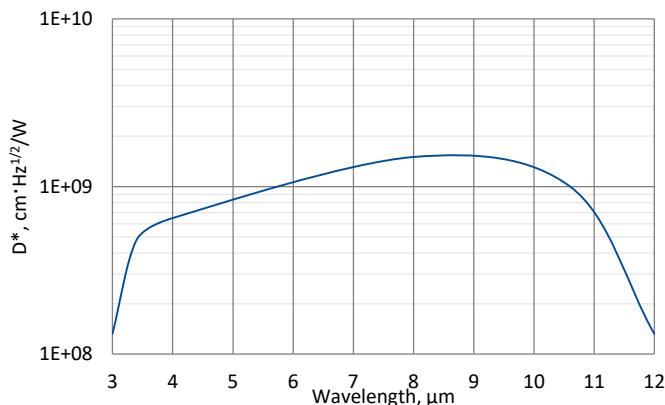


UHSM-I-10.6

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 ($T_a = 20^\circ\text{C}$)



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



Specification ($T_a = 20^\circ\text{C}$)

Parameter	Typical value
Optical parameters	
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm	≤ 3.0
Peak wavelength λ_{peak} , μm	8.5 ± 0.5
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	12.5 ± 0.3
Detectivity $D^*(\lambda_{\text{peak}}, 100 \text{ MHz})$, $\text{cm} \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 1.5 \times 10^9$
Detectivity $D^*(\lambda_{\text{opt}}, 100 \text{ MHz})$, $\text{cm} \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 1.0 \times 10^9$
Output noise density $v_n(100 \text{ MHz})$, $\text{nV} / \text{Hz}^{1/2}$	≤ 90
Electrical parameters ($R_L = 50 \Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V / W	$\geq 1.0 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V / W	$\geq 7.0 \times 10^2$
Low cut-off frequency f_{co} , Hz	300
High cut-off frequency f_{hi} , Hz	$\geq 700\text{M}$
1/f noise corner frequency f_c , Hz	$\leq 10\text{M}$
Power supply voltage V_{SUP} , V	+9
DC monitor (approx. 1 V offset, $R_L = 1 \text{ M}\Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V / W	$\geq 3.8 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V / W	$\geq 2.7 \times 10^2$
Low cut-off frequency f_{co} , Hz	DC
High cut-off frequency f_{hi} , Hz	260
Other information	
Active element material	epitaxial HgCdTe heterostructure
Optical area A_o , $\text{mm} \times \text{mm}$	1x1
Window	wZnSeAR
Acceptance angle Φ	$\sim 36^\circ$
Ambient operating temperature T_a , $^\circ\text{C}$	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

^{*)} R_L – load resistance

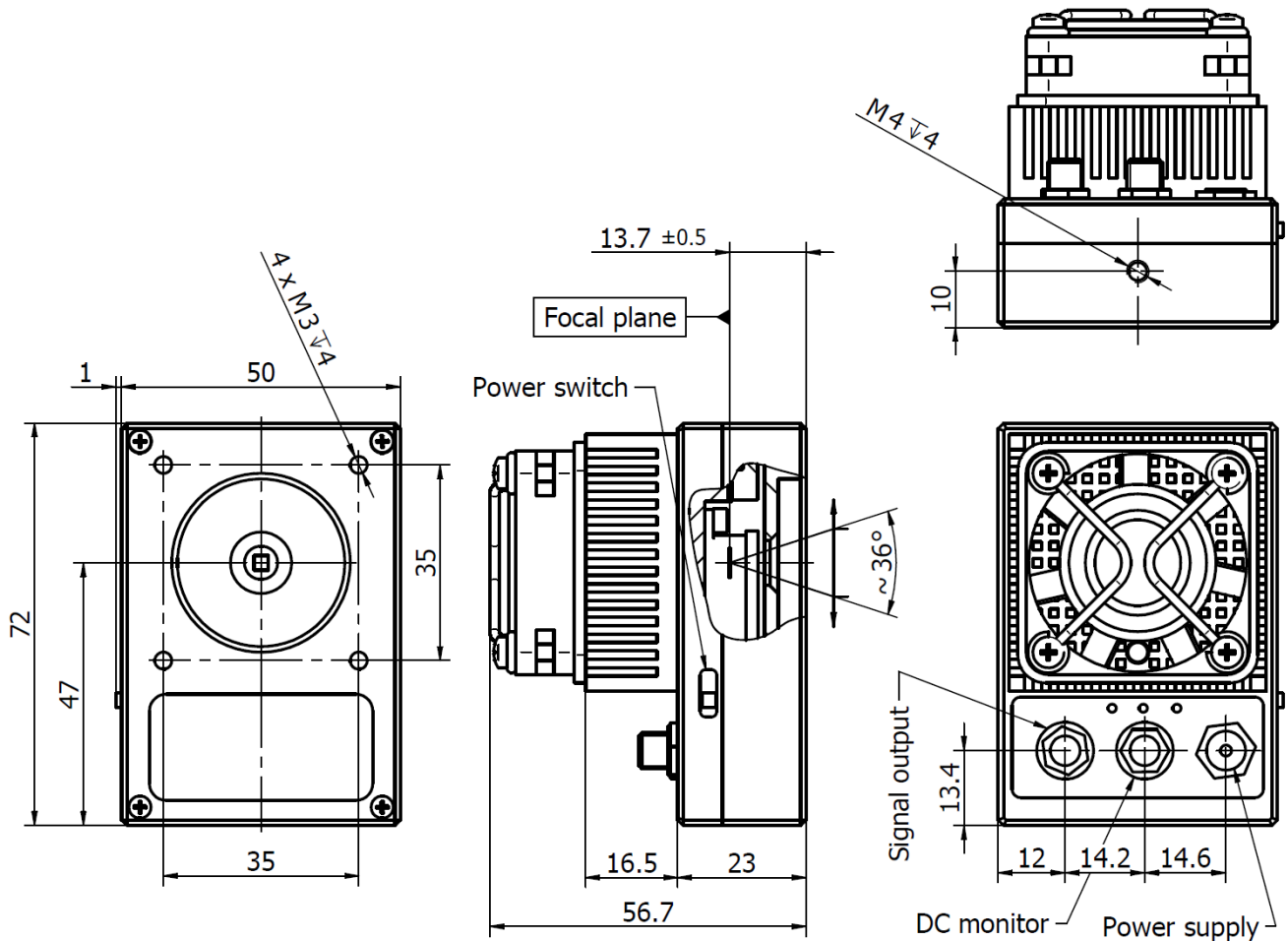
Features

- 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

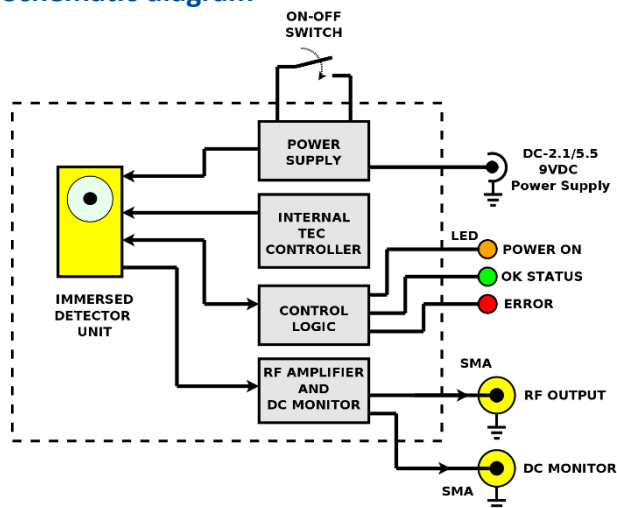
Applications

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

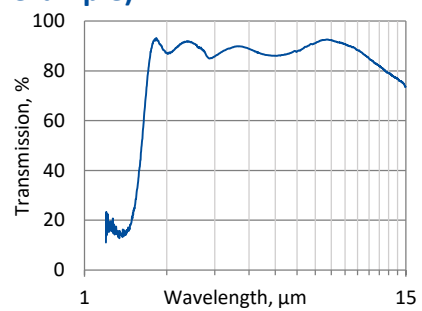
Mechanical layout, mm



Schematic diagram



Spectral transmission of wZnSeAR window (typical example)



Included accessories

- 2x SMA-BNC cables + AC adaptor

Dedicated accessories

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

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