CH_4 NDIR Gas Sensor

S500L-IR / S500LT-IR

S500L-IR and S500LT-IR models are high quality and autonomous NDIR (Non Dispersive Infra Red) gas sensors which offer a lot of sophisticated functions to give quick and reliable warnings against explosive concentrations of combustible gases.
They operate like a autonomous instrument or with a controller or a computer.
It is designed in a compact case and can be configured or calibrated by a person, without declassify the dangerous area certification.
Gas concentration is indicated on a 4-digits alphanumeric digital display, which also indicates the instrument status.
It is fully user programmable and none physic adjustments are required during the calibration, like on the board computer which ensures the calibration procedure.
The sensor is not affected by catalytic poisons which have a negative effect on the traditional “Pellistor effect”.
All the user variables are stored in a non volatile memory (EEPROM) and are conserved indefinitely, even during a power failure.

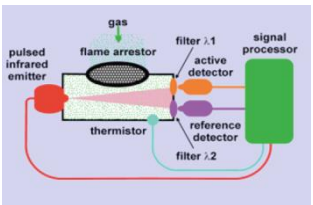
Advantages

- Integrated microprocessor
- 4 – 20 mA analog output
- Free potential relay contacts
- RS485 digital interface
- Alphanumeric display
- “One person” calibration
- Dual detectors
- ATEX II 2 G Ex d IIC T6 certified
- Temperature compensation
- Autonomous operating

Applications

- Refineries
- Chemical treatment
- Offshore platform
- Gaseous treatment
- Oil and gas storage depot
- Gas pipelines
- Reservoirs
- Laboratories
- Petrochemical industries

These instruments use the NDIR technology combined with a microprocessor software technology. An infrared source emits a wide infrared spectra laser beam on an optical cavity. The system measures the infrared energy adsorption passed in the sample gas. Different gases have clearly defined adsorption characteristics, theirs concentrations can be determinated by the determinated infrared radiation at the wavelength determinated by the lambda filter 1 on the schema.
To compensate interference factors, the lambda filter 2 isolates another wavelength used to measure the total transmission through the optical cavity and which is not affected the monitored gas. By comparison, the gas concentration can be determinated. The signal compares and linearizes the 2 signals and factors depending the temperature.



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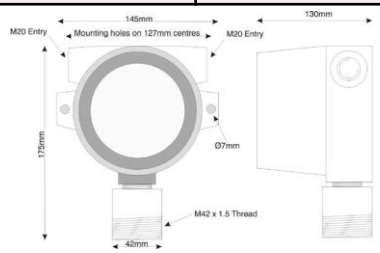
Technical specifications

Power supply	Nominal 24 Vdc (operates from 20 to 35 Vdc)
Power consumption	2W nominal, 2.3W maximum
Circuit protection	Electric current limiter, 1.5A auto-reset
Transitory protection	PCB mounted, 3 Joules, Metal oxide transistor
Analog output	4 – 20 mA current, source referenced at 0V
Analog output charge	500 Ohms maximum
Operating temperature	-20 to +50°C (-30 to +50°C for the S500LT-IR)
Operating pressure	± 10% of the ambient pressure
Storing temperature	-40 to +66°C
Humidity range	10%RH to 90%RH (non condensing)
Preconditioning required	Operational : 30 seconds ; specification : 15 minutes
Full scale range	0 – 100 % LEL (0 – 100% volume CH_4 also available)
Response time (T90)	Typically <30 seconds
Drift at STP	<3% upward 3 months
Linearity	± 5%
Repeatability	± 2%
Resolution	1%
MTBF sensor	10 years (based on MIL-HDBK-217K)
Calibration period required	12 months (depending on the application)
Weight	1.8 kg (including the sensor)
RS485 operating mode	Slave mode, semi-duplex, Modbus protocol TBA
Max units in a RS485 loop	100
Comm RS485 parameters	1200-N-8-1
RS485 error exam	Control addition 1 byte
Unit interrogation time	40 mS
Relay contacts	SPST, NO, 125V @ 0A5 (30V DC @ 1A) each for A1 & A2
Setting option	Digital setting (all options adjusted in standard and settable by the user)
Alarm settings	Digital setting (totally adjustable between 10 and 90% of the full scale)
Alarm types	Excited / non excited. Enrichment / lack. Settable by the user
S500L-IR ATEX certification	II 2 G Ex d IIC T6 Tamb -20°C à +60°C (certificate number Baseefa08ATEX0056)
S500LT-IR ATEX certification	II 2 G Ex d IIC T6 Tamb -40°C à +60°C (certificate number Baseefa08ATEX0056)
Recommended sample flow rate	500 mL/min
Mounting holes	2 holes, diameter 7mm, spaced of 127mm
User variables storage	RAM non-volatile (EEPROM)
Electromagnetic conformity (EMC)	Conform at EN50081 and EN50082
Inputs cable glands	2 inlets, each one M20 x 1.5
Terminations	Terminal blocks PCB mounted to accept 1.5 mm² of cable
Case material	Pressure die-cast aluminum, chromate with blue epoxy finish



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