

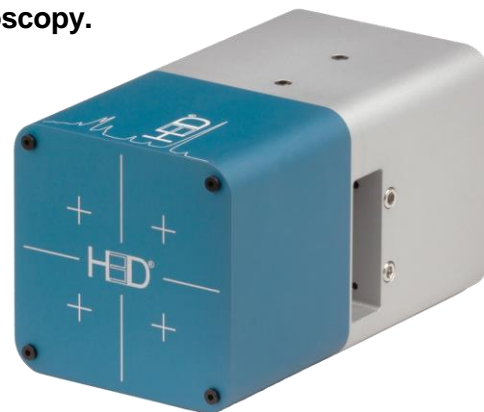
### Features

- ✓ Fast and highly portable spectrometer
- ✓ Option for  $\leq 0.8\%$  FWHM energy resolution at 662 keV and interaction-by-interaction resolution of  $\leq 0.65\%$  FWHM
- ✓ Ready to use in less than 60 s
- ✓ Rapidly identifies gamma-ray sources
- ✓ Industry-leading efficiency with up to  $>29 \text{ cm}^3$  pixelated CZT
- ✓ Real-time spectroscopy and ID
- ✓ Discrimination between background and sources of interest in less than 20 s
- ✓ Single USB connection for power and control
- ✓ Wireless, Ethernet, or USB communication
- ✓ Option for gamma-ray imaging from 250 keV to 3 MeV
- ✓ Option to synchronize data collection with other radiation detectors for coincidence detection

Integrate H3D's detector module into your product. This box contains everything you need for high-resolution spectroscopy.

Perfect for integration with:

- ☐ Drones
- ☐ Robots
- ☐ Laboratory experiments
- ☐ Medical-imaging arrays
- ☐ Other sensor suites



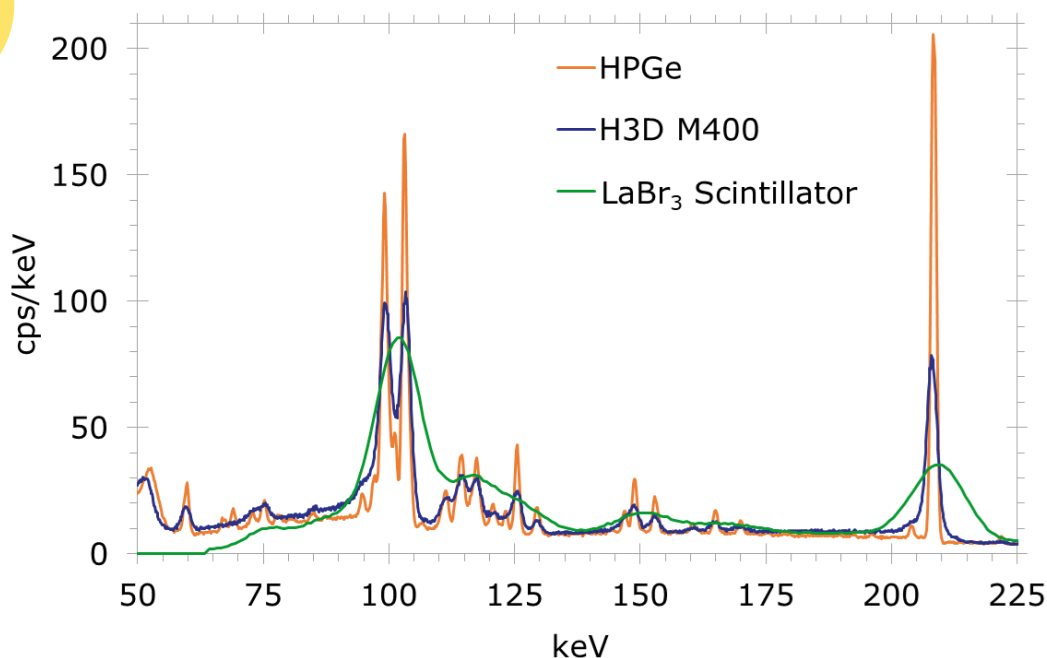
Containing the most advanced room-temperature semiconductor technology to achieve spectroscopic performance competitive with cryogenically cooled detectors, the detector module has:

- ☐ Compact and light-weight size
- ☐ Fast startup
- ☐ Excellent energy resolution
- ☐ Low power

Contact H3D to create a custom solution for your application.



The M400 system mounted on a drone.



**Any options can be combined,  
except as noted.**

### High-Resolution Option (M400+)

Improve energy resolution to  
≤0.8% FWHM at 662 keV  
(coincident interactions combined)  
and ≤0.65% FWHM at 662 keV  
(coincident interactions separated)

### Lower Efficiency Options

#### M200

Crystal Volume: >9.5 cm<sup>3</sup>  
Anode Pixelation: 2 x 11 x 11  
Sensitivity: Detect in <44 s

#### M100

Crystal Volume: >4.5 cm<sup>3</sup>  
Anode Pixelation: 1 x 11 x 11  
Sensitivity: Detect in <88 s

### Extra-High-Efficiency Option (M400-15)

Increase crystal volume to >29 cm<sup>3</sup>.  
Also available as a higher-resolution  
M400+-15 with no resolution  
guarantee.

## M400 Base Specifications

### Note: Custom designs also available

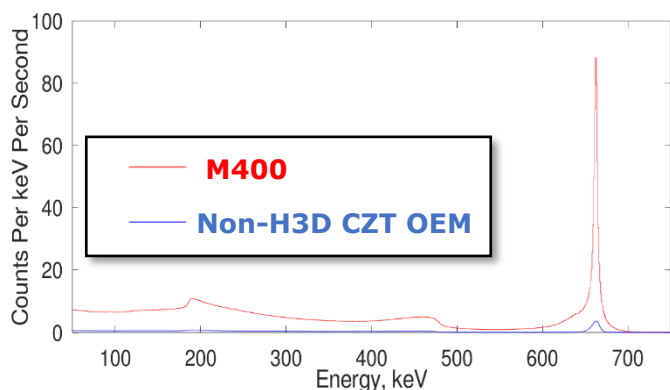
Dimensions:	4.0 in x 2.25 in x 2.25 in (10.2 cm x 5.7 cm x 5.7 cm)
Weight:	1.3 lbs (0.6 kg)
Battery:	Optional add-on box
Power Input:	5 V, <6 W, USB-C (option for other connectors)
Startup & Operating Temp.:	-20° C to 50° C (-4° F to 122° F) with fan enabled -10° C to 35° C (14° F to 95° F) with fan disabled
Startup Time:	<60 s
Energy Resolution at 25° C (77° F):	≤1.1% FWHM at 662 keV (coincident interactions combined) ≤0.9% FWHM at 662 keV (coincident interactions separated)
Sensitivity:	Detects 10-μCi <sup>137</sup> Cs at 1 m (~3 μR/hr) in < 22 s (in natural background)
Spectroscopy Range:	50 keV to 3 MeV
Crystal Volume:	>19 cm <sup>3</sup> CZT (CdZnTe)
Anode Pixelation:	4 x 11 x 11
Spatial Resolution:	<0.5 mm (≥140 keV)
Count-Rate Limit:	1 rem/hr (10 mSv/hr) bare- <sup>137</sup> Cs equivalent
Maximum Event Rate:	75 kcps at <0.5-mm spatial resolution 150 kcps at <2-mm spatial resolution
Coincidence:	FPGA-level architecture
Communication Options:	USB to computer USB to Ethernet Wireless communication interfaces available
Data API Options:	Real-time spectrum Event total energy, each interaction energy, and time stamp

### Compton Imaging Option (M400i)

Image Energy Range: 250 keV to 3 MeV  
Field of View: 4n (360°) omnidirectional  
Angular Precision: ±1° source localization for all 4n (real time)  
Angular Resolution: ~30° FWHM for all 4n (real time; >250 keV)  
~20° FWHM for all 4n (post processing; >250 keV)  
Sensitivity: Localize point source of <sup>137</sup>Cs producing ~3 μR/hr in <90 s  
Data API Options: Each interaction 3D position (x, y, z)

### Optical Camera and Imaging Option (M400iC)

All specifications of M400i, and...  
Optical Field of View: >162° horizontal, >122° vertical; full color  
Optical Registration: ±2° to radiation image in front 90° x 90°



Spectral  
comparison  
between  
**H3D M400**  
and **non-  
H3D CZT  
OEM.** (10 μCi  
<sup>137</sup>Cs, 5 cm)



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