PCF Elettronica S.r.l.

Aromatic hydrocarbon gas chromatographic analyser BTX Model 528

For continuous ambient air monitoring

Description

PCF's BTX Mod. 528 is a rack mounted gas chrimatograph intended for continuous monitoring of Benzene, Toluene and Xylenes. Sampled air is sucked through a small trap dimensioned to allow an optimal injection.
Aromatic compounds in ambient air are concentrated in a proprietary trap filled with TENAX GR, that features a very fast cooling mode to reach the accumulation temperature of about 35°C without any need of additional cryogenic devices.
As TENAX GR does not trap water, most analytical problems caused by other types of trapping substrates in the analytical cycle are avoided.
The trapping device has physical dimensions perfectly suitable to the selected separation columns.
Gas chromatographic separation takes place via a 5m pre-column followed by an analytical column of 45 m length. Both columns are Ultimetal WIDE BORE (0.53 mm I.D.) covered with DB-WA ID 53 FILM = 1 µm capillary types.
In order to guarantee an high stability and reproducibility of the instrument the analysis is performed at isothermal conditions (70°C).
The interested species may be easily selected by setting both tempìeratures of trapping device (35°C) and the pre-column configuration. Under these conditions the low temperature boiling compounds will not be trapped, while the ligh temperature boiling compounds will be blocked in the pre-column and then stripped out in the BACK-FLUSH cycle.
The mean time required to run a full BTX analysis ranges from 15 up to 30 minutes, with a very high reproducibility. The sampled volumes of air are controlled by a calibrated sampling loop.
The detection is made by a FID (Flame Ionisation Detector), specifically developed by PCF for the BTX monitor.
A very good selectivity of the analytical technique is guaranteed by the proprietary separation column, making a detector such ad PID (Photo ionisation), more expensive and less stable, not required. The active range of the monitor is from 0 to 1000 µg/m^3, while the operating range is between 0 to 500 µg/m^3.
For the instrument calibration a low concentration stabilised gas mixture, e.g. 50-100 ppb of aromatic species in nitrogen, is suggested.
PCF's BTX monitor Mod. 528 performs a zero line check before each analytical cycle, therefore it requires a single point calibration. The sampling of air via a calibrated loop avoids any expensive mass flow control device.

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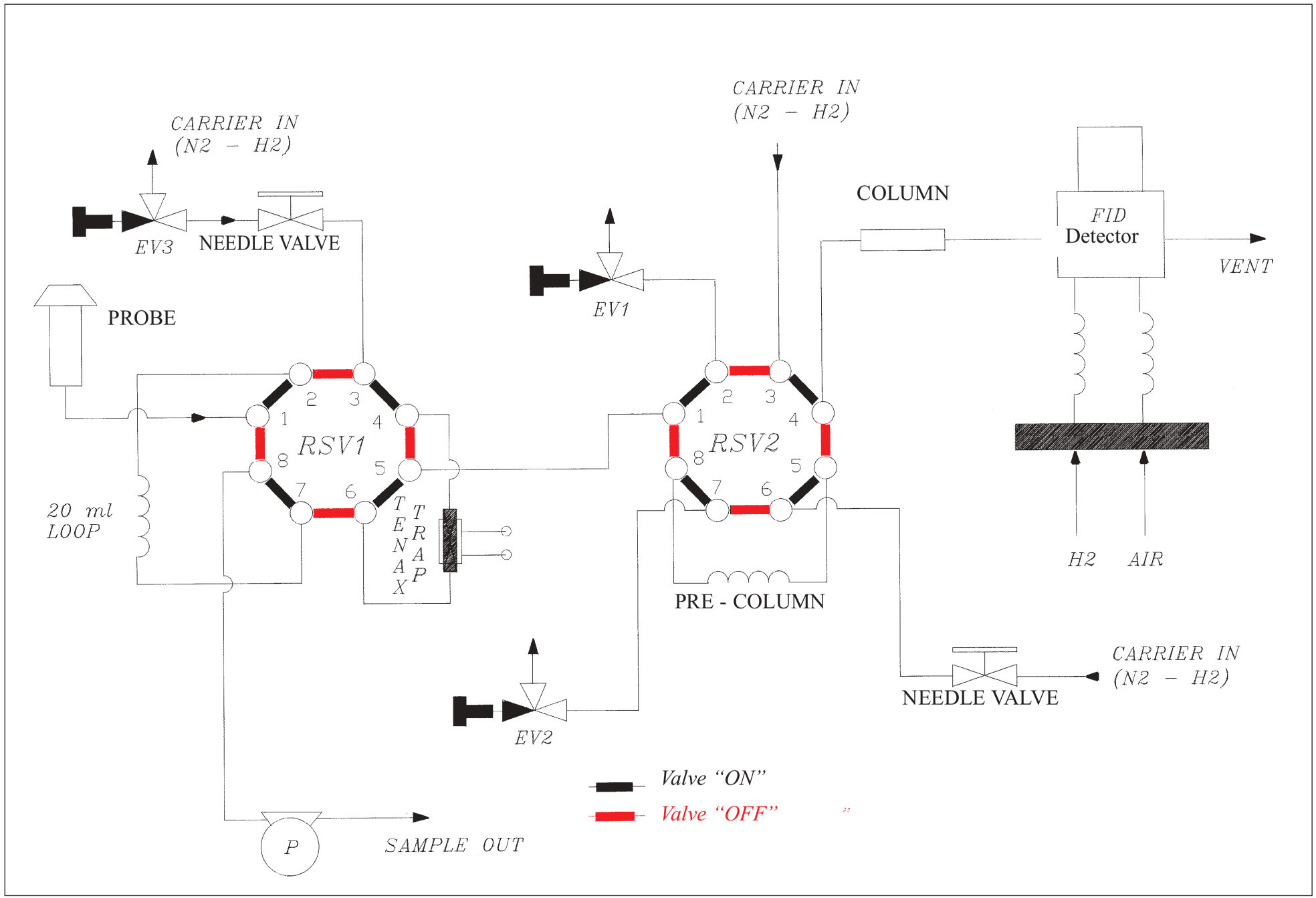

A special industrial software package has been developed that manages the chromatogram, calculates actual concentration values and does data reporting and storing.
The conversion between electrical signal and concentration values is carried out through response factors that makes the results more reliable with respect to other integration modes for the calculation of concentration.
At the end of the analysis, via a RS 232, data may be transferred to PC, for further data and instrument status management.
The graphic display as well as LEDs that indicate the working mode of the monitor, i.e. ON/OFF, calibration or sample analysis mode are located on the front panel. Further LEDs indicate alarm conditions, e.g. carrier, hydrogen and/or air low pressure.
All these alarms and controls are available on the PC video.
Dimensions are intended for installation in a 19" (5 units) rack. The instrument is suitable to be installed in existing monitoring cabins as well as integrated in air quality monitoring networks.
Via in built analogue outputs the monitor may be easily interconnected to commercial data logger and/or digital or line recorders.

TECHNICAL SPECIFICATIONS

- Sampled volume		: 10-100 ml of air
- Detector		: proprietary FID (Flame Ionisation Detector)
- Measuring signal		: direct or corrected for calibraton values
- Ranges		: 0-500 µg/m^3 and 0-100 µg/m^3
- Background noise		: ≤ 0.05 µg/m^3
- Lower Detectable Limit (LDL)		: 0.1 µg/m^3
- Interference equiv.		: < 1 µg/m^3
- Zero drift (24 hrs)		: corrected automatically at every cycle
- Span drift (24 hours)		: ≤ 1 µg/m^3
- Measuring cycle		: 15 minutes
- Response time		: 15 minutes
- Linearity		: better than 1% full scale
- Precision		: ± 0.5 µg/m^3 benzene equiv.
- Sample flow rate		: 500 ml/min
- Instrument configuration		: Via key board on front panel
- Operating temperature		: 0-40 °C
- Display		: 640 x 200 pixel LCD graphic display
- Analogue outputs		: 0-1/5/10 Vdc and 4-20 mA for each component
- Digital I/O		: 50 pin connector for 12 opto-isolated digital signals
- Serial output		: 9 pin connector, configured for a 24 or 80 column printer
- Serial connection		: RS 232 for local or remote connection
- Services	Hydrogen	: 30 ml/min.
	Air	: 300 ml/min.

- Carrier gas : 10 ml/min. either nitrogen or hydrogen (to be specified in order)
- Mounting : 19” rack, 5 units
- Dimensions : 480x250x560 mm (19”x10”x22”, WxHxD)
- Weight : 15 Kg
- Power supply : 220/110 Vac, 50/60 Hz to be specified in order
- Power consumption : 650 W in the heating up mode, 250 W in the working mode
- Calibration : via calibration loop from gas cylinder, multipoint calibrator or benzene permeation tube
- Suggested calibration mixture : 100 ppb of Benzene, Toluene and p-Xylene, nitrogen balance
- Pneumatic connections : 1/4”, 4/6 and 1/2 mm diameter plumbing

How to order

Code number	Description
041 - 1001	BTX Mod. 928, aromatic compound analyser, 220 Vac 50 Hz
041 - 1002	BTX Mod. 928, aromatic compound analyser, 110 Vac 60 Hz
048 - 0001	Mod. 9588 ultra pure air generator
052 - 1001	Hydrogen generator
052 - 1002	Nitrogen generator
041 - 1011	Calibration gas cylinder, 10 l with pressure reducer
041 - 1021	Expendables kit
041 - 1022	Spare parts kit

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