



ESP Safety's **Vector** Gas Detector series is a field control unit composed by an integrated control terminal/display and specific gas sensor (PGU* product line).

A vast selection of sensor and related gases detected are available in the catalogue, based on the main operating technologies: INFRARED – CATALYTIC – PHOTOIONIZED – ELECTROCHEMICAL – MOS - OXYGEN.

For clarification purpose, PGU and VGU are interchangeable names for the same device that share the same part number (PN) 100-0015 and a family code.

KEY FEATURE

- Vivid 2.7" (diagonal) 128x64 pixel resolution, OLED screen simultaneously display a wide range of data including gas concentrations, alarm levels, faults and operational modes.
- Source Analog 4-20mA, HART communication, Digital RS-485 Modbus RTU, and 4 relays.
- Non-intrusive, onsite detector calibration via HART Field Communicator or Magnetic Wand
- Operating Temp Range of -58°F to +167°F (-50°C to +75°C)
- Configurable to control & monitor up to two different detectors.
- SIL-2 certification by independent 3rd party agency NRTL
- Aluminum or 316 SS construction available

Features and Benefits

- Tri-color status LED indicates operational mode, fault, and gas presence.
- 4 indicators: 3 warning & alarm level LEDs, and 1 calibration LED
- 128 x 64-pixel OLED display (visible up to 10 feet/3 mt) providing continuous graphical indication of trending data for Peak Reading and Time-Weighted Average (TWA) of gas concentration
- Remote sensor option allows the user to either connect the Vector up to 500 feet away or install the unit at the site of the potential hazard
- Robust construction and heated optics withstand harsh environments.
- Plug-in, pre-calibrated (field replaceable) gas sensors
- Enhanced temperature range
- Automatic temperature compensation
- Expected life > 10 years
- 5 years warranty

Applications

- Drilling and production platforms
- Offshore platforms
- Shipping tankers, freighters, and other vessels
- LNG/LPG processing & storage facilities
- Oil & gas refineries
- Petrochemical plants
- Gas & electric utilities

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ELECTRICAL SPECIFICATION

| | | | | |
|--------------------|---|---------------------------------------|-----------------|-----------------|
| Supply Voltage | +24VDC Nominal (+18 to 32 VDC) | | | |
| Power Consumption | | Only Display | Display+n°1 PGU | Display+n°2 PGU |
| | Standby | 4.3 W | 5.3 W | 6.3 W |
| | Alarm with heater on (temp≤30°C) | <5.3 W 12 W | <6.3 W 13 W | <7.3 W 14 W |
| Analog Outputs | 1 or 2 Analogue Signal 4-20mA sourcing NAMUR NE43 (sinking configuration available on request) | | | |
| | Circuit Opening | 0 mA ± 0.1 mA | | |
| | Fault signal | 1.82 mA ± 0.02 mA | | |
| | Normal operation output | 4 to 20 mA (0 to full scale) ± 0.1 mA | | |
| | Overrange | 22 mA ± 0.1 mA | | |
| Calibration output | 3.14 mA ± 0.02 mA | | | |
| HART Communication | HART protocol Version 7 (Optional by request non-intrusive communication port) | | | |
| Digital Outputs | RS 485, Modbus RTU | | | |
| Relay Contact | Alarm: Three normally open / normally closed (NO/NC) user selectable, latching or non-latching Fault: One normally open / normally closed (NO/NC) user selectable Normally Energized | | | |
| Wiring | 14 AWG (2.5 sq.mm) or 16 AWG (1.5 sq.mm) Shielded cable is recommended | | | |
| Terminals | 14 AWG - 2.5 sq.mm | | | |

FUNCTIONAL SPECIFICATION

| | |
|----------------------------|---|
| Vector Response Time | 2 seconds typically, the response time depends on the specific sensor(s) attached to Vector refer to Vector Gas Table for response time |
| Vector Boot & Warm Up Time | 30 seconds typically. The total warm-up time depends on the specific sensor(s) attached to Vector |
| Sensor Types / Model | Toxic Electrochemical PGU-E, Combustible Infrared PGU-IR / VOCs Photo Ionized PGU-P Combustible Catalytic PGU-CAT Oxygen: PGU-O2, Hydrogen sulfide (H ₂ S) MOS: PGU-MOS |

MECHANICAL SPECIFICATION

| | |
|--------------------|--|
| VECTOR Display | 316SSL Electropolished Marine Grade 6061 aluminum alloy painted |
| PGU Material | 316 SSL Electropolish |
| Conduit Connection | Two (2) Conduit Entries 3/4" NPT (ISO M20 with adapter) |
| Dimensions | 10.7"x 5.9"x 4.8" (Vector + PGU) 272 x 150 x 122 mm (Vector + PGU) |
| Weight | 316 SSL :14 lbs (6.4 kg) Aluminum lbs (3.2 kg) |
| Ingress Protection | IP66 |
| Warranty | 5 years (for Sensor Cell warranty, refer to Vector Gas Table for specific Sensor Life) |

ENVIRONMENTAL SPECIFICATION

| | |
|--|--|
| Operating Temperature | -40°F to +167°F (-40°C to +75°C) |
| Storage Temperature | -76°F to +185°F (-60°C to +85°C) |
| Humidity | 0 to 95% relative humidity (can withstand 100% condensing humidity for short periods of time) - tropicalized/conformal |
| PERFORMANCE | |
| EMC/RFI | Complies with IEC 61000-6-2 and 4 |
| Combustible gases detector performance | Complies with ISA-12.13.01 IEC 60079-29-1 |
| Toxic gases detector performance | Complies with ISA 92.00.01 IEC 62990-1 |
| Oxygen detection performance | Complies with ISA 92.04.01 |

APPROVALS

| | |
|---------------|---|
| North America | FM: Class I, Division 1 Groups B, C & DT4 Ta = -40°F to +167°F (-40°C to +75°C), IP66 |
| Canadian | CSA: Class I, Division 1 Groups B, C & D T4 Ta = -40°F to +167°F (-40°C to +75°C), IP66 |
| European | ATEX: Ex d IIC T4 -58°F to +167°F (-50°C to +75°C) IP66 |
| International | IEC, IECEx: Ex d IIC T4 -40°F to +185°F (-40°C to +85°C) IP66 |
| SIL Rating | IEC61508 SIL Assessment SIL 2 |
| UAE | ECAS-Ex |

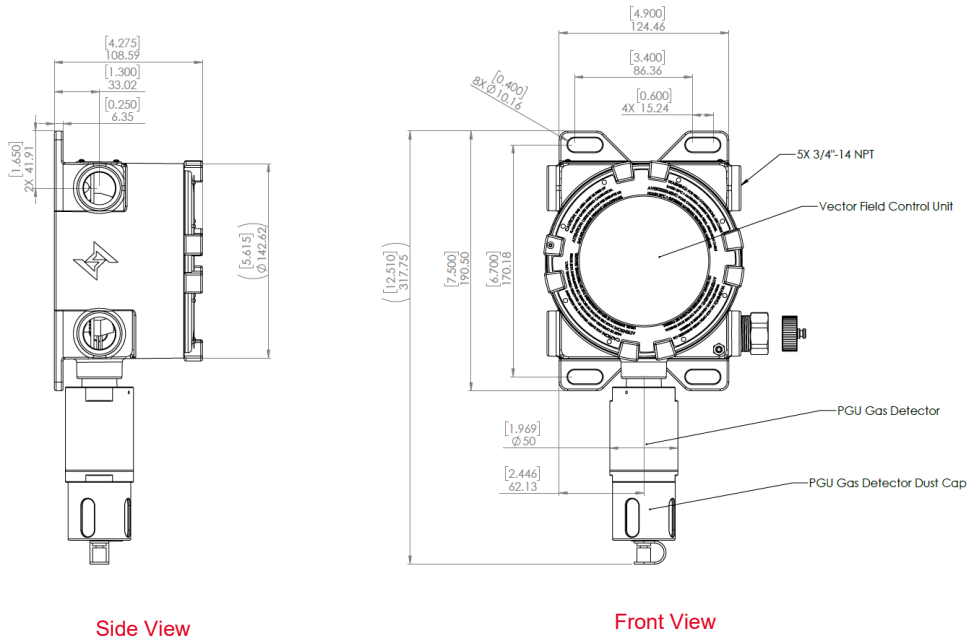
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**GENERAL ARRANGEMENT
DRAWING**



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SKU parts included in each configuration:

- P/N 125-0007 PGU Protective Cap
- P/N 125-0002 Mounting Screw Kit (4 screws)
- P/N 420-0210 Cable entry 3 - 3/4" Plug SS (Certified) **

Accessories:

- P/N 125-0042-SS U-Bolts for 2" Pole Mount (Vector) Stainless Steel
- P/N 120-0092-GRP Awning Shield GRP 226 (width) 350 (depth) 130 (height)
- P/N 120-0092-SS Awning Shield Stainless Steel 260 (width) 350 (depth) 65 (height)
- P/N 150-0015 KVES terminal box
- P/N 120-0096-AL VECTOR Direct HVAC Duct Mounting Kit Aluminum
- P/N 120-0096-SS VECTOR Direct HVAC Duct Mounting Kit Stainless Steel
- P/N 120-0082-AL VECTOR Sampling HVAC Duct Mounting Kit Aluminum
- P/N 120-0082-SS VECTOR Sampling HVAC Duct Mounting Kit Stainless Steel
- P/N 125-0012 Plug 3/4" NPT **
- P/N 125-0025 3/4" NPT male to M20 female reducer **

(**) adapters and plugs are available in nickel plated brass and stainless steel

Spare Part:

- P/N 125-0007 PGU Protective Cap
- P/N 125-0002 Mounting Screw Kit (4 screws)
- P/N 540-0002 VECTOR Cap O-ring
- P/N 250-0022-01 VECTOR Terminal Board
- P/N 200-0053 VECTOR Control Module Assembly
- P/N 100-0015-CAT PGU Catalytic Sensor Assembly SS housing. Includes Protective Cap
- P/N 100-0015-P PGU Photoionized Sensor Assembly SS housing. Includes Protective Cap
- P/N 100-0015-E PGU Electrochemical Sensor Assembly SS housing. Includes Protective Cap
- P/N 100-0015-IR PGU Infrared Sensor Assembly SS housing. Includes Protective Cap
- P/N 100-0015-MOS PGU MOS Sensor Assembly SS housing. Includes Protective Cap
- P/N 100-0015-O2 PGU Oxygen Sensor Assembly SS housing. Includes Protective Cap
- P/N 349-XXXX Gas Sensor, (Refer to Gas Sensor List)

Tools:

- P/N 120-0078 Hex L-Key. With Standard Tip, 10 mm Size, 4-11/16" Overall Length.
- P/N 120-0076 Magnetic wand
- P/N 260-0007 Cable Assembly, HART Communicator to VECTOR; 6-pin connector to HART connector
- P/N 580-XXXX Calibration Kit Gas, (Refer to Gas Calibration Kit List)

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