SAFDY METHANE DETECTOR

MODEL 5% VOL/VOL

The Safdy range of CH4 gas detectors are used in the mining environment to continuously detect methane gas. The Safdy CH4 connects to a Telemetry System and displays the information on software Scada package.

DESCRIPTION

- Remote sensing head for continuously monitoring 0 - 5% methane / volume.
- Designed to be interfaced to a remote Telemetry System.
- The output of the Methane detector can be displayed as a trend graph on a Scada software program.
- Originally designed for the South African mining industry, specifically to monitor underground in the gold, coal or diamond mine, but can also be used for Industrial applications.
- CH4 gas up to 100% LEL or 0 - 5% CH4 / volume.
- Linear output proportional to 100% LEL.
- Highly accurate, four times more sensitive than conventional CH4 sensors.
- Zero and Span calibration is done via internal twirl-pot.
- Rapid response of change of detected CH4.
- Very low lifecycle costs – CH4 pelliments last a long time.
- No external settings.
- Output is a standard 4 – 20mA, alternate (0-1mA) output can be provided.
- To be used in conjunction with the SAFDY DC to DC (I/S) converter.

TEST CERTIFICATES AND APPROVALS

- Intrinsically safe for use in coalmines.
- SABS and Explo-Labs approved for use in I/S conditions.

CONSTRUCTION

- Surface mount design PCB electronics.
- Proven way to measure CH4 accurately.
- The CH4 sensor and electronics are housed in a stainless steel box
- The lifespan of the CH4 pelliments are in excess of ten years.

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METHOD OF OPERATION

- The Safdy CH4 uses the reliable, well-proven NEMOTO pellistor.
- An active pellistor forms one part of a Wheatstone bridge circuit.
- Catalytic oxidation of atmospheric methane causes an increase in temperature, hence the resistance of the pellistor. This causes an imbalance in the bridge, which is detected, amplified and processed, for output as a 4 - 20mA signal.
- A second pellistor, which is inactive, forms the second leg of the Wheatstone bridge, provides compensation for variations in ambient temperature and pressure.
- The output is therefore 4mA at 0% CH4 / volume,
  increasing linearly to 20mA at 5% CH4 / volume.
- The detector is not fail safe.

SENSOR ENVIRONMENTAL CONSIDERATIONS (POISONS)

- Silicones, free halogens, halogen hydrocarbons and metallic oxides may seriously affect the operation of catalytic sensors.
- For this reason all methane detectors are supplied with a protecting plastic bag over the methane head.
- This plastic bag should only be removed after the detector has been installed underground and is ready for operation.
- Do not operate the detector with the plastic bag in place.
- If the detector has to be removed from underground for maintenance or calibration, cover the head with the plastic bag first.
- To clean the outer filter of the methane head an ultra sonic bath is recommended for which special “poisons free” soap is available.
- Do not clean the filter with compressed air as the compressed air might be contaminated with oil from the compressor.
- Never try to clean the methane element itself in an ultra sonic bath.

TECHNICAL DATA

Supply voltage	11V to 20V I/S power
	To be used in conjunction with the Safdy DC-DC convertor
Power consumption	40mA + loop current (4-20mA)
Range normal	0% - 5% CH4 volume / volume
Other ranges	0% - 100% LEL
Output	4mA to 20mA (standard) 0,9mA to 0,1mA (Anglo system)
Sensor fail	2,2mA (standard)
	1,1mA (Anglo system)
Housing	Stainless steel powder coated orange
IA Number	M-XPL/04690
Classification	Ex 1a I 150ºC
Dimension	75 x 60 x 120mm
Weight	750 gram