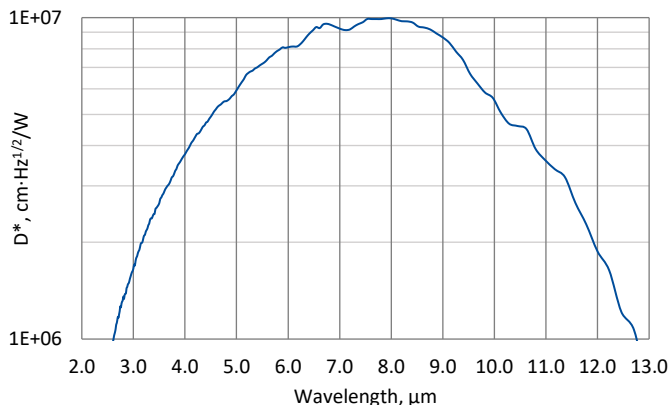


QM-10.6 – ENGINEERING SAMPLE

3.0 – 12.0 μm and DC – 1 MHz HgCdTe four-channel IR detection module with photovoltaic quadrant geometry multiple junction detector

QM-10.6 is „all-in-one“ position IR detection module. Uncooled photovoltaic multiple junction quadrant geometry detector, based on HgCdTe heterostructure, is integrated with transimpedance, DC coupled four-channel preamplifier. It is designed to accurately measure the displacement of an incident beam relative to the calibrated center. This device is ideal for measuring the movement of a beam, the distance traveled, or as feedback for alignment systems.

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	3.0 ± 1.0
Peak wavelength λ_{peak} , μm	8.0 ± 2.0
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	12.0 ± 1.0
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 1.0 \times 10^7$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 4.5 \times 10^6$
Output noise density v_n (100 kHz) $\mu\text{V}/\text{Hz}^{1/2}$	≤ 4.5
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}}, R_L = 1 \text{ M}\Omega^*)$, V/W	$\geq 2.2 \times 10^2$
Voltage responsivity $R_v(\lambda_{\text{opt}}, R_L = 1 \text{ M}\Omega^*)$, V/W	$\geq 1.1 \times 10^2$
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, mm \times mm	4 \times (1 \times 1)
Distance between active elements, mm	0.15 ± 0.1
Window	none
Acceptance angle Φ	$\sim 70^\circ$
Ambient operating temperature T_a , $^\circ\text{C}$	10 to 30
Signal output sockets	4 \times MCX
Power supply socket	DC 2.1/5.5
Mounting hole	M4
Fan	yes

^{*)} R_L – load resistance

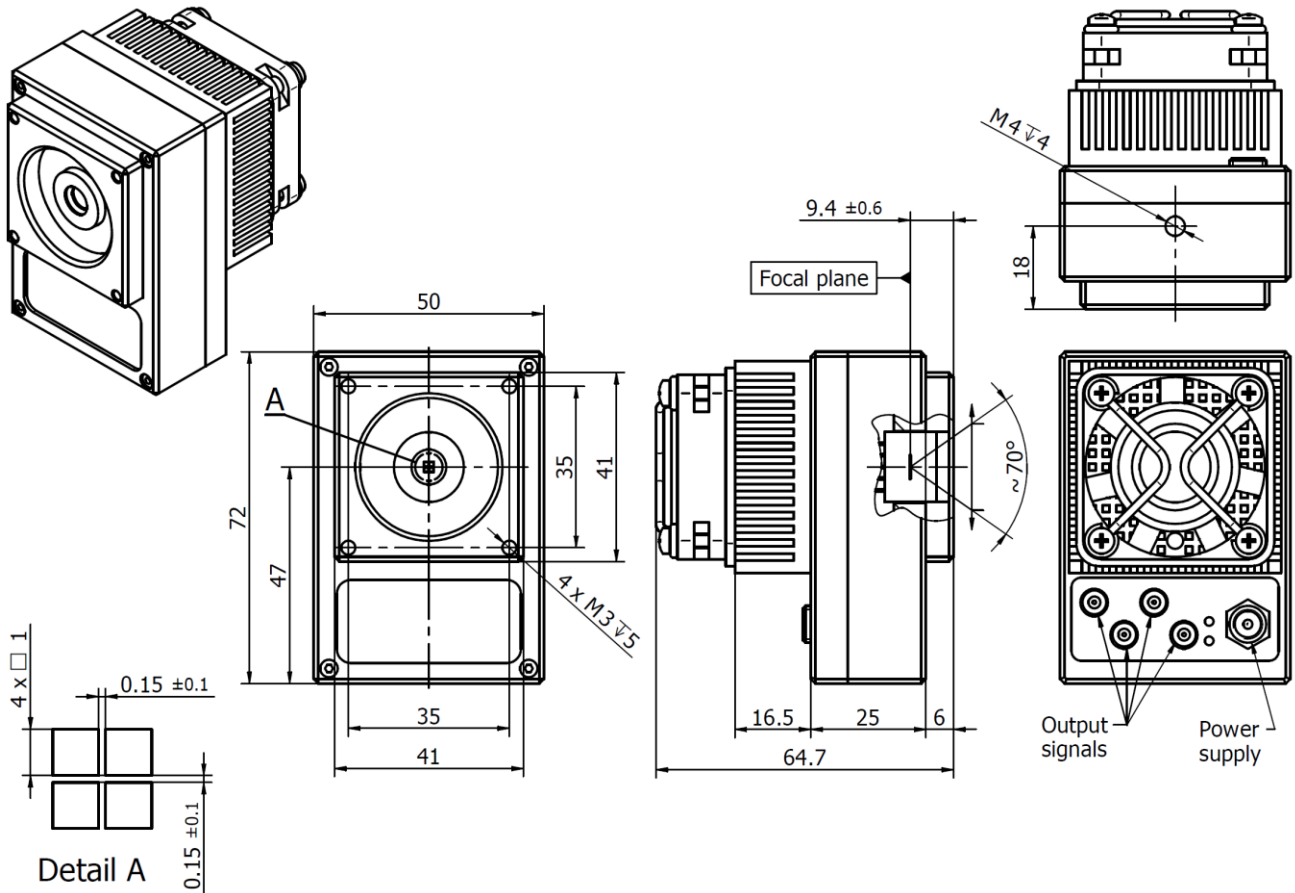
Features

- Four channels
- Low crosstalk
- Single power supply
- Sensitive to IR radiation polarization
- Compatible with optical accessories

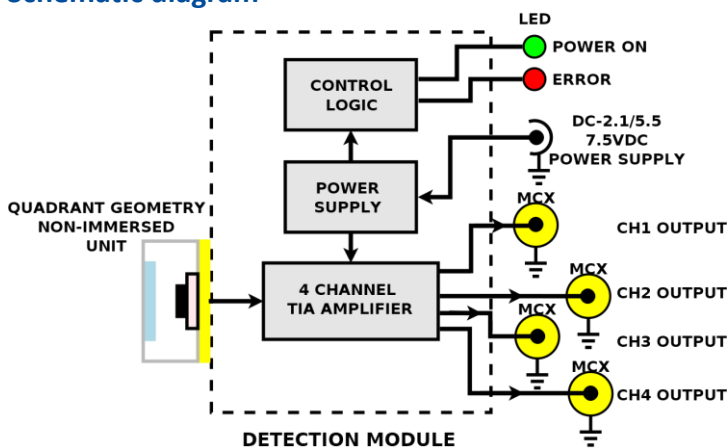
Applications

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

Mechanical layout, mm



Schematic diagram



Included accessories

- 4×MCX-BNC cables + AC adaptor

Dedicated accessories

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