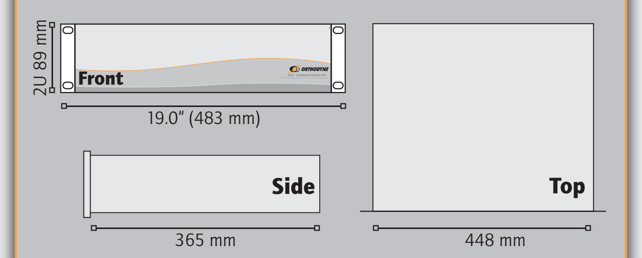
SPECIFICATIONS FID500+Methaniser

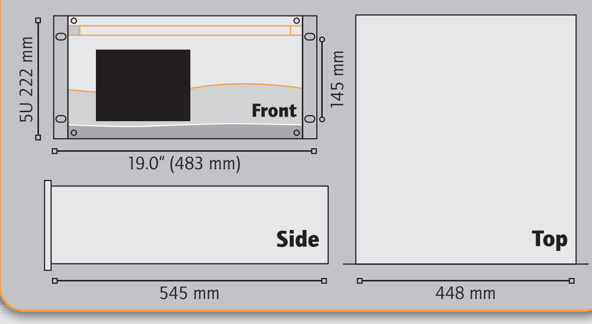
Accuracy	Depend of the range used
Drift	1 % over 24 hours
Temperature drift	1 % per degree
Operating temperature	± 20°C without wide variations of temperature
Sampling gas	**N_2, Ar, He, Air, H_2, O_2**
Sample gas connection	1/8" Swagelok SS
Sample flow rate	Approximately 3 to 5 l/h
Sample pressure	Lower than 100 mBar
Combustive gas	**Synthetic air**
Combustive gas connection	1/8" Swagelok SS
Combustive gas pressure	2 Bar stable
Combustive gas flow rate	300 ml/min
Recommended quality	5.0
Fuel gas	**Hydrogen**
Fuel gas connection	1/8" Swagelok SS
Fuel gas pressure	1 Bar stable
Fuel gas flow rate	38 ml/min
Recommended quality	6.0
Carrier gas	**Argon, Nitrogen, Helium or Hydrogen**
Carrier gas connection	1/8" Swagelok SS
Carrier gas pressure	from 4 to 10 Bar
Carrier gas flow rate	2 to 6 l/h
Recommended quality	6.0
Power supply	220 Vac, 50-60 Hz
Power consumption	500 VA
4-20 mA output	Eight configurable outputs depending on the application.
RJ-45 connection	Computerised system maintenance
Output relays (SPST 2 amperes / 250 Vac)	1 Analyser Failure alarm contact 1 Alarm High contact 1 Alarm High High contact

UMTR Dimensions

Standard UMTR rack mount 2U
Height > 89 mm | Depth > 365 mm | Width > 483 mm



Standard FID rack mount 5U
Height > 222 mm | Depth > 545 mm | Width > 483 mm



FID Dimensions

Rue Des Technologies, 23 – B-4432 ALLEUR – BELGIUM
Phone : +32-4-247.91.06 – Fax : +32-4-263.09.79
E-Mail : sales@orthodyne.be

sales@
www.orthodyne.be

Line 500

A new generation of intelligent detectors

FID500

+ Methaniser

Analysis of CH_4, CO, CO_2 and NMHC in PPB and PPM

ORTHODYNE
GAS CHROMATOGRAPHY

FID500

+ methaniser

The FID500 is an analytical system that measures CH_4, CO, CO_2, NMHC in ppb and in ppm level in Helium, Argon, Oxygen, Nitrogen, Hydrogen or Air

PRINCIPLE

The flame ionization detector is placed in a temperature regulated chamber.
It is designed to detect traces of hydrocarbons in neutral gases.

The combustion of Hydrogen and Synthetic Air creates a flame in which are burning the organic components contained in the gas to be analysed.
When burning, these components produce ions which are collected by an electrode.

The very weak current obtained in this way is amplified in an electrometer with high gain and directed to a data aquisition system.
A polarization electrode is connected on the level of the nozzle and a collecting electrode with adjustable distance make the best results possible.

Coupled with a methanizer (UMTR unit), it also detects traces of CO and CO_2.
The methaniser is foreseen to convert, in a catalytic reactor, traces of CO and CO_2 into methane.

This reaction takes place at a temperature of ± 350°C in presence of Hydrogen in excess

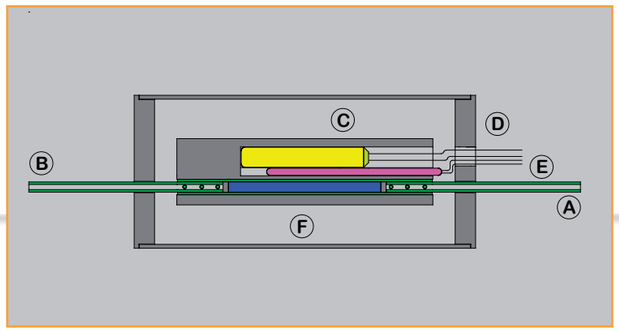
The following reactions bring these conversions :
$CO + 3\ H_2 = CH_4 + H_2O$ and $CO_2 + 4\ H_2 = CH_4 + 2\ H_2O$

With a properly adjusted temperature and flowrate, the efficiency is almost of 100%.

When supplied with high purity gases, the detection threshold can reach 1 ppb.

UMTR METHANISER EXPLANATION

A > Gas inlet
B > Gas outlet
C > Oven
D > Heating element
E > PT100 sensor
F > Catalytic reactor



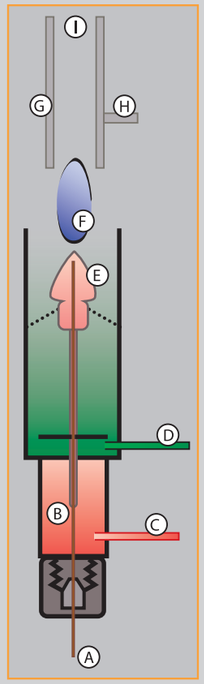
Type of configuration

- **FID530 (FID530/UMTR)**
  1 Valve /1 column
- **FID540 (FID540/UMTR)**
  1 Valve /2 columns
- **FID550 (FID550/UMTR)**
  2 Valves /1 column
- **FID560 (FID560/UMTR)**
  2 Valves /2 columns
- **FID570 (FID570/UMTR)**
  3 Valves /1 column
- **FID580 (FID580/UMTR)**
  2 Valves /2 columns
  + external rack

Applications

- Air separation plants
- Cryogenic truck loading station
- Specialty gas laboratories
- Process control
- Steel industry

FID DETECTOR EXPLANATION



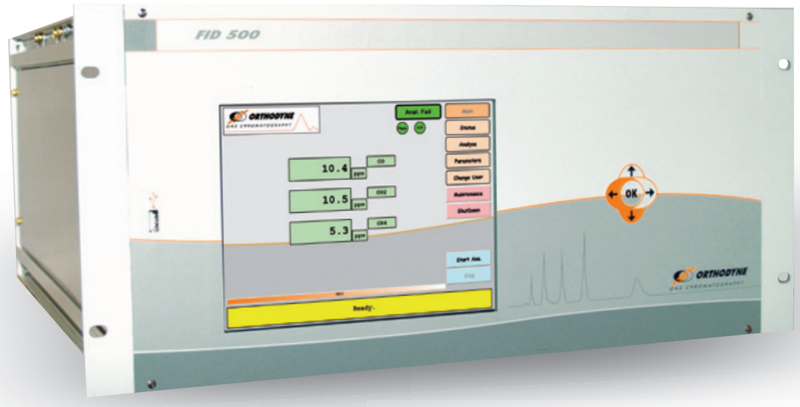
A > Sample inlet
B > Mixture between the sample and the Hydrogen
C > Hydrogen inlet
D > Synthetic Air inlet
E > Nozzle
F > Flame tip
G > Collector
H > Anode & Ignitor
I > Flame guard

FEATURES

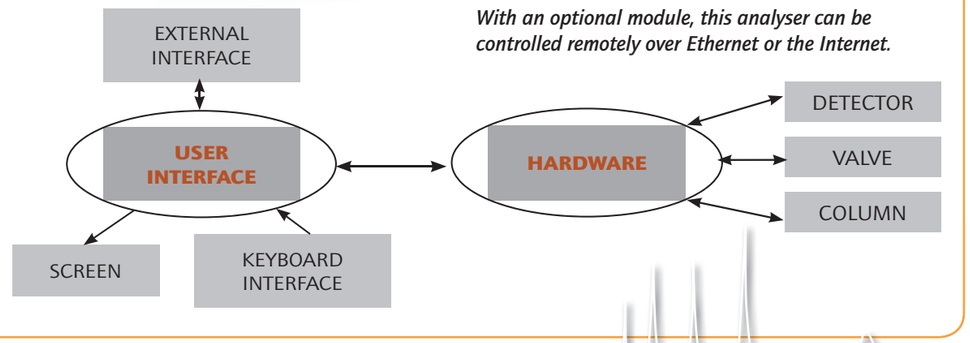
- < 1 ppb resolution guaranteed. (Limit Detection Level).
- User-friendly software.
- GC technology used for complete separation between each impurity.
- NMHC : Total hydrocarbons from C2 to C5 (Given in CH_4 equivalent).
- Electronic flame-out guard circuit.
- Automatic fuel shut off system.
- Adjustable alarm and oven settings.
- Fast response.
- Possibility of auto-calibration programming – ideal for unmanned plant conditions.
- Easy access to pressure and flow control devices.
- CE marked.

MEASUREMENT CAPABILITIES

Sample	ARGON	HELIUM	HYDROGEN	NITROGEN	OXYGEN
Type : Orthodyne **FID**	< 1 ppb CH_4 < 1 ppb CO < 1 ppb CO_2 < 2 ppb NMHC	< 1 ppb CH_4 < 1 ppb CO < 1 ppb CO_2 < 2 ppb NMHC	< 1 ppb CH_4 < 1 ppb CO < 1 ppb CO_2 < 2 ppb NMHC	< 1 ppb CH_4 < 1 ppb CO < 1 ppb CO_2 < 2 ppb NMHC	< 1 ppb CH_4 < 1 ppb CO < 10 ppb CO_2 < 2 ppb NMHC



System overview



Line 500 - FID500 + Methaniser