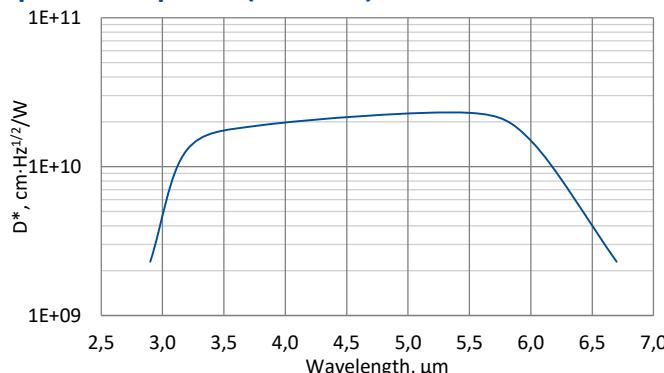


## UM-I-6

### 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
<b>Optical parameters</b>	
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), µm	$3.0 \pm 1.0$
Peak wavelength $\lambda_{\text{peak}}$ , µm	$5.2 \pm 0.5$
Optimum wavelength $\lambda_{\text{opt}}$ , 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 $v_n(100 \text{ kHz})$ , nV/Hz <sup>1/2</sup>	$\leq 350$
<b>Electrical parameters</b>	
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 $f_{\text{lo}}$ , Hz	DC
High cut-off frequency $f_{\text{hi}}$ , Hz	$\geq 1\text{M}$
Output impedance $R_{\text{out}}$ , Ω	50
Output voltage swing $V_{\text{out}}$ , V	$\pm 2$ ( $R_L = 1 \text{ M}\Omega^*$ )
Output voltage offset $V_{\text{off}}$ , mV	$\pm 1$ ( $R_L = 50 \text{ }\Omega^*$ )
Power supply voltage $V_{\text{sup}}$ , V	max $\pm 20$
<b>DC monitor (approx. 0 V offset)</b>	
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 $f_{\text{lo}}$ , Hz	DC
High cut-off frequency $f_{\text{hi}}$ , Hz	150k
<b>Other information</b>	
Active element material	epitaxial HgCdTe heterostructure
Optical area $A_0$ , mm×mm	1×1
Window	wedged zinc selenide AR coated (wZnSeAR)
Acceptance angle $\Phi$	$\sim 36^\circ$
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

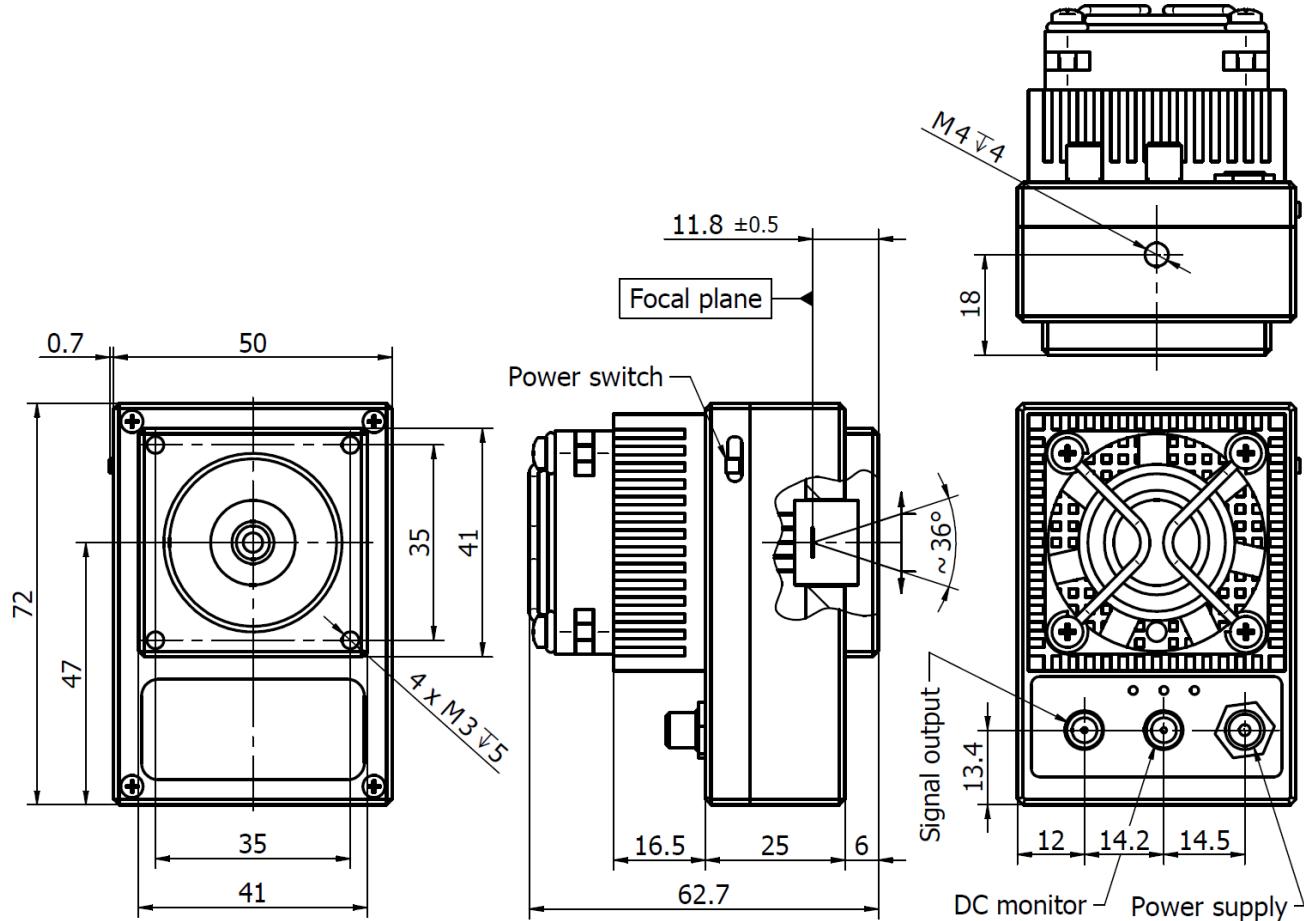
- Integrated TEC controller and fan
- Single power supply
- DC monitor
- Optimised for effective heat dissipation
- Compatible with optical accessories
- Cost effective OEM version available
- Universal and flexible
- Quantity discounted price
- Fast delivery

#### Applications

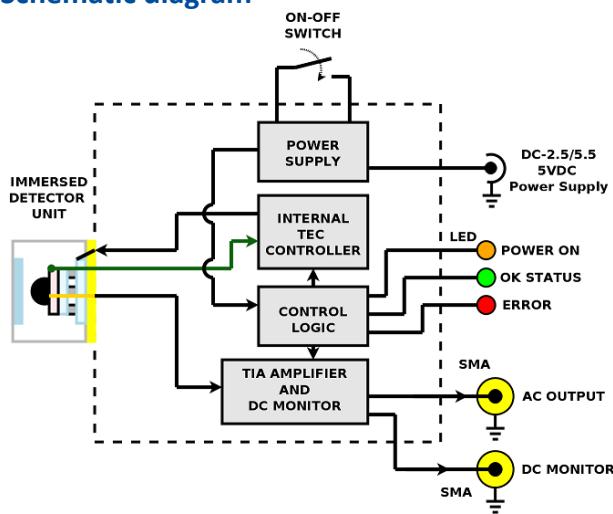
- Gas detection, monitoring and analysis (CO, CO<sub>2</sub>, NH<sub>3</sub>, NO<sub>x</sub>)
- Flue gas denitrification
- Fuel combustion monitoring at power plants and other industrial facilities
- Contactless temperature measurements

\*<sup>1</sup>)  $R_L$  – load resistance

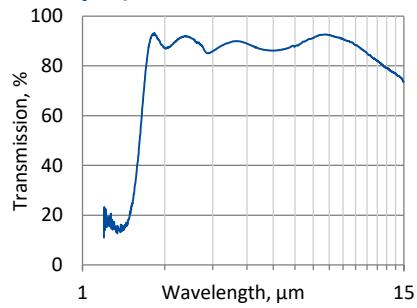
## Mechanical layout, mm



## 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