



ARIES 1001



Automatic computerized hydrocarbons analyser (THC - Met. - NMHC), to emission monitoring from thermics and catalytics combustion plants

(mCERTs pending n° A5003537 applied for EN12619)

Aries is the definitive solution for monitoring combustion plants, for who asks operative simplicity, complete check of every parameters, immediate results identification, safety without compromises.

N.I.R.A. has created the first chromatography solution, without requiring any further connections to elaboration

systems, completed with "PC-embedded and graphic display", which supervises to every analytical cycle phase, pressure and flows check, data handling, chromatograms graphic display, immediate results identification and irregularities, if any.

The easy reading due to colour TFT screen, the handy keyboard access and the designed configuration, shows N.I.R.A. attention spent in analyser planning utilisation.

Aries 1001 provides two different analytical cycles:

- **THC (short cycle) in 5 seconds**
- **Met-NMHC (complete cycle) in 120 seconds**



Performance

The N.I.R.A. analytical instrumentation line, is the result of synergy of two excellent technologies based on tradition account and recent discover.

Analytic process "technology":

- Consolidated tradition based on 30 years of experience
- Proved reliability of the components
- Membrane, sampling valves, without moving parts, which guarantee years of free trouble working
- Continuous checking of pressure and gas flows by digital reading
- FID gasproof detector
- Heated transfer line
- Heated sampling pump
- Heated fibre glass filter

"PC embedded" technology:

- PC core module utilization
- Graphic view of analytical process by different animation phases
- Continuous evidence and test of operative parameters
- Higher elaboration processing for accurate chromatogram integration
- Chromatogram real time display with higher graphic quality
- File layout
- Graphic and numeric re-elaboration
- Historic data recording and record of irregularities, if any
- Auto diagnostic

Operative principle

The computerized automatic analyser N.I.R.A. Aries 1001, identifies by only one sampling the Methane and non-Methane Hydrocarbons or their Totals (Met./NMHC-THC), through a chromatographic separation and FID detector, in agreement with the actual standards. Aries 1001 has a pump with heated head which intakes the sample from drawing point and through the heated line with fibre glass filter, send it to the analyser.

An electronic sensor checks the line showing irregularities, if any (filter occlusion or line breaking). The heated membrane sampling valve, draws automatically a known and reproducible volume of sample, taken to atmospheric pressure to guarantee reproducible sampling which are not influenced by pressure or range changes. The Methane, separated from the analytes, is sent to FID detector; after the carrier gas back-flush, the remaining Hydrocarbons are sent to FID detector, where they produce an unique signal. So the analyser finds NMHC separated from Methane, or THC. A shorter analytical cycle then, allows the determination of THC only. The analysed data are referred to standard calibration mixture.

System configuration, provides the following laying:

- Temperature (chamber and line)
- Pressure and flow gas
- Measurements range
- Calibration
- Video display modality
- Concentration alarms

Operative sequences, are managed by software:

- FID check and management
- Temperature check
- Data collection
- Data hadling
- Data transmission and printing
- Checking alarms

Analytical results:

- Chromatogram elaboration
- Area integration, method
- Graphic showing by colour LDC (TFT) display
- Signals: voltage 0-10V, power 4-20mA, serial RS232, printing
- Stop alarms

The "PC embedded" supervises to all the analytic cycle phases, chromatographic view, data processing and read in, graphic interface based on colour LDC (TFT) screen.



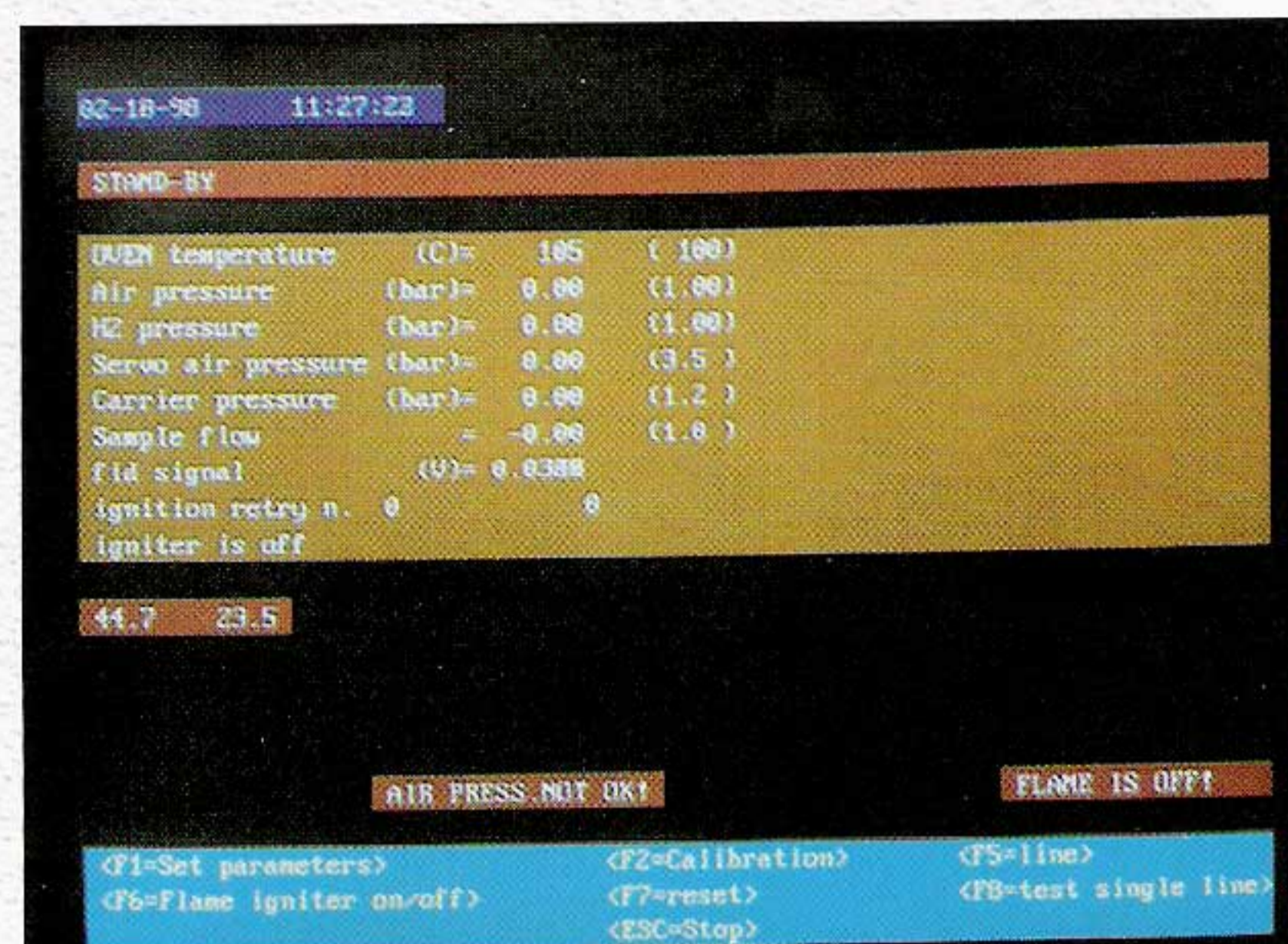
Electronic control

- pressure air and hydrogen digital readout
- flame automatic light
- hydrogen interception (flame off)
- thermostatic chamber with over temperature safe
- high temperature sampling valve (300° C)
- high temperature sampling pump (200° C)
- guided autocalibration sequence
- analytic sequence managed by software
- heated sampling line control
- suction sampling line, temperature and pressure control
- detector FID, temperature control (200° C)
- remote diagnostic by modem

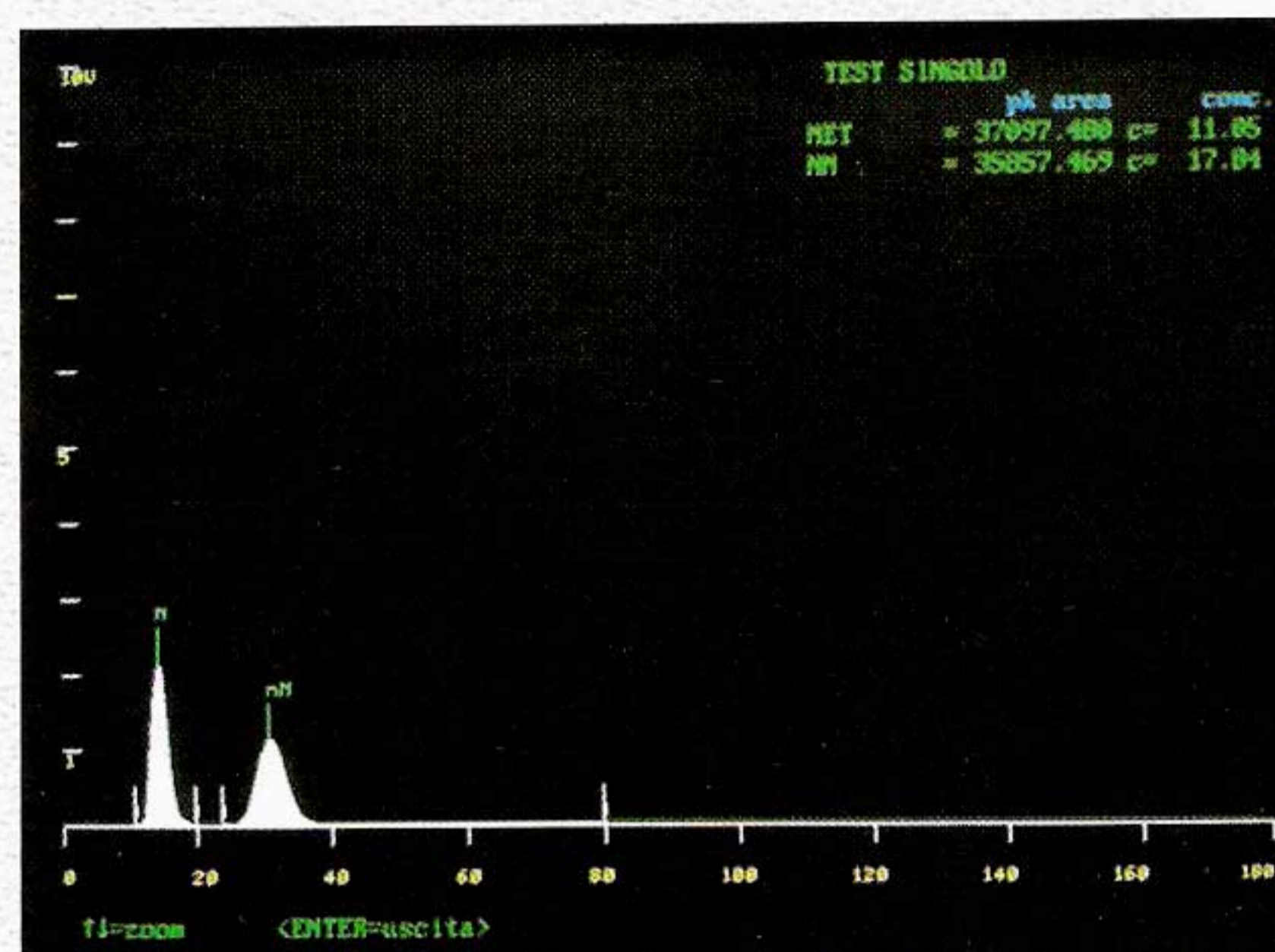
a) - Parameter selection and monitoring

b) - Chromatogram graphic display and data handling

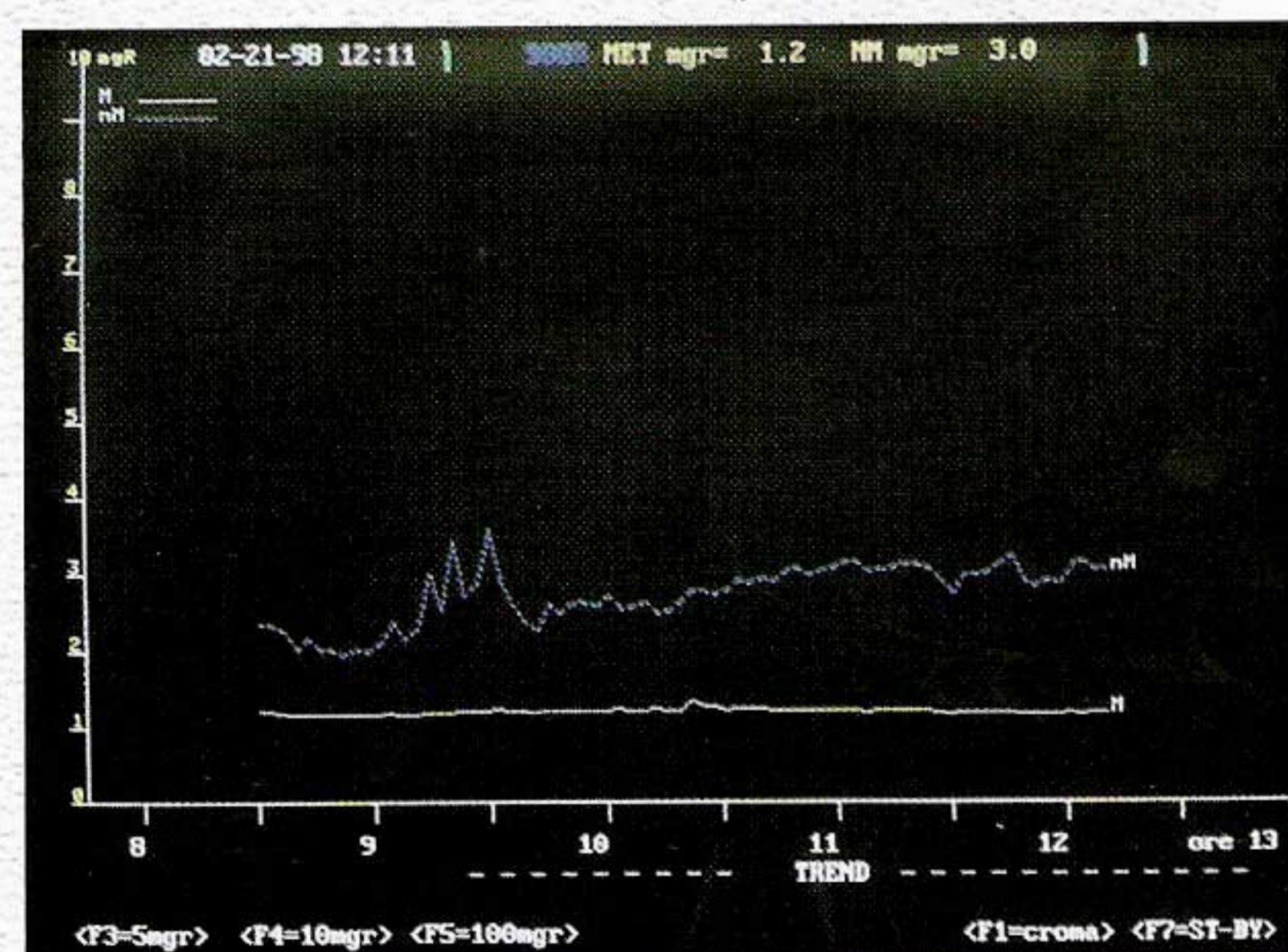
c) - Measurement trend and historic data



a)



b)



c)



Technical specification ARIES 1001

DETECTION SYSTEM	Flame ionisation(FID)
MEASUREMENT RANGE	30-100-300-1000-10000 mg/m ³
COMPLETE ANALYTIC CYCLE TIME	120 sec.
SHORTER ANALYTIC CYCLE TIME	5 sec.
NOISE	0.1% F.S.
MINIMUM DETECTABLE	0.2% F.S.
ACCURACY	± 1% F.S.
LINEARITY	± 1% F.S.
REPEATABILITY	<1% F.S.
WORKING TEMPERATURE	10°-40° C
FID TEMPERATURE	200° C
HYDROGEN CONSUMPTION (electronic check)	30 ml/min.
MINIMUM HYDROGEN PRESSURE	2 bar
AIR CONSUMPTION (electronic check)	250 ml/min.
CARRIER AIR CONSUMPTION (electronic check)	50 ml/min.
SERVO-AIR PRESSURE (electronic check)	4 bar
ANALOGIC OUTLETS	V, mA, printing
SERIALS OUTLETS (other ranges as option)	RS232
DATA PRINTING	Centronix PC compatible
DISPLAY (TFT COLOUR)	VGA 640x480 display 6 inc.
MEASUREMENTS DISPLAY	ppm, mg/Nm ³ , to be selected
INTERNAL MEASUREMENTS CONSOLIDATION	>3 working months
REAL TIME CHROMATOGRAM GRAPHIC DISPLAY	to be selected
MEASUREMENT TREND GRAPHIC DISPLAY	to be selected
CONSOLIDATED MEASUREMENT EDITING	numerical system on printing numerical system on screen graphic system on screen
DATA TRANSFER (RLAN)	pre-installed, s/w - interface
DATA BASE FILEING	EXCEL compatible
AUTODIAGNOSTIC	power wantage gas pressure wantage detector flame off out of temperature
POWER	220 VCA, 500 VA
DIMENSIONS	rack 19", hight 6 u
WEIGHT	20 Kg.

The instruments is assembled in cabinet IP 55 with ancillary equipments.

Heated drawing line (measurement has to be indicated): as options.

The instruments needs hydrogen, chromatographic air and standard gas



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