DMCT Series Liquid-Nitrogen-Cooled MCT Detectors, 2–22 µm Spectral Range

Model DMCT Series · waveqvanta.com/products/dmct-series-liquid-nitrogen-cooled-mct-detectors

Liquid-nitrogen-cooled MCT detectors for mid-infrared spectroscopy and fast infrared time-resolved measurements.



DMCT series detectors are liquid-nitrogen-cooled mercury cadmium telluride (MCT) photodetectors covering 2–22 µm. The DMCT(x)-De01 models are offered with long-wavelength cutoffs of 12, 14, 16 or 22 µm for routine measurements with a preamplifier and lock-in amplifier, while the DMCT12-HS has an integrated 20 MHz preamplifier and a rise time below 50 ns for time-resolved work.

Key features

- DMCT(x)-De01 in four spectral ranges: 2–12, 2–14, 2–16 and 2–22 µm
- DMCT(x)-De01 models require a preamplifier and lock-in amplifier; -PA versions come with a matched preamplifier
- DMCT12-HS: integrated 20 MHz preamplifier, rise time below 50 ns, connects directly to an oscilloscope
- Minimum D* from 5×10^{9} to 3×10^{10} cm·Hz½/W, depending on model
- Dewar mounts conveniently on the spectrometer; one liquid nitrogen fill lasts about 8 hours
- Fits the manual slit of Omni-λ series spectrometers

Specifications

Detector Type	MCT (HgCdTe), liquid-nitrogen-cooled
Spectral Range	2–12 µm up to 2–22 µm, depending on model
Active Size (DMCT(x)-De01)	1 × 1 mm
Cooling	Liquid nitrogen (user-supplied); about 8 hours per fill
Output Signal Polarity	P (positive)
Compatibility	Manual slit of Omni-λ series spectrometers

Model overview

Model	Spectral Range (µm)	Peak Responsivity (V/W)	D* min. (cm·Hz½/W, λpeak, 1 kHz)	Rise Time (ns)	Preamplifier
DMCT12-De01	2–12	3×10^{3}	3×10^{10}	–	Optional
DMCT14-De01	2–14	1×10^{3}	3×10^{10}	–	Optional
DMCT16-De01	2–16	900	2.5×10^{10}	–	Optional
DMCT22-De01	2–22	150	5×10^{9}	–	Optional
DMCT12-HS	2–12	above 4×10^{4}	3×10^{10}	below 50	Integrated, 20 MHz

Typical applications

- Mid-infrared spectroscopy
- Infrared time-resolved measurements
- Infrared emission and photoluminescence measurements
- Lock-in detection of chopped IR signals