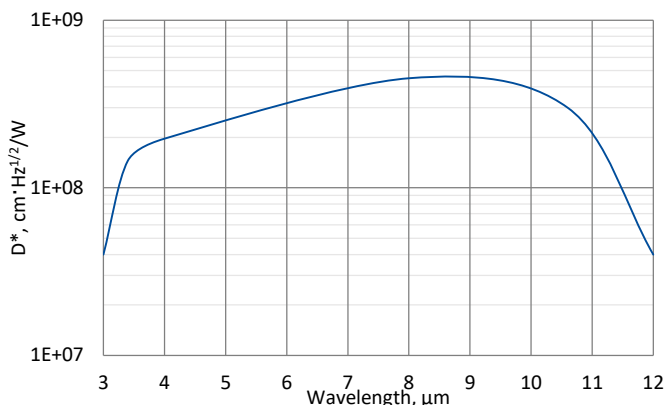


UHSM-10.6

3 – 12 μm and over 1GHz HgCdTe ultra high speed IR detection module with photovoltaic detector

UHSM-10.6 is ultra high speed „all-in-one“ IR detection module. Thermoelectrically cooled, 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-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	8.0 ± 1.0
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	≥ 12.0
Detectivity $D^*(\lambda_{\text{peak}}, 100 \text{ MHz})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 4.5 \times 10^8$
Detectivity $D^*(\lambda_{\text{opt}}, 100 \text{ MHz})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 3.0 \times 10^8$
Output noise density $v_n(100 \text{ MHz})$, $\text{nV}/\text{Hz}^{1/2}$	≤ 70
Electrical parameters ($R_L = 50 \Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 4.5 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 3.0 \times 10^3$
Low cut-off frequency f_{lo} , Hz	300
High cut-off frequency f_{hi} , Hz	$\geq 1.0\text{G}$
Output voltage swing V_{out} , V	± 1
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, $R_L = 100 \text{ k}\Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 1.7 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 1.1 \times 10^3$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	260
Other information	
Active element material	epitaxial HgCdTe heterostructure
Active area A , $\text{mm}\times\text{mm}$	0.05×0.05
Window	wZnSeAR
Acceptance angle Φ	$\sim 80^\circ$
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

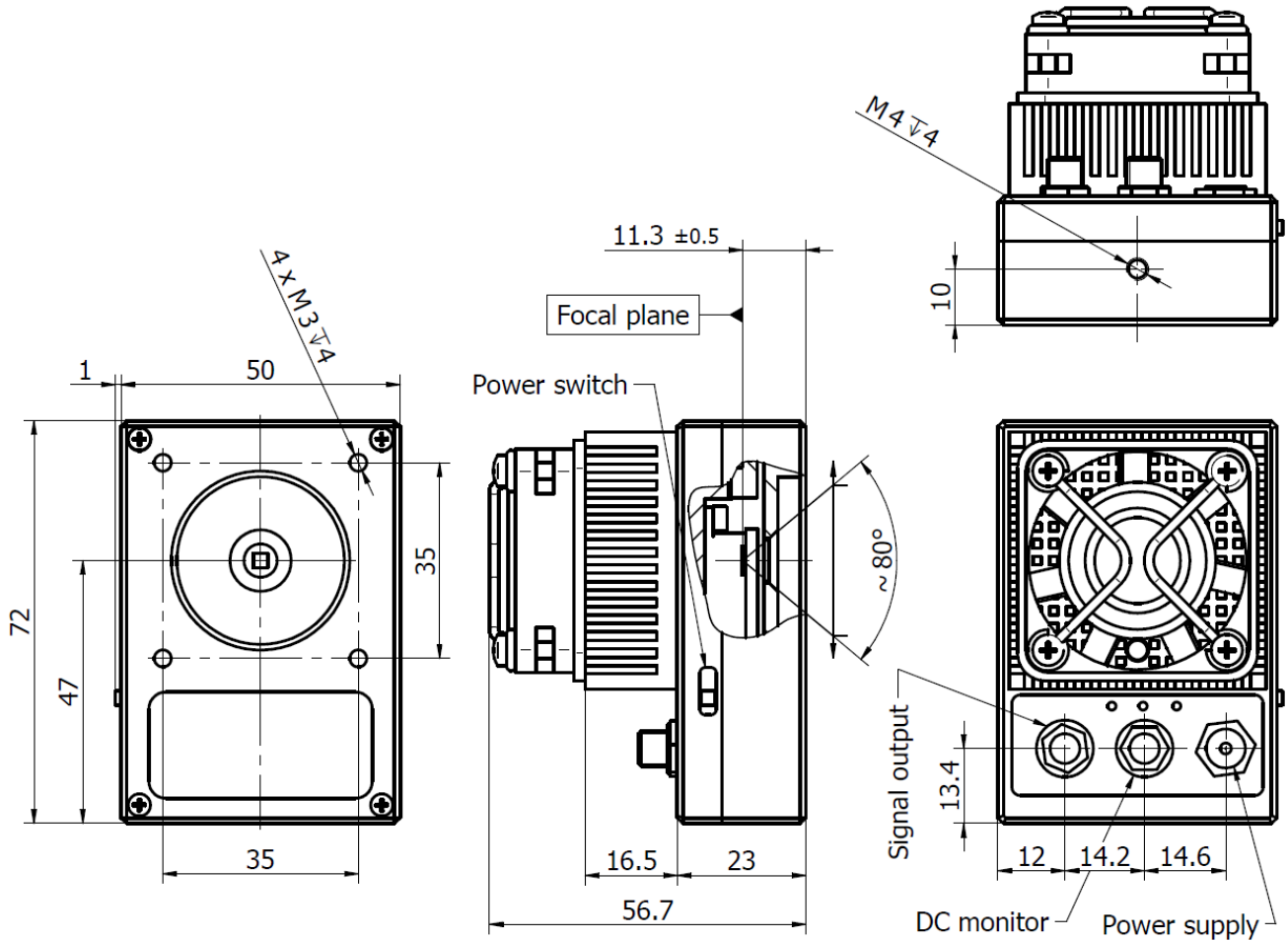
Features

- Wide frequency bandwidth over 1 GHz
- Integrated TEC controller and fan
- Single power supply
- DC monitor
- Optimised for effective heat dissipation
- Compatible with optical accessories
- Fast delivery

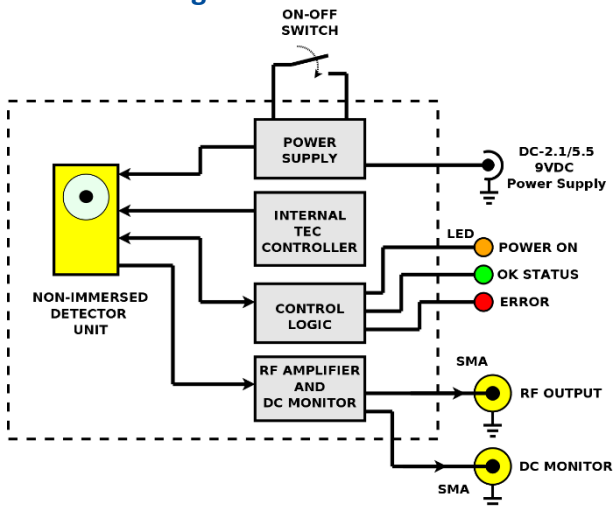
Applications

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

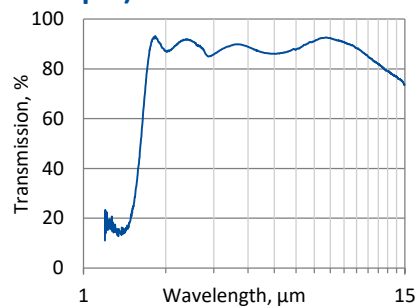
Mechanical layout, mm



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