

## Monitoring Toxic Hydrocarbons in Industrial Applications

For years Synspec has been developing monitors for measuring of hydrocarbons for industrial safety. The Delta is the Synspec line for monitoring hydrocarbons for industrial safety and emissions applications. Our knowledge of making ambient air gas chromatographs combined with the requirements of the industrial customer resulted in the Synspec Delta analyser.

Main reasons for why these systems are used in the industry are as follows:

- Worker (and neighbour) safety;
- Emission measurements;
- Process control

## Hydrocarbons that Can be Measured with Synspec Delta

Environmental and industrial safety authorities increasingly require very strict monitoring of carcinogenic and toxic hydrocarbons. Therefore, low ppm to ppb measurements for indoor and low ppb measurements for outdoor use are obligatory.

### Examples of applications:

Ethane	Ethylene
Benzene	Epichlorhydrine
Vinyl chloride	1,3-Butadiene
Ethylene oxide	Propylene oxide
Dichloro ethane	Trichloroethylene
Dichloro methane	Tetrahydro thiophene
Isoamylalcohol	

*\*Other applications can be supplied on request.*

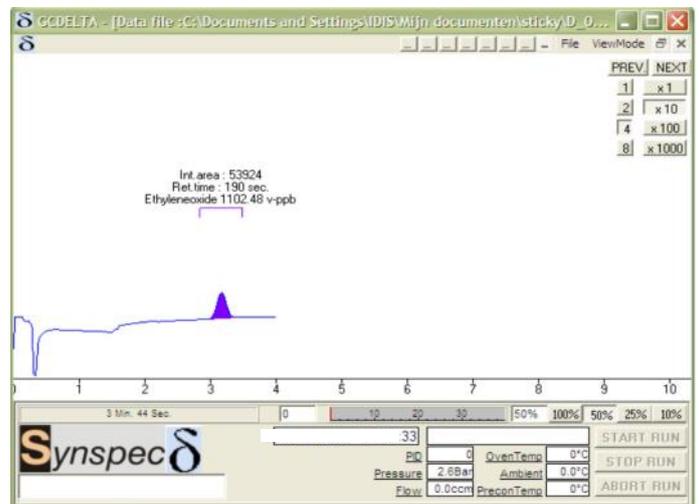
## Gas Chromatography for Industrial Requirements

Synspec Delta software is specifically designed for industrial safety monitoring. Each Delta GC will be customized to your application. Based upon the components and the concentrations that need to be measured the appropriate detector, columns, sample collection system and application software will be installed.

This automated system continuously measures the required components, has simple software and can provide automatically time-weighted-averages, for example. The system is supplied with flexible software that can communicate with external data loggers using standard industrial protocols. Automated calibration and validation options are also available. Adaptation for Ex safety is possible. The software will fully support the optional Multi (up to 15) Channel Selector (see separate datasheet).



Delta analyzer in combination with a multi channel selector



Measurement of Ethylene Oxide

Channel name	Actual value	-TRENDS-	TWA-5min	TWA-5min
1 Flur	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb
2 Belades. K-L	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb
	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb
4 Warenaus 1	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb
	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb
6 Halle 2-1	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb
	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb
Benzol	0.00 v-ppb		0.00 v-ppb	0.00 v-ppb

Multi Channel Selector Screen

## Measuring Principle

The analyser is a compact 19-inch mountable GC. It contains all the essential elements: computer, sampling unit, backflush valve, separation column in special small oven unit and detector. The detector can be FID, TCD or PID, depending on the application.

The gas sample is pumped in a loop. The sample is then injected over the valve into a column and the single hydrocarbons pass on to the detector. The loop size is adapted to the concentration range specified by the customer. For ultra low concentrations a pre-concentration unit can be installed.

All higher boiling hydrocarbons will be backflushed. This means that the system will auto clean and that a short cycle time is possible. The system is adapted to the specific hydrocarbon that must be monitored with regards to the essential parameters for column, flow, temperature and back flush setting.

The instrument works with a gas chromatographic separation, this way misidentification and false alarms are minimized.

The software runs under Windows embedded. Synspec Delta is designed to measure single hydrocarbons. Multiple hydrocarbons can be measured in Synspec GC955.

SYNSPEC DELTA 100 AND 300	
SYSTEM	Gas chromatograph with built/in industrial PC, with sampling pump, loop or pre-concentration system, backflush column system with 10 port valve, choice of 3 detectors, oven temperature range 40°C to 100 °C
DETECTORS	PID range 0,01 up to 20 ppm FID, range 0,05 up to 100 ppm TCD, range 0,1 up to 100%
GASES REQUIRED	PID nitrogen 99,999% pure FID nitrogen, zero air and hydrogen, 99,999% pure TCD helium (or for some applications argon or nitrogen) 99,999% pure
CALIBRATION	Internal calibration switch for calibration with zero and span gas, gas stream required 25 ml at ambient pressure
HARDWARE, SOFTWARE AND COMMUNICATION	
HARDWARE	Industrial x86 based computer, hard disk, full color touchscreen, I/O 2 x RS232, 4 x USB, Ethernet, PS2 keyboard/mouse, touchscreen
INCLUDED SOFTWARE	Windows embedded and GC955 software. Direct control via touchscreen, keyboard or mouse, via remote host (RS232/modem) or Ethernet. Software for running the analyser and demo version for data evaluation and reprocessing on desktop is included.
COMMUNICATION	Direct control via touchscreen, keyboard or mouse. External data communication via RS232, analog and digital outputs, via TCP-IP. Standard available protocols : ASCII terminal, Hessen, Gesytec and MODBUS, other protocols on demand
PHYSICAL DATA	
DIMENSIONS	19" rack, (W 48,3 cm ) 3 standard Height Units, (height 13,9 cm ) , depth 42 cm net , weight 11 Kg
POWER DEMAND	230 V AC, 200 VA (115 V AC available) 50/60 Hz
ROOM CONDITION	5 °C TO 40 °C , 20 TO 95% rH, non condensing
GENERAL	
OPTIONS	<ul style="list-style-type: none"> <li>• Multi channel selector with Vici dead end or flow through, 6 to 16 stream, pump 5l/min (internal) or on demand an external can be recommended.</li> <li>• Analogue output multiplexer 15 outputs with 0-10 V or 4-20 mA ( order number 8602)</li> <li>• IO extender with 15 low and 15 high alarm outputs ( 24 V with max 300 mA) (order number 8608)</li> <li>• Special software that shows a map of your location and the current status of the measurements</li> </ul>
APPROVALS	CE approval for EMC conformity: EN 61000-6-2, EN 61000-6-3, EN 61010, EN 61326

# SYNSPEC

Shaping a cleaner, safer future. With you.

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Version 2.0 b