# AR-2000

## Radio-TLC Imaging Scanner


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**The AR-2000 radio-TLC imaging scanner is the industry 'Gold Standard' in the detection of radiolabeled compounds in TLC plates and in the purity analysis of [$^{18}$F]FDG.**

### Technology

The AR-2000 imaging scanner is the industry 'Gold Standard' for analyzing the purity of [$^{18}$F]FDG and other PET radiopharmaceuticals, $^{3}$H, $^{14}$C and alpha emitters on TLC plates, strips, gels, and blots.
The system provides direct digital counting of all radioisotopes including positron emitters, which guarantees quantitative accuracy and reproducibility for important metabolism experiments and radiochemical purity measurements. The AR-2000 is linear over four to five decades of activity, a range greater than the linear range of X-ray film, providing fast and reliable analysis. The scanner uses a gas-filled proportional counter, which can detect all beta, gamma and even alpha emitting isotopes. An entire TLC lane can be imaged in less than one minute. Multiple lanes can be analyzed in a single automated run without operator intervention.

### Applications

#### PET / Nuclear Medicine:

Fast, accurate results for SPECT or PET radiopharmaceutical compounds labeled with $^{68}$Ga, $^{18}$F, $^{11}$C, $^{99m}$Tc, $^{111}$In, etc. Very useful for radiopharmaceutical quality control and synthesis process control for diagnostic as well as therapeutic radionuclides such as $^{225}$Ac, $^{211}$At, $^{90}$Y or $^{177}$Lu.

#### Pharmaceutical metabolite analysis:

Radioisotope flexibility and manual or automatic peak analysis for low or high activity products, using beta ($^{3}$H, $^{14}$C), gamma or positron-labeled compounds.

#### Radiotracer toxicology studies:

High sensitivity for quantitative measurement of $^{14}$C-labeled organic compounds and agrichemicals.

#### Lipid biosynthesis / Lipid analysis:

1D and 2D analysis of complex lipids, phospholipids and glycolipids by TLC with no cutting, scraping or transfer for fast quantitative results.

#### Alpha-emitter TLC analysis:

The AR-2000 allows for direct detection of alpha particles from radionuclides like $^{225}$Ac, $^{223}$Ra, $^{227}$Th and $^{211}$At instead of direct or indirect decay photons.

#### Radiolabeled reporter gene or enzyme assays:

Simplifies the analysis and improves accuracy for traditional radioisotopic CAT or enzymatic conversion assays using TLC.

#### Quantitative biochemical separations and planar samples using radiolabeled compounds:

Programmable scanning and quick-change magnetic collimators for resolution and sensitivity optimization.

### WinScan Software

The system includes WinScan Software for instrument control for users who do not need GMP-compliant software. The results of multi-slice acquisition can be presented for 2D image construction via WinScan 2D.

#### Features at a glance:

- Real time data display and on-screen analysis tools, including ROI definition, background subtraction, % total chromatogram activity and Rf values
- Automatic raw data storage for GLP (non-GMP)
- Automatic peak finding with adjustable selection criteria
- Plot to scale (1:1) printing option for plate overlays

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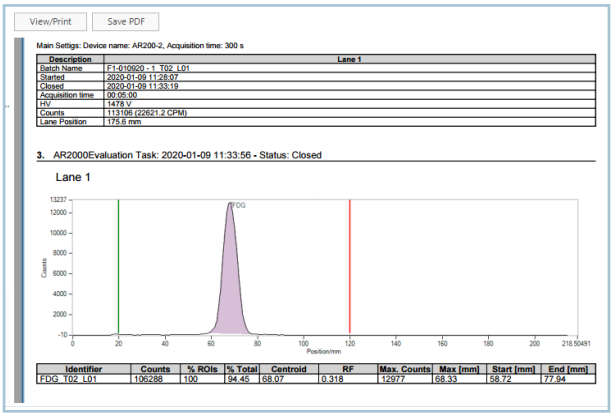
## Features of WinScan 2D imaging software (optional):

- Quantitative ROI analysis using on-screen drawing tools with smoothing, background subtraction and 1D chromatogram overlays for selected lane areas
- Printing of images, associated data and acquisition
- Parameters, or exporting of Windows metafiles or tab delimited Excel compatible data tables
- Includes additional 6 mm high efficiency collimator

## GMP-compliant RaPET-Lab/AR software (optional)

The RaPET-Lab/AR software provides a modern software platform for AR-2000 users. This workflow management tool allows the automated execution of full processes of measurement, evaluation and quality checks using the AR-2000. Different tasks for desired processes can be integrated and executed in a predetermined order. All steps of the workflow are evaluated in an automatically generated unchangeable report. The built-in user management and access protection assures compliance with the highest standards of GMP, cGMP, GAMP 5 and 21 CFR part 11.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Main Settigs: Device name: AR200-2, Acquisition time: 300 s

| Description | Lane 1 |
|---|---|
| Batch Name | F1-010920 - 1_T02_L01 |
| Started | 2020-01-09 11:28:07 |
| Closed | 2020-01-09 11:33:19 |
| Acquisition time | 00:05:00 |
| HV | 1478 V |
| Counts | 113106 (22621.2 CPM) |
| Lane Position | 175.6 mm |

3. AR2000Evaluation Task: 2020-01-09 11:33:56 - Status: Closed

Lane 1



| Identifier | Counts | % ROIs | % Total | Centroid | RF | Max. Counts | Max [mm] | Start [mm] | End [mm] |
|---|---|---|---|---|---|---|---|---|---|
| FDG_T02_L01 | 106288 | 100 | 94.45 | 68.07 | 0.318 | 12977 | 68.33 | 58.72 | 77.94 |

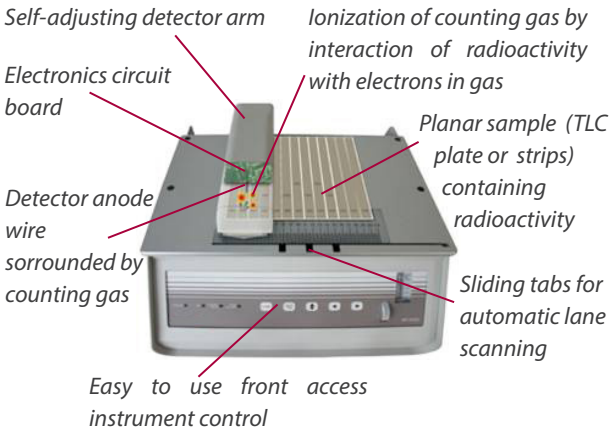
*Screenshot of RaPET-Lab/AR software*

## Benefits

- Easy-to-use WinScan and RaPET-Lab/AR software
- GMP-compliant execution of workflows (optional with RaPET-Lab/AR)
- Fast, automated and reliable runs
- Excellent spatial resolution
- Minimized technician exposure and bench time
- 2-dimensional color image generation
- Quantitation of TLC without scraping and counting
- High sensitivity for all radioisotopes including $^{3}H$
- Interchangeable high efficiency and high resolution collimators

## Models for one, two or three TLC plates

The AR-2000 can be configured in three models to accept one, two or three 20x20 cm TLC plates. It features an autotab advance to automatically count as many TLC lanes as desired. Included are AR-4101A calibration plate, P-10 gas regulator (compatible with most regions), WinScan3 software, one year license for AR-Calib calibration and one 10 mm high resolution and one 10 mm high efficiency collimator.




## Specifications and requirements

| | |
|---|---|
| Sensitivity (10 min. analysis) | 1,000 DPM for $^{3}H$, $^{125}I$<br>100 DPM for $^{14}C$, $^{32}P$ and most other isotopes |
| Resolution | 0.5 – 1 mm for $^{3}H$<br>1 – 2 mm for $^{14}C$<br>3 mm for $^{32}P$ and most gamma emitters |
| Linearity | Calibrated to within 1 % (± 2 mm) |
| Background | Less than 0.15 CPM per mm |
| Dimensions | 1-Plate: 40 x 23 x 48 cm (16 x 9 x 19 in)<br>2-Plate: 61 x 23 x 48 cm (24 x 9 x 19 in)<br>3-Plate: 81 x 23 x 48 cm (32 x 9 x 19 in) |
| Weight | 1-Plate: 15 kg (33 lbs)<br>2-Plate: 18 kg (39 lbs)<br>3-Plate: 20 kg (45 lbs) |
| Power | 110/220 V, 50/60 Hz |
| Gas Supply | P10 counting gas (90 % Argon, 10 % Methane) regulated to 10 - 20 psi (0.7 – 1.4 bar) |
| PC Requirements WinScan | Windows OS, 9-pin RS232 or USB port; USB-RS232 adapter provided if necessary |
| PC Requirements RaPET-Lab/AR | Windows 10 Pro 64Bit, I5 / I7 processor, 4GB memory, 250 GB HDD/SSD, 15“ full HD non-touch display, 3 USB ports |

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