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**32EM-5-01,  
32EM-5-02  
MWIR 32-Channel IR  
Detection Modules**

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**32EM-5** is a series of 32-channel detection modules. Thermoelectrically cooled MWIR 32-element HgCdTe photovoltaic detector is integrated with DC-coupled 32-channel transimpedance preamplifier.

## FEATURES

- High sensitivity
- High-speed response
- 32 channels
- Low crosstalk
- Compact small size
- Convenient cryogenic-free operation
- External heatsink is necessary  
(recommended thermal resistance: ~2 K/W)
- External TEC controller is necessary

## APPLICATIONS

- Spectroscopy (gas detection, breath analysis)
- Slow and fast contactless temperature measurement (railway transport, industrial and laboratory processes monitoring)
- Optical sorting systems
- Laser beam profiling and positioning
- Flame and explosion detection
- Defense and security
- Combustion process control

## SPECIFICATION ( $T_A = 20^\circ\text{C}$ , $V_B = 0\text{ mV}$ )

Parameter	Detection module type	
	32EM-5-01	32EM-5-02
<b>Optical characteristics</b>		
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), $\mu\text{m}$	$\leq 2.0$	$3.7 \pm 0.2$
Peak wavelength $\lambda_{\text{peak}}$ , $\mu\text{m}$	$4.25 \pm 0.2$	$4.75 \pm 0.2$
Optimal wavelength $\lambda_{\text{opt}}$ , $\mu\text{m}$	5.0	5.0
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), $\mu\text{m}$	$5.6 \pm 0.2$	$5.8 \pm 0.2$
Detectivity $D^*(\lambda_{\text{peak}})$ , $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 3.5 \times 10^9$	$\geq 2.4 \times 10^9$
Detectivity $D^*(\lambda_{\text{opt}})$ , $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 2.2 \times 10^9$	$\geq 2.2 \times 10^9$
<b>Electrical parameters</b>		
Voltage responsivity $R_V(\lambda_{\text{peak}}, R_{\text{Load}} = 1\text{ M}\Omega)$ , V/W	$\geq 3.5 \times 10^4$	$\geq 5.0 \times 10^4$
Voltage responsivity $R_V(\lambda_{\text{opt}}, R_{\text{Load}} = 1\text{ M}\Omega)$ , V/W	$\geq 2.2 \times 10^4$	$\geq 4.6 \times 10^4$
Low cut-off frequency $f_{\text{lo}}$ , Hz	DC	DC
High cut-off frequency $f_{\text{hi}}$ , kHz	$\geq 400$	$\geq 650$
Output impedance $R_{\text{out}}$ , $\Omega$	50	50
Output voltage swing $V_{\text{out}}$ ( $R_{\text{Load}} = 1\text{ M}\Omega$ ), V	-1 (negative output)	-1 (negative output)
Output voltage offset $V_{\text{off}}$ , $\text{mV}_{\text{DC}}$	max -200	max -200
Power supply voltage $V_{\text{sup}}$ , $V_{\text{DC}}$	+5	+5
<b>Other information</b>		
Active elements material	epitaxial HgCdTe heterostructure	
Number of elements	1×32 linear array	
Active area of single element A, mm×mm	0.125×1	0.1×0.1
Distance between active elements, $\mu\text{m}$	25	50
Window	$\text{pAl}_2\text{O}_3\text{AR}$	
Acceptance angle $\Phi$	~70°	
Ambient operating temperature $T_a$ , °C	10 to 30	