals:	System Ventilating	4.0 barg (60 psig) 1/8" NPT (F), plug fitted.
	Ventilation Complete:	4.0 barg (60 psig) 1/8" NPT (F), plug fitted.
System Ventilating & Ventilation Complete Contacts:	SPCO electrical switch, certified Ex db IIC T6, Contact ratings 250 Vac 4 Amps, AC15.	
Temperature Limits:	-20°C to +60°C (T4).	-20°C to +59°C (T5).
Ventilation Flow Sensors:	Factory set to match ventilation flow rate required.	
Supply Pressure:	4 to 10 barg (60 to 145 psig).	
High Supply Pressure (Optional):	4 - 16 barg (60 - 232 psig) for 5PV and 7PV system.	
Compressed Air Supply:	Clean, Dry Oil Free Air or inert Gas. Refer to Air Supply Quality section in Installation of the System.	
Logic Regulator & Gauge:	Factory set to 4 barg (60 psig).	
Air Consumption:	<10NI/min when not in Ventilation mode.	
Mounting Method	Wall mounting straps & spacers. Fix holes as per drawing.	
/PA Terminal Box:	Stainless Steel, Ex e IIC T5 Gb / Ex tb IIIC T100°C Db IP66 Tamb : -20°C to +55°C with Ex e terminals, front access cover & lower removable gland plate. Stainless Steel, Ex e IIC T4 Gb Tamb : -20°C to +60°C with Ex e terminals, front access cover & lower removable gland plate.	
Switch Details:	SPCO switch, contact ratings 250 Vac 4 Amps (AC-15) / 24V DC 4A, Ex d IIC T6 Gb / Ex tb IIIC T80°C Db.	

/IS Terminal Box:	Stainless Steel, IP66, fitted with blue terminals, front access cover & lower removable gland plate, and marked "Intrinsically Safe Circuits Only"		
Switch Details:	SPCO switch, contact ratings 24V DC 4A, considered to be 'simple apparatus' in intrinsically safe circuit (by others)		
Weight (unpacked):	3PV:	16.5kg (36.3lb)	
	5PV:	20.6kg (45.4lb)	
	7PV:	43kg (154lb)	

### Outlet Valve with Integral Spark Arrestor (contains overpressure Relief Valve).



	3PV:	5PV:	7PV:
Default type:	RLV052/ss/PV	RLV104/ss/PV	RLV200/ss/PV/OV
Outlet Valve lift off pressure:	15 mbarg (6"wg)	15 mbarg (6"wg)	Pneumatically Operated
	Tolerance: +0,-20%	+0,-20%	
Overpressure Relief			
Valve Lift-Off Pressure:	Min: 20 mbarg (8.0"wg)	20 mbarg (8.0"wg)	20 mbarg (8.0"wg)
	Max: 50 mbarg (20"wg)	50 mbarg (20"wg)	50 mbarg (20"wg)
	Default: 30 mbarg (12"wg)	30 mbarg (12"wg)	30 mbarg (12"wg)
	Tolerance: +0, - 20%	+0, - 20%	+0, - 20%
Weight:	4kg (8.8lb)	7kg (15.4lb)	25kg (50.6lb)
Available Ventilation Flow Rate	500 NI/min	2000 NI/min	7000 NI/min
	1000 NI/min	3000 NI/min	8000 NI/min
	1500 NI/min	4000 NI/min	10000 NI/min
		5000 NI/min	12000 NI/min
		6000 NI/min	14000 NI/min
	Default: 1000 NI/min	2000 NI/min	7000 NI/min
	Tolerance: -0, + 20%	-0, +20%	-0, +20%

**NOTE: A Solenoid Valve (Optional) may be fitted to allow remote start. Please ensure that one of the solenoid valve options is selected when ordering. See General Specification for Remote Start Options, and Section 10 for the Recommended Spares.**

## Section 2: Quick User Guide

### Operation of the System

Once the system is installed correctly, turn on the air supply. Refer to the "Commissioning" on section 7 for commissioning instructions.

Indicator	Colour	Status
System Ventilating	Black 	Not in Ventilation
Ventilation Complete	Red 	Power Off

**Note: User must start the system ventilation cycle by either, pressing the Local Start Push Button or energizing the Solenoid Valve for Remote Start (optional). Ventilation cycle will NOT start just by turning on the air supply. Note that operation of the Push Button or Remote Start Solenoid Valve for more than 1 sec will cause system reset. Actuate start for less than 1 second.**

Please refer to relevant drawing number for illustration:


3PV	5PV	7PV
XBR-1TD0-015	XBR-1TD0-014	XBR-1TD0-016

#### **\*\*Local Start: To start the ventilation cycle**



- Push and hold the Local Start Push Button until flow is achieved. The "System Ventilating" LED's will start to flash once air flow is achieved through the machine enclosure system.

#### **\*\*Remote Start (Optional)**


The remote start option will require an Expo approved Solenoid Valve which can be purchased with the PV.


- Energize the Remote Start Solenoid Valve until flow is achieved in the PV. The "System Ventilating" LED's will start to flash once air flow is achieved through the machine enclosure system.
- Ventilation cycle will start for the selected ventilation time.
- During the ventilation cycle the ventilation gas will exit the enclosure through the spark arrestor in the Outlet Valve.
- Once the sufficient number of volume changes have completed (defined by the length of the ventilation time period) the system will cease to supply ventilation gas to the enclosure.
- The system will show "Ventilation Complete"  signal when the ventilation cycle is completed.

#### **Note the running time of the ventilation cycle.**

Indicator	Colour	Status
System Ventilating	Yellow 	Ventilation in progress (Flashing)
Ventilation Complete	Red 	Power Off (power to the electrical machine should be off)

**NOTE: If ventilation cycle fails to start, Open the Ventilation Flow Restrictor until the "System Ventilating" indicator start to flash.**

Indicator	Colour	Status
System Ventilating	Black 	Not in Ventilation

Indicator	Colour	Status
Ventilation Complete	Green 	Ventilation Cycle Successful (safe to apply power to the electrical machine)

- Check that the ventilation time noted is greater or equal to the required ventilation time.
- The Pre-Start Ventilation will remain in “Ventilation Complete” mode until either the air supply falls below the minimum supply pressure or the ventilation cycle is reset or re-started either locally or remotely.
- To reset the “Ventilation Complete” signal, push the Local Start Push Button or energize the Remote Start Solenoid Valve for one second.

If the Local Start Push Button is pushed or the Remote Start Solenoid Valve is energized for more than one second, the PV system will start a new ventilation cycle after resetting.

If the system fails to work as expected, refer back to the “Installation of the System” in section 6.

If the problem continues, Refer to the “Fault Finding” in section 9.

If all checks have been done and the system still fails to operate as expected, please contact your local distributor or Expo Technologies.

## Section 3: Application Suitability

The Pre-Start Ventilation systems designed to protect rotating electrical machines, are certified for use in hazardous locations, where the hazardous location is non-mining (above ground) and the hazard is caused by flammable gases, or vapours. The rotating electrical machines must be rated for use in (with the respective markings clearly displayed):

- Ex e rated rotating electrical machines - ATEX & IECEx Zone 1 or Zone 2 environment.
- Ex n rated rotating electrical machines - ATEX & IECEx Zone 2 environment.

Some High Voltage Ex e and Non Incendive Ex n machines, although certified to “Non-Incendive” methods of protection can create incendive sparking. These sparks and “hot spots” are more likely to occur during machine start-up due to the increased loading. The additional hazard that flammable gas may have entered the machine casing is the principle reason for fitting the Pre-Start Ventilation system. See applicable standards such as IEC / EN60079-15 and IEC / EN60079-7.

Pre-Start Ventilation systems may be used for hazards of any gas group. Apparatus associated with the Pre-Start Ventilation system, such as intrinsically safe signalling circuits and flameproof enclosures containing switching devices may be limited in their gas group. The certification documentation supplied with any of such devices must be checked to ensure their suitability.

This system is primarily designed for use with compressed air. Where other inert compressed gases are used (Nitrogen, for example) the user must take suitable precautions so that the build up of the inert gas does not present a health hazard. Consult the Control of Substances Hazardous to Health (COSHH) data sheet for the gas used. Where a risk of asphyxiation exists, a warning label must be fitted to the ventilated enclosure.

The following materials are used in the construction of Pre-Start Ventilation Systems. If substances that may adversely affect any of these materials are present in the surrounding environment, please consult Expo Technologies for further guidance.

Materials of Construction		
Stainless Steel	Aluminium	Acrylic

Materials of Construction		
Mild (Carbon) Steel	Nylon	Silicone
Brass	Polyurethane	Neoprene
ABS	Polycarbonate	Polyester (glass filled)

## Section 4: Description and Principle of Operation

The Pre-Start Ventilation System applies specifically to electrical machines e.g motors and generators that are already (or in the process of) being certified/approved as increased Safety (Ex e) or Non Incendive Ex n.

Prior to switching on the power (either Locally or Remotely) to the electrical equipment, the machine must be ventilated to remove any flammable gas that might have entered the enclosure machine. Pre-Start Ventilation is the process of removal of contaminated air and replacement with air (or inert gas) known to be free from flammable gas prior to machine start-up. The duration of the ventilation cycle process is normally ascertained by performing a ventilation test.



The air supply can be turned off after the Ventilation Cycle has been completed. The PV system does not provide leakage compensation or maintain pressurization after the ventilation cycle.

The principle of Pre-Start Ventilation is as follows:

- Clean compressed air or inert gas is drawn from a non-hazardous location.
- The interior of the machine is pre-ventilated to remove any hazardous gas.
- Measure the flow of “ventilation air” at a defined outlet.
- Positive pressure in the enclosure of the electrical machine prevents the hazardous gas from the environment entering the machine enclosure during the ventilation cycle and presents the machine ready to start once the ventilation cycle is complete..

### Local Operation

Local operation is selected when the remote operation option is either not available, or is de-energized. Turning on the air supply alone will not activate a ventilation cycle. The PV system will not start until the ventilation cycle is activated by operating the Local Start Push Button.



- To start ventilation cycle, push and hold the Local Start Push Button until flow is achieved. The flow in the enclosure will be indicated by the flashing Yellow  indicator “System Ventilating” LED’s. The ventilation cycle will then start.
- When the required ventilation flow from the outlet valve level has been attained, visual indicator, visual indicator and volt free (dry) contact will indicate “System Ventilating”.
- The ventilation will continue for the selected ventilation time. At the end of the ventilation time the system will show Green  indicator “Ventilation Complete”, pneumatic signal and or another set of volt free (dry) contacts.
- To reset the “Ventilation Complete” signal, push the Local Start Push Button for one second.

If held for longer than one second, the system will start a new ventilation cycle after resetting.

## Remote control operation (Optional)

The PV system can be operated remotely to ventilate the rotating electrical machine before use. Note that the PV system will not start the ventilation cycle automatically when the air supply is turned on. User must activate the ventilation cycle by energizing the Remote Start Solenoid Valve.

The appropriate remote control option if selected must be factory fitted to the PV system. For remote control operation:


- Start the ventilation cycle by energizing the Remote Start Solenoid Valve until flow is achieved in the PV system. The flow in the enclosure will be indicated by the flashing Yellow  indicator "System Ventilating".
- When the required ventilation flow from the outlet valve level has been attained, visual indicator, pneumatic signal or a volt free (dry) contact will indicate "System Ventilating".
- The ventilation will continue for the selected ventilation time. At the end of the ventilation time the system will show Green  indicator "Ventilation Complete", pneumatic signal and or another set of volt free (dry) contacts.
- To reset the "Ventilation Complete" signal, energize the Remote Solenoid Valve for one second.
- If held for longer than one second, the system will start a new ventilation cycle after resetting.


For Local Start or Remote Start operation; when the pressure in the enclosure reaches the liftoff pressure of the Outlet Valve, this automatically opens and allows airflow through the machine casing.

Note: For 7PV Pneumatically Operated Valve, the valve will open as flow enters the machine casing.

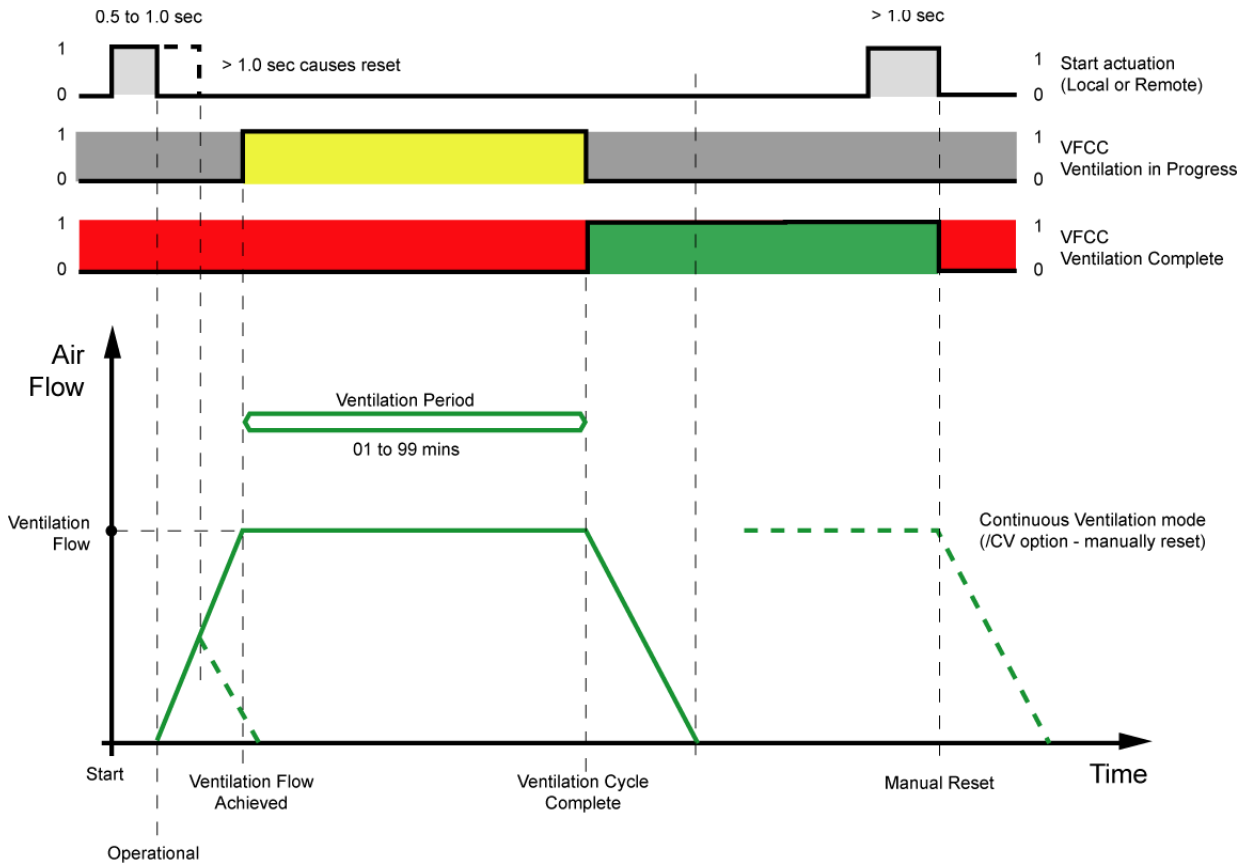
The Overpressure Relief Valve can also open during fault conditions if the pressure rises inside the machine to or above the opening pressure.

Two pipes connects the Outlet Valve to a Ventilation Flow Sensor in the PV system to measure the differential pressure across the orifice plate. When the pressure rises above the factory set value, the ventilation Flow Sensor will activate the timing circuit. The timer will operate for the specified ventilation time to ventilate the machine if the air flow rate does not fall below the required flow rate.

When the required ventilation flow level is attained, the visual indicator "System Ventilating" will start flashing Yellow , and the pneumatic output or volt-free contact will be activated.

At the end of the timed ventilation cycle, the air flow to the machine will be turned off by the PV system. The pressure within the machine falls to atmospheric, and the Outlet Valve closes. Within the PV system, the Green  "Ventilation Complete" indicator, pneumatic signal & a volt free (dry) contact will close giving permission to start the machine switchgear.

Provided that the air supply to the system is not interrupted, the system will remain in this condition unless the Local Start or Remote Start Solenoid Valve is activated for one second causing the system to reset.



## Section 5: Main Components

Refer to section 12 Drawings and Diagrams list for relevant PV system General Arrangement for components numbering.

### Air Supply Filter

The unit is provided with a 40-micron water / dust filter element as a precaution but air supply should be to the quality as stated in the Air Supply paragraph found in the Installation of the System section.

### Ventilation Flow Regulator

The Ventilation Flow Regulator is a 0-7 barg Pressure Regulator and enables the user to adjust the total ventilation flow to the enclosure in order to achieve the required ventilation flow rate plus the enclosure leakage rate. The total ventilation flow is the (Ventilation Flow rate at the Outlet Valve +10%) + the leakage of the machine casing.

### Ventilation Control Pilot Operated Regulator

This regulator controls the ventilation air supply to the enclosure according to the supply from the ventilation flow regulator and is automatically closed after the ventilation time has been completed.



### Logic Air Supply Regulator

This device provides the system with a stable logic pressure supply for consistent operation. The pressure level of 4.0 barg (60 psig) is factory set and can be verified by means of the integral pressure gauge. It should only be adjusted if the gauge indicates that the regulated pressure is incorrect. This should indicate no more than 4.0 barg (60 psig). During ventilation you may notice the pressure drop down to 3.0 barg (45 psig).



## Visual indicators

Visual indicators are fitted to provide local status information to the operator:

### Ventilation in Progress Indicator

Black		"Ventilation flow too low" (or not in Ventilation mode)
Yellow (flashing)		"Ventilation flow above the minimum" (System Ventilating)

### Ventilation Complete Indicator

Red		Power Off (power to the electrical machine should be off)"
Green		Ventilation Cycle Successful (safe to apply power to the electrical machine)

## /PA Terminal Box

Increased Safety

Ex e IIC T5 Gb Ex tb IIIC T100°C Db IP66 Tamb -20°C to +55°C	Ex e IIC T4 Gb Tamb -20°C to +60°C
--	---------------------------------------

The Terminal Box is increased safety (Ex e) certified and incorporates the terminal connection points for the switches and solenoid valve (when Remote Start is included). All contacts provided are volt free (dry).

Cable entry methods (for example conduit or cable glands) must be certified to IECEx and ATEX standards. The main requirement is that IP66 (or better) ingress protection must be provided by use of seals or washers.

## /IS Intrinsically Safe (Ex i)

The output signals "System Ventilating" and "Ventilation Complete" are available as volt-free contacts in blue terminals, for connection to Intrinsically Safe circuits. The terminal box has an isolation partition to keep the separation between I.S. circuits and non-I.S. circuits, when the solenoid valve is not I.S.

## /PO Pneumatic Output Signals

The output signals "Ventilation in Progress" and "Ventilation Complete" are 4 barg (60 psig) pneumatic signal available for connection to  $\frac{1}{8}$ " NPT Female bulkheads. Connect these signals to external pressure switches.

## Outlet Valve

This device has several functions:

- The Outlet Valve unit is calibrated to open when the Ventilated Enclosure pressure exceeds the set point.
- It contains a Spark Arrestor designed to prevent the emission of arcs, sparks and incandescent particles produced by normal operation or electrical fault within the machine.
- It measures the differential pressure across the outlet orifice during ventilation flow. The measurement figure indicates when the required flow rate is achieved and timing of the ventilation cycle can start.
- It contains the overpressure Relief Valve.

To achieve effective Ventilation Flow, the point where air enters and exits the machine should normally be at opposite ends of the enclosure. The Outlet Valve unit must be mounted vertically and there should be a minimum clearance of 300 mm (12") around the spark arrestor. The Outlet Valve have user selectable orifice plates. These allow the flow rate to be selected by the user without modification to the PV system.

It is important that the interior and exterior of the spark arrestor is kept clean and debris is not allowed to accumulate. In particular the exterior of the spark arrestor should not be painted or blocked in any way.

## Section 6: Installation of the System

The Pre-Start Ventilation System must be installed by a competent person in accordance with relevant standards, such as IEC/EN 60079-14 and 60079-19. The installation must strictly adhere to the current standards that applies to the installation of Intrinsically Safe, Increased Safety and Type “n” apparatus. Copies of the Current Standard can be purchased from Expo Technologies or B.S.I or relevant local code / Standard.

The Pre-Start Ventilation system should be installed either directly on, or close to the machine. It should be installed such that the system indicators and certification labels are in view.

All parts of the system carry a common serial number. If installing more than one system, ensure that this commonality is maintained within each system installed.

### Air Supply Quality

The Pre-Start Ventilation System should be connected to a protective gas supply, which is suitable for ventilation.

The supply pipe connections to the Pre-Start Ventilation System are:

3PV	5PV	7PV
1/2" NPT (F)	1" NPT (F)	2" NPT (F)

The size of the input pipe should be appropriate for the maximum input ventilation flow rate for the application.

The air supply must be regulated at a pressure less than the maximum stated inlet pressure.

The air supply must be: clean, non-flammable and from a non-hazardous location. It must comply with BS ISO 8573-1: 2001 Class 2.2.1 or equivalent local standards. This is typically referred to as Instrument Air Quality. Although equipment will operate with lower air quality, the operational life of the system will be adversely affected. The equipment that is being protected by the Pre-Start Ventilation may also suffer because of poor air quality.

### Instrument Air Quality

Solid Particles	0.5 mm < particle size ≤ 1 mm, maximum 1000 particles / m <sup>3</sup>
Residual Water	1mm maximum density, +3°C* pressure dewpoint
Oil Content	0.01 mg / m <sup>3</sup> concentration total oil

\* For applications where T<sub>amb</sub> 0°C, the air supply should be Class 2.1.1 with humidity of -70°C pressure dewpoint.

When an inert gas is being used to supply the ventilation system, risk of asphyxiation exists. Refer to Application Suitability section.

Before connecting the air supply to the Pre-Start Ventilation System, the supply pipe work should be flushed through with instrument quality air to remove any debris that may remain in the pipes. This must be carried out for at least 10 seconds for every metre of supply pipe.

The ventilation air from the Pre-Started Ventilation system should be piped within the machine to ensure ventilation of potential dead air spots.

**Warning: The system is fitted with an internal regulator factory set to 4 barg (60 psig) feeding the logic air supply regulator. The correct logic supply pressure is vital to the reliability and calibration of the Pre-Start Ventilation System, therefore should NOT be adjusted.**

## Pipe Work

If the Pre-Start Ventilation is not connected directly to the machine enclosure, pipe work and fittings used to connect the PV system to the machine enclosure should be either metallic or appropriate to the environment into which the system is installed. No valve may be fitted in any signal pipe connecting the PV system to the machine enclosure. This pipe work must be fitted in accordance with local codes of practice where relevant.

## Multiple Enclosures


This system is suitable for the ventilation of the primary enclosure and its associated terminal boxes.

## Power Supplies and their Isolation

All power entering the rotating electrical machine must have a means of isolation. This requirement also applies to any external power sources that are connected to the equipment such as volt-free (dry) contacts within the rotating electrical machine. The electrical installation must conform to the local codes of practice.

## Exception

Power to Intrinsically Safe apparatus, or apparatus that is already suitable for use in hazardous locations need not be isolated by the Pre-Start Ventilation System.

In all cases the user must control the application and the isolation of power to the rotating electrical machine after the Pre-Start Ventilation System shows the "Ventilation Complete" Green  signal.






# Section 7: Commissioning

## Commissioning the System

Refer to the General Arrangement (GA) drawing for the Pre-Start Ventilation system option.

If, after commissioning, the system does not perform as expected, refer to the Fault Finding Section.

Follow these steps:

1. Disconnect the air supply pipe from the inlet to the PV System.
2. Flush the pipe through with instrument quality air to remove any debris. This must be carried out for at least 10 seconds for every metre of supply pipe.
3. Check all connections between the PV system and the Outlet Valve. The Outlet Valve Unit must be fitted correctly with clear path to the ventilation exhaust.
4. Close and re-open the internal shut off valve. See No. 5 in the GA drawing.
5. Check that the internal logic pressure gauge reads 4.0 barg (60 psig). See No. 4 in the GA drawing.
6. Start the ventilation cycle by pushing the Local Start Push Button momentarily until flow is achieved. Or use the Remote Start facility where fitted.
7. The ventilation timer will start as soon as the "System Ventilating" indicator turn from Black  to flashing Yellow .
8. Check the time delay between the "System Ventilating" indicator start flashing Yellow , and the "Ventilation Complete" indicator turning from Red  to Green . Ventilation time should not be less than the minimum required. Times in excess of the minimum are permitted.

9. If the "System Ventilating" indicator does not flash Yellow ●, this indicates low ventilation flow. This can happen with a machine housing with greater than expected leakage.

### **Increase the ventilation pressure.**

10. To correct this, push and hold the Local Start Push Button.

11. Very slowly, open (clockwise) the Ventilation Flow Regulator (See GA drawing for item number), until the indicator flashes Yellow ●.

DO NOT open too quickly as this can allow too much air and over pressurize the enclosure.

12. If after the flow regulator is fully open (the pressure gauge read 4 mbar), and the "System Ventilating" indicator does not flash Yellow ●, refer to next page on "Procedure for increasing air flow".

When a full ventilation cycle is successfully completed, the "System Ventilating" indicator will turn from flashing Yellow ● to Black ●.

At the same time the "Ventilation Complete" indicator will turn from Red ● to Green ●. The appropriate pneumatic or electrical signals will coincide with the changes of indicator status.

Once the ventilation time is completed, the ventilation air flow to the machine will stop and the "Ventilation Complete" signal will activate.

The system will remain in this mode until the system is either reset or re-started, or the air supply to the system is isolated.

To reset the "Ventilation Complete" signal, push the Local Start Push Button or energise the Remote Start Solenoid Valve for one second.

To re-start a ventilation cycle again, push and hold the Local Start Push Button or the Remote Start facility until the "System Ventilating" LED's begin to flash.

### **Procedure for increasing air flow**

It is possible for the enclosure of the rotating electrical machine to have a higher leakage rate than expected, which may affect the PV system's ability to achieve sufficient air flow to start the ventilation cycle.

See table below to identify if the PV system require the below procedure for removing the fitted restrictor to increase air flow through the system.

Note: This procedure should be carried out by a competent engineer.

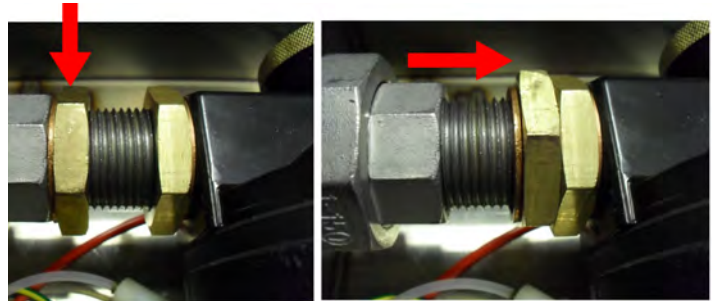
System	Orifice in system Outlet Valve (required flow)	Remove Restrictor (Yes/No)
3PV	1500 NI/min	Yes (If unable to achieve sufficient flow to start electronic timer).
5PV	6000 NI/min	Yes
7PV	N/A	N/A

### **Necessary spanner (wrench) sizes**

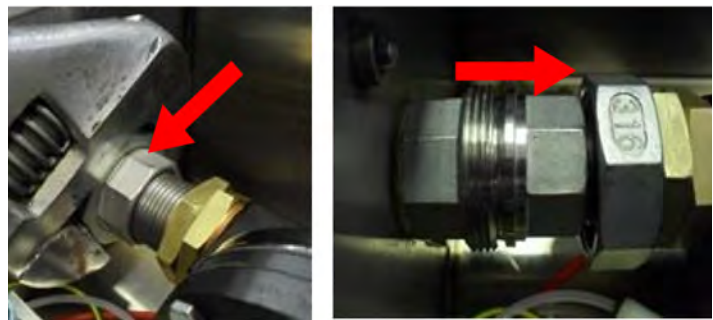
Components	3PV	5PV
Locknut	32mm	42mm

Components	3PV	5PV
Union Nut	40mm	54mm
Union	26mm	39mm

Use the spanner (wrench) to loosen the locknut. It should go back 15 - 20mm.



Loosen the union nut and move it back towards the locknut as shown



Pull back the right hand half of the union 5 - 10mm. The orifice restrictor is in the middle.

Remove the restrictor.

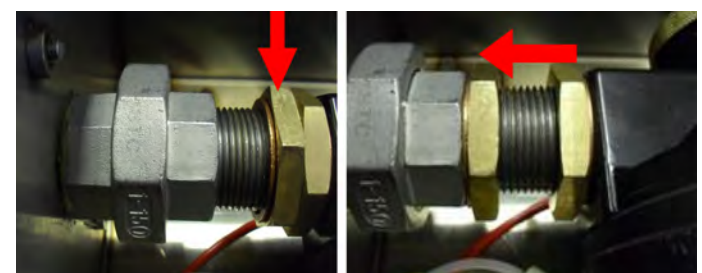


Wind back the right hand union half towards the left union half.

Note: It is very important to fit the two halves together tightly to avoid leakage.



Lock the two union halves together with the union nut. Wind back the locknut to its former position.



## Section 8: Maintenance of the System

### General maintenance

The maintenance of the system outlined in this manual should be supplemented with any additional requirements set out in appropriate local codes of practice.

**The following checks should be carried out every 6 - 36 months dependent on environment according to IEC / EN 60079-17**

- Tests outlined in the Detailed Commissioning section.
- Ensure that the Outlet Valve Unit is free from contamination prior to making any adjustment. To do this:
  - Remove large cover plate using a 10 mm spanner (wrench).
  - Check that the interior and all components are clean and free from contamination.
  - Replace large cover plate.
- Check the condition of the air supply filter element. Clean or replace as necessary.

**The following additional checks are recommended at least every 3 years:**

Check that:

- Apparatus is suitable for use in the hazardous location.
- There are no unauthorised modifications.
- The air supply is not contaminated.
- The "System Ventilating" and "System Ventilation Complete" signals function correctly.
- Approval labels are legible and not damaged.
- Adequate spares are carried.
- The action on pressure failure is correct.

### Maintenance of Electronic Timer

**This must be carried out every 3 years.**

- The intrinsically safe battery pack associated with the electronic timer should be replaced and the commissioning tests repeated.
- After the timing phase has elapsed, the battery may be hot-swapped in the hazardous location without affecting the operation of the Pre-Start Ventilation System

## Section 9: Fault Finding

### General Information

If there are any problems that cannot be corrected using one of the methods described, please call Expo or your supplier for further assistance. If the system is less than 12 months old, parts under warranty should be returned to Expo for investigation. A full report of the fault and the system serial number should accompany the parts.

It is common for problems with the Pre-Start Ventilation System to be caused by contamination of the air supply with oil, water or dirt. To prevent these problems, the air supply must contain a dust filter and a water filter. This will ensure that the air is instrument quality and protect both the ventilation system and the equipment being ventilated. This filtration system is not provided by Expo and must be sourced separately.

Contamination can enter the system from a number of sources. To prevent this, it is essential that the procedures described in the Installation section are carried out prior to first use of the system. These procedures should also be carried out following any disconnection and re-connection of the pipe work. Failure to perform these procedures may cause damage to the system that will not be covered by the warranty.

The system has been designed for ease of fault finding and the many of the components fitted are plug-in or chassis mounted. Check components by substitution only after establishing that such action is necessary.

Before carrying out the fault finding procedures, ensure that:

- Both the main air pressure to the system and the regulated pressure to the logic manifold are as specified on the settings sheet.
- Air pressure does not drop below the minimum supply pressure during ventilation; the majority of faults reported are due to insufficient air supply during the ventilation cycle.

### Pre-Start Ventilation System has sufficient flow but no "System Ventilating" signal.

Fault Location	Cause	Solution
Battery Pack.	The battery pack is discharged.	<ul style="list-style-type: none"> <li>• Battery needs replacement. Consult Expo Technologies.</li> </ul>
"System Ventilating" switch.	<ul style="list-style-type: none"> <li>• Stroke actuator faulty.</li> <li>• Ex d system ventilating switch is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the actuation of switch by the "Short Stroke Actuator for Ex d Switch". Refer to relevant General Arrangement (GA) drawing.</li> <li>• If Stroke Actuator is not moving while the system is ventilating, the actuator may require replacement. Consult Expo Technologies.</li> <li>• If Stroke Actuator is working, check that the switch is closing.</li> <li>• If it is not closing, it needs to be replaced.</li> <li>• If it is closing but no signal is present, the switch needs replacement. Consult Expo Technologies</li> </ul>
Electronic Timer	The Electronic Timer is faulty	<ul style="list-style-type: none"> <li>• Needs replacement. Consult Expo.</li> </ul> <p>This should be done by a competent Service Engineer.</p>

## Ventilation does not start or fails to complete

This is common due to the smaller pipe diameter or smaller compressor.

Fault Location	Cause	Solution
Air Supply Pressure	Air supply pressure fall below 4 barg (60 psig).	<ul style="list-style-type: none"> <li>Check that the air supply pressure is not below the specified minimum pressure during ventilation.</li> <li>Increase air pressure. The pressure gauge should be above 4 barg (60 psig) during ventilation.</li> <li>or replace main air filter. Consult Expo Technologies.</li> </ul>
Machine could have a greater leakage rate than expected	Insufficient air supply to rotating electrical machine enclosure.	<ul style="list-style-type: none"> <li>Slowly turn the Ventilation Flow Regulator to increase the air flow.</li> <li>Do this until the "Ventilation in Progress" indicator is activated. Indicator should turn from "Black ●" to "Flashing Yellow ●"</li> <li>This indicates correct Ventilation Flow.</li> <li>If the problem is not solved, refer to the "Procedure for increasing air flow" in the Commissioning section.</li> </ul>
Remote Solenoid Valve	Not functioning	<ul style="list-style-type: none"> <li>Check all connections from the PV system to the Remote Start control, continuity and supply voltage where possible.</li> <li>Make sure all connections are secure and terminated correctly.</li> <li>If all these appear to be correct, then check the operation of the system by using the Local Start Push Button.</li> <li>If the Local Start Push Button successfully starts a ventilation cycle, the Solenoid Valve needs replacement.</li> </ul>

## Ventilation Time Insufficient

This can occur if the Electronic Timer Selector Switches have not been set correctly.

Fault Location	Cause	Solution
Electronic Timer Selector Switch	Not set correctly	<ul style="list-style-type: none"> <li>Make sure the Electronic Timer Selector Switch is correct to the required setting.</li> </ul>
	Electronic Timer is faulty	<ul style="list-style-type: none"> <li>Replacement necessary</li> <li>This should be fitted by a competent Service Engineer.</li> </ul>

## Flow Sensor Calibration

Contact Expo Technologies for new Ventilation Flow Sensor if the sensor is out of calibration.

## Section 10: Recommended Spares List

Part Number	Description
HF1-A03N-008	Filter kit for HF1-A03N-009 filter - size 3
HF1-A03N-007	Filter kit for HF1-A03N-006 filter - size 5
HF1-A03N-002	Filter kit for HF1-A03N-001 filter - size 7
S0191/025	Ex d II switch SPCO
AGE-SW0Z-035	IS switch SPCO
S0030/606	Ventilation Flow sensor, must be factory set to the value as stated on the Customer Test and Inspection Sheet
ETM-IS31-001	IS battery pack for Electronic Timer  (only applicable to systems with battery powered timer)
KPV-RS01	24VDC Remote Start Solenoid Kit
KPV-RS02	110VAC Remote Start Solenoid Kit
KPV-RS03	230VAC Remote Start Solenoid Kit
KPV-RS10	12VDC (IS) Remote Start Solenoid Kit
KPV-RS11	24VDC (IS) Remote Start Solenoid Kit

## Section 11: Glossary

Acronym	Definition
PV	Pre-Start Ventilation system
ET	Electronic Timer
LS	Local Start Pushbutton
RS	Remote Start (Solenoid valve)
IS	Intrinsically Safe
PA	Permissive Alarm
OV	Pneumatically Operated Outlet Valve
PO	Pneumatic Output

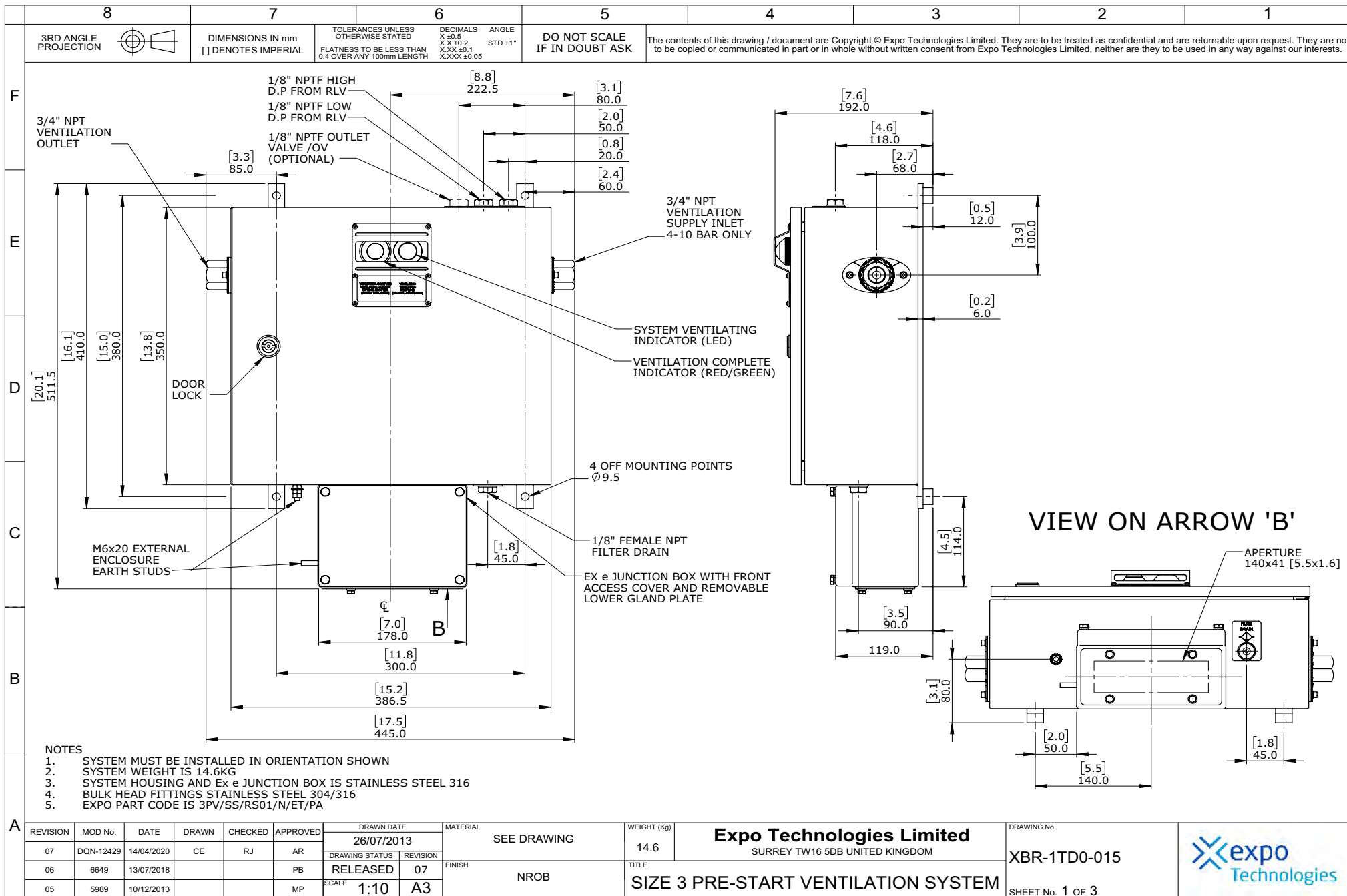
## Section 12: Drawings and Diagrams

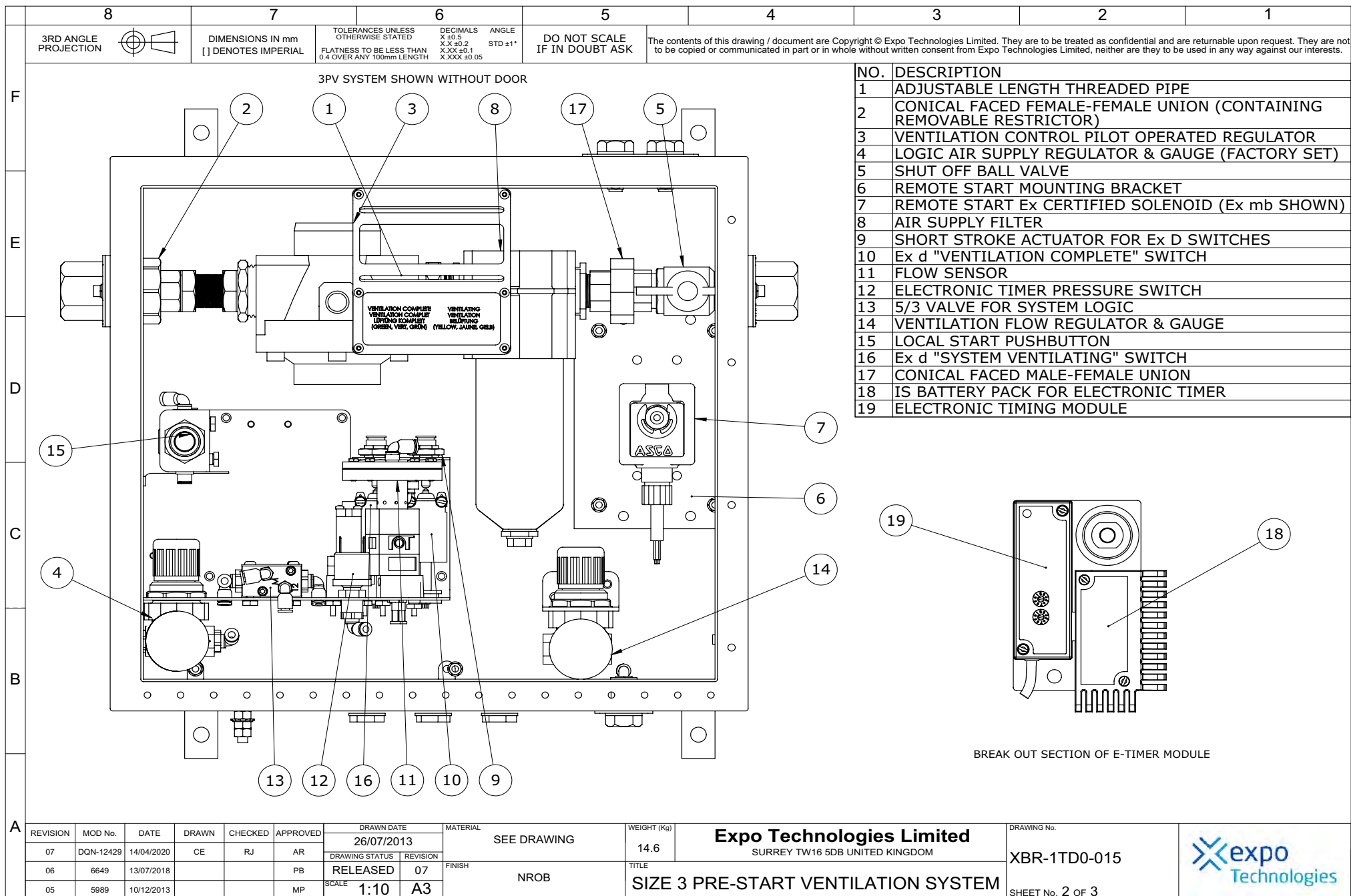
Title	Drawing Number	Number of Sheets
SIZE 3 PRE-START VENTILATION SYSTEM	XBR-1TD0-015	3
SIZE 5 PRE-START VENTILATION SYSTEM	XBR-1TD0-014	3
SIZE 7 PRE-START VENTILATION SYSTEM	XBR-1TD0-016	3
3/5PV HOOK UP DIAGRAM	PV-HU	1
7PV HOOK UP DIAGRAM	7PV-HU	1
PRESTART SYSTEM P & I DIAGRAM	PV-PI	1
EX E JUNCTION BOX LAYOUT	AGE-WC00-230	1
INDICATOR DISPLAYS/SWITCH SEQUENCE	SD8100	1

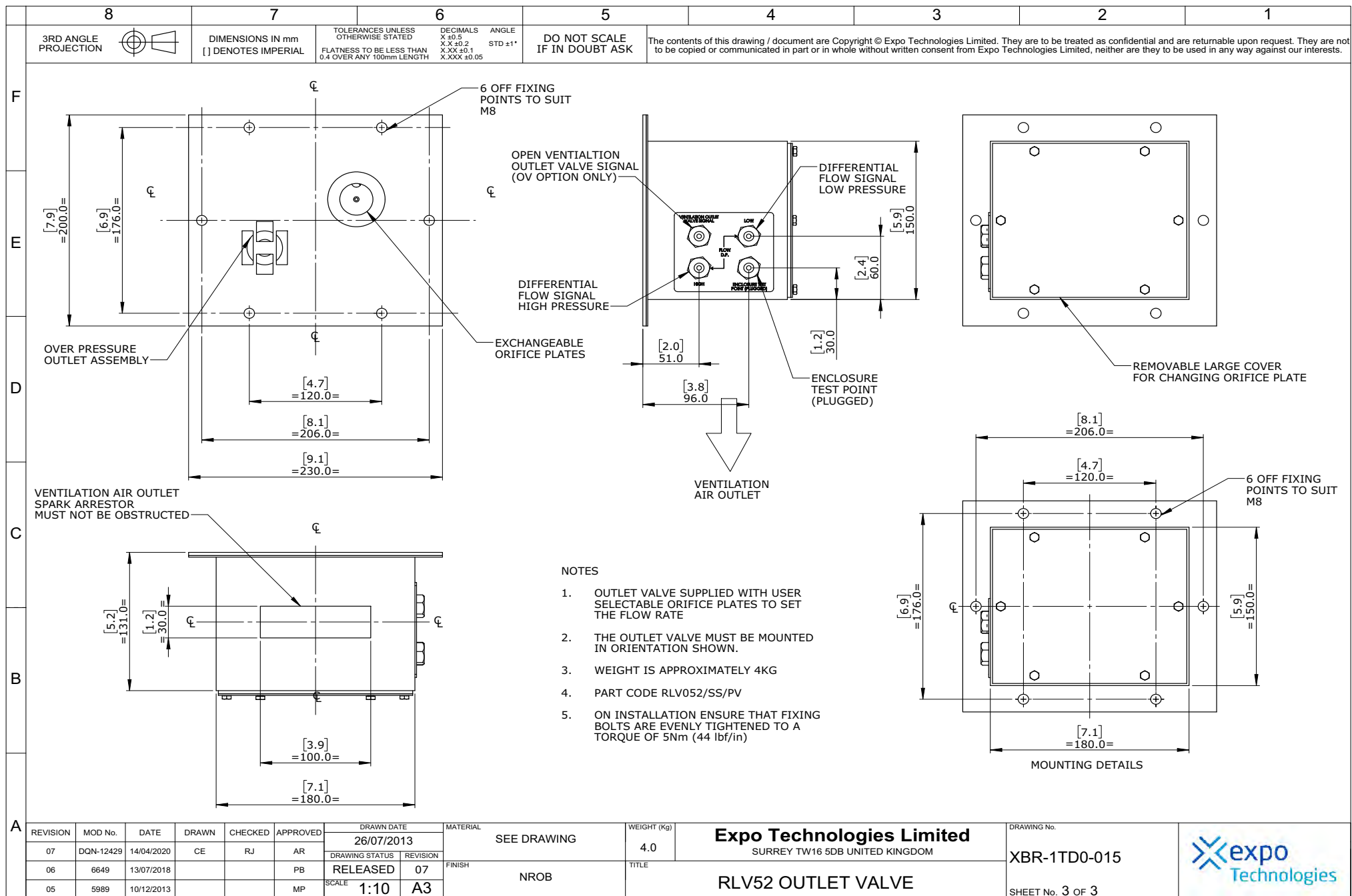
## Section 13: Certification

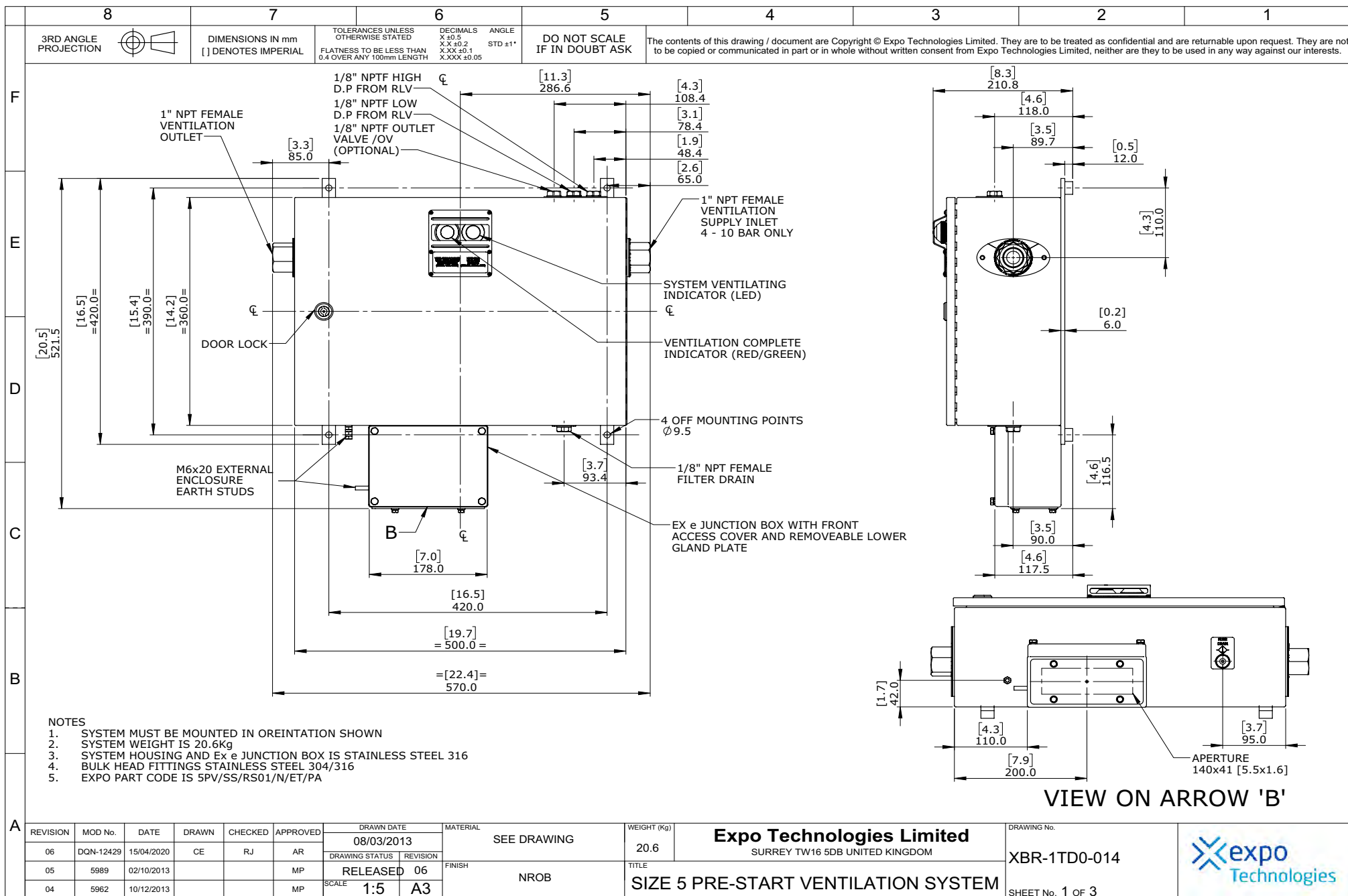
Download the certificates at [www.expoworldwide.com](http://www.expoworldwide.com)

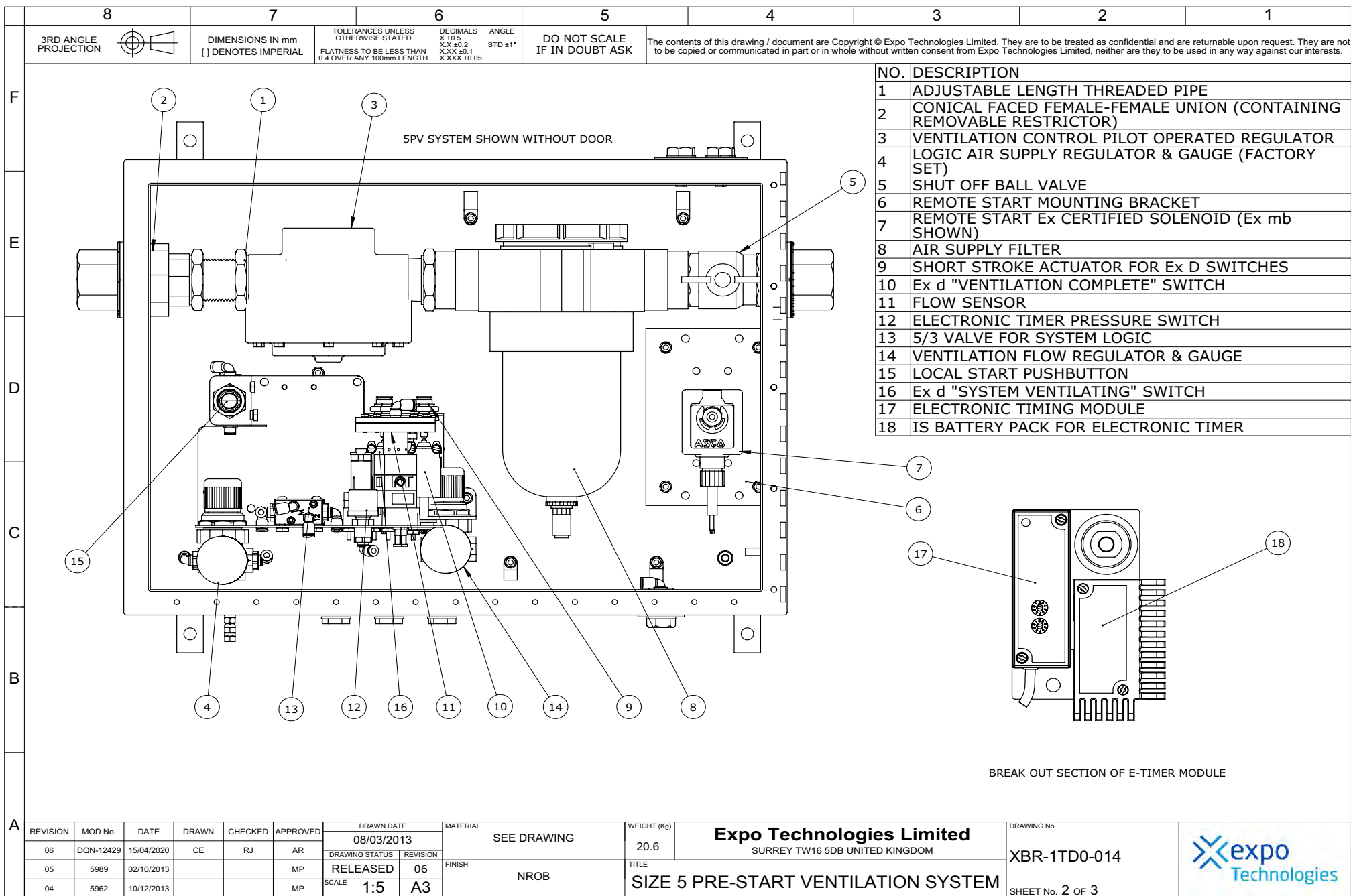
Component	Certificate	Number
Ventilation System	ATEX Certificate	ExVeritas 20ATEX0717X
	IECEX Certificate	IECEX EXV 20.0050X
	EXPO	EXPO 13MDOC1314
		EXPO 13MDOC1313
	COC	SC024
MIU/e Ex e Terminal Box	ATEX Certificate	ExVeritas 19ATEX0542X
	IECEX Certificate	IECEX EXV 19.0057X
Electronic Timer	ATEX Certificate	FM 10 ATEX0003X
	IECEX Certificate	IECEX FME 10.0001X
Electronic Switch	ATEX Certificate	EPS 14 ATEX 1766 X
	IECEX Certificate	IECEX EPS 14.0092X
/IS Option only	Electronic Switch Declaration 20MDOC1403X	
Solenoid Valve	Ex mb RS00/RS01/RS02/RS03	Certificate number as per solenoid valve provided
	Ex i RS10/RS11	
	Ex d RS20/RS21/RS22	

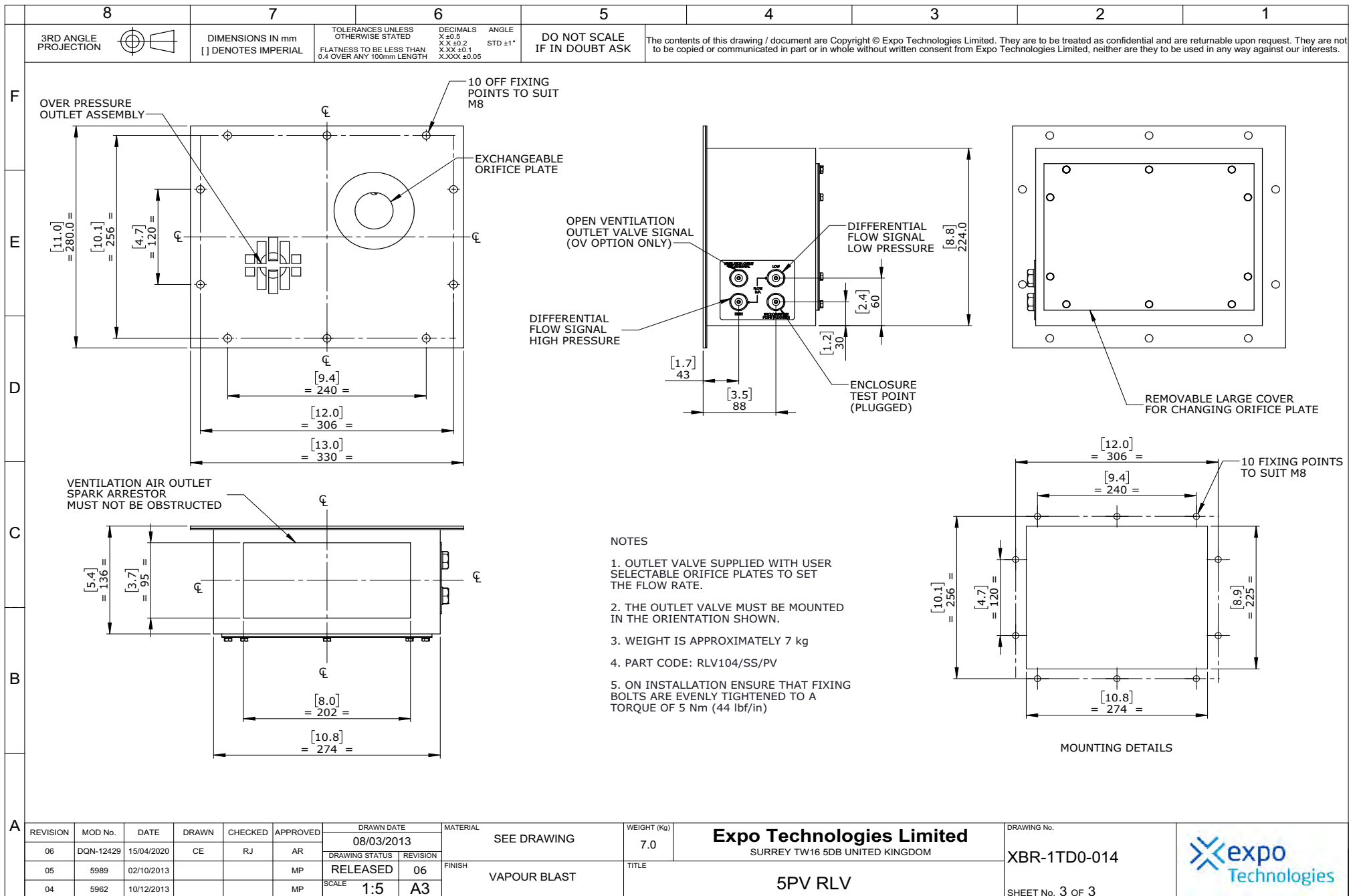


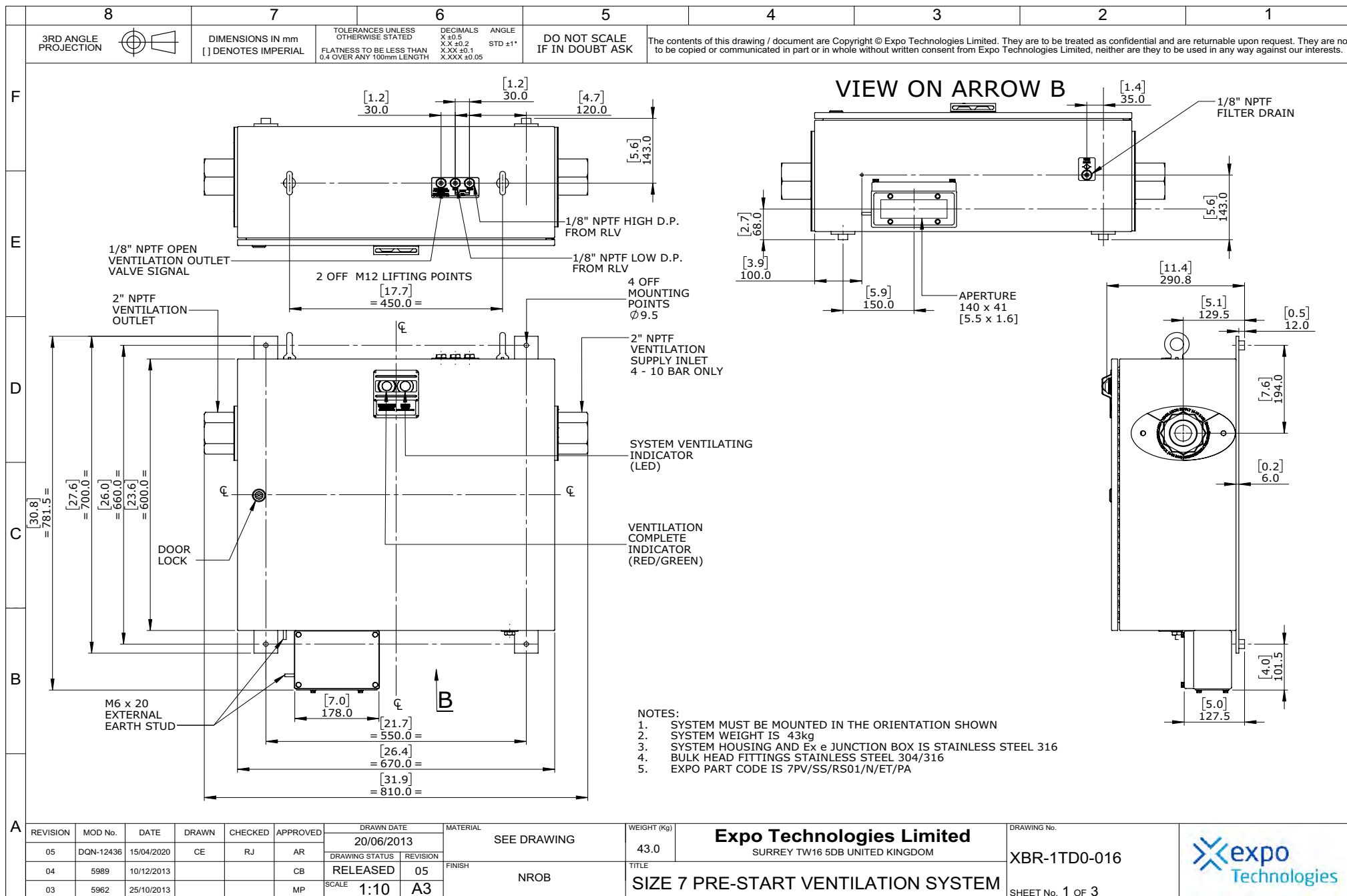


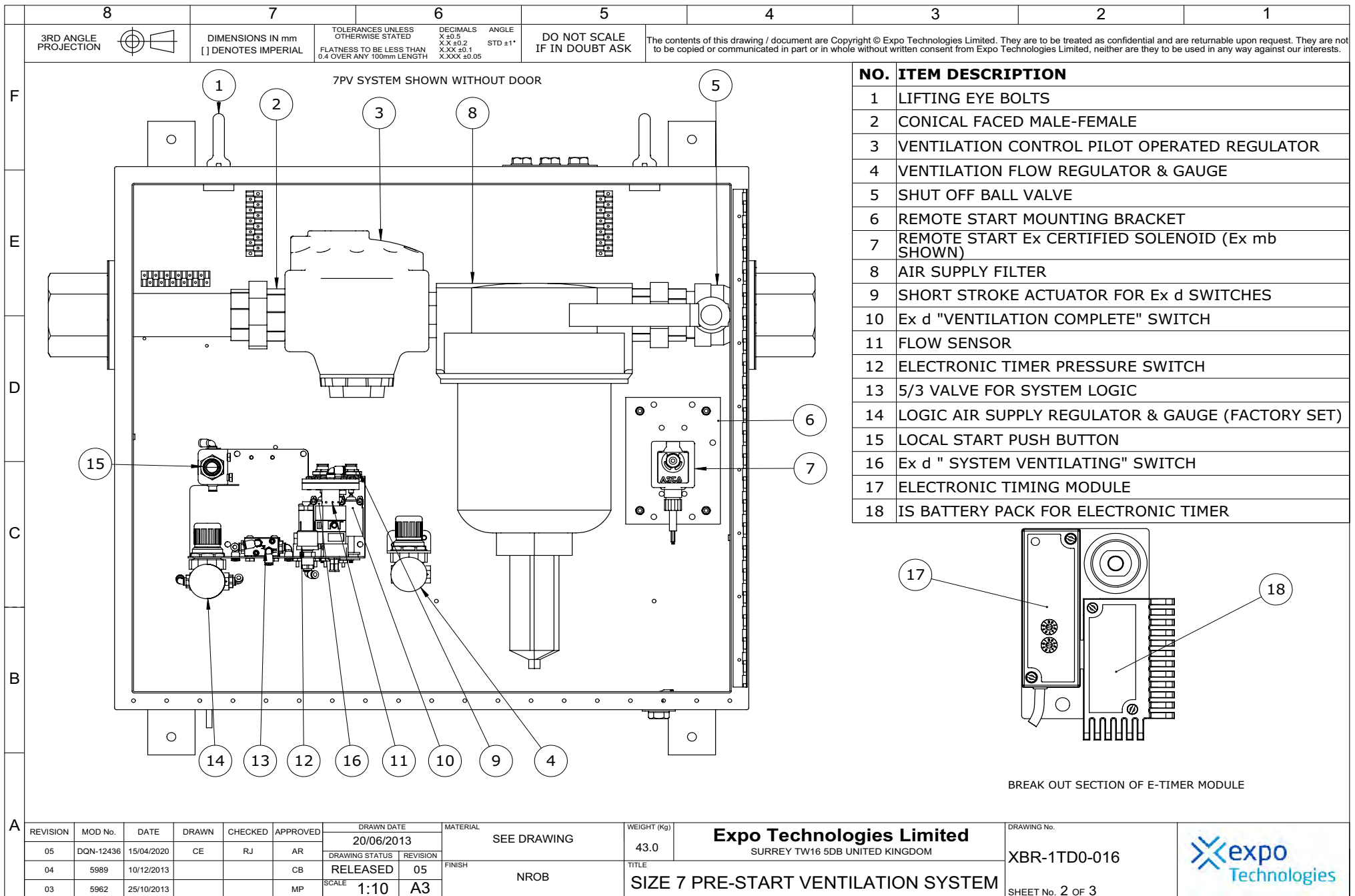


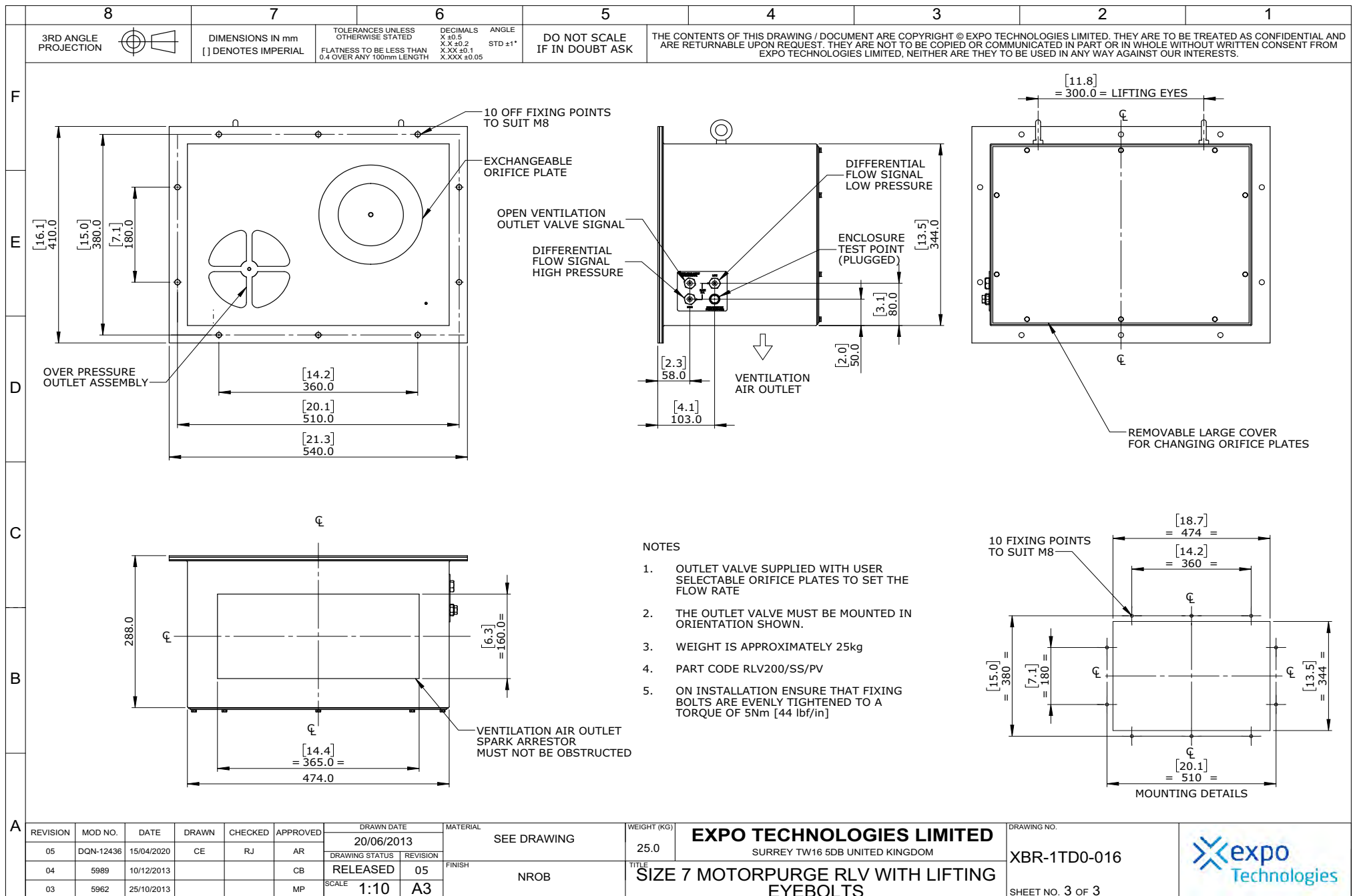


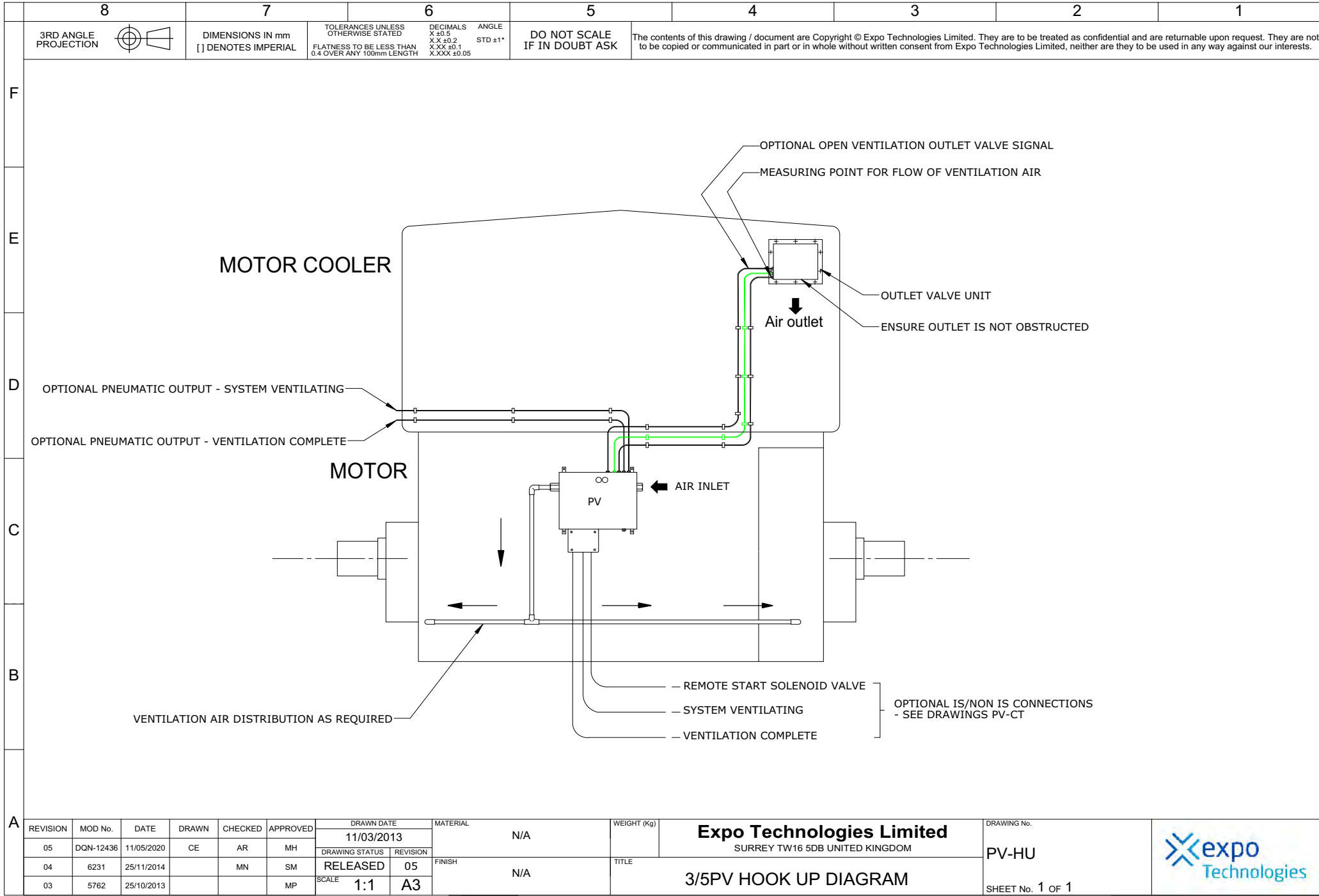


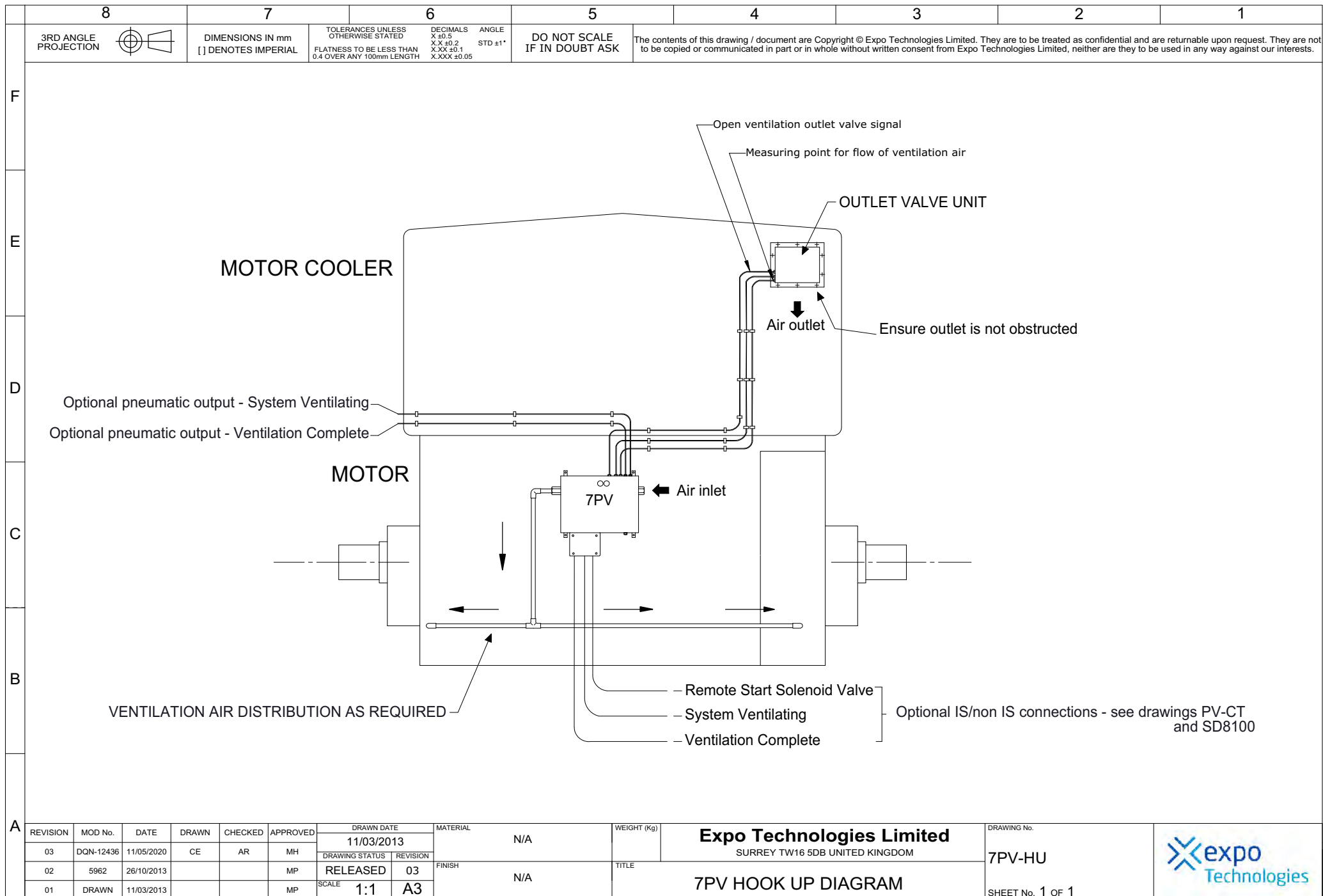


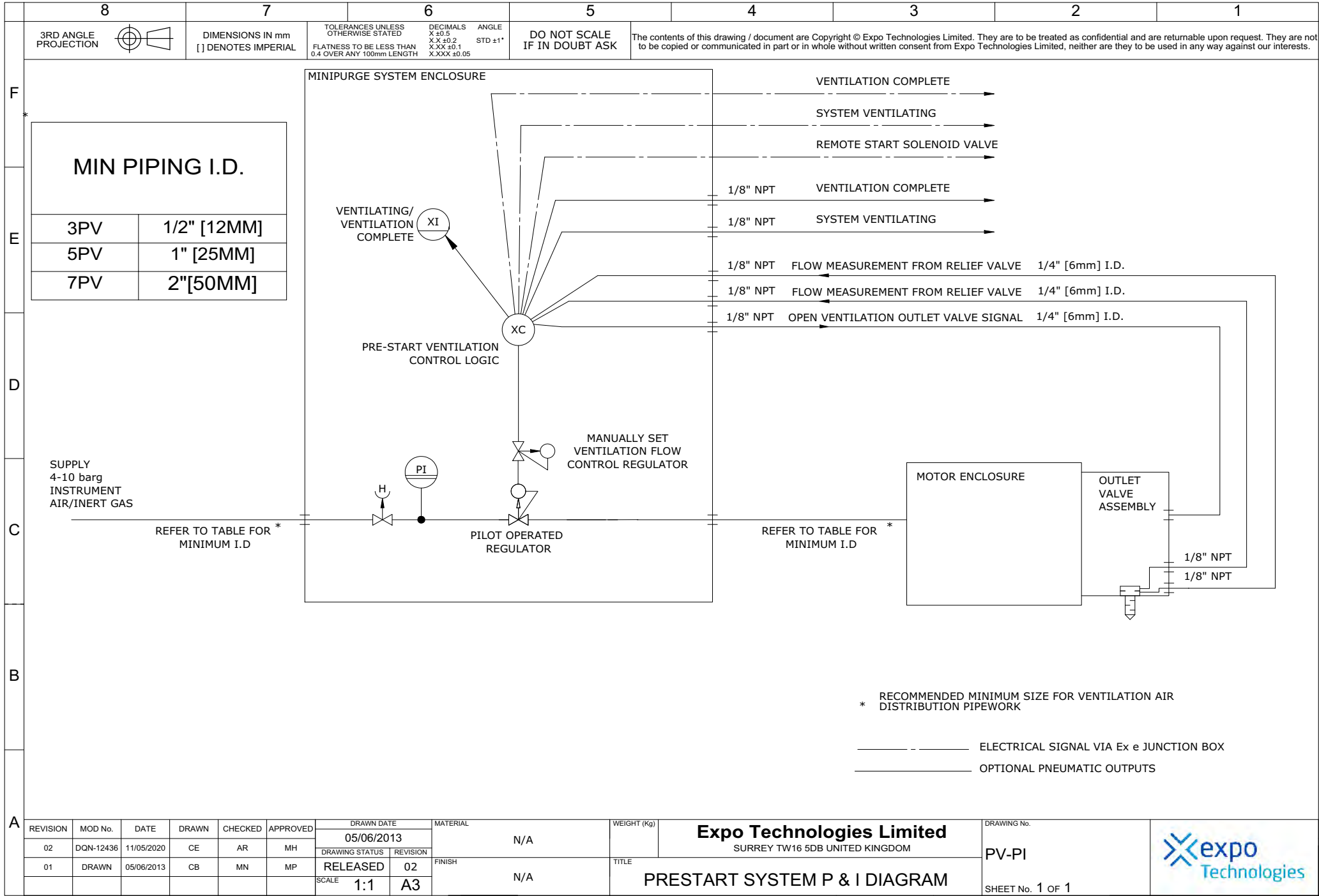


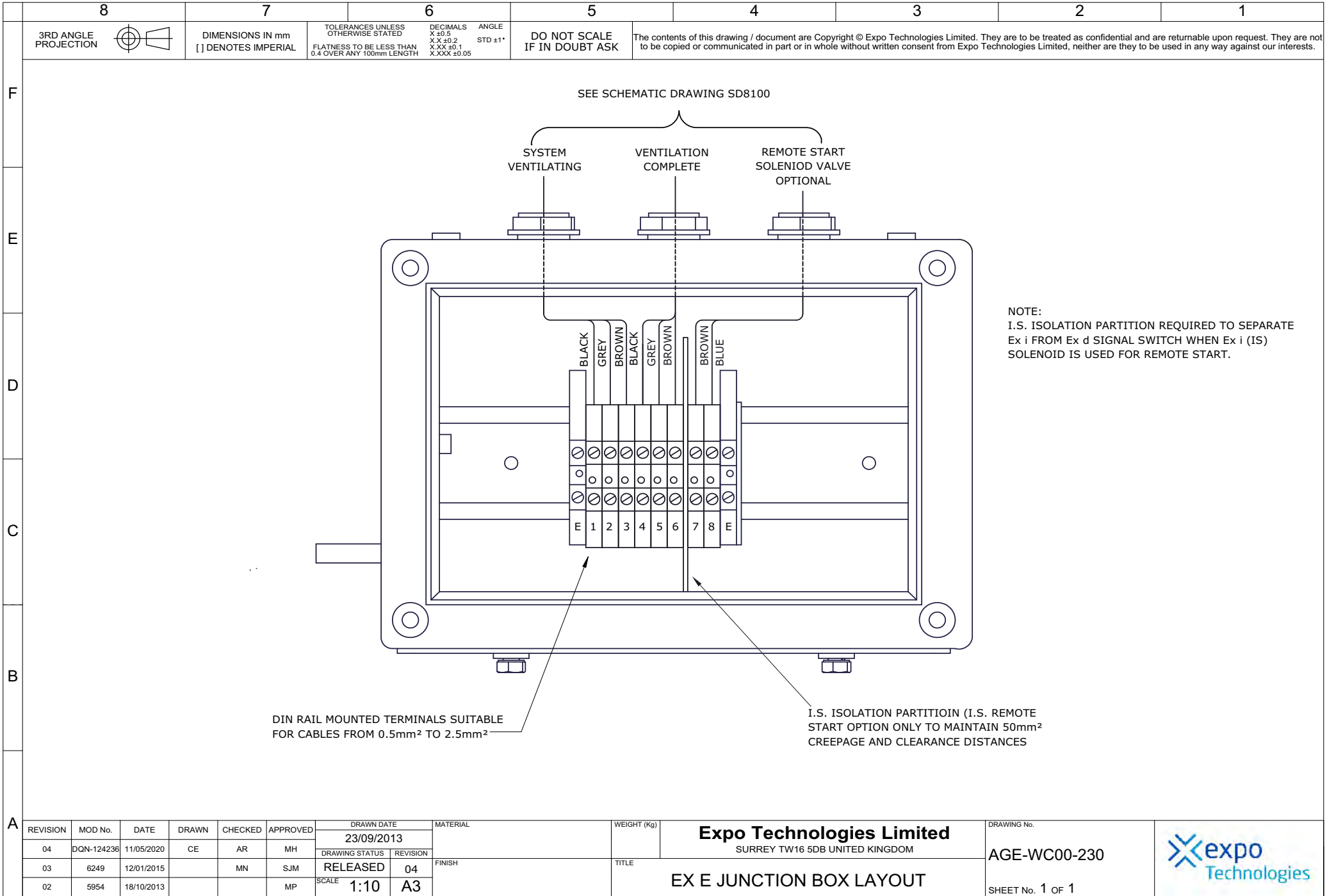


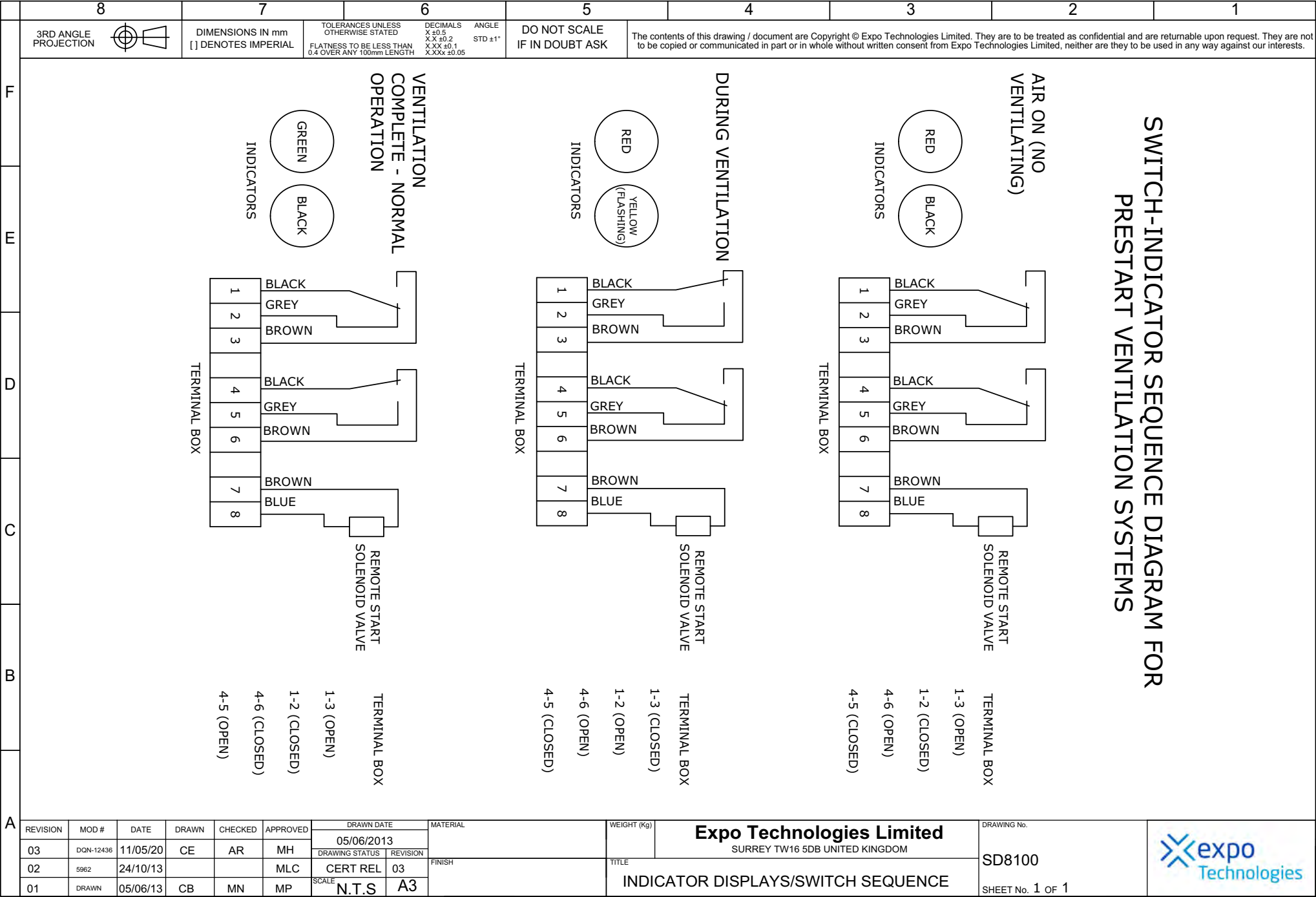










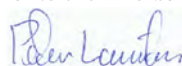


# 1 EU - Type Examination Certificate

- 2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
- 3 Certificate Number: ExVeritas 20 ATEX 0717 X Issue: 0
- 4 Equipment: Pre-Start Ventilation System
- 5 Manufacturer: EXPO Technologies Limited
- 6 Address: Unit 2, The Summit, Hanworth Road, Sunbury on Thames, Surrey, TW16 5DB, United Kingdom
- 7 This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- 8 ExVeritas, Notified Body number 2804 in accordance with Article 17 of the Council 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 design and construction of equipment and protective systems for use in potentially explosive atmospheres given in Annex II to the Directive
- 9 Compliance with the applicable Essential Health and Safety Requirements has been assured by compliance with the following Standards and section 16 of this certificate:  
  
EN 60079-0: 2012+A11:2013  
EN 60079-7: 2007
- 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 EU-Type Examination Certificate relates only to the design, construction, examination and tests of the specified equipment or protective system in accordance to the Directive 2014/34/EU. 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 shall be in consonance with the prescribed marking in the description (section 12.1, overleaf)



On behalf of ExVeritas




Peter Lauritzen  
Managing Director

This certificate may only be reproduced in its entirety and without any change, schedule included.  
The certificate is only valid when it carries an original signature.  
For help or assistance relating to this certificate, contact [info@exveritas.com](mailto:info@exveritas.com).  
ExVeritas ApS, Severinsmindevej 6, 4420 Regstrup, Denmark.  
ExVeritas® is a registered trademark, unauthorised use will lead to prosecution.


## Schedule

### 12.1 Marking


Standard version

 II 2G Ex e IIC T5 Gb Ta = -20°C to +60°C


Standard version with /ET or /ES

 II 2G Ex e ia IIC T5 Gb Ta = -20°C to +59°C...or...II 2G Ex e ia IIC T4 Gb Ta = -20°C to +60°C

Low temperature version

 II 2G Ex db e IIC T3 or T4\* Gb Ta = Ta -60°C to +60°C ... \* Dependent upon heater

Low temperature version with /ET or /ES

 II 2G Ex db e ia IIC T3 or T4\* Gb Ta -60°C to +60°C ... \* Dependent upon heater

The following line is added to the Pre-start Ventilation System designation table after the DXXX option:

LT = Low Temperature option

### 13 Description of Equipment or Protective System

The Expo Technologies Pre-Start Ventilation System is intended to provide pre-start ventilation for motors in a hazardous area. The equipment consists of a control unit and a relief valve, which contains various electrical, mechanical, and pneumatic components for the control of ventilation gas to an associated motor (not included in this certificate), at a set flow rate and for a predetermined time. Alternative arrangements include the provision of an electronic timer, a solenoid valve, and the option for extended or continuous ventilation. A low temperature version is available which includes a certified heater and thermostat.

The following representative placeholder indicates the order of the model number. This disambiguation comprehensively defines the part numbers using the characteristic letters which are defined in the table overleaf.

Part Number: a b c d e

Certificate: ExVeritas 20 ATEX 0717 X Issue 0

This certificate may only be reproduced in its entirety and without any change, schedule included.  
For help or assistance relating to this certificate, contact [info@exveritas.com](mailto:info@exveritas.com).  
ExVeritas ApS, Severinsmindevej 6, 4420 Regstrup, Denmark.  
ExVeritas® is a registered trademark, unauthorised use will lead to prosecution.



## Schedule

Characteristic letter	Definition
a - Size or Capacity	1 = Flow rate up to 225 l/min 2 = Flow rate up to 450 l/min 3 = Flow rate up to 1500 l/min 4 = Flow rate up to 3000 l/min 5 = Flow rate up to 6000 l/min 6 = Flow rate up to 9000 l/min 7 = Flow rate up to 14000 l/min
b - Pre-start Ventilation Type	PV = Pre-start Ventilation PP = Pre-start Ventilation (alternative)
c - Control Unit Enclosure Material/Mounting Configuration	al = Aluminium alloy cs = Mild steel, painted ss = Stainless steel bp = Back Plate only co = Chassis only pm = Panel mounting nm = Non-Metallic
d - Start Option	LS = Local start using start switch on PV/PP system RS## = Remote start using Ex rated solenoid kit
e - Fitting Option	A = ANSI flange connection fittings used D = DIN flange connection fittings used B = BSP Pipe connection fittings used N = NPT Pipe connection fittings used # = letter showing non-certified pipe fitting

### Option codes (Added only if used)

FM	Flow Meter(s) fitted on enclosure to indicate ventilation flow
IS	Internal Switches suitable for Ex i circuits.
MR	Mechanically Resets ventilation reset signal.
ER	Electronically Resets ventilation reset signal.
PR	Pneumatically Resets ventilation reset signal.
MT	Mechanical Timing used to time pre-start ventilation cycle
PT	Pneumatic Timing used to time pre-start ventilation cycle
ET	Electronic Timing used to time pre-start ventilation cycle
HP	High Pressure sensor fitted to prevent over pressure.
OV	Outlet valve, pneumatically operated.
PA	"Ex" switch(es) built-in, with/without "Ex" junction box.
SP	Secondary Pre-Ventilation supply options.
SS	Separate Supply for Protective gas and Logic air.
TW	Twin (or more) outputs for two or more separate ventilated enclosures ventilated in parallel.
HS	High Supply Pressure up to 16 Bar.
CV	Ventilation sustained indefinitely after completion of ventilation cycle
EV	Ventilation extended for predefined period of time after completion of ventilation cycle
DXXX	Special design, no certification related options
LT	Low Temperature option
/ES	Electronic timer with EPPS
/ET	Electronic timer with the battery

Certificate: ExVeritas 20 ATEX 0717 X Issue 0

This certificate may only be reproduced in its entirety and without any change, schedule included.  
For help or assistance relating to this certificate, contact [info@exveritas.com](mailto:info@exveritas.com).  
ExVeritas ApS, Severinsmindevej 6, 4420 Regstrup, Denmark.  
ExVeritas® is a registered trademark, unauthorised use will lead to prosecution.



## Schedule

### 14 Descriptive Documents

#### 14.1 Associated Report and Certificate History:

Report Number	Cert Issue Date	Issue	Comment
R2909/A/1	19/10/2020	0	Issue of EXV prime certificate. Certificate transfer from Sira 13ATEX1083X Issue 1. See previous certificate for full revision history. This revision includes the code for the part number "/ES".

#### 14.2 Compliance Drawings:

### Issue 0

Title	Drawing No.	Rev. Level	Rev. Date
Ventilation Complete Reset Options for PV system.	SD8036	03	11/11/2020
Pre-start Ventilation Housing.	SD8038	06	11/11/2020
Pre-start Ventilation Model Numbers.	SD8043	04	25/11/2020
Circuit Diagram for PV/PP System.	SD8044	06	11/11/2020
High Pressure Option 'HP'.	SD8049	03	11/11/2020
Timing Options for PV System.	SD8066	06	11/11/2020
Certification Label.	SD8076	02	25/11/2020
PV & PP System Low Temp. Wiring (Typical).	SD8312	02	11/11/2020
PV & PP Low Temperature Housing.	SD8313	02	11/11/2020

### 15 Conditions of Certification

#### 15.1 Special Conditions for Safe Use

- The intended use of this equipment is as a pre-start ventilation system. It is the user's responsibility to ensure the correct functionality of the equipment when in use.*
- The equipment enclosure may contain RTDs or simple resistive switches. It is the user's responsibility to ensure that these are connected into suitably certified intrinsically safe circuits.*
- The Pre-Start Ventilation System, 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 controller unit falls below -20°C. This system shall utilise the RTDs that are fitted to the control unit to provide the appropriate level of safety 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.*
- When the equipment is provided with an intrinsically safe solenoid valve, the user must ensure that any associated line inductance is within the parameters of the solenoid valve certificate.*

Certificate: ExVeritas 20 ATEX 0717 X Issue 0

This certificate may only be reproduced in its entirety and without any change, schedule included.  
For help or assistance relating to this certificate, contact [info@exveritas.com](mailto:info@exveritas.com).  
ExVeritas ApS, Severinsmindevej 6, 4420 Regstrup, Denmark.  
ExVeritas® is a registered trademark, unauthorised use will lead to prosecution.



## Schedule

15.2 Conditions for Use  
(Routine Tests)

16 Essential Health and Safety Requirements  
Essential Health and Safety Requirements are addressed by the standards listed in section 9 and where required the report listed in section 14.1

The manufacturer shall inform the Notified Body of any modifications to the design of the product described by this schedule.

Certificate: ExVeritas 20 ATEX 0717 X Issue 0

This certificate may only be reproduced in its entirety and without any change, schedule included.

For help or assistance relating to this certificate, contact [info@exveritas.com](mailto:info@exveritas.com).

ExVeritas ApS, Severinsmindevej 6, 4420 Regstrup, Denmark.

ExVeritas® is a registered trademark, unauthorised use will lead to prosecution.



## IECEx Certificate of Conformity

### INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEx EXV 20.0050X** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2021-01-18

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

Equipment: **Pre-Start Ventilation System**

Optional accessory:

Type of Protection: **Ex 'e'**

Marking:

Standard version  
Ex e IIC T5 Gb Ta = -20°C to +60°C

Standard /ET version  
Ex e ia IIC T5 Gb Ta = -20°C to +59°C...or...II 2G Ex e ia IIC T4 Gb Ta = -20°C to +60°C

Low temperature version  
Ex db e IIC T3 or T4\* Gb Ta = Ta -60°C to +60°C ... \* Dependent upon heater

Low temperature/ET version  
Ex db e ia IIC T3 or T4\* Gb Ta -60°C to +60°C ... \* Dependent upon heater

Approved for issue on behalf of the IECEx  
Certification Body:

**Sean Clarke CEng MSc FIET**

Position:

**Certification Manager**

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting [www.iecex.com](http://www.iecex.com) or use of this QR Code.



Certificate issued by:

**ExVeritas Limited**  
Units 16-18 Abenbury Way  
Wrexham Ind. Est.  
Wrexham LL 139UZ  
United Kingdom



## IECEx Certificate of Conformity

Certificate No.: **IECEx EXV 20.0050X**

Page 2 of 3

Date of issue: 2021-01-18

Issue No: 0

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

Additional  
manufacturing  
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

#### STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2011 Explosive atmospheres - Part 0: General requirements  
Edition:6.0

IEC 60079-7:2006-07 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"  
Edition:4

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

#### TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[GB/EXV/ExTR20.0079/00](#)

Quality Assessment Report:

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



# IECEx Certificate of Conformity

Certificate No.: IECEx EXV 20.0050X

Page 3 of 3

Date of issue: 2021-01-18

Issue No: 0

## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Expo Technologies Pre-Start Ventilation System is intended to provide pre-start ventilation for motors in a hazardous area. The equipment consists of a control unit and a relief valve, which contains various electrical, mechanical, and pneumatic components for the control of ventilation gas to an associated motor (not included in this certificate), at a set flow rate and for a predetermined time. Alternative arrangements include the provision of an electronic timer, a solenoid valve, and the option for extended or continuous ventilation. A low temperature version is available which includes a certified heater and thermostat

Please see Annex for part number disambiguation.

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

1. The intended use of this equipment is as a pre-start ventilation system. It is the user's responsibility to ensure the correct functionality of the equipment when in use.
2. The equipment enclosure may contain RTDs or simple resistive switches. It is the user's responsibility to ensure that these are connected into suitably certified intrinsically safe circuits.
3. The Pre-Start Ventilation System, 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 controller unit falls below -20°C. This system shall utilise the RTDs that are fitted to the control unit to provide the appropriate level of safety 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.
4. When the equipment is provided with an intrinsically safe solenoid valve, the user must ensure that any associated line inductance is within the parameters of the solenoid valve certificate.

## Annex:

[IECEx Certificate Annex\\_1.pdf](#)



Annex to: IECEx EXV 20.0050X Issue 0

## Description Continued:

The Expo Technologies Pre-Start Ventilation System is intended to provide pre-start ventilation for motors in a hazardous area. The equipment consists of a control unit and a relief valve, which contains various electrical, mechanical, and pneumatic components for the control of ventilation gas to an associated motor (not included in this certificate), at a set flow rate and for a predetermined time. Alternative arrangements include the provision of an electronic timer, a solenoid valve, and the option for extended or continuous ventilation. A low temperature version is available which includes a certified heater and thermostat.

The following representative placeholder indicates the order of the model number. This disambiguation comprehensively defines the part numbers using the characteristic letters which are defined in the table overleaf.

Part Number: a b c d e

Characteristic letter	Definition
a - Size or Capacity	1 = Flow rate up to 225 l/min 2 = Flow rate up to 450 l/min 3 = Flow rate up to 1500 l/min 4 = Flow rate up to 3000 l/min 5 = Flow rate up to 6000 l/min 6 = Flow rate up to 9000 l/min 7 = Flow rate up to 14000 l/min
b - Pre-start Ventilation Type	PV = Pre-start Ventilation PP = Pre-start Ventilation (alternative)
c - Control Unit Enclosure Material/Mounting Configuration	al = Aluminium alloy cs = Mild steel, painted ss = Stainless steel bp = Back Plate only co = Chassis only pm = Panel mounting nm = Non-Metallic
d - Start Option	LS = Local start using start switch on PV/PP system RS## = Remote start using Ex rated solenoid kit
e - Fitting Option	A = ANSI flange connection fittings used D = DIN flange connection fittings used B = BSP Pipe connection fittings used N = NPT Pipe connection fittings used # = letter showing non-certified pipe fitting

## Option codes (Added only if used)

FM	Flow Meter(s) fitted on enclosure to indicate ventilation flow
IS	Internal Switches suitable for Ex i circuits.
MR	Mechanically Resets ventilation reset signal.
ER	Electronically Resets ventilation reset signal.
PR	Pneumatically Resets ventilation reset signal.
MT	Mechanical Timing used to time pre-start ventilation cycle
PT	Pneumatic Timing used to time pre-start ventilation cycle
ET	Electronic Timing used to time pre-start ventilation cycle
HP	High Pressure sensor fitted to prevent over pressure.
OV	Outlet valve, pneumatically operated.
PA	"Ex" switch(es) built-in, with/without "Ex" junction box.
SP	Secondary Pre-Ventilation supply options.
SS	Separate Supply for Protective gas and Logic air.
TW	Twin (or more) outputs for two or more separate ventilated enclosures ventilated in parallel.
HS	High Supply Pressure up to 16 Bar.
CV	Ventilation sustained indefinitely after completion of ventilation cycle
EV	Ventilation extended for predefined period of time after completion of ventilation cycle
DXXX	Special design, no certification related options
LT	Low Temperature option
/ES	Electronic timer with EPPS
/ET	Electronic timer with the battery

--

<b>Routine Tests:</b>
None.

**Issue 0**

Title	Drawing No.	Rev. Level	Rev. Date
Ventilation Complete Reset Options for PV system.	SD8036	03	11/11/2020
Pre-start Ventilation Housing.	SD8038	06	11/11/2020
Pre-start Ventilation Model Numbers.	SD8043	04	25/11/2020
Circuit Diagram for PV/PP System.	SD8044	06	11/11/2020
High Pressure Option 'HP'.	SD8049	03	11/11/2020
Timing Options for PV System.	SD8066	06	11/11/2020
Certification Label.	SD8076	02	25/11/2020
PV & PP System Low Temp. Wiring (Typical).	SD8312	02	11/11/2020
PV & PP Low Temperature Housing.	SD8313	02	11/11/2020



(1) **Declaration of Conformity**

(2) Expo Technologies Document Number EXPO 13MDOC1314 Issue 1

(3) This declaration is issued for the Pre-Start Ventilation Systems  
Types 4PP, 6PP, 7PP, 3PV, 5PV & 7PV

(4) Manufacturer:

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

(5) Pre-Start Ventilation Systems, types 4PP, 6PP, 7PP, 3PV, 5PV or 7PV, including all option models, are designed to protect rotating electrical machines, by removing any explosive gases which may ignite during the start-up cycle.

(6) The system is suitable for use with Ex e rotating electrical machines in accordance with EN 60079-7:2015.

(7) Expo Technologies declares that the Pre-Start Ventilation System is fully constructed of pneumatic and mechanical parts, which fulfil all the requirements for Group II Category 2 equipment in accordance with European Directive 2014/34/EU. The construction of the Pre-Start Ventilation System is inherently safe to be used in Zone 1 Hazardous Areas

(8) Depending on the model, the Expo Pre-Start Ventilation System may contain one or more of the following ATEX certified apparatus, suitable for use in Zone 1 without further assessment:

Apparatus	ATEX Certificate	Marking	T amb
Indication Limit Switch	EPS 14ATEX1766X	II 2 G Ex db IIC T6	-20°C to +60°C
Electronic Timer	FM 10ATEX0003X	II 1 G Ex ia IIC T5	-20°C to +59°C
MIU/e Terminal Box	ITS 10ATEX37092X	II 2 G Ex e IIC T5	-20°C to +60°C
Ex m Solenoid Valve	SIRA BAS98ATEX2168X	II 2 G Ex mb IIC Tx Gb*	-40°C to +yy°C*
Ex i Solenoid Valve	INERIS 03ATEX0249X	II 1 G Ex ia IIC T*	-40°C to +yy°C*
Ex d Solenoid Valve	LCIE 00ATEX6008X	II 1 G Ex d IIC T*	-40°C to +100°C

\* Refer to installed apparatus for full marking.

(9) The design has been assessed under SIRA Report R29083B/00 and R70087523A and is documented in Expo Technologies Technical Construction File numbers 45054 & 51080.

Manufacture is controlled under Sira Quality Assurance Notification Sira 99 ATEX M043

M L Carrillo  
Certification Manager

J P de Beer  
Technical Director

For and on behalf of Expo Technologies Ltd.  
Sunbury on Thames, UK

**Annex to Declaration of Conformity EXPO 13MDOC1314 Issue 1**

(10) Expo Technologies declares that the Pre-Start Ventilation Systems are suitable for use with Ex e rotating electrical machines in accordance with:

EN 60079-7:2015 Clause 5.2.7.3 requires that the rotating electrical machines shall be assessed for possible air gap sparking. This Clause specifies that an alternative for mitigating the risk of ignition during start up is that "the machine shall allow special measures to be applied during starting, to ensure that its enclosure does not contain an explosive gas atmosphere at the time of starting."

Note 1 to the above Clause on the standard states "Special measures include pre-start ventilation to remove any ignitable accumulation of flammable gases (for example by applying the purging, but not pressurization aspects of IEC 60079-2 in respect of Level of Protection 'pzc')."

(11) Given that the standard only refers to special measures, a Pre-start Ventilation System cannot be certified as apparatus for this purpose.

**(12) Outlet Valve**

The Pre-Start Ventilation System is supplied with an outlet valve, fitted with a spark arrester and overpressure relief valve. The Outlet Valve shall be fitted to the protected Ex e or Ex n rotating electrical machine, to prevent an internal overpressure above the maximum overpressure rating of the apparatus.

**(13) Remote Start**

The Pre-Start Ventilation System may be remotely started by means of an Ex certified Solenoid Valve. When a Solenoid Valve is used, the following electrical data may be afforded to the system:

Power supply 5, 12-24, 50, 110 or 230V dc / ac 50-60 Hz  
Current Consumption 8 – 16 mA according to valve type and supply voltage

(14) **Low Temperature Option** - Ambient temperature range Ta -60°C to +60°C

The Pre-Start Ventilation System may be supplied with an additional, heated, stainless steel enclosure to permit it to be used within an ambient temperature down to -50°C. This enclosure is fitted with an Ex d heater and an Ex e terminal box for connection of the heater leads.

T Class and Gas Group may vary according to the Ex d heater and Ex e or Ex d terminal box classifications, refer to installed apparatus.

**(15) Declaration of Conformity History**

Issue	Date	Comment
0	29 October 2013	The release of the initial Declaration of Conformity
1	19 October 2017	This issue covers the following changes: <ul style="list-style-type: none"><li>IEC 60079-7:2015 has superseded standards IEC 60079-7:2007 and IEC 60079-15:2010</li><li>Update to certificates referenced on item (8)</li><li>Update to ambient temperature range for the Low Temperature Option.</li><li>European Directive updated to 2014/34/EU</li></ul>



(1) **Declaration of Conformity**

(2) Expo Technologies Document Number EXPO 13MDOC1313 Issue 1

(3) This declaration is issued for the Pre-Start Ventilation Systems  
Types 4PP, 6PP, 7PP, 3PV, 5PV & 7PV

(4) Manufacturer:

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

(5) Pre-Start Ventilation Systems, types 4PP, 6PP, 7PP, 3PV, 5PV or 7PV, including all option models, are designed to protect rotating electrical machines, by removing any explosive gases which may ignite during the start-up cycle.

(6) The system is suitable for use with Ex e rotating electrical machines in accordance with IEC 60079-7:2015.

(7) Expo Technologies declares that the Pre-Start Ventilation System is fully constructed of pneumatic and mechanical parts, which fulfil all the requirements for Zone 1 equipment in accordance with the IECEx regulations. The construction of the Pre-Start Ventilation System is inherently safe to be used in Zone 1 Hazardous Areas

(8) Depending on the model, the Expo Pre-Start Ventilation Systems may contain one or more of the following IECEx certified apparatus, suitable for use in Zone 1 without further assessment:

Apparatus	IECEx Certificate	Marking	T amb
Indication Limit Switch	IECEx EPS 14.0092X	Ex db IIC T6	-20°C to +60°C
Electronic Timer	IECEx FME 10.0001X	Ex ia IIC T5	-20°C to +59°C
MIU/e Terminal Box	IECEx ITS 10.0003X	Ex e IIC T5	-20°C to +60°C
Ex m Solenoid Valve	IECEx SIR 06.0109X	Ex mb IIC Tx Gb*	-40°C to +yy°C*
Ex i Solenoid Valve	IECEx INE 10.0002X	Ex ia IIC T*	-40°C to +yy°C*
Ex d Solenoid Valve	IECEx LCI 07.0015X	Ex d IIC T*	-40°C to +100°C

\* Refer to installed apparatus for full marking.

(9) The design has been assessed under SIRA ExTR GB/SIR/ExTR13.0267/00 and GB/SIR/ExTR17.0181/00 and is documented in Expo Technologies Technical Construction File numbers 45054 & 51080.

M L Carrillo  
Certification Manager

J P de Beer  
Technical Director

For and on behalf of Expo Technologies Ltd.  
Sunbury on Thames, UK

**Annex to Declaration of Conformity EXPO 13MDOC1313 Issue 1**

(10) Expo Technologies declares that the Pre-Start Ventilation Systems are suitable for use with Ex e rotating electrical machines in accordance with:

IEC 60079-7:2015 Clause 5.2.7.3 requires that the rotating electrical machines shall be assessed for possible air gap sparking. This Clause specifies that an alternative for mitigating the risk of ignition during start up is that "the machine shall allow special measures to be applied during starting, to ensure that its enclosure does not contain an explosive gas atmosphere at the time of starting."

Note 1 to the above Clause on the standard states "Special measures include pre-start ventilation to remove any ignitable accumulation of flammable gases (for example by applying the purging, but not pressurization aspects of IEC 60079-2 in respect of Level of Protection 'pzc')."

(11) Given that the standard only refers to special measures, a Pre-start Ventilation System cannot be certified as apparatus for this purpose.

**(12) Outlet Valve**

The Expo Pre-Start Ventilation System is supplied with an outlet valve, fitted with a spark arrestor and overpressure relief valve. The Outlet Valve shall be fitted to the protected Ex e or Ex n rotating electrical machine, to prevent an internal overpressure above the maximum overpressure rating of the apparatus.

**(13) Remote Start**

The Pre-Start Ventilation System may be remotely started by means of an Ex certified Solenoid Valve. When a Solenoid Valve is used, the following electrical data may be afforded to the system:

Power supply 5, 12-24, 50, 110 or 230V dc / ac 50-60 Hz  
Current Consumption 8 – 16 mA according to valve type and supply voltage

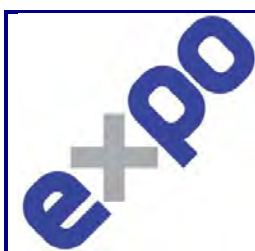
(14) **Low Temperature Option** - Ambient temperature range Ta -60°C to +60°C

The Pre-Start Ventilation System may be supplied with an additional, heated, stainless steel enclosure to permit it to be used within an ambient temperature down to -50°C. This enclosure is fitted with an Ex d heater and an Ex e or Ex d terminal box for connection of the heater leads.

T Class and Gas Group may vary according to the Ex d heater and Ex e or Ex d terminal box classifications, refer to installed apparatus.

**(15) Declaration of Conformity History**

Issue	Date	Comment
0	29 October 2013	The release of the initial Declaration of Conformity
1	19 October 2017	This issue covers the following changes: <ul style="list-style-type: none"><li>IEC 60079-7:2015 has superseded standards IEC 60079-7:2007 and IEC 60079-15:2010</li><li>Update to certificates referenced on item (8)</li><li>Update to ambient temperature range for the Low Temperature Option.</li></ul>



## EU-Declaration of Conformity

With  
European  
Directives

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

**This is to declare that  
Pre-Start Ventilation Systems are manufactured in  
conformity with the following European Directives and standards:**

Electromagnetic Compatibility Directive 2014/30/EU

Pre-Start Ventilation Systems with a /PO suffix in the type number are non-electrical and are outside the scope of the EMC Directive.

Pre-Start Ventilation Systems with suffices /PA or /IS incorporate one or more volt-free ("dry") contacts which work in circuits specified by others. In normal operation these circuits are "benign" and no CE mark is appropriate.

Pre-Start Ventilation Systems with Electronic Timer (Option /ET) are designed to conform to the EMC Directive, in compliance with EN 61000-6-4:2007 and EN 61000-6-2:2005 (Intertek Report EM10048000).

Low Voltage Directive 2014/35/EU

Pre-Start Ventilation systems are intended to be used in Hazardous Areas (Explosive Atmospheres) and are therefore excluded from the Low Voltage Directive.

Pressure Equipment Directive 97/23/EC

Pre-Start Ventilation Systems are classified as not higher than category I under Article 9 of this Directive and intended for use in potentially explosive atmospheres (Hazardous Areas) and are therefore excluded from the Pressure Equipment Directive.

ATEX Directive 2014/34/EU

Pre-Start Ventilation systems are designed to conform to the ATEX Directive, in compliance with:

EN 60079-0 : 2012+A11:2013      EN 60079-1 : 2014      EN 60079-7 : 2007

EN 60079-11 : 2012 (Only for /ET & /RS1# options)

EN 60079-18 : 2015 (Only for /RS0# options or when RSK/24V/D is used)

Pre-Start Ventilation Systems are certified by SIRA Certification Service, Hawarden Industrial Park, Hawarden CH5 3US,, England, under EC Type-Examination Certificate SIRA 13ATEX1083X, in compliance with: EN 60079-0 : 2012      EN 60079-7 : 2007

Pre-Start Ventilation Systems are rated and shall be marked as follows:  II 2 G

Pre-Start Ventilation Systems are manufactured under Production Quality Assurance Notification SIRA 99ATEXM043, issued by SIRA Certification Service, Notified Body No. 0518.

Signed  
Managing Director

Date 18/05/2016

Confidential Assessment file reference SC024

# 1 EU - Type Examination Certificate

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: ExVeritas 19ATEX0542X Issue: 1

4 Equipment: MiniPurge Interface Units MIUe

5 Manufacturer: Expo Technologies Ltd

6 Address: Unit 2, The Summit, Hanworth Road, Sunbury on Thames, Surrey, TW16 5DB, UK

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

8 ExVeritas, Notified Body number 2804 in accordance with Article 17 of the Council 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 design and construction of equipment and protective systems for use in potentially explosive atmospheres given in Annex II to the Directive

9 Compliance with the applicable Essential Health and Safety Requirements has been assured by compliance with the following Standards and section 16 of this certificate:


EN IEC 60079-0: 2018 EN 60079-7: 2015+A1: 2018 EN 60079-31: 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 EU-Type Examination Certificate relates only to the design, construction, examination and tests of the specified equipment or protective system in accordance to the Directive 2014/34/EU. 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 shall include the following:

 II 2 G Ex eb IIC T5/4\* Gb T<sub>amb</sub> -20°C to +55/60\* °C

 II 2 D Ex tb IIIC T100°C Db T<sub>amb</sub> -20°C to +55°C

## 13 Description of Equipment or Protective System

The Minipurge Interface Units are part of a series of IP66 rated enclosures that are used as Junction Boxes. The construction of the boxes has been assessed under the component certificate ExV19ATEX0454U. A permitted content of the boxes is specified on drawing SD7623. The current rating and maximum voltage for each terminal box is specified on the label and the general assembly drawings. Three types of boxes have been covered by this certificate:

MIU/e1 – 7A, 400V, IP66 assembly drawing SD7851  
MIU/e2 – 7A, 400V, IP66 assembly drawing SD7850  
MIU/e1/MO – 2A, 400V, IP66 assembly drawing SD7861

### 13.1 Details of change:

The following changes are introduced in issue 1 of the certificate:

- Transfer of the certificate from ExVeritas UK, Notified Body number 2585 to ExVeritas Denmark, Notified Body number 2804. Certificate number remains unchanged.

## 14 Descriptive Documents

### 14.1 Associated Report and Certificate History:

Report Number	Cert Issue Date	Issue	Comment
R2328/A/1	17 <sup>th</sup> Oct 2019	0	Initial issue of the Prime Certificate
EXV3094A	12 <sup>th</sup> Jan 2021	1	Issue of the first variation, see section 13.1.

### 14.2 Compliance Drawings:

#### Issue 0

Title:	Drawing No.:	Rev. Level:	Date:
MIU/e Permitted Contents	SD7623	2	02/10/19
MIU IECEX & ATEX Certificate label	SD7624	4	02/10/19
MIU User Instructions	SD7644	3	02/10/19
Minipurge Interface Unit	SD7850	3	02/10/19
Minipurge Interface Unit	SD7851	3	02/10/19
MIU with manual override	SD7861	3	02/10/19

## 15 Conditions of Certification

### 15.1 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 manufacturers' instructions. They shall maintain the IP66 rating of the enclosure.

### 15.2 Conditions for Use (Routine tests)

- None

## 16 Essential Health and Safety Requirements

Essential Health and Safety Requirements are addressed by the standards listed in section 9 and where required the report listed in section 14.1

The manufacturer shall inform the Notified Body of any modifications to the design of the product described by this schedule.

Certificate: ExVeritas 19ATEX0542X

Issue 1

This certificate may only be reproduced in its entirety and without any change, schedule included.

For help or assistance relating to this certificate, contact [info@exveritas.com](mailto:info@exveritas.com).  
ExVeritas ApS, Severinsmindevej 6, 4420 Regstrup, Denmark.  
ExVeritas® is a registered trademark, unauthorised use will lead to prosecution.



## IECEx Certificate of Conformity

### INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEx EXV 19.0057X** Page 1 of 3 [Certificate history](#)

Status: **Current** Issue No: 0

Date of Issue: 2019-11-12

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

Equipment: **Minipurge Interface Units MIUe**

Optional accessory:

Type of Protection: **Increased Safety Ex 'eb' Protection by Enclosure Ex 'tb'**

Marking: Ex eb IIC T5/4\* Gb Ta = -20°C to +55/60\* °C

\*Manual override (MO) models exempt

Ex tb IIIC T100°C Db Ta = -20°C to +55°C

Approved for issue on behalf of the IECEx  
Certification Body:

**Sean Clarke CEng MSc FIET**

Position:

**Certification Manager**

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting [www.iecex.com](http://www.iecex.com) or use of this QR Code.



Certificate issued by:

**ExVeritas Limited**  
Units 16-18 Abenbury Way  
Wrexham Ind. Est.  
Wrexham LL 139UZ  
United Kingdom



## IECEx Certificate of Conformity

Certificate No.: **IECEx EXV 19.0057X**

Page 2 of 3

Date of issue: 2019-11-12

Issue No: 0

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

Additional  
manufacturing  
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

#### STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

**IEC 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-31:2013** Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

**IEC 60079-7:2015** Explosive atmospheres – Part 7: Equipment protection by increased safety "e"  
Edition:5.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

#### TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[GB/EXV/ExTR19.0059/00](#)

Quality Assessment Report:

[GB/SIR/QAR07.0012/15](#)



## IECEx Certificate of Conformity

Certificate No.: **IECEx EXV 19.0057X**

Page 3 of 3

Date of issue: 2019-11-12

Issue No: 0

### EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Minipurge Interface Units are part of a series of IP66 rated enclosures that are used as Junction Boxes. The construction of the boxes has been assessed under the component certificate IECEx EXV 19.0010U. A permitted content of the boxes is specified on drawing SD7623. The current rating and maximum voltage for each terminal box is specified on the label and the general assembly drawings. Three types of boxes have been covered by this certificate:

MIU/e1 – 7A, 400V, IP66 assembly drawing SD7851

MIU/e2 – 7A, 400V, IP66 assembly drawing SD7850

MIU/e1/MO – 2A, 400V, IP66 assembly drawing SD7861

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

- Cable glands, breathers, drains and plugs shall be appropriately IECEx certified types, suitable for the cable and conditions for use and installed in accordance with their manufacturers' instructions. They shall maintain the IP66 rating of the enclosure.

### Annex:

[ExV 19.0057X IECEx Annex.pdf](#)



Annex to: IECEx EXV 19.0057X Issue 0

Manufacturer's documents:				
Title:	Drawing No.:	Rev	Sheets	Date:
MIU/e Permitted Contents	SD7623	2	1 of 1	02/10/19
MIU IECEx & ATEX Certificate label	SD7624	4	2 of 2	02/10/19
MIU User Instructions	SD7644	3	3 of 3	02/10/19
Minipurge Interface Unit	SD7850	3	1 of 1	02/10/19
Minipurge Interface Unit	SD7851	3	1 of 1	02/10/19
MIU with manual override	SD7861	3	1 of 1	02/10/19

# 1 EU-TYPE EXAMINATION CERTIFICATE



2 Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU

3 EU-Type Examination Certificate No: FM10ATEX0003X

4 Equipment or protective system: Electronic Timer Module ETM-IS\*\*-\*\*\*  
(Type Reference and Name)

5 Name of Applicant: Expo Technologies Ltd

6 Address of Applicant: Unit 2, The Summit  
Hanworth Road  
Sunbury on Thames  
TW16 5DB

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Ltd, notified body number 1725 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, 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.

The examination and test results are recorded in confidential report number:

3036907EC dated 12<sup>th</sup> November 2010

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN60079-0:2012+A11:2013, and EN 60079-11:2012

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. 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:



II 1 G Ex ia IIC T\* Ga  
II 1 D Ex ia IIC T\* Da  
\* See Description



cm=Mick Gower, o=FM Approvals,  
ou,  
email=mick.gower@fmaprovals.  
com, c=GB  
2017.07.24 14:37:10 +01'00'

Mick Gower  
Certification Manager, FM Approvals Ltd.

Issue Date: 24<sup>th</sup> July 2017

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS  
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: [atex@fmaprovals.com](mailto:atex@fmaprovals.com) [www.fmaprovals.com](http://www.fmaprovals.com)

F ATEX 020 (Apr/16)

Page 1 of 3

## SCHEDULE



to EU-Type Examination Certificate No. FM10ATEX0003X

### 13 Description of Equipment or Protective System:

The ETM-IS is a powered electronic timer module. The Timer module is designed to be supplied from either a self contained battery pack or an IS certified Power Supply. The battery pack contains a non-rechargeable battery together with current limiting resistors. The timer settings are controlled by two BCD switches located on the main part of the timer. Connections from the timer to a solenoid valve and switch are also provided. The solenoid is supplied as part of the timer circuit. Four LED's are used to indicate the status of the timer circuit.

The Timer module and Solenoid Valve are designed to be installed within another enclosure.

#### Electronic Timer Module ETM-ISab-cde

a = sub module 1 = Timer Module powered by Expo Battery Pack  
2 = Timer module powered by IS power supply  
3 = Expo IS Battery Pack  
4 = Expo IS remote Battery Pack  
5 = Timer module powered by E.P.P.S.

b = Mounting Style 1 = Plate mounted  
2 = Panel mounted

c = LED connection 1 = LED's on Timer surface  
2 = LED's on flying leads

de = Maximum Time d = Reference Value 1 to 9  
e = Multiplying digit 1, 2, 3 or 4

The input parameters for the power supply option are;

Ui = 11.1V li = 340 mA Pi = 2.613 W (non linear) Ci = 363 nF Li = 0

The input parameters for the E.P.P.S. option are;

Ui = 10.8V li = 3.28 A Pi = 1.46 W Ci = 363 nF Li = 0

The temperature class is dependednt on the ambient temperature;

Ambient Tamb =	Temperature Class	
	Group II	Group III
-20 °C to +60 °C	T4	T101 °C
-20 °C to +59 °C	T5	T100 °C
-20 °C to +44 °C	T6	T85 °C

### 14 Specific Conditions of Use:

- The Electronic Timer shall not be used where UV light or radiation may impinge the Electronic Timer System.
- The Electronic Timer shall be installed within an enclosure which provides protection against impact.
- The Enclosure shall be metallic providing a minimum IP20.
- For light alloy enclosures, materials shall not contain, by mass, more than 7.5% in total of magnesium, titanium and zirconium. Where more than 10% in total of aluminium, magnesium, titanium and zirconium the user shall take special precautions to avoid ignition hazard due to impact or friction.

### 15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS  
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: [atex@fmaprovals.com](mailto:atex@fmaprovals.com) [www.fmaprovals.com](http://www.fmaprovals.com)

F ATEX 020 (Apr/16)

Page 2 of 3

## SCHEDULE



to EU-Type Examination Certificate No. FM10ATEX0003X

### 16 Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's ATEX Certification Scheme.

### 17 Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

### 18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
12 <sup>th</sup> November 2010	Original Issue.
30 <sup>th</sup> January 2013	<u>Supplement 1:</u> Report Reference: 3036906rev130109 dated 25 <sup>th</sup> January 2013. Description of the Change: 1. Change of address 2. Addition of IS power Supply option.
22 <sup>nd</sup> October 2013	<u>Supplement 2:</u> Report Reference: 3049400 dated 18 <sup>th</sup> October 2013 Description of the Change: Addition of ETM-IS31-001 battery pack module. (This corresponds to a =3. No change to the model code.)
08 <sup>th</sup> December 2014	<u>Supplement 3:</u> Report Reference: 3036907rev141016 dated 04 <sup>th</sup> December 2014 Description of the Change: Change to Valve part number and update of Valve certificate number (DEKRA 11ATEX0273X).
20 <sup>th</sup> July 2015	<u>Supplement 4:</u> Report Reference: 3055146 dated 15 <sup>th</sup> July 2015 Description of the Change: Update to the standards used.
25 <sup>th</sup> November 2016	<u>Supplement 5:</u> Report Reference: RR206511 dated 23 <sup>rd</sup> November 2016 Description of the Change: Change of T-Class due to solenoid. Updated certificate to EU format.
24 <sup>th</sup> July 2017	<u>Supplement 6:</u> Report Reference: RR209962 dated 22 <sup>nd</sup> June 2017 Description of the Change: Addition of EPPS pneumatically powered generator (this corresponds to a =5 in model number).

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS  
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: [atex@fmaprovals.com](mailto:atex@fmaprovals.com) [www.fmaprovals.com](http://www.fmaprovals.com)

## Blueprint Report

**Expo Technologies Ltd (1000002806)**

**Class No 3610**

**Original Project I.D. 3036907**

**Certificate I.D. FM10ATEX0003X**

Drawing No.	Revision Level	Drawing Title	Last Report	Electronic Drawing
EPC-B000-114	1	Electronic Timer Timer Main PCB Layout	3049400	Yes (msw8)
EPC-B000-115	1	Electronic Timer Battery Main PCB Layout	3036907	Yes (pdf)
EPC-B000-116	1	Electronic Timer Battery Connector PCB Layout	3036907	Yes (pdf)
EPC-B000-117	1	Electronic Timer BCD PCB Layout	3049400	Yes (msw8)
EPC-B000-147	1	Electronic Timer Battery Pack PCB	3049400	Yes (zip_html)
EPC-BBM0-010	3	Timer Module Parts List	16-Oct-14	Yes (pdf)
EPC-BBM0-011	1	Battery pack Parts List	3049400	Yes (msw8)
EPC-BBM0-015	1	ETM-IS31-001 Battery Pack Parts List.doc	3049400	Yes (msw8)
SD7607	3	Electronic Timer Schematic	RR209962	Yes (pdf)
SD7608	3	Electronic Timer Module - Design Document.doc	3055146	Yes (msw8)
SD7610	1	Timer Module Schematic	3049400	Yes (pdf)
SD7611	5	Electronic Timer ELECTRONIC TIMER - BLOCK DIAGRAM	RR209962	Yes (pdf)
SD7616	5	Electronic Timer ATEX / IEC EX CERTIFICATION LABEL	RR206511	Yes (pdf)
SD7620	4	Electronic Timer - FM (USA, Canada) Label	RR206511	Yes (pdf)
SD7621	5	Electronic Timer - Manual Extracts	3055146	Yes (msw8)
SD7622	2	Electronic Timer - Model Number designation	RR209962	Yes (pdf)
SD7642	5	Electronic Timer Installation	RR209962	Yes (pdf)
SD7835	1	Electronic Timer Assembly	3036907	Yes (pdf)
SD7841	4	Electronic Timer Interconnection	RR209962	Yes (pdf)
SD7842	3	Electronic Timer - Encapsulation	3055146	Yes (msw8)
SD7848	3	Electronic Timer	3049400	Yes (pdf)
SD7898	1	Electronic Timer System Certification Label.doc	3049400	Yes (msw8)
SD8085	1	Electronic Timer Assembly.pdf	3049400	Yes (pdf)
SD8222	2	Description of proposal changes for E-timer	RR209962	Yes (pdf)
SD8255	1	Electronic Timer with EPPS Assembly	RR209962	Yes (pdf)
SD8256	1	EPPS - IS Barrier Schematic	RR209962	Yes (pdf)
Timer Module	1	Gerber files of Timer PWB	3036907	Yes (zip_html)



## 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](http://www.iecex.com)

Certificate No.: IECEx FME 10.0001X Issue No: 6 Certificate history:  
Issue No. 6 (2017-07-24)  
Issue No. 5 (2016-11-25)  
Issue No. 4 (2015-07-20)  
Issue No. 3 (2014-12-08)  
Issue No. 2 (2013-10-22)  
Issue No. 1 (2013-01-30)  
Issue No. 0 (2010-11-05)

Status: **Current** Page 1 of 5

Date of Issue: **2017-07-24**

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

Equipment: **Electronic Timer Module ETM-IS**

Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking:  
Ex ia IIC T4 Ga Ta = -20°C to +60°C  
Ex ia III C T101°C Da Ta = -20°C to +60°C  
  
Ex ia IIC T5 Ga Ta = -20°C to +59°C  
Ex ia III C T100°C Da Ta = -20°C to +59°C  
  
Ex ia IIC T6 Ga Ta = -20°C to +44°C  
Ex ia III C T85°C Da Ta = -20°C to +44°C

Approved for issue on behalf of the IECEx  
Certification Body:

Mick Gower

Position:

Certification Manager

Signature:  
(for printed version)

Date:

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

Certificate issued by:

**FM Approvals Ltd**  
1 Windsor Drive  
SL4 1RS Windsor  
United Kingdom



Member of the FM Global Group



## IECEx Certificate of Conformity

Certificate No: IECEx FME 10.0001X

Issue No: 6

Date of Issue: **2017-07-24**

Page 2 of 5

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

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

#### STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

**IEC 60079-0 : 2011** Explosive atmospheres - Part 0: General requirements  
Edition:6.0

**IEC 60079-11 : 2011** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

*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/FME/ExTR10.0006/00	GB/FME/ExTR10.0006/01	GB/FME/ExTR10.0006/02
GB/FME/ExTR10.0006/03	GB/FME/ExTR10.0006/04	GB/FME/ExTR10.0006/05
GB/FME/ExTR10.0006/06		

#### Quality Assessment Report:

GB/SIR/QAR07.0012/10



## IECEx Certificate of Conformity

Certificate No: IECEx FME 10.0001X

Issue No: 6

Date of Issue: 2017-07-24

Page 3 of 5

### Schedule

#### EQUIPMENT:

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

The ETM-IS is battery powered electronic timer module. The Timer module is designed to be supplied from a self contained battery pack or separately certified AIS power supply. This battery pack contains a non-rechargeable battery together with current limiting resistors. The timer settings are controlled by two BCD switches located on the main part of the timer. Connections from the timer to a solenoid valve and switch are also provided. The solenoid is supplied as part of the timer circuit. Four LED's are used to indicate the status of the timer circuit. The Timer module and Solenoid Valve are designed to be installed within another enclosure.

a = sub module 1 = Timer Module powered by Expo Battery Pack

2 = Timer module powered by IS power supply

3 = Expo IS Battery Pack

4 = Expo IS remote Battery Pack

5 = Timer module powered by E.P.P.S.

b = Mounting Style 1 = Plate mounted

2 = Panel mounted

c = LED connection 1 = LED's on Timer surface

2 = LED's on flying leads

de = Maximum Time d = Reference Value 1 to 9

e = Multiplying digit 1, 2, 3 or 4

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

1. The Electronic Timer shall not be used where UV light or radiation may impinge the Electronic Timer System.
2. The Electronic Timer shall be installed within an enclosure which provides protection against impact.
3. The Enclosure shall be metallic providing a minimum ingress protection of IP20.
4. For light alloy enclosures, materials shall not contain, by mass, more than 7.5% in total of magnesium, titanium and zirconium. Where more than 10% in total of aluminium, magnesium, titanium and zirconium the user shall take special precautions to avoid ignition hazard due to impact or friction.



## IECEx Certificate of Conformity

Certificate No: IECEx FME 10.0001X

Issue No: 6

Date of Issue: 2017-07-24

Page 4 of 5

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

Issue 6: Addition of EPPS pneumatically powered generator.



# IECEx Certificate of Conformity

Certificate No: IECEx FME 10.0001X

Issue No: 6

Date of Issue: 2017-07-24

Page 5 of 5

## Additional information:

<b>Electronic Timer Module ETM-ISab-cde</b>	
a = sub module	
1 = Timer Module powered by Expo Battery Pack	
2 = Timer module powered by IS power supply	
3 = Expo IS Battery Pack	
4 = Expo IS remote Battery Pack	
5 = Timer module powered by E.P.P.S	
b = Mounting Style	
1 = Plate mounted	
2 = Panel mounted	
c = LED connection	
1 = LED's on Timer surface	
2 = LED's on flying leads	
de = Maximum Time	
d = Reference Value 1 to 9	
e = Multiplying digit 1, 2, 3 or 4	



(1) EC-Type Examination Certificate

(2) 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 07-2511-\*\*\*\*/\*\*\*\*  
Position switch type 07-2911-\*\*\*\*/\*\*\*\*

(5) Manufacturer: BARTEC GmbH

(6) Address: 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 23<sup>rd</sup> 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 14TH0090.

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

EN 60079-0:2012  
EN 60079-31:2014

EN 60079-1:2007  
(IEC 60079-1:2014)

(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

Certification department of explosion protection

Nürnberg, 2014-12-03

Page 1 / 3

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



Annexe

(13)

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

(15) Description of equipment:

The limit switch type 07-2511-\*\*\*\*/\*\*\*\* and 07-2581-\*\*\*\*/\*\*\*\* as well as the position switch type 07-2911-\*\*\*\*/\*\*\*\* 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 60079-0, Table 13b, group II.

Technical data:

Type	max. Rated current <sup>(1)</sup>	max. Rated voltage
07-2511-1****/****, 07-2581-1****/****, 07-2511-5****/****, 07-2581-5****/****, 07-2511-7****/****, 07-2581-7****/****, 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****/****, 07-2581-6****/****, 07-2511-8****/****, 07-2581-8****/****, 07-2913-****/****, 07-2916-****/****, 07-2918-****/****	0,4 A	30 V

Number of hose cables<sup>(1)</sup>:

1 or 2

Cross section<sup>(1)</sup>:

0,5 mm<sup>2</sup> up to 1,5 mm<sup>2</sup>

Ambient temperature range<sup>(1)</sup>:

Max. -60 °C ≤ T<sub>a</sub> ≤ +75 °C (T6),  
Max. -60 °C ≤ T<sub>a</sub> ≤ +90 °C (T5)

<sup>(1)</sup> = 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: 14TH0090

Page 2 / 3

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





## 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](http://www.iecex.com)

Certificate No.: IECEx EPS 14.0092X Issue No: 0 Certificate history:  
Issue No. 0 (2014-12-03)

Status: **Current** Page 1 of 3

Date of Issue: **2014-12-03**

Applicant: **BARTEC GmbH**  
Max-Eyth-Straße 16  
97880 Bad Mergentheim  
Germany

Electrical Apparatus: **Limit switch type 07-25\*1-\*\*\*\*/\*\*\*\* and Position switch type 07-291\*,\*\*\*\*/\*\*\*\***

Optional accessory:

Type of Protection: **"d"**

Marking:  
Ex d IIC T6, T5 Gb, or Ex db IIC T6, T5  
Ex tb IIC T80°C, T95°C, Db, or Ex tb IIC T80°C, T95°C

Approved for issue on behalf of the IECEx Certification Body: Dieter Zitzmann

Position: Certification manager

Signature:  
(for printed version)

Date:

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

Certificate issued by:

**Bureau Veritas Consumer Products Services Germany GmbH**  
Businesspark A86  
86842 Türkheim  
Germany



## IECEx Certificate of Conformity

Certificate No: IECEx EPS 14.0092X Issue No: 0

Date of Issue: **2014-12-03** Page 2 of 3

Manufacturer: **BARTEC GmbH**  
Max-Eyth-Straße 16  
97880 Bad Mergentheim  
Germany

Additional Manufacturing  
location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

#### STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

**IEC 60079-0 : 2011** Explosive atmospheres - Part 0: General requirements  
Edition: 6.0

**IEC 60079-1 : 2014-06** Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition: 7.0

**IEC 60079-31 : 2013** Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition: 2

*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:

DE/EP/ExTR14.0093/00

Quality Assessment Report:

DE/TUN/QAR06.0011/06



## IECEX Certificate of Conformity

Certificate No: IECEX EPS 14.0092X Issue No: 0  
Date of Issue: 2014-12-03 Page 3 of 3

### Schedule

#### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The limit switch type 07-2511-\*\*\*\*/\*\*\*\* and 07-2581-\*\*\*\*/\*\*\*\* as well as the position switch type 07-2911-\*\*\*\*/\*\*\*\* is used as equipment or utility power switch for signal and control circuits. The connection is made by cemented floss cables. The position switch is designed with a guard (protective enclosure) which protects against the risk of high mechanical hazards according to the IEC 60079-0, Table 13b, group II.

#### CONDITIONS OF CERTIFICATION: YES as shown below:

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 that it is protected 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 IEC 60079-0.

The specific installation standards and manufacturer's instructions must be respected.

#### Annex:

IECEX EPS 14.0092X Annex 1.pdf

Annex to: IECEX EPS 14.0092X issue No.: 0  
Applicant: BARTEC GmbH  
Apparatus: Limit switch Type 07-2511-\*\*\*\*/\*\*\*\*  
Position switch Type 07-2911-\*\*\*\*/\*\*\*\*



#### Technical data:

Type	max. Rated current <sup>(1)</sup>	max. Rated voltage
07-2511-1****/****, 07-2581-1****/****, 07-2511-5****/****, 07-2581-5****/****, 07-2511-7****/****, 07-2581-7****/****, 07-2911-****/****, 07-2915-****/****, 07-2917-****/****	AC 2 A	AC 400 V
	AC 7 A	AC 250 V
	DC 0,5 A	DC 250 V
	DC 7 A	DC 30 V
07-2511-3****/****, 07-2581-3****/****, 07-2511-6****/****, 07-2581-6****/****, 07-2511-8****/****, 07-2581-8****/****, 07-2913-****/****, 07-2916-****/****, 07-2918-****/****	0,4 A	30 V

Number of hose cables<sup>(1)</sup>: 1 or 2  
Cross section<sup>(1)</sup>: 0,5 mm<sup>2</sup> up to 1,5 mm<sup>2</sup>  
Ambient temperature range<sup>(1)</sup>:  
Max. -60 °C ≤ T<sub>a</sub> ≤ +75 °C (T6),  
Max. -60 °C ≤ T<sub>a</sub> ≤ +90 °C (T5)

<sup>(1)</sup> = 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.

Bureau Veritas  
Consumer Products Services Germany GmbH  
Phone: +49 (0) 40 - 740 41 - 0  
Fax: +49 (0) 40 - 740 43 - 2499  
www.bureauveritas.de/cps

Location Hamburg  
Ortleckerweg 46  
DE - 22419 Hamburg  
cps.hamburg@de.bureauveritas.com

Location Schwein  
Wilhelm-Hennemann-Str. 3  
DE - 19061 Schwein  
cps.schwein@de.bureauveritas.com

Location Fürth  
Heinrich-Strunk-Str. 3-5  
DE - 90765 Fürth  
cps.fuerth@de.bureauveritas.com

Location Tübingen  
Businesspark A96  
D.R. - 70642 Tübingen  
cps.tuebingen@de.bureauveritas.com

Managing Director: Michael Gries Laboratory Accreditation ISO 17025 Reg.No. 31656011003 3564

[This Page Intentionally Left Blank]

[This Page Intentionally Left Blank]

[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  
617 Shillin Er Road  
Jimo District, Qingdao,  
266200 China  
T: +86 532 8906 9858  
F: +86 532 8906 9858  
E: qingdao@expoworldwide.com

**[www.expoworldwide.com](http://www.expoworldwide.com)**