

## KEY COMPONENTS



## BENEFITS

- Preheats the gas to avoid retrograde condensation due to the Joule-Thomson Effect. (manifested as condensation or icing on conventional regulators)
- Small, easy to install and replace filter (TDS011).
- Stable and reliable pressure reduction. The small, easy to install critical orifice which effectively reduces the pressure and controls the flow through the sample system (TDS011).
- Designed to mount directly onto the head of any VE Technology sample probe
- Maintains the same constant internal diameter as the entire suite of VE Technology products, ensuring a fast, accurate and representative sample.
- The critical orifice provides an excellent method of either filling (on site) or emptying (at the lab) a sample cylinder by carefully controlling the flow whilst avoiding the risk of retrograde condensation
- Integrated temperature measurement to give feedback and confirm the sample remains representative
- Eliminates poor surface finishing, dissimilar materials, moving parts, convoluted flow paths and more to provide truly representative sampling.

# VE CONDITIONING UNIT

## Reliable Pressure Reduction and Flow Control for Representative Sampling

When reducing the pressure of any gas, there is an associated instantaneous temperature drop which is known as the Joule-Thomson Effect. If the temperature drop causes the gas to cross the dew point curve, the sample becomes unrepresentative, even if subsequent revaporization occurs.

The VE Conditioning Unit (VECU) has been designed to solve the problems associated with conventional pressure reduction. Heating a pressure regulator can mask the underlying problem however does not guarantee that the sample stays in the gas phase. By heating the gas prior to pressure reduction in the VECU the risk of retrograde condensation due to the Joule-Thomson Effect is eliminated.

The VECU can be mounted directly onto the head of any VE Technology sample probe, mounted into a cabinet or used in a laboratory. With ATEX/IECEx Zone 0 and Class 1 Zone 0 approval and an IP 67 rating the unit is certified for use in a broad range of applications, whether open to atmosphere or enclosed in a sample cabinet.

The inlet of the VECU houses a 0.4micron rated inline filter (see TDS 011). The filter housing has been meticulously designed to ensure that only the filter internals can become contaminated and with a simple filter change (which takes only 2 minutes) the entire system returns to an 'as new' condition.

The sample is then heated beyond any temperature drop created by the pressure reduction (sized according to the process, flow rate, ambient conditions and required outlet pressure).





As the sample exits the VECU it crosses a critical orifice (again sized to the application) which reliably supplies a flow of low pressure gas into the secondary sampling system (see VE AIM) and on to the analyzer.

Both the filter and orifice can be simply changed as part of a maintenance cycle.

Point A represents the conditions you might expect in a high pressure pipeline.  
Point B represents the conditions required for analytical Equipment to operate safely and effectively  
Line 1: No additional heat input. Line 2: Multi stage pressure reduction. Line 3: VECU



## SPECIFICATIONS - VECU

Dimensions	Height – 160mm (6.29 in) Diameter – 100mm (3.93 in)
Weight	3.5 kg (8 lb)
Temperature Range	Ambient -50 °C to + 160 °C (-58 °F to +320 °F) as standard *Different temperature set points subject to process and pressure drop. Please contact us for more information.
Supply Voltage	110/240Vac – Unit is suitable for either with no modification 240V nominal, unit suitable for 230 – 265V 24Vdc or 18-28Vdc
Power Consumption	Typical: 20 – 80W subject to pressure drop, flow rate and ambient conditions Maximum: 140W
Certification	<p>  ATEX Certificate: Baseefa10 ATEX 0249X   II 1G Ex ma IIC T3 Ga (Tamb = -50 °C &lt; Ta &lt;+160 °C)                      IECEx: BAS 10.0115X                      Ex ma IIC T3 Ga (Tamb = -50 °C &lt; Ta &lt;+160 °C)   LabTest Certification Inc. (C of C: 12938-2S) evaluated to: FM 3600, UL 499, ANSI/UL 60079 (0 &amp; 18),   -C22.2 Nos: 46:13, 60079-0 &amp; 60079-18                      Ex ma IIC T3 Ga; Class I Zone 0 AEx ma IIC T3 Ga; -50 °C ≤ Ta ≤ 160 °C                 </p>
Protection Rating	IP67
Connections	Cable glands – flying lead (1.5m) as standard – extended length available along with flexible or rigid conduit Heating – 3 core (18AWG) power cable – Brown/Blue/Earth (O.D. 8.2mm +/- 0.4mm) Temperature sensor – 3 wire (18AWG) PT100 – Red/Red/White (O.D. 9mm +/- 0.6mm)
Sample Conditions	Permissible inlet pressure – as required, confirm by tube burst pressure Outlet Pressure – Maximum 40% inlet pressure Sample flow – Up to 10NL/min, extended range available
Materials	Wetted by sample – Electropolished stainless steel (SilcoNert® coating available on request) Housing – 316 stainless steel Cable glands and Earth lug – Corrosion resistant brass or Nickel plated brass (stainless steel available on request) Other materials (for housing or sample wetted pathway) available on request
Installation & Mounting	User instructions - Please see Installation, Operation & Maintenance manual ref; IOM 001 <b>Special conditions for installation:</b> <ul style="list-style-type: none"> <li>• The electrical supply must include a fuse capable of interrupting a potential short circuit current of 1500A</li> <li>• This system includes an integral cable which must be terminated in a suitably certified enclosure or safe area</li> <li>• The integral cable must be secured and mechanically protected within the Zone 0 area</li> <li>• The supply must include 30mA RCD protection</li> </ul> <b>Mounting options:</b> <ul style="list-style-type: none"> <li>• Integrated on to VE Technology® sample probe</li> <li>• Free standing in lab (attached to frame work)</li> <li>• Installed into cabinet</li> </ul>