PCF Elettronica S.r.l.

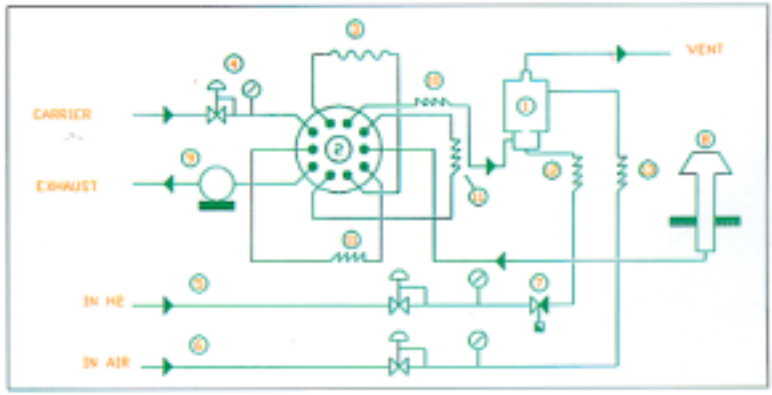
Total and non methane hydrocarbon gas chromatographic analyser Model 527 For continuous ambient air monitoring

FID Detector

The FID detector is a carbon atom counter. Sample is introduced into a micro flame fed by hydrogen and air (1:10 ratio) where the electrical charges generated by the oxidation of C_x to CO are proportional to the hydrocarbons content in the sample. Actual concentration is computed out of a calibration employing a traceable reference gas mixture.
The electrical charges are collected by two polarised electrodes and converted by an electrical circuit into an electronic signal.

Description

The PCF's Mod. 527 total and non methane hydrocarbon gas chromatographic analyser is intended for measurements of reactive hydrocarbons in ambient air by subtracting from the concentration of total hydrocarbons the methane fraction. As the catalytic separation is not always efficient, the separation of methane fraction is based on the chromatographic technique.
A sample pump on the back of the pneumatic circuit fills a calibrated capillary of about 0.6 ml, whose volume normalised against the atmospheric pressure in order to have high reproducibility samples is injected via a 10 port rotation valve into a chromatographic column filled with PQS or a most suitable substrate that allows separation of methane fraction from the total hydrocarbons.



The separated CH_4 is sent to FID detector whose response is memorised by the in built micro processor. In the repair phase of the 10 port rotation valve a second sample is subsequently introduced into the FID detector to measure the total quantity of hydrocarbons (THC); the relevant electronic signal is also memorised by electronics. By subtracting the signal attributed to methane fraction from the signal of total hydrocarbons the value of hydrocarbon less methane fraction in the sample is computed.
The auto zeroing of the instrument before each measuring cycle guarantees an high zero drift stability, All three electronic signals are visible on display as well as available on the analogue outputs of the instrument. The INTEL 80C195 microprocessor manages all functions relative to analytical sequences as well as data management.
The in built auto diagnostic software package controls

- The operative parameters as well as the alarms status
- The instrument pre-conditioning phase.
- The flame switching ON automatic procedure.
- The automatic alarm in case of flame OUT or hydrogen leak condition.

A 640 x 200 pixel LCD graphic display shows the three measured values (i.e. CH4, THC and NMHC) as ppm and/or mg/Nm^3 as well as any occasional system failure status.
The working firmware memorised on bached RAM can easily be programmed to suite the analysis of most frequent chemical species, making Model 527 the best solution for separating and monitoring polluting chemical species. (e.g. benzene, ethylene oxide, monomers, etc.)
A PCF's Mod. 527/T, Total Hydrocarbon Monitor, version is available with direct measurement of hydrocarbons in air without the separation of the methane fraction from the total hydrocarbon concentration. Technical specifications as for base NMHC Mod. 527.

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TECHNICAL SPECIFICATIONS

- Measuring ranges CH_4, THC and NMHC		: 0-10/30/100/300/1,000/3,000 ppm (other ranges optional)
- Units		: ppm or mg/m^3
- Background noise		: 0,01 ppm
- Lower Detectable Limit (LDL)		: < 0,02 ppm
- Zero stability (24 hours)		: < 0,01 ppm
- Span drift (24 hours)		: < 0,02 ppm
- Measuring cycle		: 180 seconds
- Response time		: 180 seconds
- Linearity		: better than 1% full scale
- Precision		: ± 1% full scale
- Sample flow rate		: 500 ml/min
- Operating temperature range		: 0 – 40 °C
- Display		: 640 x 200 pixel LCD graphic display
- Instruments configuration		: from front panel
- Analogue outputs	CH_4	: 0-1/5/10 Vdc/4-20 mA
	THC	: 0-1/5/10 Vdc/4-20 mA
	NMHC	: 0-1/5/10 Vdc/4-20 mA
- Serial output		: RS 232 (9 pin connector)
- Zero drift		: automatic compensation
- Zero/Span check		: set from front panel and/or remote control
- Services	Hydrogen	: 30 ml/min
	Air	: 300 ml/min
- Suggested calibration gas cylinder		: 3 ppm CH_4 + 1 ppm Propane, air balance
- Mounting		: standard 19" rack and/or transportable bench top
- Dimensions		: 480x250x560 mm (19"x10"x22", WxHxD)
- Weight		: 15 Kg
- Standard power supply		: 220/110 Vac 50/60 Hz (to be specified in order)
- Power consumption		: 300 VA
- Pneumatic connections		: 1/4" or 4/6 mm and 1/2 mm

How to order

Code number	Description
041 - 0191	Mod. 527, Non Methane Hydrocarbon Analyser, 220 Vac 50 Hz
041 - 0192	Mod. 527, Non Methane Hydrocarbon Analyser, 110 Vac 60 Hz
041 - 0181	Mod. 527/T, Total Hydrocarbon Monitor, 220 Vac 50 Hz
041 - 0182	Mod. 527/T, Total Hydrocarbon Monitor, 110 Vac 60 Hz
052 - 1001	Hydrogen generator
048 - 0001	Mod. 9588 UPP air generator
041 - 1023	Calibration gas cylinder
041 - 1101	Mod. 527 expendables kit
041 - 1102	Mod. 527T expendables kit
041 - 1111	Mod. 527 spare parts kit
041 - 1112	Mod. 527/T spare parts kit

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