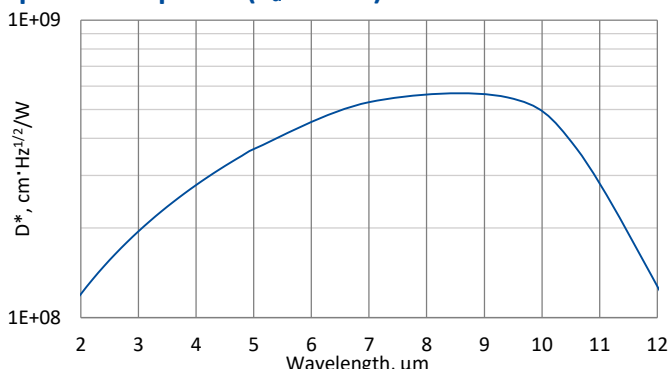


UM-I-10.6

2 – 12 μm and DC – 100 MHz HgCdTe universal IR detection module with optically immersed photovoltaic multiple junction detector

UM-I-10.6 is universal „all-in-one“ IR detection module. Thermoelectrically cooled, optically immersed photovoltaic detector, based on HgCdTe heterostructure, is integrated with transimpedance, DC coupled preamplifier, a fan and a thermoelectric cooler controller in a compact housing. 3° wedged zinc selenide anti-reflection coated window prevents unwanted interference effects. UM-I-10.6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of LWIR applications.

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 characteristics	
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm	≤2.0
Peak wavelength λ_{peak} , μm	8.5±1.5
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	≥12.0
Detectivity $D^*(\lambda_{\text{peak}})$, cm·Hz ^{1/2} /W	≥5.5×10 ⁸
Detectivity $D^*(\lambda_{\text{opt}})$, cm·Hz ^{1/2} /W	≥3.7×10 ⁸
Output noise density v_n (averaged over 1 MHz to f_{hi}), nV/Hz ^{1/2}	≤330
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	≥9.7×10 ²
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	≥6.5×10 ²
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	≥100M
Output impedance R_{out} , Ω	50
Output voltage swing V_{out} , V	±1 ($R_L = 50 \Omega^*)$
Output voltage offset V_{off} , mV	max ±20
Power supply voltage V_{sup} , V	+5
DC monitor (approx. 0 V offset)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	≥2.2×10 ²
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	≥1.5×10 ²
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	150k
Other information	
Active element material	epitaxial HgCdTe heterostructure
Optical area A_o , mm×mm	1×1
Window	wedged zinc selenide AR coated (wZnSeAR)
Acceptance angle Φ	~36°
Ambient operating temperature T_a , °C	10 to 30
Signal output socket	SMA
DC monitor socket	SMA
Power supply socket	DC 2.5/5.5
Mounting hole	M4
Fan	yes

Features

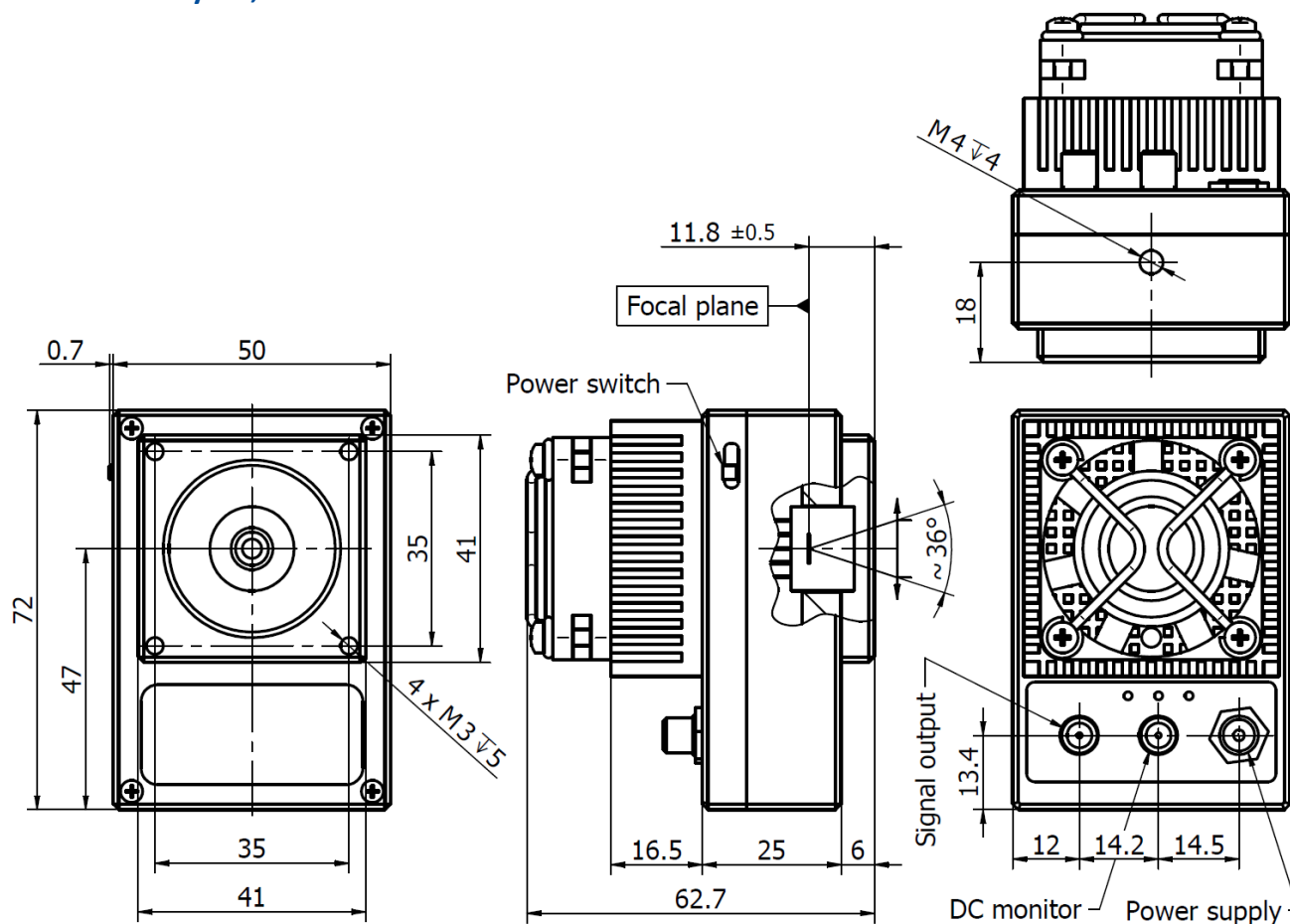
- Integrated TEC controller and fan
- Single power supply
- DC monitor
- Sensitive to IR radiation polarisation
- Optimised for effective heat dissipation
- Compatible with optical accessories
- Cost effective OEM version available
- Universal and flexible
- Quantity discounted price
- Fast delivery

Applications

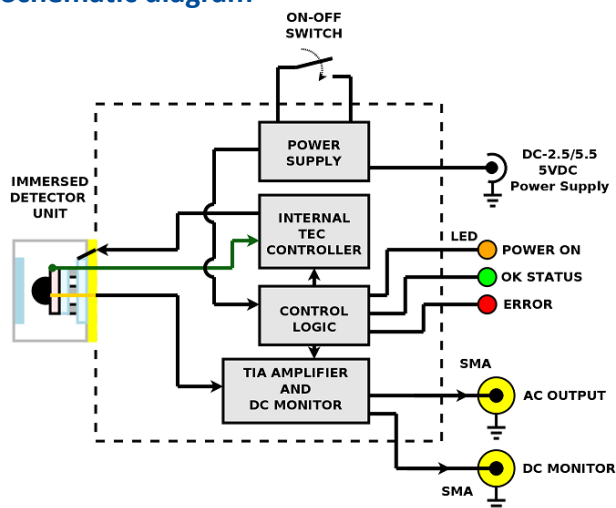
- Gas detection, monitoring and analysis
- CO₂ laser (10.6 μm) measurements
- Laser power monitoring and control
- Laser beam profiling and positioning
- Laser calibration

*) R_L – load resistance

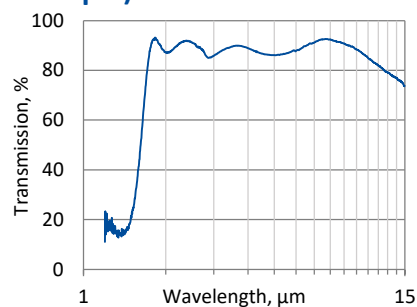
Mechanical layout, mm



Schematic diagram



Spectral transmission of wZnSeAR window (typical example)



Included accessories

- 2 x SMA-BNC cables + AC adaptor

Dedicated accessories

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