



VaultSafe

Transformer Monitor



Continuous Monitoring



Maintenance Free



Accurate Readings

RESPONSIVE

ASSET HEALTH SOLUTIONS

Community Safety Comes First

Network transformers are found in highly populated communities servicing critical infrastructure such as hospitals, commercial buildings and public transportation systems. Failures of these transformers can be catastrophic, resulting in transformer damage, property damage, long outages and even injury or death. The VaultSafe (VSM) provides continuous monitoring of the network transformer's main tank, switch compartment and cable compartment giving utilities clear visibility into their vaults. The VSM is easy to implement and gives you instant remote access to your vault transformers.



VaultSafe Features

- Simple installation utilizing existing access point on the transformer.
- Monitor is magnetic-mountable for easy retrofit applications.
- Monitor is completely submersible.
- Ethernet, serial and analog outputs are available.
- Hydrogen sensor is calibrated to be representative of dissolved gas in oil readings.

- Optional magnetic-mount RTD is available for temperature monitoring.
- Four form C relays with NO, NC and COM terminals are available.



Continuous Monitoring

The VaultSafe provides continuous monitoring of the transformers main tank with reliable consistency. There are three compartments on a vault transformer: main tank, switch, and cable compartments. Conventional monitors only look at hydrogen in the main tank even though failure is most likely to occur in the cable compartment. The VaultSafe Transformer Monitor uses one sensor to continuously monitor all three compartments so that you are aware when hydrogen in the transformer headspace has increased.



Maintenance Free

The VaultSafe is submersible, maintenance free and self-calibrating. The VaultSafe monitors hydrogen gas and pressure in all transformer compartments which provides early detection of problems and greatly reduces the potential for failure.



Accurate Readings

The VaultSafe provides a more accurate detection of excessive pressure and vacuum conditions by equalizing pressure between all compartments using the unique design of the headspace adapters and manifold system. Pressure is monitored across all three compartments preventing moisture or atmosphere ingress.



How does it work?

The utilization of online dissolved gas analysis monitoring has proven to be one of the most effective predictors of transformers health and condition. However, network transformers are unique in that they consist of three separate compartments, each susceptible to failure. The VaultSafe evaluates headspace in each compartment by using adapters which are inserted into the existing ports. By utilizing the headspace as a sample point, we allow all three compartments to be monitored using one hydrogen sensor.

These adapters allow gas to be drawn from each compartment and distributed into a single line. The combined sample is then pumped through a sensor chamber which utilizes a solid state hydrogen sensor to measure hydrogen levels present in the gas. After passing through the sensor chamber, the gas sample is split back into three individual lines and returned to the headspace of the transformer compartments.

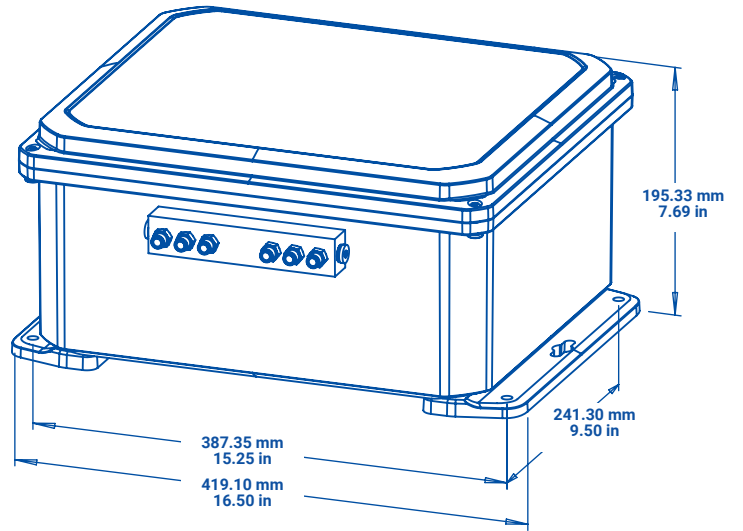
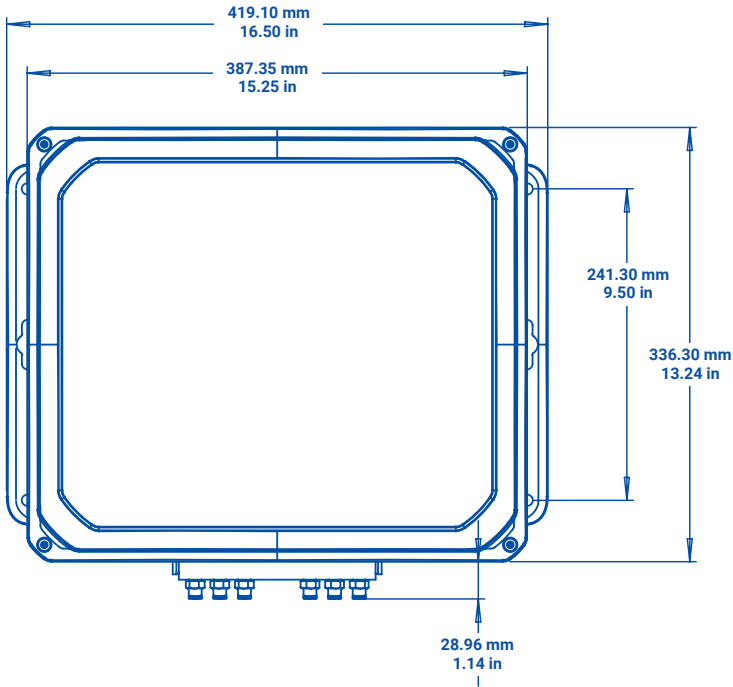
This system also equalizes the pressure between all the compartments. The monitor is designed to alarm should any of the compartments develop a leak thereby causing a drop in the overall pressure. This is critical considering the harsh environments present in underground vaults.

Monitoring serves as an early warning sign of incipient faults developing in the network transformers. This allows users to take the equipment out of service to further investigate before failure occurs.



Product Specifications

Power Requirement	12 VDC, 24 VDC, 48 VDC or 120 - 240 VAC (50 – 60 Hz)
Dimensions	187 mm Wide x 296 mm Tall x 129 mm Deep (13" x 11" x 8")
Temperature Range	-40°C to 70°C (-40°F to 158°F)
Communications Ports	Ethernet, RS232, RS485
Protocols	Modbus, DNP
Outputs	Four form C relays with NO, NC and Com terminals Three configurable analog outputs (current or voltage)
Inputs	0-20 mA or 0-5 V
Hydrogen Gas Measurement Range	25-5000ppm
Accuracy	+/- 20%, or +/- 25 ppm



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