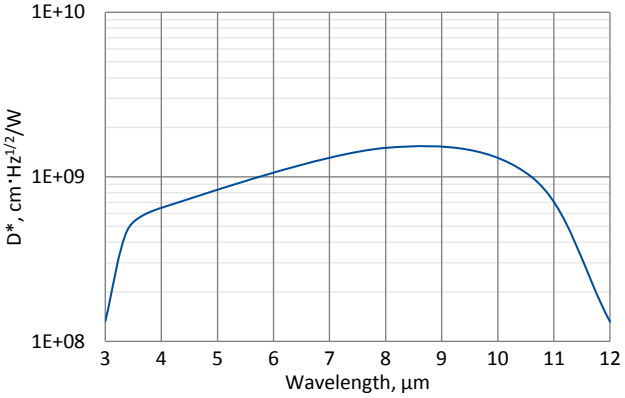
1.12 UHSM-I-10.6

1.12.1 3.0 – 12.0 µm and over 700 MHz HgCdTe ultra high speed IR detection module with optically immersed photovoltaic detector

UHSM-I-10.6 is ultra high speed „all-on-one" IR detection module. Thermoelectrically cooled, optically immersed photovoltaic detector, based on HgCdTe heterostructure, is integrated with transimpedance, AC coupled preamplifier, a fan and a thermoelectric cooler controller in a compact housing. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects. UHSM-I-10.6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of LWIR applications requiring wide frequency bandwidth.

Spectral response (T_a = 20°C)



Exemplary spectral detectivity, the spectral response of delivered devices may differ.

Specification (T_a = 20°C)

Parameter	Typical value
Optical parameters	
Cut-on wavelength $\lambda_{cut\text{-}on}$ (10%), µm	≤3.0
Peak wavelength $\lambda_{peak,}$ µm	8.5±0.5
Optimum wavelength λ_{opt}, µm	10.6
Cut-off wavelength $\lambda_{cut\text{-}off}$ (10%), µm	12.5±0.3
Detectivity D*(λ_{peak}, 100 MHz), cm·Hz$^{1/2}$/W	≥1.5×10^9
Detectivity D*(λ_{opt}, 100 MHz), cm·Hz$^{1/2}$/W	≥1.0×10^9
Output noise density v_n (100 MHz), nV/Hz$^{1/2}$	≤90
Electrical parameters (R_{Load} = 50 Ω)	
Voltage responsivity R_v (λ_{peak}), V/W	≥1.0×10^3
Voltage responsivity R_v (λ_{opt}), V/W	≥7.0×10^2
Low cut-off frequency f_{lo}, Hz	300
High cut-off frequency f_{hi}, Hz	≥700M
1/f noise corner frequency f_c, Hz	≤10M
Power supply voltage V_{sup}, V	+9
DC monitor (approx. 1 V offset, R_{Load} = 1 MΩ)	
Voltage responsivity R_v (λ_{peak}), V/W	≥3.8×10^3
Voltage responsivity R_v (λ_{opt}), V/W	≥2.7×10^2
Low cut-off frequency f_{lo}, Hz	DC
High cut-off frequency f_{hi}, Hz	260
Other information	
Active element material	epitaxial HgCdTe heterostructure
Optical area A_o, mm×mm	1×1
Window	wZnSeAR
Acceptance angle Φ	~36°
Ambient operating temperature T_a, °C	10 to 30
Signal output socket (RF output)	SMA
DC monitor socket	SMA
Power supply socket	DC 2.1/5.5
Mounting hole	M4
Fan	yes

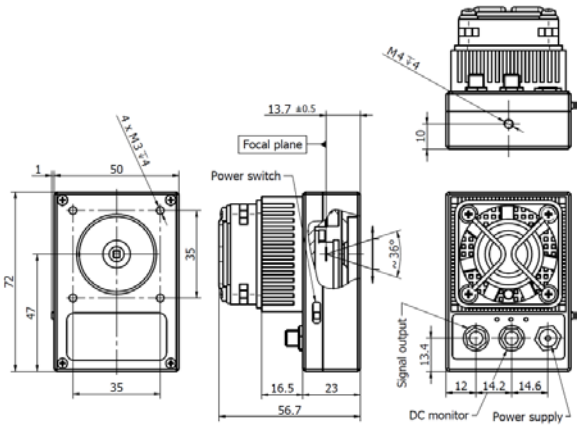
Features

- High S/N ratio
- Wide frequency bandwidth over 700 MHz
- Integrated TEC controller and fan
- Single power supply
- DC monitor
- Optimised for effective heat dissipation
- Compatible with optical accessories
- Fast delivery

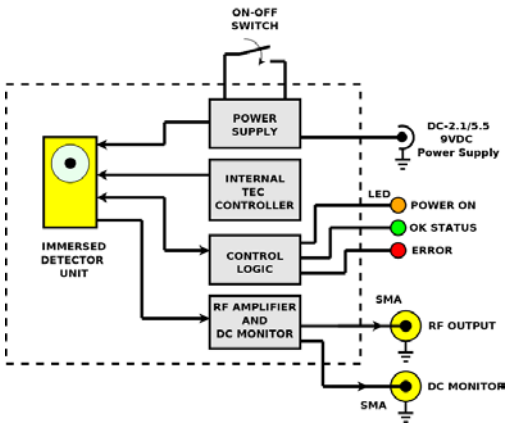
Applications

- Dual-comb spectroscopy
- Heterodyne detection
- Characterization of pulsed laser sources
- LIDAR
- Object scanners
- Time-resolved fluorescence spectroscopy systems
- Free-space optical communication
- Telemetry

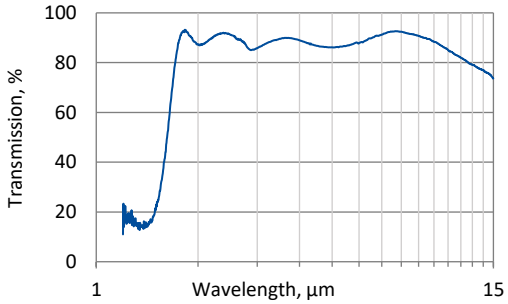
Mechanical layout, mm



Schematic diagram



Spectral transmission of wZnSeAR window (typical example)



Included accessories

- 2×SMA-BNC cables + AC adaptor

Dedicated accessories

- OTA optical threaded adapter
- DRB-2 base mounting system