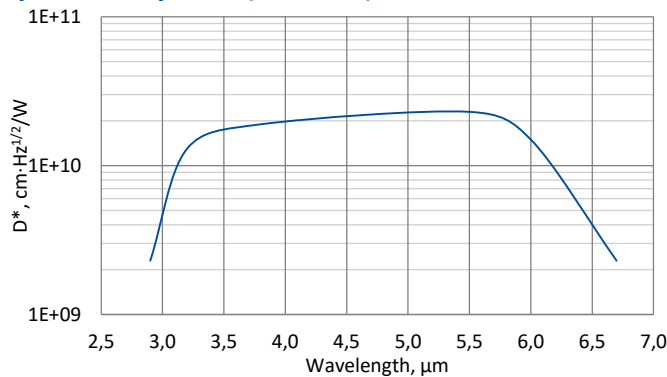


UM-I-6

3.0 – 6.7 μm and DC – 1 MHz HgCdTe universal IR detection module with optically immersed photovoltaic detector

UM-I-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-6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of MWIR 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 parameters | |
| Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm | 3.0 \pm 1.0 |
| Peak wavelength λ_{peak} , μm | 5.2 \pm 0.5 |
| Optimum wavelength λ_{opt} , μm | 6.0 |
| Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm | 6.7 \pm 0.3 |
| Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$ | $\geq 2.3 \times 10^{10}$ |
| Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$ | $\geq 1.5 \times 10^{10}$ |
| Output noise density v_n (100 kHz), $\text{nV}/\text{Hz}^{1/2}$ | ≤ 350 |
| Electrical parameters | |
| Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W | $\geq 6.5 \times 10^4$ |
| Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W | $\geq 3.6 \times 10^4$ |
| Low cut-off frequency f_{lo} , Hz | DC |
| High cut-off frequency f_{hi} , Hz | $\geq 1\text{M}$ |
| Output impedance R_{out} , Ω | 50 |
| Output voltage swing V_{out} , V | ± 2 ($R_L = 1 \text{ M}\Omega^*$) ± 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 | $\geq 6.5 \times 10^3$ |
| Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W | $\geq 3.6 \times 10^3$ |
| 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 , $\text{mm}\times\text{mm}$ | 1 \times 1 |
| Window | wedged zinc selenide AR coated (wZnSeAR) |
| Acceptance angle Φ | $\sim 36^\circ$ |
| Ambient operating temperature T_a , $^\circ\text{C}$ | 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

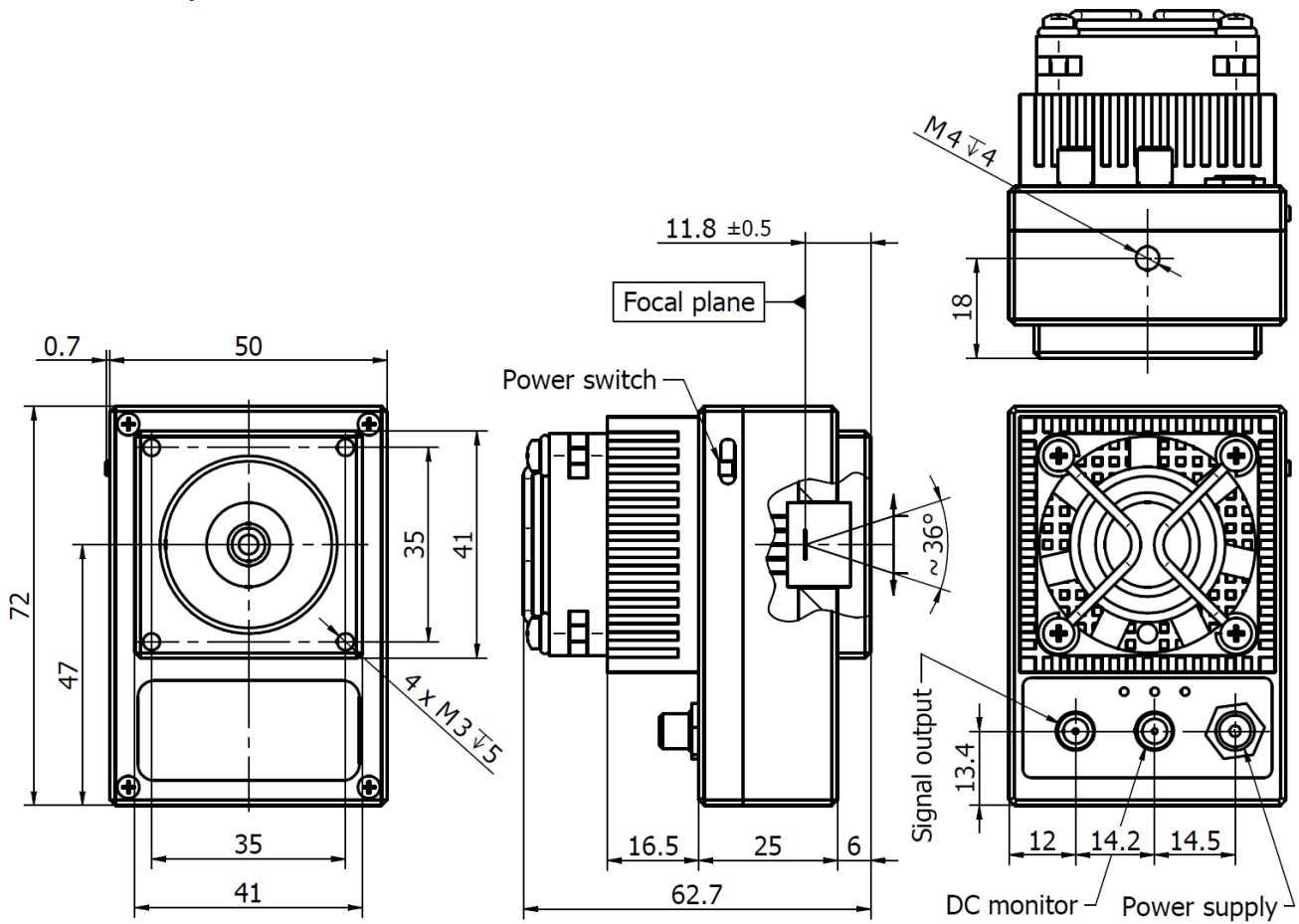
- Integrated TEC controller and fan
- Single power supply
- DC monitor
- Optimised for effective heat dissipation
- Compatible with optical accessories
- Cost effective OEM version available
- Universal and flexible
- Quantity discounted price
- Fast delivery

Applications

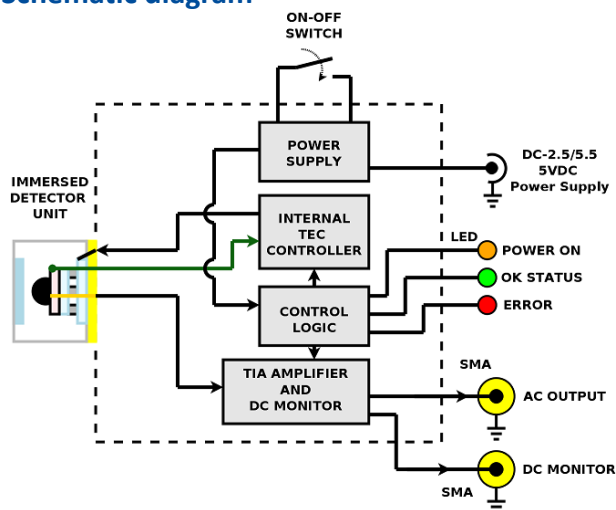
- Gas detection, monitoring and analysis (CO , CO_2 , NH_3 , NO_x)
- Flue gas denitrification
- Fuel combustion monitoring at power plants and other industrial facilities
- Contactless temperature measurements

^{*)} R_L – load resistance

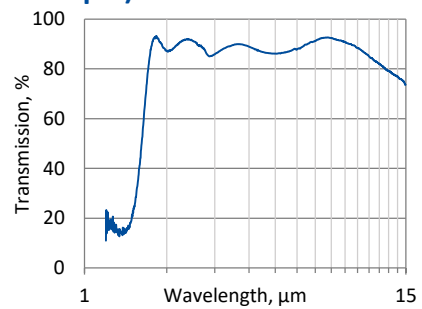
Mechanical layout, mm



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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