



New Plug/Socket Vehicle Gas Monitoring System for Rubber Tyred Vehicles

The Austdac vehicle gas monitoring system is designed to mount on a vehicle to provide continuous monitoring of the atmosphere as the vehicle moves about in an underground coal mine. The system provides a warning if the vehicle should approach a potentially explosive atmosphere and an engine shut down if the vehicle enters a potentially explosive atmosphere.

Glanded or Plug and Socket Versions

I.S. Vehicle Gas Monitoring Unit



*Back and Side View
(Plug and Socket Version)*

Front View

System Description

The system may be fitted to any underground vehicle with an alternator with a nominal output of 12 volts. The monitoring system draws power from the alternator whenever the engine is running and charges an internal battery, which is used to power the system when the engine is not running. A gas sensor, main unit, solenoid valve and some cabling make up the entire system. The solenoid valve is installed in the vehicle's pneumatic engine control system to provide a failsafe engine shutdown.

The main control unit houses the battery, battery charger, trip amplifier, LED bar graph display, status indicators and control keyboard in one compact dash mounting enclosure for convenient operation by the vehicle driver operator. The explosive gas concentration is continuously displayed on a LED bar graph along with other status indications which include alternator power, battery bulk charge, battery trickle charge, battery fault, system OK, sensor ready and OK to start. The LED bar graph may also function as a battery charge condition indicator when required by the driver operator.

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System Operation

A typical operation cycle of the vehicle gas monitoring system consists of the following steps:

- 1 The driver operator enters the vehicle and activates the gas monitoring system by pressing the reset button. The system will boot up and indicate that the driver must wait a short period of time for the gas sensor to stabilise. At this stage, the vehicle is prevented from starting.
- 2 After completion of the wait period and provided, that the explosive gas concentration is below the trip concentration, the driver operator will receive an OK to start indication. The solenoid valve will be energised, enabling the engine management system. The operator may then start and operate the vehicle.
- 3 The gas monitoring system will monitor and display the gas concentration whenever the vehicle is operating.
- 4 Should the vehicle enter a potentially explosive atmosphere the system will indicate the gas concentration level and shut the engine down by dumping pneumatic control pressure via the solenoid valve.
- 5 If the operator stops the vehicle at any time, the gas monitoring system will remain powered up for a predetermined time monitoring the surrounding gas concentration. This feature allows immediate restart when the operator returns to the vehicle.

The internal battery and time system will allow the system to execute a start sequence after several weeks of vehicle inactivity. The special conditioning charger ensures that the battery is returned to full charge, without memory effect, in the shortest possible time after the alternator begins to produce power.

System Components



Typical plug and socket system components

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Gas Detection Equipment

System Components

Main I.S. Low Current Solenoid, which can be glanded or plug/socket into the main control unit.



I.S. Low Current Solenoid



Deputy key reset in a stainless steel enclosure which can be located remotely from the main control unit.



Deputy Key Reset
(Plug/Socket Version available)

The sensing heads can be used in conjunction with various plug and socket configurations or simply plugged directly into the remote display.



Page 3 of 3

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