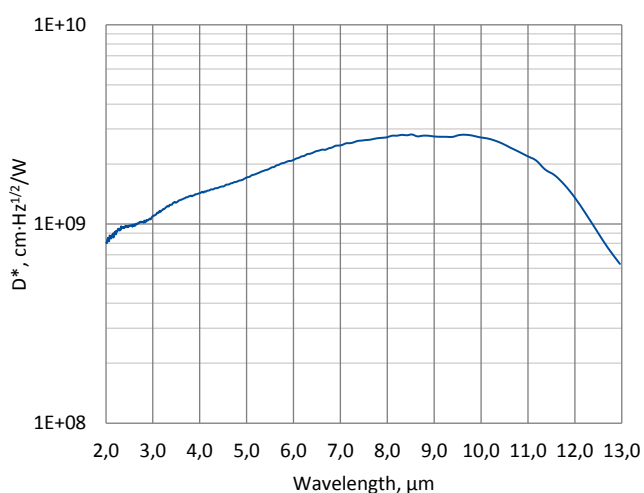


## 1.14 SM-I-12

### 1.14.1 2.0 – 14.0 μm and 10 Hz – 1 MHz HgCdTe small-size IR detection module with optically immersed photoconductive detector

**SM-I-12** is an ultra-small IR detection module. Thermoelectrically cooled, optically immersed photoconductive detector, based on HgCdTe heterostructure (PCI-3TE-12-1×1-TO8-wZnSeAR-36) is integrated with transimpedance, AC coupled preamplifier. There is a possibility to manually adjust gain of the signal. 3° wedged zinc selenide anti-reflection coated window prevents unwanted interference effects. SM-I-12 is easy to assembly in space limited measuring systems of FTIR applications.

#### Spectral response ( $T_a = 20^{\circ}\text{C}$ )



Exemplary spectral detectivity, the spectral response of delivered devices may differ.

**Specification (T<sub>a</sub> = 20°C)**

Parameter	Typical value
<b>Optical parameters</b>	
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), $\mu\text{m}$	$\leq 2.0$
Peak wavelength $\lambda_{\text{peak}}$ , $\mu\text{m}$	$10.0 \pm 0.2$
Optimum wavelength $\lambda_{\text{opt}}$ , $\mu\text{m}$	12.0
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), $\mu\text{m}$	$14.0 \pm 0.2$
Detectivity D* ( $\lambda_{\text{peak}}$ , 20 kHz), $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 2.5 \times 10^9$
Detectivity D* ( $\lambda_{\text{opt}}$ , 20 kHz), $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 1.3 \times 10^9$
Output noise density $v_n$ (20 kHz), $\mu\text{V}/\text{Hz}^{1/2}$	$\leq 6$
<b>Electrical parameters</b>	
Voltage responsivity $R_v$ ( $\lambda_{\text{peak}}$ , 100 kV/A), V/W	$\geq 1.35 \times 10^5$
Voltage responsivity $R_v$ ( $\lambda_{\text{opt}}$ , 100 kV/A), V/W	$\geq 6.30 \times 10^4$
Voltage responsivity $R_v$ ( $\lambda_{\text{peak}}$ , 55 kV/A), V/W	$\geq 7.45 \times 10^4$
Voltage responsivity $R_v$ ( $\lambda_{\text{opt}}$ , 55 kV/A), V/W	$\geq 3.45 \times 10^4$
Low cut-off frequency $f_{\text{lo}}$ , Hz	10
High cut-off frequency $f_{\text{hi}}$ , Hz	$1\text{M} \pm 0.1$
Output impedance $R_{\text{out}}$ , $\Omega$	50
Output voltage swing $V_{\text{out}}$ , V	10 ( $R_{\text{load}} = 1\text{M}\Omega$ )
Output voltage offset $V_{\text{off}}$ , mV	$\text{max} \pm 20$
<b>Other information</b>	
Active element material	epitaxial HgCdTe heterostructure
Optical area $A_{\text{op}}$ , mm $\times$ mm	1 $\times$ 1
Window	wZnSeAR
Acceptance angle $\Phi$	$\sim 36^\circ$
Ambient operating temperature $T_{\text{op}}$ , °C	10 to 30
Signal output socket	MMCX
Power supply and TEC control socket	AMPMODU 2 $\times$ 4 (male)
Mounting hole	none
Fan	no (external heatsink necessary)

**Features**

- Wide spectral range from 2.0 to 14.0  $\mu\text{m}$
- High responsivity
- Large dynamic range
- Very small size
- Convenient to use
- Quantity discounted price
- Fast delivery

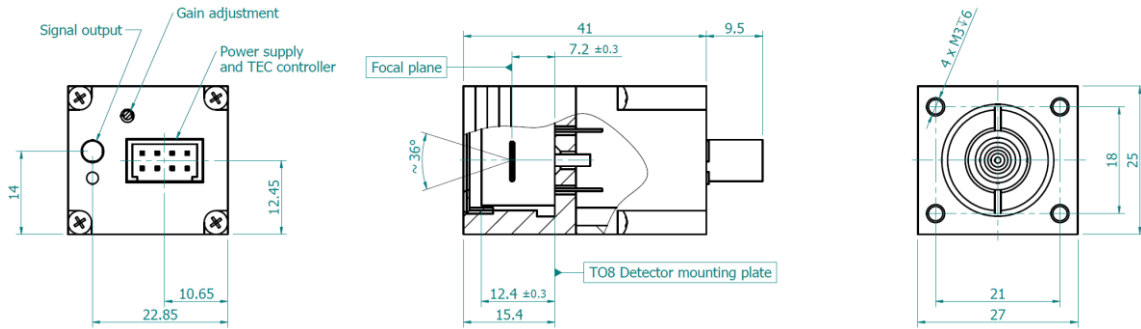
**Applications**

- FTIR spectroscopy and spectrometry

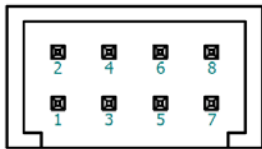
**Related product**

- PCI-3TE-12-1 $\times$ 1-TO8-wZnSeAR-36

**Mechanical layout, mm**



**Power supply and TEC control socket AMPMODU 2x4 (male)**



Function	Symbol	Pin number
Power supply input (-)	-V <sub>sup</sub>	1
Thermistor output	TH2	2
Data pin	DATA	3
TEC supply input (-)	TEC-	4
Ground	GND	5
Thermistor output	TH1	6
Power supply input (+)	+V <sub>sup</sub>	7
TEC supply input (+)	TEC+	8

**Included accessories**

- MMCX-BNC, AMP2x4-DB9 cables

**Dedicated accessories**

- PTCC-01-BAS TEC controller + USB: TypeA-MicroB cable + AC adaptor
- PTCC-01-ADV TEC controller + USB: TypeA-MicroB cable + AC adaptor
- PTCC-01-OEM TEC controller + USB: TypeA-MicroB,
- KK2-POWER cables
- MHS-2 heatsink

**Schematic diagram**

