

Product Datasheet

Scan-RAM 2™

Radio-TLC Scanner with options for
radio-HPLC and Gamma Spectrometry

Scan-RAM 2 System Specifications

Dimensions (without detector)	109 (h) x 370 (l) x 156 (w), all mm
Mass	4.2 kg (single-head variants); 4.5 kg (Duo variant); 4.6 kg (MCA variant)
Scanning length	200 mm (single-head variants); 150 mm (dual-head variants)
Scanning speed range	0.1 to 10 mm/s
Dwell (sampling) time	200 ms default, range 0.1 to 10 s
Scanning head height range (above TLC bed, single-and dual-head)	Contact to 10 mm; manual adjustment; electronic height measurement
Collimator dimensions	25 x 3 mm slit (changeable; available down to 25 x 1 mm); 15 mm Pb thickness
Power requirements	12 Vdc (adapter supplied); 5 Vdc USB-C (cable supplied)
Power consumption (standby)	0.4 W; 0.8 W (MCA variant)
Power consumption (idle - SiPM)	4 W; 6 W (MCA variant)
Power consumption (idle - PMT)	5 W; 8 W (MCA variant, 2 x PMT)
Power consumption (running 1 mm/sec - SiPM)	6 W; 8 W (MCA variant)
Power consumption (running 1 mm/sec - PMT)	7 W; 10 W (MCA variant, 2 x PMT)
Detector operating voltages	Smart detector technology – all optimised detector operating voltage parameters stored in detector memory PMT-based detectors nominal operating voltage 800-900 Vdc SiPM-based detectors nominal operating voltage 40 Vdc
Default discrimination window settings	Smart detector technology – all optimised detector discrimination window parameters stored in detector memory LLD and ULD selectable in the range 0 to 3000 mV
Lower and upper detection limits	Count rate ~2,500,000 cps (Linearity 0 - 1,000,000 cps $r^2 \geq 0.99$). Maximum sample activity dependent on counting efficiency and dwell time. Example lower detection limit (^{137}Cs): 10 kBq
Background count rate	<10 cps for all variants
I/O	2 x Configurable I/O lines, 0-5 V; Analogue output 0-3 V, scalable as counts/mV

Gamma Spec MCA Option Specifications

Signal Input Type	Positive current pulse
Power/Comms Connection	USB
Power Rating	3 W typical
Default Number of MCA Channels	1024/2048
Default Detector Type	1 x 1" NaI(Tl)/PMT or 1 x 1" NaI(Tl)/SiPM
Detector Operating Voltage	550-700 V (Typical, factory set)
Detector Shielding	6 mm Pb crystal shield; 10 mm Pb standard collimator base, optimised collimation aperture
Threshold Setting	Settable channel threshold
Discriminators	Settable LLD and ULD
Energy Resolution (662 keV Cs-137)	<10 %, typical
Calibration Routine	Multi-point calibrations created and stored as MCA Configuration files within Laura software
Gamma Spec Positional Measurement Range	0 to 150 mm

SiPM/Plastic Scintillator: r-TLC	
Recommended Use	PET/High Energy Beta
Scintillator	Plastic Scintillator, 25 mm D x 0.5 mm T
Typical Counting Efficiency (%)	Na-22: 2%; Lu-177: 5%; Cs-137: 3.5%; F-18-FDG: 2%
Recommended Energy Range	150 keV to 1 MeV (beta)
Typical Background Count Rate	<10 cps
Operating Voltage	42 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 45 mm
Mass	119 g
Cooling	Peltier

SiPM/NaI(Tl): r-TLC, r-HPLC and gamma spec	
Recommended Use	SPECT gamma
Scintillator	NaI(Tl) 25.4 mm D x 25.4 mm T
Typical Counting Efficiency (%)	Co-57: 9%; Tc-99m: 2.5%, based on 5 µl spot, 1 mm/s
Recommended Energy Range	50 keV to 1.5 MeV
Typical Background Count Rate	<10 cps shielded
Operating Voltage	42 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 74 mm
Mass	407 g
Cooling	Peltier

PMT/Plastic Scintillator: r-TLC	
Recommended Use	PET/High Energy Beta
Scintillator	Plastic Scintillator, 25 mm D x 0.5 mm T
Typical Counting Efficiency (%)	Na-22: 2%; Lu-177: 5%; Cs-137: 3.5%; F-18-FDG: 2%
Recommended Energy Range	150 keV to 1 MeV (beta)
Typical Background Count Rate	<10 cps
Operating Voltage	700 to 1000 V, 900 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 103 mm
Mass	466 g

PMT/NaI(Tl): r-TLC, r-HPLC and gamma spec	
Recommended Use	SPECT gamma
Scintillator	NaI(Tl) 25.4 mm D x 25.4 mm T
Typical Counting Efficiency (%)	Co-57: 8%; Tc-99m: 3.2%, based on 5 µl spot, 1 mm/s
Recommended Energy Range	50 keV to 1.5 MeV
Typical Background Count Rate	<10 cps shielded
Operating Voltage	700 to 1000 V, 900 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 132 mm
Mass	691 g

PMT/BGO: r-TLC and gamma spec	
Recommended Use	SPECT/PET gamma
Scintillator	BGO, 25.5 mm W x 5 mm T x 20 mm H
Typical Counting Efficiency (%)	Na-22: TBC; Co-57: TBC; Tc-99m: TBC; Cs-137: TBC
Recommended Energy Range	50 keV to 1.5 MeV
Typical Background Count Rate	<10 cps shielded
Operating Voltage	700 to 1000 V, 900 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 132 mm
Mass	TBC

PMT/Plastic Scintillator (alpha) – to be used with alpha collimator only: r-TLC	
Recommended Use	Alpha
Scintillator	Plastic Scintillator, 25 mm D x 0.5 mm T
Typical Counting Efficiency (%)	Ac-225: TBC; Am-241: TBC; Pu-239: TBC
Recommended Energy Range	~5-6 MeV alpha
Typical Background Count Rate	<10 cps
Operating Voltage	700 to 1000 V, 900 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 103 mm
Mass	466 g

Detector Specifications

Low Energy NaI(Tl)/PMT (legacy): r-HPLC

Recommended Use	Low energy gamma – I-125
Scintillator	NaI(Tl), 25.4 mm D x 1 mm T
Typical Counting Efficiency (%)	I-125: 33.5%; I-129: 18%
Recommended Energy Range	10 to 60 keV
Typical Background Count Rate	< 10 cps shielded
Operating Voltage	700 to 1200 V, 800 V typical
Temperature Range	10 to 40°C
Connection Type	SHV
Dimensions	51 (D) x 178 (H) mm
Mass	0.5 kg

2" NaI(Tl)/PMT (legacy): r-HPLC

Recommended Use	Moderate to high energy gammas
Scintillator	NaI(Tl), 51 mm D x 51 mm T
Typical Counting Efficiency (%)	I-125: 4%; Co-57: 20%; Cs-137: 9%; Co-60: 15%
Recommended Energy Range	30 keV to 3.0 MeV
Typical Background Count Rate	< 10 cps shielded
Operating Voltage	500 to 1200 V, 800 V typical
Temperature Range	10 to 40°C
Connection Type	SHV
Dimensions	66 (D) x 279 (H) mm
Mass	1.04 kg

Well detector NaI(Tl)/PMT (legacy): r-HPLC only

Recommended Use	Gamma assay, low-level
Scintillator	NaI(Tl), 51 mm D x 46 mm L
Typical Counting Efficiency (%)	I-129: 65%; Cs-137: 33%; Co-60: 43%
Recommended Energy Range	50 keV to 1.5 MeV
Typical Background Count Rate	< 10 cps shielded
Operating Voltage	500 to 1200 V, 800 V typical
Temperature Range	10 to 40°C
Connection Type	SHV
Dimensions	63 (D) (Max.) x 246 (H) mm
Mass	912 g
Fixed Flow Cell Volumes	10, 20, 50, 100 and 200 µl

SiPM/BGO: r-TLC and gamma spec

Recommended Use	SPECT/PET gamma
Scintillator	BGO, 25.5 mm H x 5 mm T x 20 mm W
Typical Counting Efficiency (%)	Na-22: TBC; Co-57: TBC; Tc-99m: TBC; Cs-137: TBC
Recommended Energy Range	50 keV to 1.5 MeV
Typical Background Count Rate	< 10 cps shielded
Operating Voltage	42 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 74 mm
Mass	520 g
Cooling	Peltier

SiPM/ZnS (alpha) – to be used with alpha collimator only: r-TLC

Recommended Use	Alpha
Scintillator	ZnS(Ag)
Typical Counting Efficiency (%)	Ac-225: TBC; Am-241: TBC; Pu-239: TBC
Recommended Energy Range	~5-6 MeV alpha
Typical Background Count Rate	< 10 cps shielded
Operating Voltage	42 V nominal
Temperature Range	10 to 40°C
Connection Type	N/A – internal interface
Dimensions	50 x 50 x 45 mm
Mass	121 g
Cooling	Peltier

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