

GABI Star



Agilent Technologies

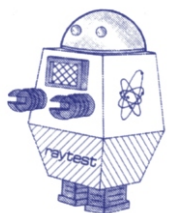
Channel Partner

Gamma

Radioactivity

Monitor

for HPLC and GC

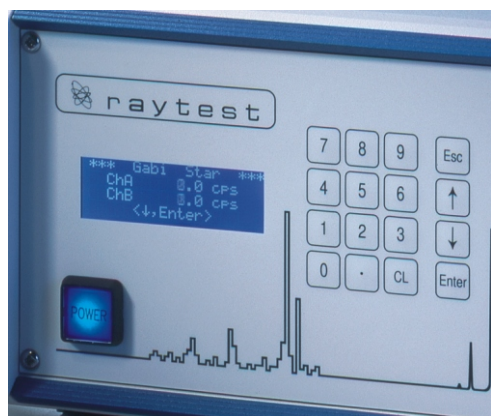


RADIO-DETECTION



Stand-alone operation mode

- Data transfer of radioactivity intensity information to any HPLC system using analog output voltage (1V)
- No PC required
- Instrument control with built-in keyboard / display
- Parameter and spectrum printout on serial thermo printer



Instrument handling via integrated keyboard/display

Control of:

- Measurement channel selection
- Discriminator thresholds
- Energy calibration
- Spectrum scan
- Smoothing
- Background subtraction
- Analog output range

EXCELLENT LINEARITY

Remote-control operation

- Full control of GABI Star and entire HPLC system by GINA Star software
- Digital Data acquisition according to GLP



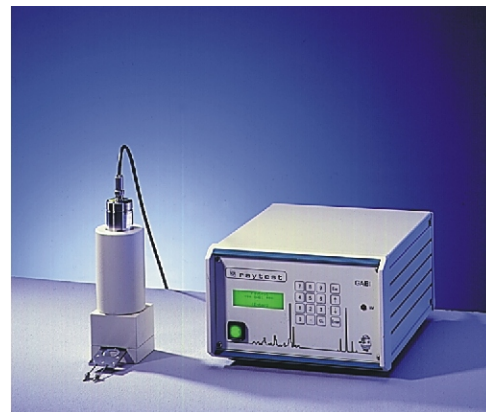
Application

GABI Star is a radioactivity flow-through detector for gamma, positron and high beta radiation.

GABI Star controls up to two different scintillation detectors of various types, dimensions and shapes of the scintillation crystal to optimize the performance for all applications, e.g.:

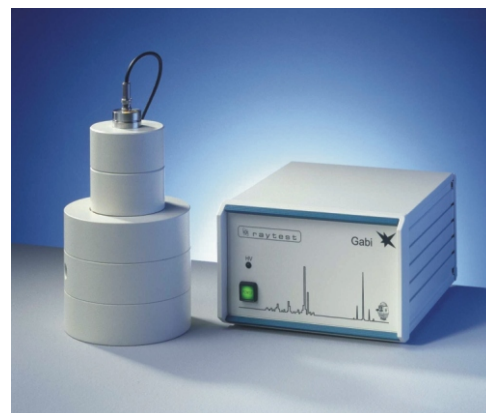
- Gamma & Positron HPLC, GC and CE
- Radioactivity flow through monitoring
- Process control
- Waste effluent monitoring
- Detection of byproducts of radioactively labelled compounds
- Single sample counting
- Total activity counting
- RIA counting
- Isotope dilution studies
- Food contamination studies

HIGHEST SENSITIVITY



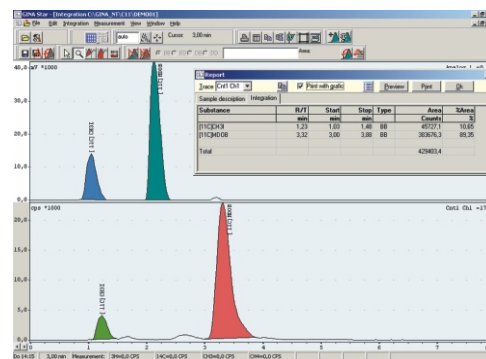
1x1 inch standard detector

- 1x1 inch Na(Tl) crystal
- Recommended energy range 10-150 keV
- Lead shielding with 10 or 30 mm wall thickness



2x2 inch standard detector

- 2x2 inch Na(Tl) crystal
- Recommended energy range 100-600 keV (high activity)
- Lead shielding with 50 mm wall thickness



Radio-HPLC-Chromatogram of [11C] MDOB and by products

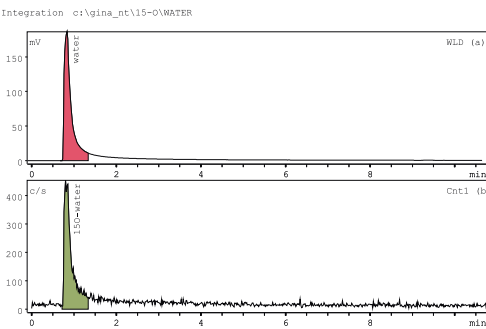
OPTIMAL RESOLUTION

- 2x2 inch pin hole detector.
- 2x2 inch Na(Tl) crystal with pinhole
- Recommended energy range 100-600 keV
- Lead shielding with 50 mm wall



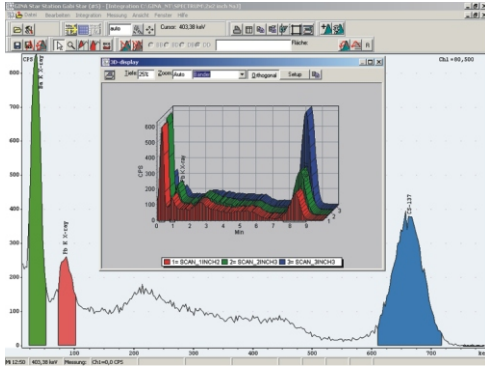
2x2 inch GC detector

- 2x2 inch Na(Tl) standard crystal
- Optimized for GC connection
- Temperature control for capillary heating up to 150°C



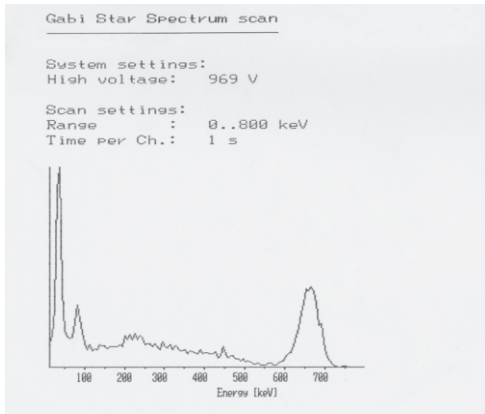
Radiogaschromatogram of 1µl [15O] H₂O, 0,55 MBq

WIDE DYNAMMIC RANGE



Spectrum scan with GINA Star

- 3-dimensional view
- Variable scan parameters



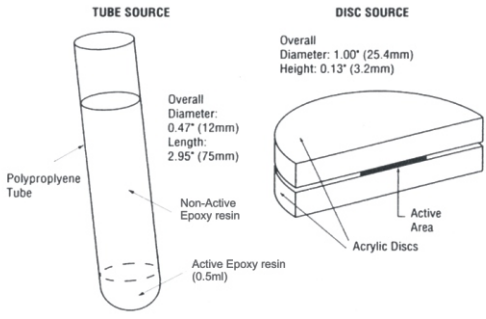
Spectrum scan

- In stand-alone and remote controlled mode
- Built-in energy calibration and high voltage scan for system setup
- Selectable scan range

FAST OPERATION

Cs-137 Tube / disc test source

- For energy calibration
- Performance test for regulatory requirements



Modular design

- CE, EMV approved
- Clearly arranged connectors
- Exchangeable plug-in boards for easy maintenance



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Technical Data

Power supply	110 V -120 V / 60 Hz or 230 V -240 V / 50 Hz \pm 10 %
Power consumption	40 VA
Dimensions (W : H : D)	250 x 160 x 320 mm (without detector)
Weight	5 kg (without detector)
Operating temperature	10°C to 40°C
Humidity	max. 70 % relative humidity
Count rate	up to 200 000 cps
HV range	500 – 2000 V programmable
Energy range	30 – 1600 keV
Background	1"x 1" NaI (TI) crystal 50 cpm 2"x 2" NaI (TI) crystalL 30 cpm
Efficiency	1"x 1" Standard NaI(TI) ¹²⁹ I max. 10 %, 1"x 1" Through hole NaI(TI) ¹²⁹ I max. 55 %,
Data output	RS232 interface 2 analog output channels range 0-1 V (overflow 150%) resolution 20 bit on external display
Data input	7 analog input channels range (-0.5 V to + 4.5 V), resolution 21 bit
Control signals	TTL signals for: liquid scintillator pump external Start/Stop measurement wait / active Relay contacts: 4 (programmable) fraction collector waste collector HPLC pumps: 3 x voltage control or 3 x frequency control



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Ramona Star



Beta (Gamma)

Radioactivity

Flow Monitor

Analyser



MAXIMUM SENSITIVITY



Stand alone operation mode

- Data transfer of radioactive intensity information to HPLC system using analog voltage output (1V).
- No PC required.
- Instrument control by using build in keyboard / display.



Instrument handling via integrated keyboard/display

- 4 lines, 20 characters LCD
- 16 button keypad
- Parameter dialog

HIGHEST RESOLUTION

Remote controlled operation

- Ramona Star and other HPLC equipment is controlled by Gina Star software.
- Digital Data acquisition according to GLP Full control of Ramona Star and complete HPLC system



Liquid scintillator admixture pump

- Sapphire piston pump
- Rubin valves
- Pressure up to 1000 psi
- Flow rate: 0,2-10 ml/min
- Manual/automatic control
- 3 fixed splitters (option)



LOWEST BACKGROUND



Cells for LS application

- Liquid flow scintillators
- Cell volumes 10-2500 μ l
- Pressure tight up to 15 bar

Cerenkov flow cell

- Cell volumes 10-1300 μ l
- Pressure tight up to 15 bar



External solid scintillator cells

- BGO crystal for 125-J. 99m-Tc, PET
- Plastic scintillator for 32-P

RADIOCHEMICAL PURITY

Quartz tube solid scintillator flow cell.

- all types of solid scintillators.
- Particle size 5-150µm
- Cell volumes 5-370µl
- Pressure tight up to 150 bar (special version up to 450 bar)
- Flow rate up to 20ml/min



Choice of solid scintillator

- Lithium glass
- Lithium glass, coated
- Calcium fluoride
- Yttrium

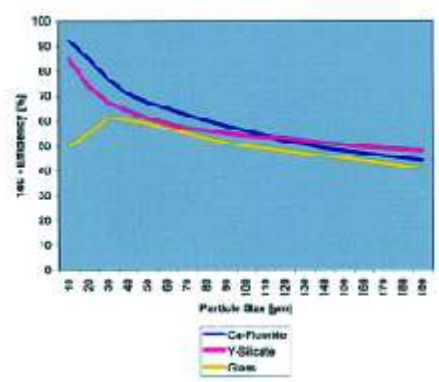
Cells for micro HPLC application

Standard cell for GLP

- Solid 14-C source
- Plastic scintillator

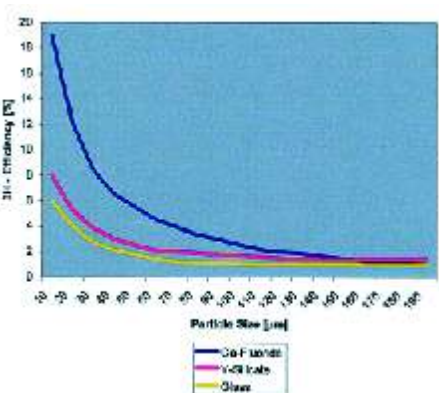


METABOLISM



Efficiency 14-C

- Highest efficiency up to 90%
- Depending on particle size



Efficiency 3-H

- Highest efficiency up to 20%
- Depending on particle size

PHARMACOKINETIC

Automatic cell identification

- All cell parameters stored on cell EEPROM.
- Cell parameters are transferred to evaluation software according to GLP. Automatic coincidence time setting depended upon used scintillator



Modular design

- CE, EMV approved
- Clearly arranged connectors
- Exchangeable plug in boards



Technical Data

- radio flow detector with 2" PMTs, special measuring chamber design to provide best sensitivity and resolution.
- 2channel amplitude discriminator.
- 7-analog inputs (21 bit resolution) for external detectors (UV-Detector etc.).
- 2-Analog outputs for radioactivity information with 20 bit resolution for connection and integration into an existing HPLC system.
- Independent output range for both analog outputs.
- HPLC pump control for 3 pump channels.
- Liquid Scintillator pump control. (start, stop, scintillator flow)
- Fraction collector control with. waste management function.
- Start / Stop inputs.
- Measurement status signals to trigger external hardware (auto sampler etc.).
- Cell identification and parameters stored in cell EEPROM.
- Automatic background subtraction.
- RS-232 Interface t.o connect to Gina Star HPLC control software

Ramona history

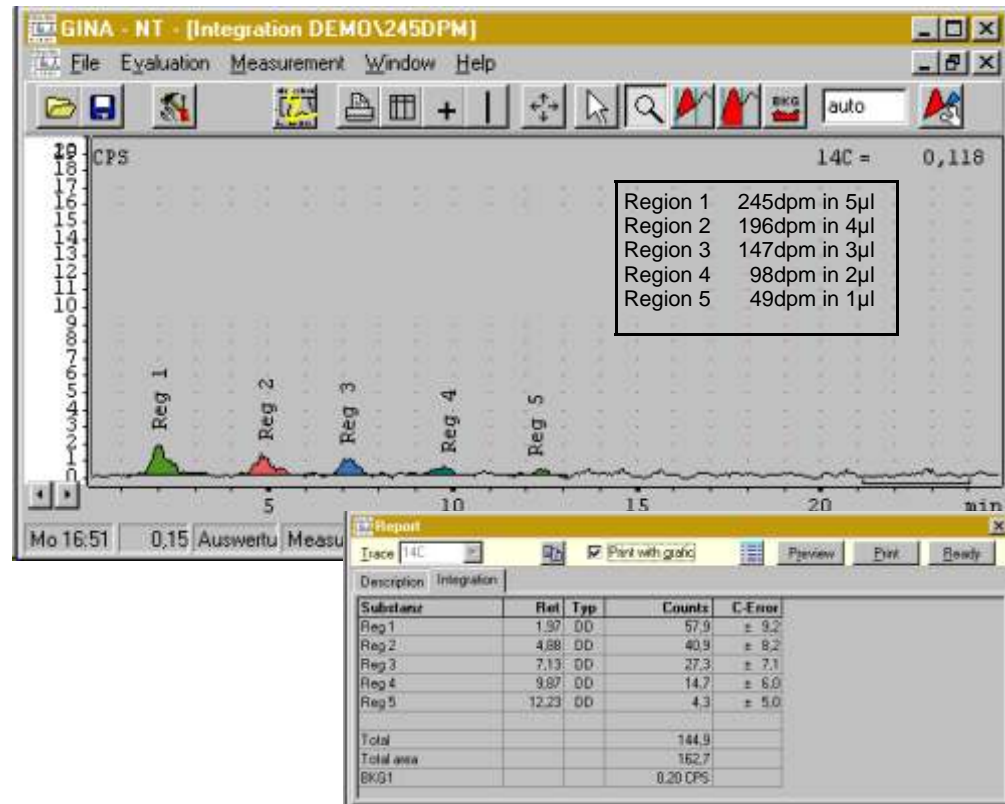
- First delivered in 1983

Generations:

- 1983 Ramona D, A,
- 1985 Ramona 4 and 6
- 1988 Ramona 5, 5LS
- 1990 Ramona 90,92, classic
- 1998 Ramona 2000
- 2000 Ramona Star

- Total production over 2000 units.
Oldest in use for over 17 Years.

Detection Limit



Remote controlled operation

Gina Star software

- Digital Data acquisition
- Control of all parameters.
- GLP compliant data handling.
- Calculation of counting error and detection limit (see graphics).
Comfortable graphical user interface.



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