

INFRARED DETECTORS AND DETECTION MODULES – SELECTED LINE

We present VIGO most popular infrared detectors and integrated detection modules. These devices are suitable for both laboratory research as well as tests, prototyping, R&D stage and in a variety of MWIR and LWIR industrial applications.

Main features

- › High performance and reliability
- › Very good repeatability in mass production
- › Cost-effective solutions
- › Fast delivery

Selected infrared detectors

Photo	Detection module type	Photo	Detection module type
	PVI-4-1x1-TO39-NW-36		PVM-10.6-1x1-TO39-NW-90
	PVI-5-1x1-TO39-NW-36		PVM-2TE-10.6-1x1-TO8-wZnSeAR-70
	PVI-2TE-4-1x1-TO8-wAl ₂ O ₃ -36		PVM-2TE-10.6-1x1-TO8-wZnSeAR-36
	PVI-2TE-5-1x1-TO8-wAl ₂ O ₃ -36		PVM-4TE-10.6-1x1-TO8-wZnSeAR-36
	PVI-2TE-6-1x1-TO8-wZnSeAR-36		PEM-10.6-2x2-PEM-SMA-wZnSeAR-48
	PVI-4TE-6-1x1-TO8-wZnSeAR-36		PCI-3TE-12-1x1-TO8-wZnSeAR-36

Selected infrared detection modules

	Photo	Detection module type		Photo	Detection module type
UM series – universal		UM-I-6	LabM series – laboratory, programmable		LabM-I-6
		UM-10.6			LabM-I-10.6
		UM-I-10.6			UHSM-10.6
fast		microM-10.6	UHSM series – ultra high-speed		UHSM-I-10.6

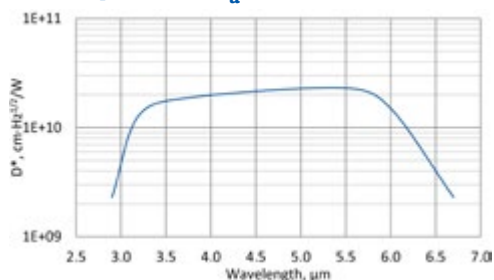
To get the information about specific parameters and applications of each detector and detection module type please see particular datasheets.

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 ± 1.0
Peak wavelength λ_{peak} , μm	5.2 ± 0.5
Optimum wavelength λ_{opt} , μm	6.0
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	6.7 ± 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_{opt} , mm \times 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

^{*)} R_L – load resistance

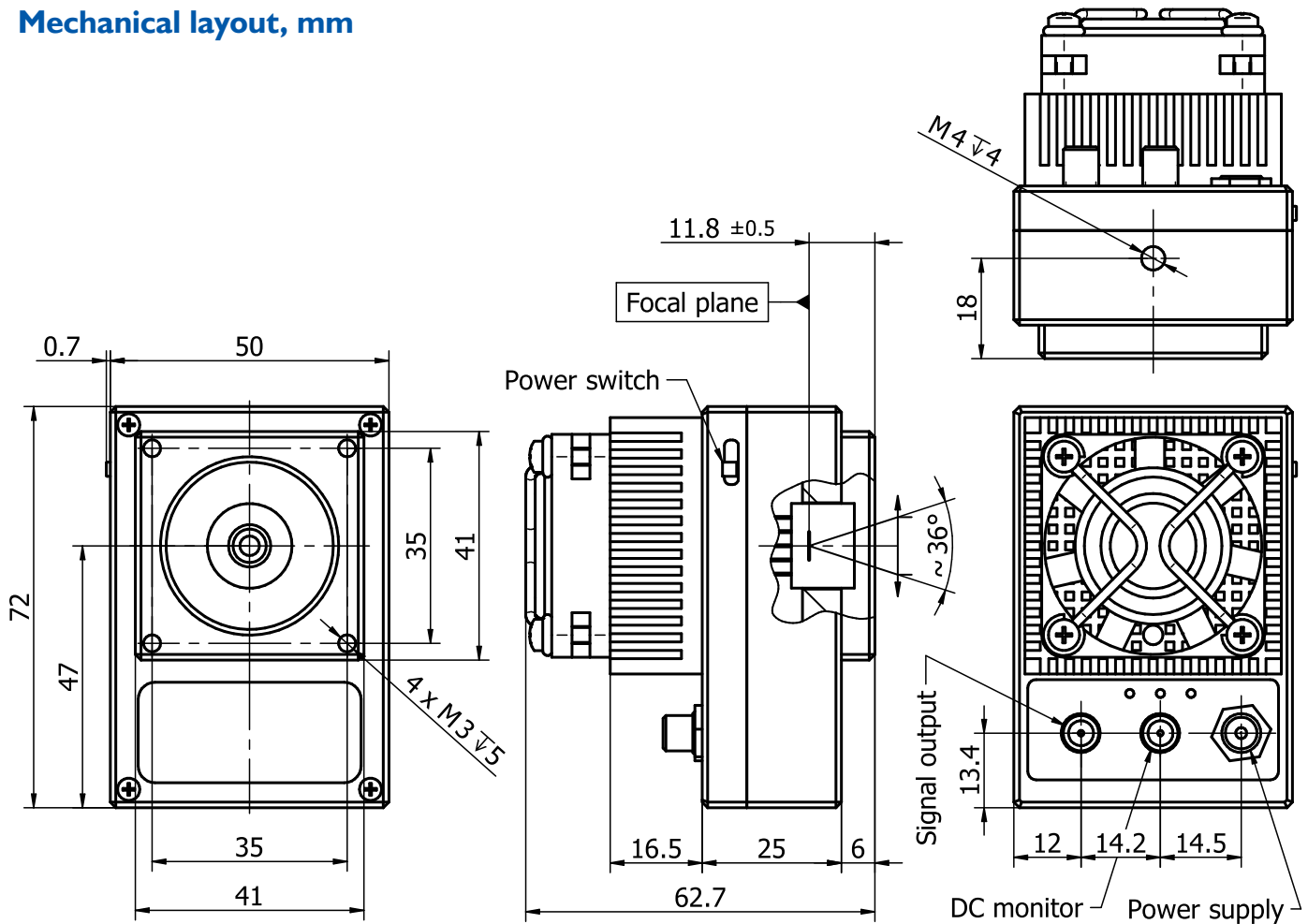
Features

- › 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

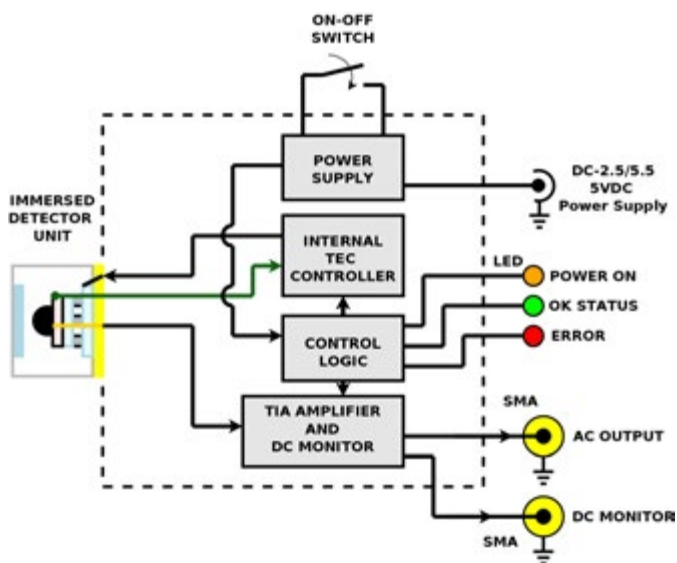
Applications

- › 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

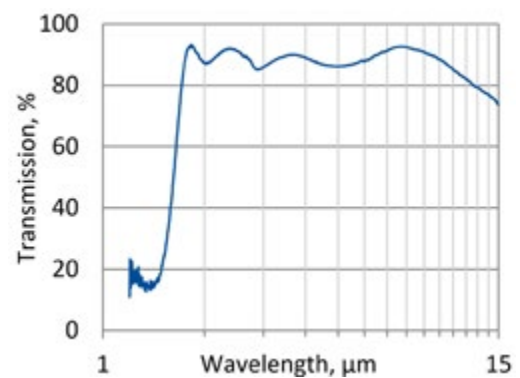
Mechanical layout, mm



Schematic diagram



Spectral transmission of wZnSeAR window (typical example)



Included accessories

- › 2×SMA-BNC cables + AC adaptor

Dedicated accessories

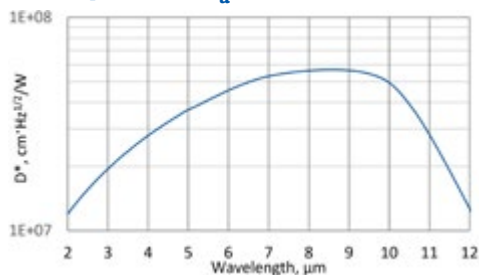
- › OTA optical threaded adapter
- › DRB-2 base mounting system

UM-10.6

2 – 12 μm and DC – 70 MHz HgCdTe universal IR detection module with photovoltaic multiple junction detector

UM-10.6 is an universal „all-in-one” IR detection module. Thermoelectrically cooled 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-10.6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of LWIR 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	≤ 2.0
Peak wavelength λ_{peak} , μm	9.3 ± 2.0
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}} (10\%)$, μm	≥ 12.0
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 5.0 \times 10^7$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 4.0 \times 10^7$
Output noise density v_n (averaged over 1 MHz to f_n), $\text{nV}/\text{Hz}^{1/2}$	≤ 380
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 1.6 \times 10^2$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 1.0 \times 10^2$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	$\geq 70\text{M}$
Output impedance R_{out} , Ω	50
Output voltage swing V_{out} , V	$\pm 2 (R_L = 1 \text{ M}\Omega)$
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	$\geq 3.6 \times 10^1$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 2.4 \times 10^1$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	150k
Other information	
Active element material	epitaxial HgCdTe heterostructure
Active area A, mm \times mm	1 \times 1
Window	wedged zinc selenide AR coated (wZnSeAR)
Acceptance angle Φ	$\sim 70^\circ$
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

¹⁾ R_L – load resistance

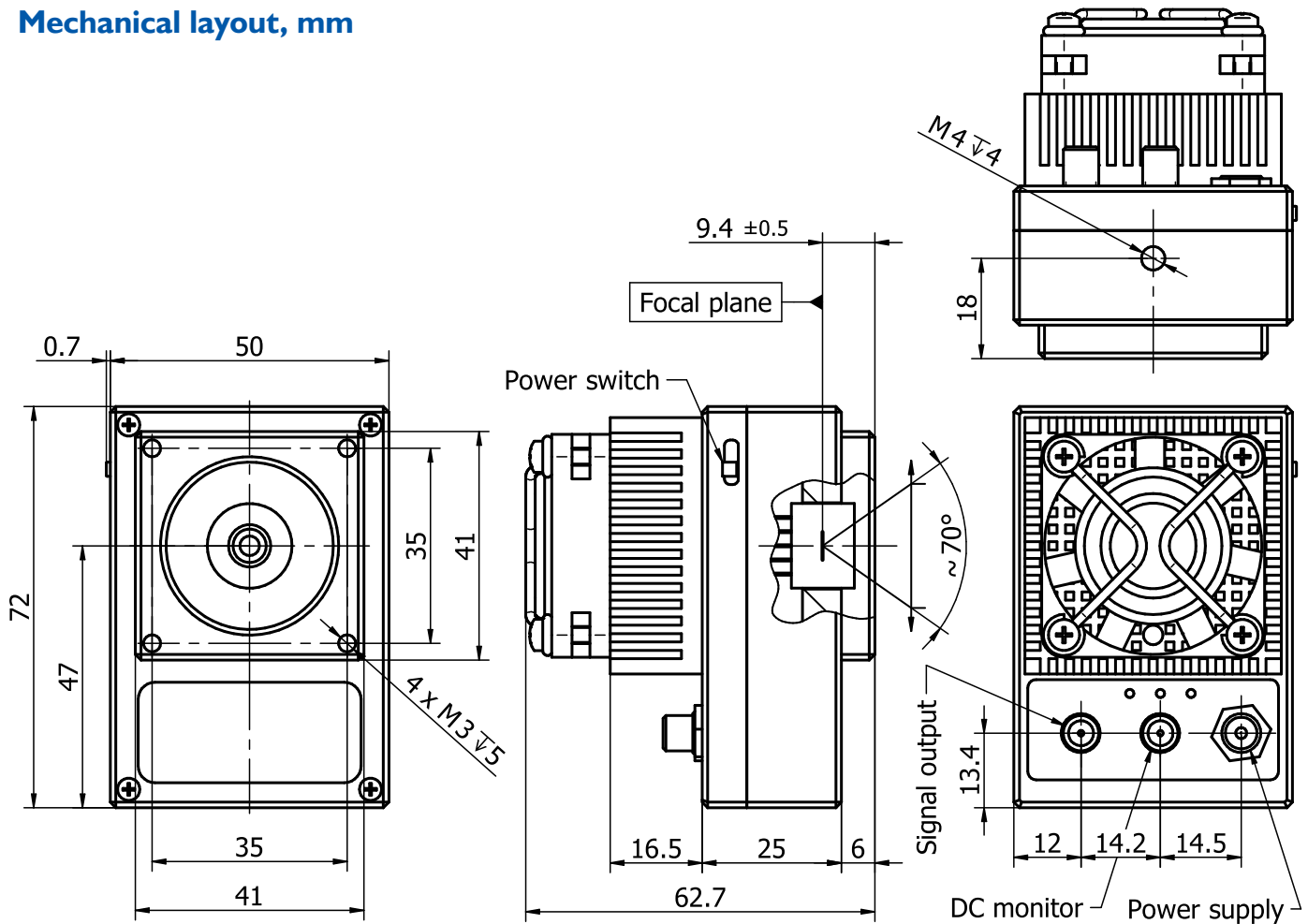
Features

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

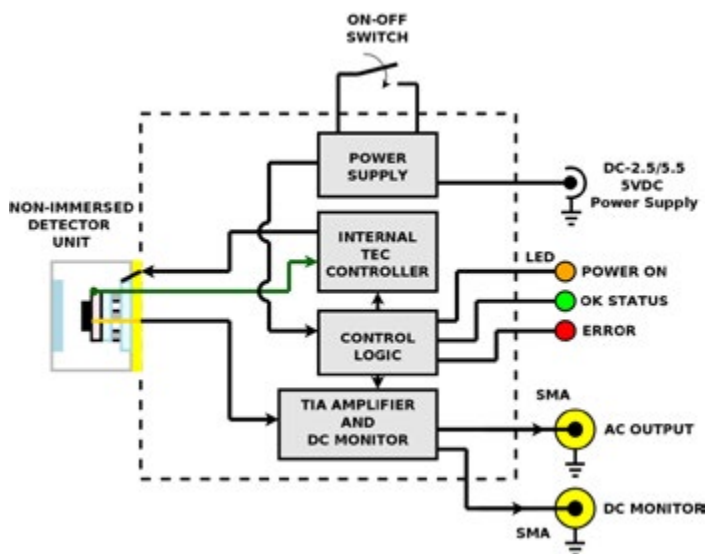
Applications

- › Gas detection, monitoring and analysis
- › CO₂ laser (10.6 μm) measurements
- › Laser power monitoring and control
- › Laser beam profiling and positioning
- › Laser calibration

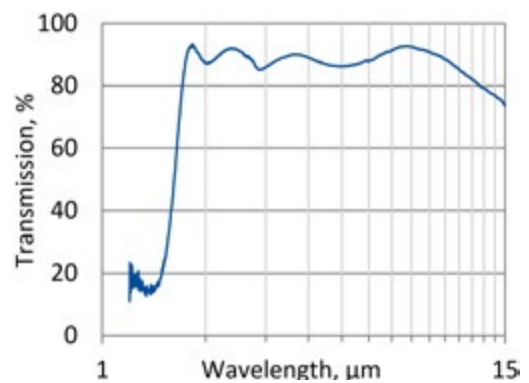
Mechanical layout, mm



Schematic diagram



Spectral transmission of wZnSeAR window (typical example)



Included accessories

- › 2 × SMA-BNC cables + AC adaptor

Dedicated accessories

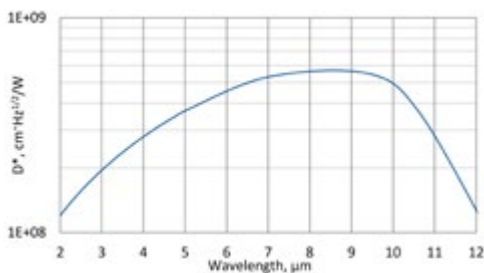
- › OTA optical threaded adapter
- › DRB-2 base mounting system

UM-I-10.6

2 – 12 μm and DC – 100 MHz HgCdTe universal IR detection module with optically immersed photovoltaic multiple junction detector

UM-I-10.6 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-10.6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of LWIR 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 characteristics	
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm	≤ 2.0
Peak wavelength λ_{peak} , μm	8.5 ± 1.5
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	≥ 12.0
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm} \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 5.5 \times 10^8$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm} \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 3.7 \times 10^8$
Output noise density v_n (averaged over 1 MHz to f_{hi}), $\text{nV} / \text{Hz}^{1/2}$	≤ 330
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V / W	$\geq 9.7 \times 10^2$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V / W	$\geq 6.5 \times 10^2$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	$\geq 100\text{M}$
Output impedance R_{out} , Ω	50
Output voltage swing V_{out} , V	± 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	$\geq 2.2 \times 10^2$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V / W	$\geq 1.5 \times 10^2$
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_{opt} , $\text{mm} \times \text{mm}$	1x1
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

^{*)} R_L – load resistance

Features

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

Applications

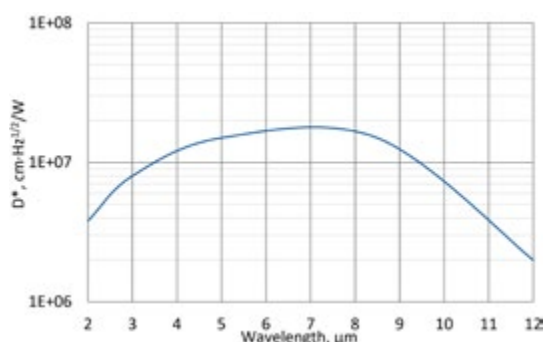
- › Gas detection, monitoring and analysis
- › CO_2 laser (10.6 μm) measurements
- › Laser power monitoring and control
- › Laser beam profiling and positioning
- › Laser calibration

microM-10.6

2 – 12 μm and DC – 10 MHz HgCdTe micro-size IR detection module with photovoltaic multiple junction detector

microM-10.6 is a micro-size IR detection module. Uncooled photovoltaic multiple junction detector, based on HgCdTe heterostructure, is integrated with transimpedance, DC coupled preamplifier. It is easy to assembly in space limited measuring systems of LWIR 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	≤ 2.0
Peak wavelength λ_{peak} , μm	8.0 ± 1.5
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	≥ 12.0
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 1.5 \times 10^7$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 5.0 \times 10^6$
Output noise density v_n (100 kHz), $\mu\text{V}/\text{Hz}^{1/2}$	≤ 1
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 1.2 \times 10^2$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 5.0 \times 10^1$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	$\geq 10\text{M}$
Output impedance R_{out} , Ω	50
Output voltage swing V_{out} , V	± 1 ($R_L = 50 \Omega$)
Output voltage offset V_{off} , mV	max ± 20
Power supply voltage V_{sup} , V	+9
Other information	
Active element material	epitaxial HgCdTe heterostructure
Active area A, mm \times mm	1 \times 1
Window	none
Acceptance angle Φ	$\sim 85^\circ$
Ambient operating temperature T_a , $^\circ\text{C}$	10 to 30
Signal output plug	SMA
Power supply plug	03T-JWPF-VSLE-S (male)
Mounting hole	none
Fan	none

¹⁾ R_L – load resistance

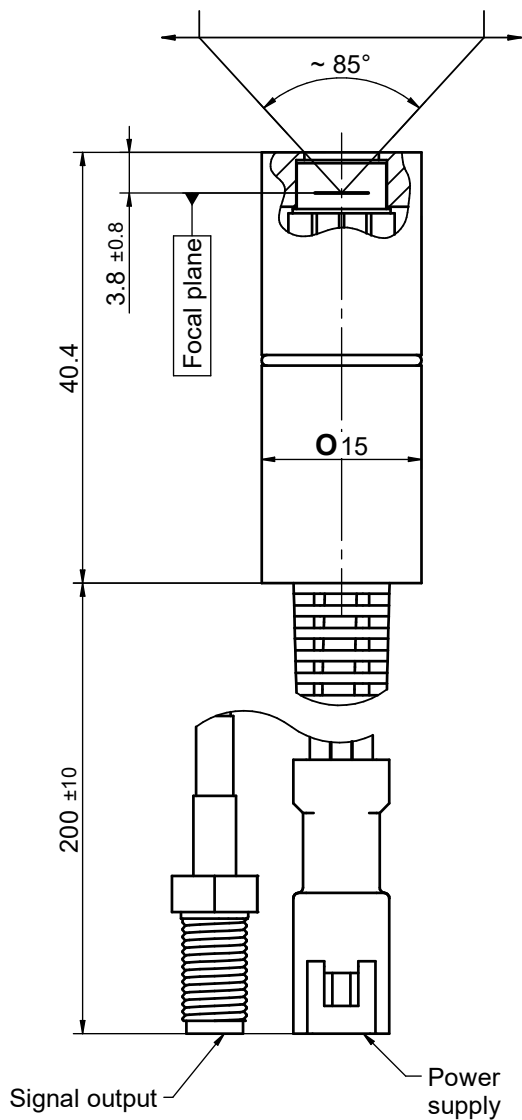
Features

- › Very small size
- › Convenient to use
- › Versatility
- › Sensitive to IR radiation polarisation
- › Cost effective OEM version available
- › Quantity discounted price
- › Fast delivery

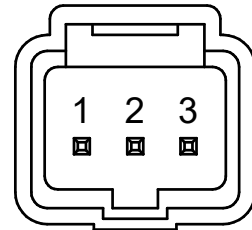
Applications

- › Gas detection, monitoring and analysis
- › CO₂ laser (10.6 μm) measurements
- › Laser power monitoring and control
- › Laser beam profiling and positioning
- › Laser calibration

Mechanical layout, mm

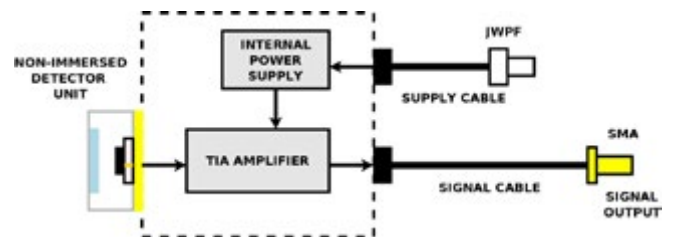


Power supply plug 03T-JWPF-VSLE-S (male)



Function	Symbol	Pin number
Power supply input (-)	$-V_{sup}$	1
Ground	GND	2
Power supply input (+)	$+V_{sup}$	3

Schematic diagram



Included accessories

- › SMA-BNC, JWPF-DB9 cables

Dedicated accessories

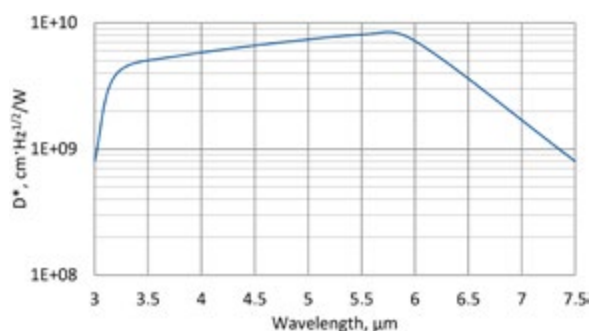
- › PPS-03 preamplifier power supply + AC adaptor
- › MH-1 module's holder
- › DRB-2 base mounting system

LabM-I-6

3.0 – 7.5 μm and over 200 MHz HgCdTe programmable, laboratory IR detection module with optically immersed photovoltaic detector

LabM-I-6 is a laboratory IR detection module with optically immersed photovoltaic detector based on HgCdTe heterostructure, integrated with transimpedance, programmable preamplifier. 3° wedged zinc selenide anti-reflection coated window prevents unwanted interference effects. For proper operation programmable „smart” VIGO thermoelectric cooler controller PTCC-01 (sold separately) and Smart Manager Software (freeware) are required. LabM I 6 module comes complete with PTCC-01 and Smart Manager is the best solution for prototyping and R&D stage in a variety of MWIR applications. This set provides flexible approach to different needs of system designers.

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



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



Specification ($T_a = 20^\circ\text{C}$, default module settings)

Parameter	Typical value
Optical parameters	
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm	3.0 \pm 1.0
Peak wavelength λ_{peak} , μm	5.5 \pm 0.5
Optimum wavelength λ_{opt} , μm	6.0
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	7.5 \pm 0.5
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 8.1 \times 10^9$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 7.2 \times 10^9$
Output noise density v_n (10 kHz), $\mu\text{V}/\text{Hz}^{1/2}$	≤ 350
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 2.3 \times 10^4$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 2.0 \times 10^4$
Low cut-off frequency f_{lo} , Hz	10
High cut-off frequency f_{hi} , Hz	$\geq 200\text{M}$ (adjustable)
Output impedance R_{out} , Ω	50
Output voltage swing V_{out} , V	± 1 ($R_L = 1 \text{ M}\Omega$)
Output voltage offset V_{off} , mV	max ± 20
Other information	
Active element material	epitaxial HgCdTe heterostructure
Optical area A_o , mm \times 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
Power supply and TEC control socket	LEMO (female) ECG.0B.309.CLN
Mounting hole	M4
Fan	yes

^{*)} R_L – load resistance

Features

- › Very high performance and reliability
- › DC offset compensation
- › Compatible with optical accessories
- › Versatility and flexibility
- › Quantity discounted price
- › Fast delivery

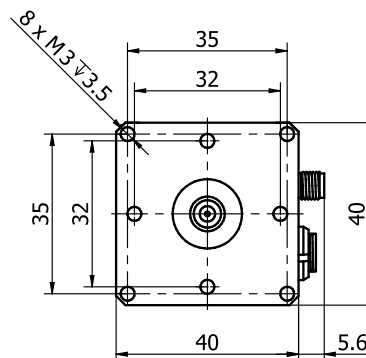
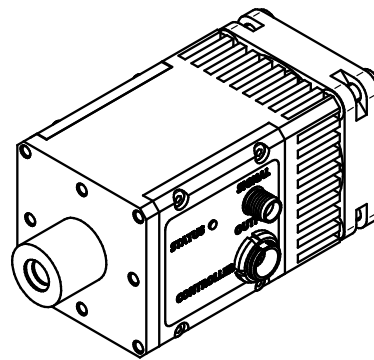
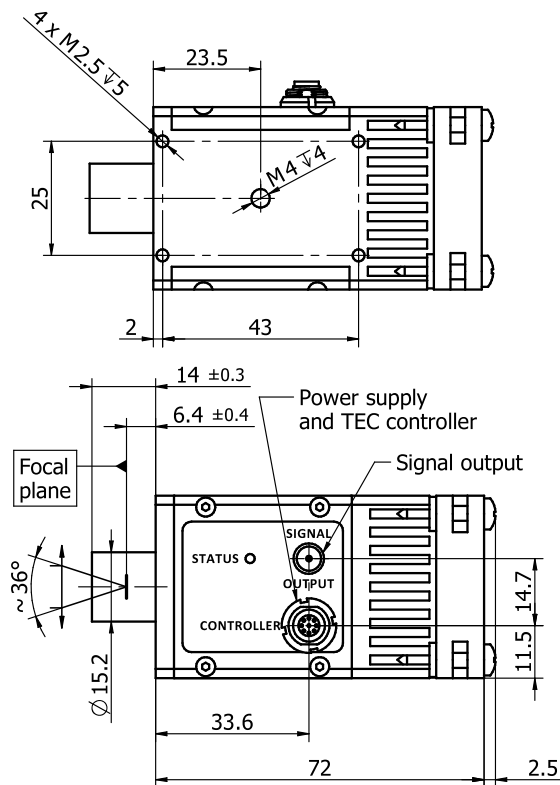
Parameters configurable by the user

- › Output voltage offset
- › Gain (in 40 dB range)
- › Bandwidth (1.5 MHz/15 MHz/200 MHz)
- › Coupling AC/DC
- › Detector's parameters (temperature, reverse bias etc.)

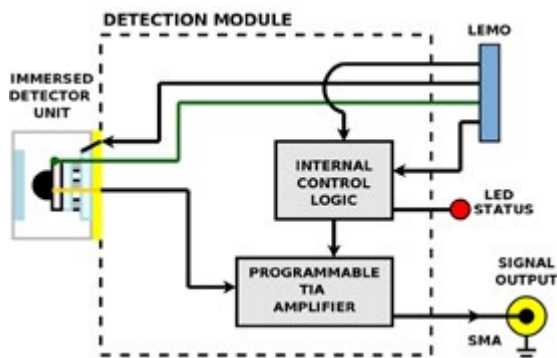
Applications

- › MWIR gas detection, monitoring and analysis
- › Flue gas denitrification
- › Fuel combustion monitoring at power plants and other industrial facilities
- › Breath analysis
- › Explosion prevention
- › Emission control (exhaust fumes, greenhouse gases)
- › Contactless temperature measurements

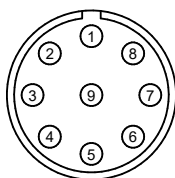
Mechanical layout, mm



Schematic diagram

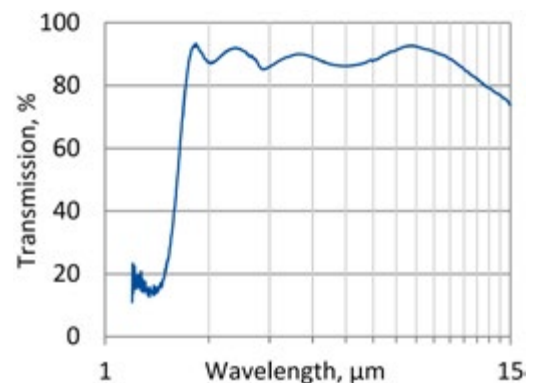


Power supply and TEC control socket LEMO (female) ECG.0B.309.CLN



Function	Symbol	Pin number
Fan and programmable preamp internal logic auxiliary supply	FAN+	1
Thermistor output (2)	TH2	2
TEC supply input (-)	TEC-	3
Power supply input (-)	-V _{sup}	4
Ground	GND	5
Power supply input (+)	+V _{sup}	6
TEC supply input (+)	TEC+	7
Thermistor output (1)	TH1	8
Bidirectional data pin	DATA	9

Spectral transmission of wZnSeAR window (typical example)



Included accessories

- › SMA-BNC, LEMO-DB9 cables

Dedicated accessories

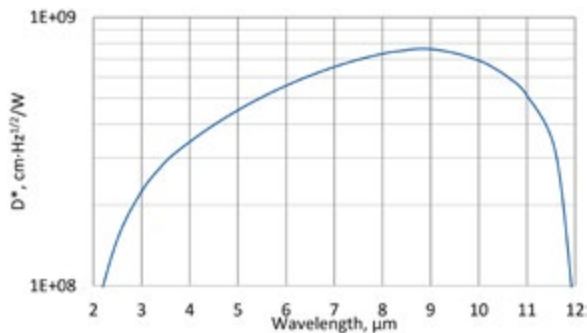
- › PTCC-01-BAS TEC controller + USB: TypeA-MicroB cable + AC adaptor
- › PTCC-01-ADV TEC controller + USB: TypeA-MicroB cable + AC adaptor
- › PTCC-01-OEM TEC controller + USB: TypeA-MicroB, KK2-POWER cables
- › OTA optical threaded adapter
- › DRB-2 base mounting system

LabM-I-10.6

2 – 12 μm and DC – 100 MHz HgCdTe programmable, laboratory IR detection module with optically immersed photovoltaic detector

LabM-I-10.6 is a laboratory IR detection module with optically immersed photovoltaic detector based on HgCdTe heterostructure, integrated with transimpedance, programmable preamplifier. 3° wedged zinc selenide anti-reflection coated window prevents unwanted interference effects. For proper operation programmable „smart” VIGO thermoelectric cooler controller PTCC-01 (sold separately) and Smart Manager Software (freeware) are required. LabM I 10.6 module comes complete with PTCC-01 and Smart Manager is the best solution for prototyping and R&D stage in a variety of LWIR applications. This set provides flexible approach to different needs of system designers.

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



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



Specification ($T_a = 20^\circ\text{C}$, default module settings)

Parameter	Typical value
Optical parameters	
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm	≤ 2.0
Peak wavelength λ_{peak} , μm	9.5 ± 0.5
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	≥ 12.0
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 7.2 \times 10^8$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 6.0 \times 10^8$
Output noise density v_n (10 kHz), $\mu\text{V}/\text{Hz}^{1/2}$	≤ 400
Electrical parameters	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 2.4 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 2.0 \times 10^3$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	$\geq 100\text{M}$ (adjustable)
Output impedance R_{out} , Ω	50
Output voltage swing V_{out} , V	± 1 ($R_L = 1 \text{ M}\Omega$)
Output voltage offset V_{off} , mV	max ± 20
Other information	
Active element material	epitaxial HgCdTe heterostructure
Optical area A_o , mm \times 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
Power supply and TEC control socket	LEMO (female) ECG.0B.309.CLN
Mounting hole	M4
Fan	yes

^{*)} R_L – load resistance

Features

- › Very high performance and reliability
- › DC offset compensation
- › Sensitive to IR radiation polarisation
- › Compatible with optical accessories
- › Versatility and flexibility
- › Quantity discounted price
- › Fast delivery

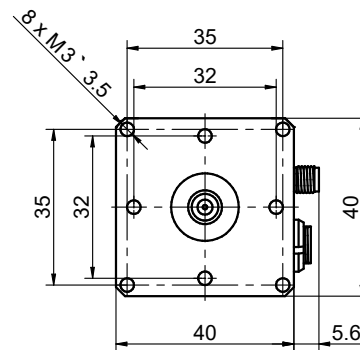
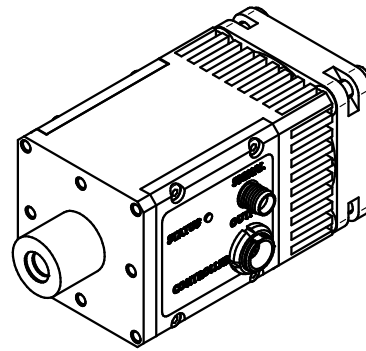
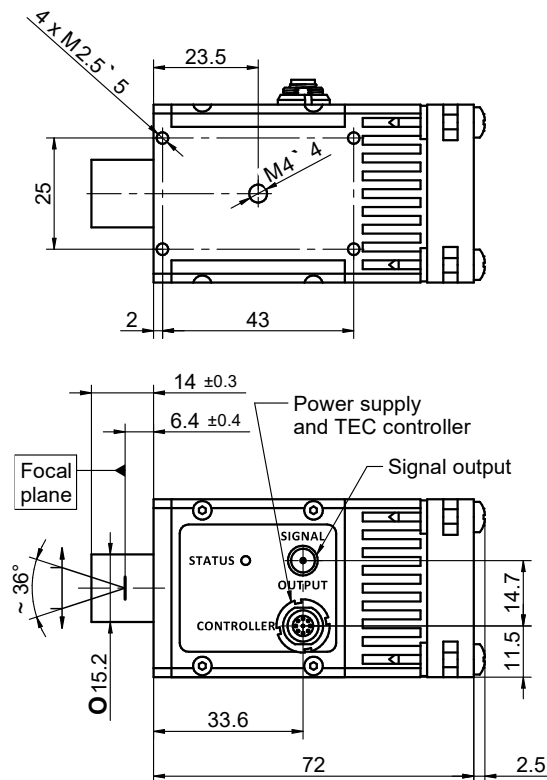
Parameters configurable by the user

- › Output voltage offset
- › Gain (in 40 dB range)
- › Bandwidth (1.5 MHz/15 MHz/100 MHz)
- › Coupling AC/DC
- › Detector's parameters (temperature, reverse bias etc.)

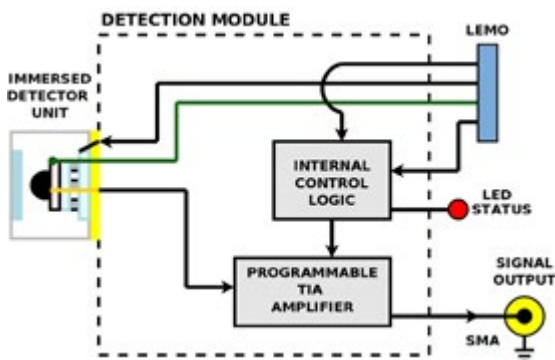
Applications

- › Gas detection, monitoring and analysis
- › CO₂ laser (10.6 μm) measurements
- › Laser power monitoring and control
- › Laser beam profiling and positioning
- › Laser calibration
- › Semiconductor manufacturing
- › Glucose monitoring
- › Dentistry

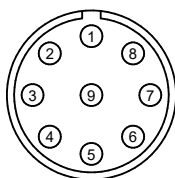
Mechanical layout, mm



Schematic diagram

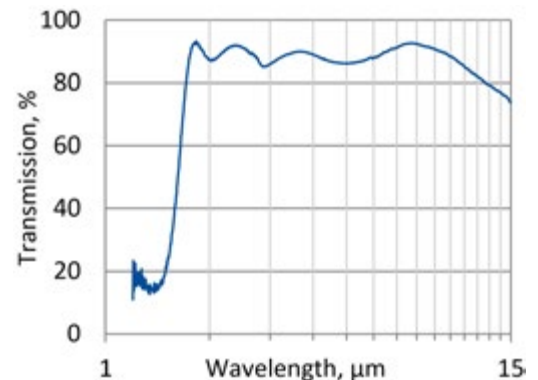


Power supply and TEC control socket LEMO (female) ECG.0B.309.CLN



Function	Symbol	Pin number
Fan and programmable preamp internal logic auxiliary supply	FAN+	1
Thermistor output (2)	TH2	2
TEC supply input (-)	TEC-	3
Power supply input (-)	-V _{sup}	4
Ground	GND	5
Power supply input (+)	+V _{sup}	6
TEC supply input (+)	TEC+	7
Thermistor output (1)	TH1	8
Bidirectional data pin	DATA	9

Spectral transmission of wZnSeAR window (typical example)



Included accessories

- › SMA-BNC, LEMO-DB9 cables

Dedicated accessories

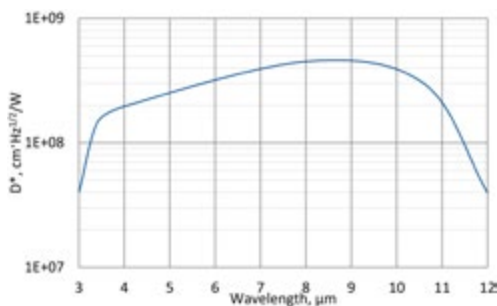
- › PTCC-01-BAS TEC controller + USB: TypeA-MicroB cable + AC adaptor
- › PTCC-01-ADV TEC controller + USB: TypeA-MicroB cable + AC adaptor
- › PTCC-01-OEM TEC controller + USB: TypeA-MicroB, KK2-POWER cables
- › OTA optical threaded adapter
- › DRB-2 base mounting system

UHSM-10.6

3 – 12 μm and over 1GHz HgCdTe ultra high speed IR detection module with photovoltaic detector

UHSM-10.6 is ultra high speed „all-in-one” IR detection module. Thermoelectrically cooled, photovoltaic detector, based on HgCdTe heterostructure, is integrated with transimpedance, AC coupled preamplifier, a fan and a thermoelectric cooler controller in a compact housing. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects. UHSM-10.6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of LWIR applications requiring wide frequency bandwidth.

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
Peak wavelength λ_{peak} , μm	8.0 ± 1.0
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}(10\%)$, μm	≥ 12.0
Detectivity $D^*(\lambda_{\text{peak}}, 100 \text{ MHz})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 4.5 \times 10^8$
Detectivity $D^*(\lambda_{\text{opt}}, 100 \text{ MHz})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 3.0 \times 10^8$
Output noise density $v_n(100 \text{ MHz})$, $\text{nV}/\text{Hz}^{1/2}$	≤ 70
Electrical parameters ($R_L = 50 \Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 4.5 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 3.0 \times 10^3$
Low cut-off frequency f_{lo} , Hz	300
High cut-off frequency f_{hi} , Hz	$\geq 1.0\text{G}$
Output voltage swing V_{out} , V	± 1
1/f noise corner frequency f_c , Hz	$\leq 10\text{M}$
Power supply voltage V_{sup} , V	+9
DC monitor (approx. 1 V offset, $R_L = 100 \text{ k}\Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 1.7 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 1.1 \times 10^3$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	260
Other information	
Active element material	epitaxial HgCdTe heterostructure
Optical area A, $\text{mm}\times\text{mm}$	0.05×0.05
Window	wZnSeAR
Acceptance angle Φ	$\sim 80^\circ$
Ambient operating temperature T_a , $^\circ\text{C}$	10 to 30
Signal output socket (RF output)	SMA
DC monitor socket	SMA
Power supply socket	DC 2.1/5.5
Mounting hole	M4
Fan	yes

¹⁾ R_L – load resistance

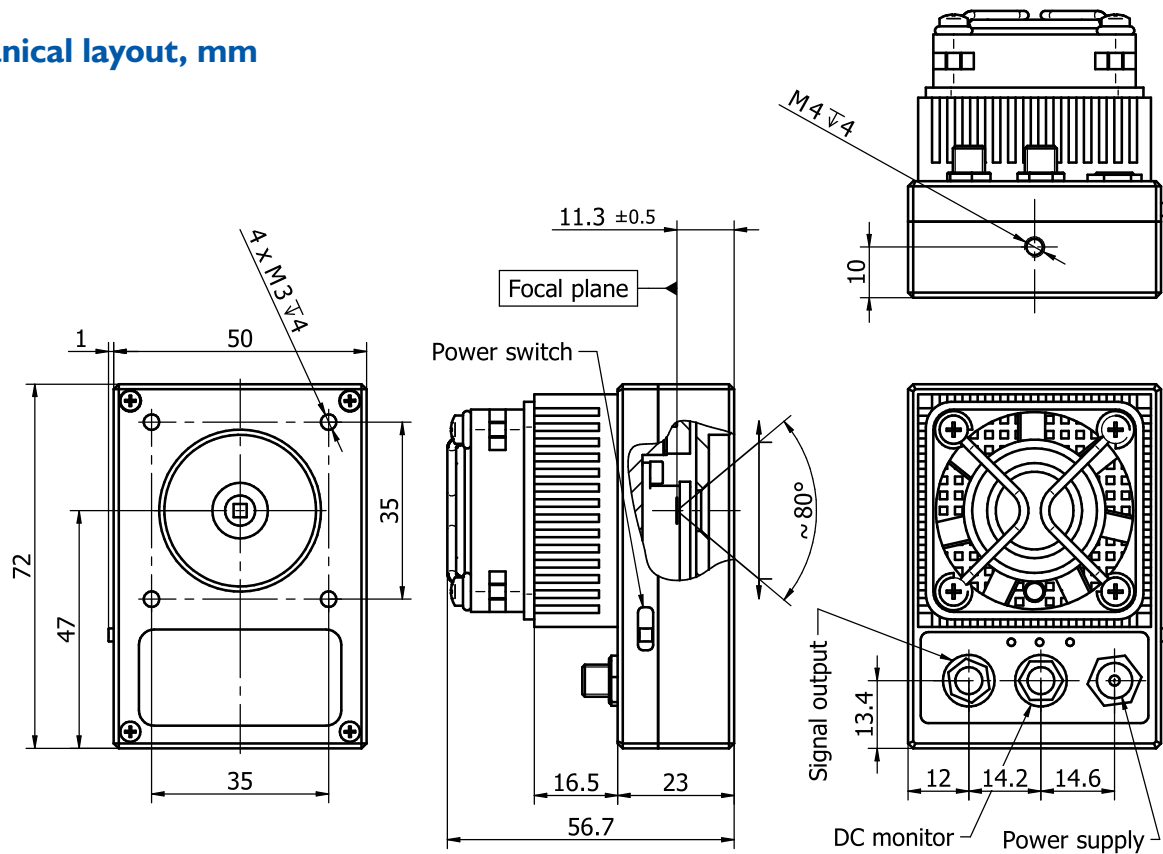
Features

- › Wide frequency bandwidth over 1 GHz
- › Integrated TEC controller and fan
- › Single power supply
- › DC monitor
- › Optimised for effective heat dissipation
- › Compatible with optical accessories
- › Fast delivery

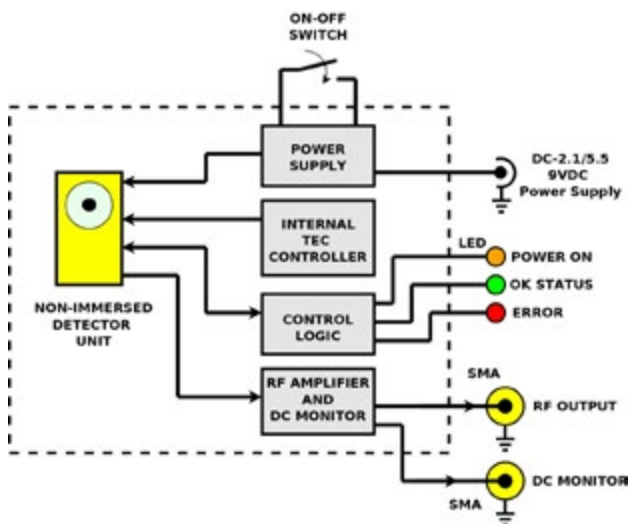
Applications

- › Dual-comb spectroscopy
- › Heterodyne detection
- › Characterization of pulsed laser sources
- › LIDAR
- › Object scanners
- › Time-resolved fluorescence spectroscopy systems
- › Free-space optical communication

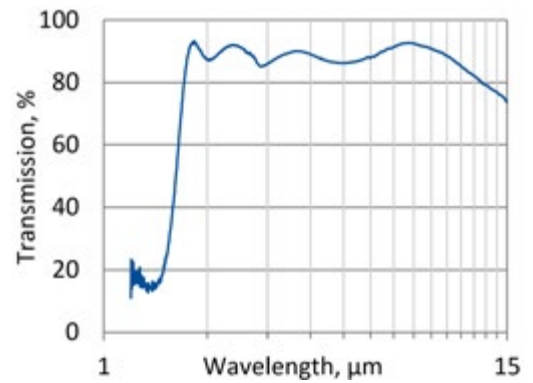
Mechanical layout, mm



Schematic diagram



Spectral transmission of wZnSeAR window (typical example)



Included accessories

- › 2 × SMA-BNC cables + AC adaptor

Dedicated accessories

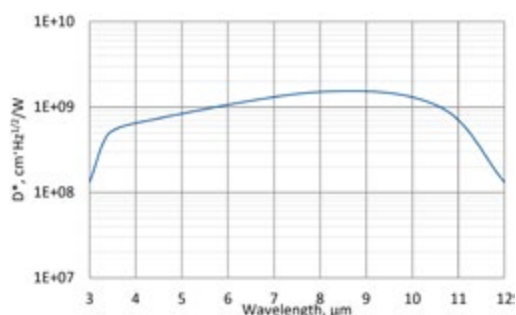
- › OTA optical threaded adapter
- › DRB-2 base mounting system

UHSM-I-10.6

3 – 12 μm and over 700 MHz HgCdTe ultra high speed IR detection module with optically immersed photovoltaic detector

UHSM-I-10.6 is ultra high speed „all-on-one” IR detection module. Thermoelectrically cooled, optically immersed photovoltaic detector, based on HgCdTe heterostructure, is integrated with transimpedance, AC coupled preamplifier, a fan and a thermoelectric cooler controller in a compact housing. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects. UHSM I 10.6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of LWIR applications requiring wide frequency bandwidth.

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
Peak wavelength λ_{peak} , μm	8.5 ± 0.5
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	12.5 ± 0.3
Detectivity D^* (λ_{peak} , 100 MHz), $\text{cm}^2 \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 1.5 \times 10^9$
Detectivity D^* (λ_{opt} , 100 MHz), $\text{cm}^2 \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 1.0 \times 10^9$
Output noise density v_n (100 MHz), $\text{nV} / \text{Hz}^{1/2}$	≤ 90
Electrical parameters ($R_L = 50 \ \Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 1.0 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 7.0 \times 10^2$
Low cut-off frequency f_{lo} , Hz	300
High cut-off frequency f_{hi} , Hz	$\geq 700\text{M}$
1/f noise corner frequency f_c , Hz	$\leq 10\text{M}$
Power supply voltage V_{sup} , V	+9
DC monitor (approx. 1 V offset, $R_L = 100 \ \text{k} \ \Omega$)	
Voltage responsivity $R_v(\lambda_{\text{peak}})$, V/W	$\geq 3.8 \times 10^3$
Voltage responsivity $R_v(\lambda_{\text{opt}})$, V/W	$\geq 2.7 \times 10^2$
Low cut-off frequency f_{lo} , Hz	DC
High cut-off frequency f_{hi} , Hz	260
Other information	
Active element material	epitaxial HgCdTe heterostructure
Optical area A_{opt} , mm \times mm	1 \times 1
Window	wZnSeAR
Acceptance angle Φ	$\sim 36^\circ$
Ambient operating temperature T_a , $^\circ\text{C}$	10 to 30
Signal output socket (RF output)	SMA
DC monitor socket	SMA
Power supply socket	DC 2.1/5.5
Mounting hole	M4
Fan	yes

^{*)} R_L – load resistance

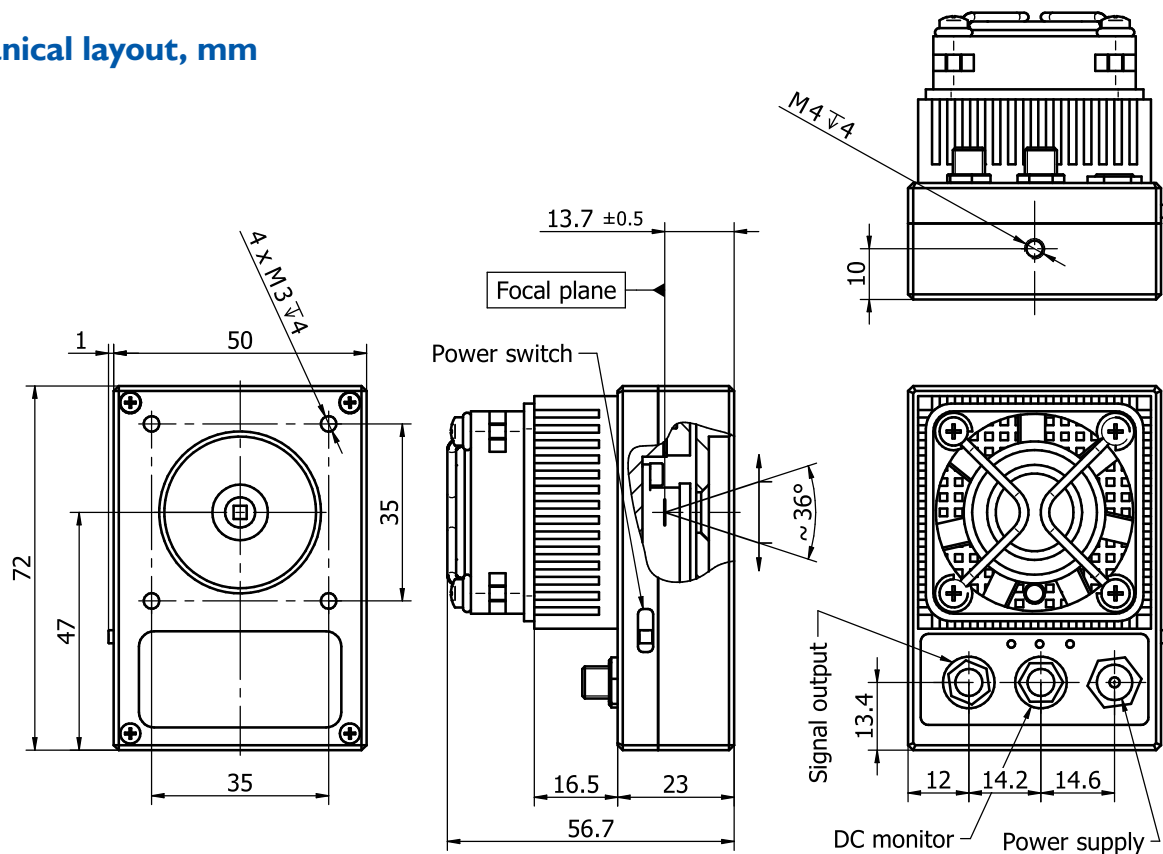
Features

- › High S/N ratio
- › Wide frequency bandwidth over 700 MHz
- › Integrated TEC controller and fan
- › Single power supply
- › DC monitor
- › Optimised for effective heat dissipation
- › Compatible with optical accessories
- › Fast delivery

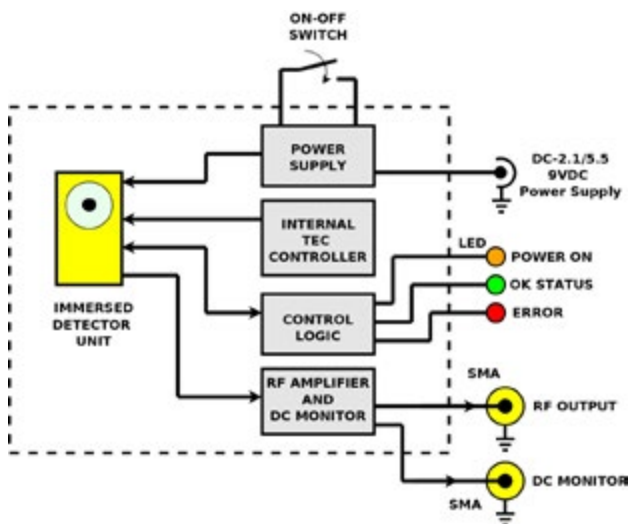
Applications

- › Dual-comb spectroscopy
- › Heterodyne detection
- › Characterization of pulsed laser sources
- › LIDAR
- › Object scanners
- › Time-resolved fluorescence spectroscopy systems
- › Free-space optical communication
- › Telemetry

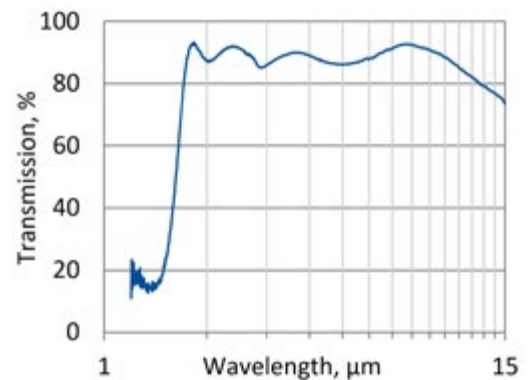
Mechanical layout, mm



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

Distributor

where technologies meet solutions

info@amstechnologies.com
www.amstechnologies-webshop.com

Contact us