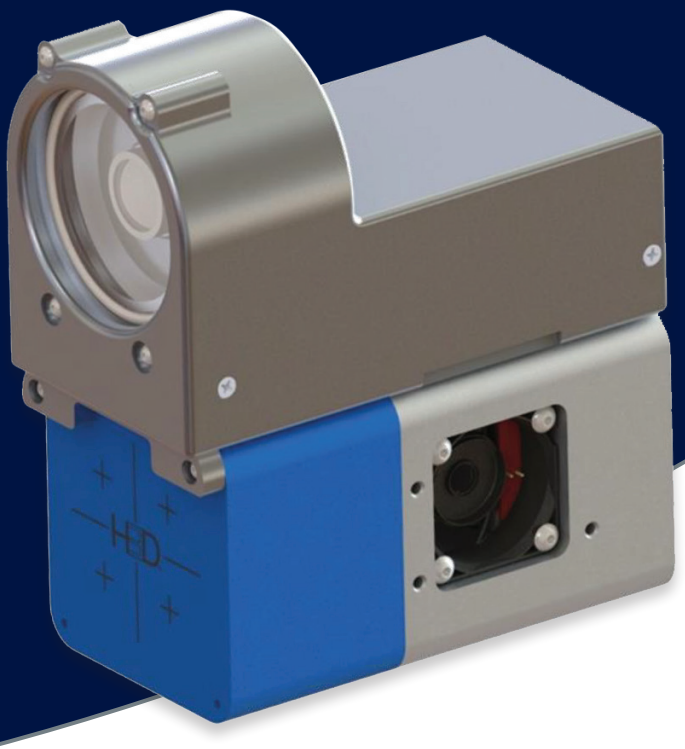
Product Datasheet

M400iC

Integrable Imaging Spectrometer



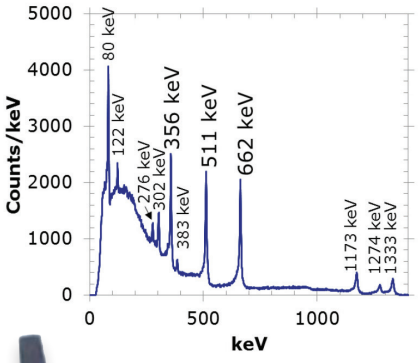
Integrate H3D's detector module into your product. This solution contains everything you need for high resolution spectroscopy and gamma-ray imaging.

Perfect for integration with:

- **Drones.**
- **Robots.**
- **Other sensor suites.**

Containing the most advanced room-temperature semiconductor technology to achieve spectroscopic performance competitive with cryogenically cooled detectors, the detector module has:

- **Compact and light-weight size.**
- **Fast startup.**
- **Excellent energy resolution.**
- **Integrated optical camera.**
- **Low power.**
- **Easy communication.**



Features

- Fast and highly portable spectrometer.
- Gamma-ray imaging from 250 keV to 3 MeV.
- Radiation image overlay onto optical image.
- Option for ≤0.8% FWHM energy resolution at 662 keV and interaction-by-interaction resolution of ≤0.65% FWHM.
- Ready to use in less than 90 s.
- Rapidly identifies and localises gamma-ray sources.
- Industry-leading efficiency with up to >29 cm^3 pixelated CZT.
- Real-time spectroscopy and imaging.
- Discrimination between background and sources of interest in less than 20 s.
- Factory-configurable rugged DB9 connection for power and control.
- Wireless, Ethernet, or USB communication.
- Cleanable for decontamination.
- Web-based user interface and full API for control and data readout.

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Specifications

M400iC	
Dimensions (L x W x H)	11.4 cm x 5.7 cm x 12.7 cm
Weight	1.0 kg
Ingress Protection	Designed to IP65
Power Input	5 V, <9 W, through DB9 port
Startup and Operating Temperature	-20° C to 50° C (-4° F to 122° F) with fan enabled -10° C to 35° C (14° F to 95° F) with fan disabled
Startup Time	<90 s
Energy Resolution at 25˚C	≤1.1% FWHM at 662 keV (coincident interactions combined) ≤0.9% FWHM at 662 keV (coincident interactions separated)
Sensitivity	Detects 10-µCi ^{137}Cs at 1 m (~3 µR/hr) in < 22 s (in natural background) Localise point source of 10-µCi ^{137}Cs producing ~3 µR/hr in <90 s
Spectroscopy Range	50 keV to 3 MeV
Image Energy Range	250 keV to 3 MeV
Optical Field of View	>162° horizontal, >122° vertical; full colour
Optical Registration	±2° to radiation image in front 90° × 90°
Radiation Field of View	4π (360°) omnidirectional
Angular Precision	± 1° source localisation for all 4π (real time)
Angular Resolution	~30° FWHM for all 4π (real time; >250 keV) ~20° FWHM for all 4π (post processing; >250 keV)
Crystal Volume	>19 cm^3 CZT (CdZnTe)
Count-Rate Limit	1 rem/hr (10 mSv/hr) bare ^{137}Cs equivalent
Maximum Event Rate	150 kcps
Communication Options	USB to computer Ethernet Wireless communication interfaces available
Data API Options	Real-time spectrum Event total energy, each interaction energy, and time stamp Each interaction 3D position (x, y, z)

Extra-High-Efficiency Option (M400iC-15)	
Crystal Volume	Increase crystal volume to >29 cm^3

Also available as a higher-resolution M400iC+-15 with no resolution guarantee.

Lower Efficiency Option (M200iC)	
Crystal Volume	>9.5 cm^3
Sensitivity	Detection in <44 s Locate in <180 s

Lower Efficiency Option (M100iC)	
Crystal Volume	>4.5 cm^3
Sensitivity	Detection in <88 s Locate in <360 s

High-Resolution Option (M400iC+)	
Energy Resolution	Improve energy resolution to ≤0.8% FWHM at 662 keV (coincident interactions combined) and ≤0.65% FWHM at 662 keV (coincident interactions separated)

Any options can be combined, except as noted above.

Specifications are subject to change without notice.
For the most up-to-date specifications, please visit www.h3dgamma.com

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