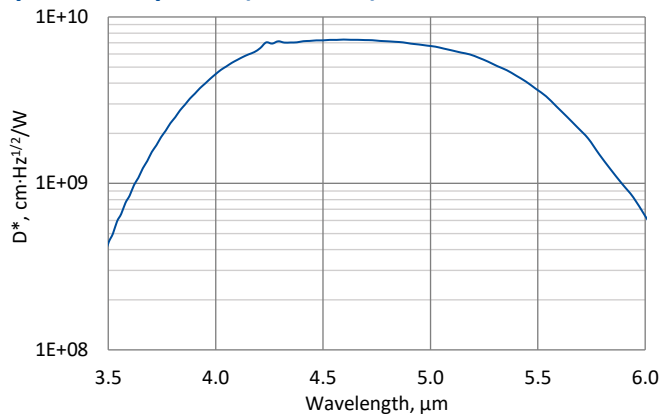


4EM-5 – ENGINEERING SAMPLE

3.5 – 6.0 μm and DC – 1 MHz HgCdTe four-channel IR detection module with photovoltaic four-element linear detector

4EM-5 is „all-in-one“ IR multi channel detection module. Thermoelectrically cooled photovoltaic four-element **linear** detector, based on HgCdTe heterostructure, is integrated with transimpedance, DC coupled four-channel preamplifier, a fan and a thermoelectric cooler controller in a compact housing.

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	3.5 ± 0.5
Peak wavelength λ_{peak} , μm	4.5 ± 0.5
Optimum wavelength λ_{opt} , μm	5.0
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	6.0 ± 0.5
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 7.0 \times 10^9$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 6.8 \times 10^9$
Output noise density v_n (100 kHz), $\text{nV}/\text{Hz}^{1/2}$	≤ 500
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}}, R_L = 1 \text{ M}\Omega^*)$, V/W	$\geq 1.7 \times 10^5$
Voltage responsivity $R_v(\lambda_{\text{opt}}, R_L = 1 \text{ M}\Omega^*)$, V/W	$\geq 1.6 \times 10^5$
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 $V_{\text{out}}(R_L = 1 \text{ M}\Omega^*)$, V	0 – 4
Output voltage offset V_{off} , mV	max ± 20
Power supply voltage V_{sup} , V_{DC}	+7.5
Power consumption, W	max 6
Other information	
Active elements material	epitaxial HgCdTe heterostructure
Active areas A, $\text{mm}\times\text{mm}$	$4 \times (0.2 \times 0.2)$
Distance between active elements, mm	0.05
Window	pSiAR
Acceptance angle Φ	$\sim 70^\circ$
Ambient operating temperature T_a , $^\circ\text{C}$	10 to 30
Signal output sockets	$4 \times \text{MCX}$
Power supply socket	DC 2.1/5.5
Mounting hole	M4
Fan	yes

^{*)} R_L – load resistance

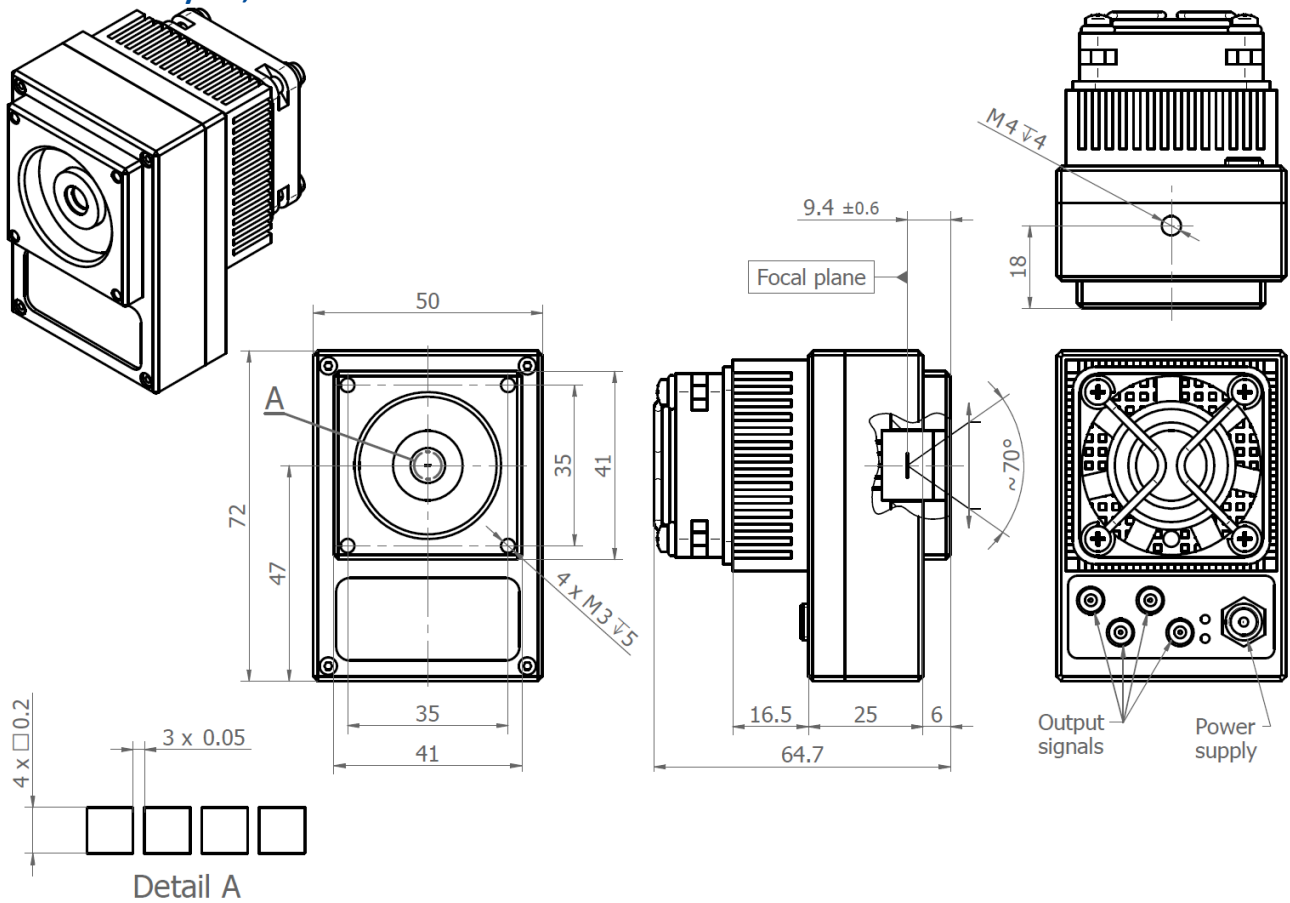
Features

- Four channels
- Low crosstalk
- Single power supply
- Compatible with optical accessories

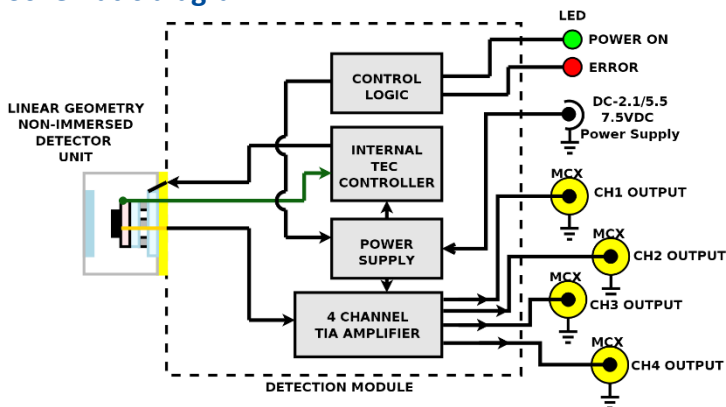
Applications

- Contactless temperature measurements (railway transport, industrial and laboratory processes monitoring)
- Spectrophotometry
- MWIR laser measurements
- Laser power monitoring and control
- Laser beam profiling
- Laser calibration

Mechanical layout, mm



Schematic diagram



Included accessories

- 4x MCX-BNC cables + AC adaptor

Dedicated accessories

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