

LMA

High stability PbS(e) linear multiplexed infrared detector array (1-5.5 μm)

Key Features:

- 256 square or rectangular elements
- Operates over 1-5.5 μm NIR and Mid-IR range
- Real-time calibration adjustment
- Superior noise suppression maximizes pixel resolution
- Robust shielding isolates elements from environment
- Temperature control via TE cooler and thermistor
- Integrated multiplexer with up to 4 MHz readout rate
- Optional: USB controller board
- Optional: Fast prototyping development system



Cal Sensor's new LMA (Linear Multiplexed Array) product family is designed to optimize measurement stability and reduce noise across the 1-5.5 μm region. These arrays fulfill the needs of IR spectrometry and thermography applications where multiple signatures need to be differentiated and high measurement accuracy, stability and resolution is essential.

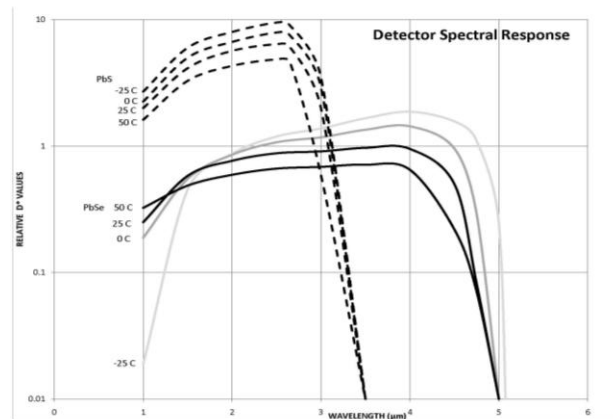
The standard configuration uses six array elements (three on each side of the array) to interface with isolated compensation elements for real-time measurement analysis and calibration adjustment. This arrangement minimizes measurement errors. In addition, robust noise suppression techniques and shielding isolate the active elements, reducing the affects of external system or environmental variables. The internal multiplexer supports global plus 8 bit per pixel dark current correction and variable gain with adjustable well sizes.

The LMA family is available in several formats. The LMA-13 uses PbS technology to cover the 1 to 3 μm wavelengths, while the LMA-15 addresses 1-5.5 μm wavelengths with PbSe technology.

An optional electronics controller board eases implementation of the array and further enhances measurement stability by supporting fine-tuning of the temperature set point with the included software. Combined, these features provide superior measurement performance for a wide variety of applications.

Markets and Applications:

- Spectroscopy
- Gas analysis and monitoring
- Thermography
- Process and quality control
 - Polymers & plastics analysis
 - Pharmaceuticals manufacturing
 - Petrochemicals production



LMA Specifications¹

Model	Part #	Element Size (μm)	Pixel Pitch (μm)	(Typ) Op. Temp	(λ pk signal, μm)	D* (cm Hz ^{1/2} /W)	Detector rise time	Readout Rate (MHz)	Max rated element temp	Std Pkg
						(λ _{pk} , Hz ² , 1Hz)				
LMA-13 Series – One stage TE cooled PbS Linear Multiplexed Array										
LAT1-R28T-250	17004	450x40	50	- 4 C	2.4 typ	1.0 x 10 ¹¹ typ	< 1 mS	4 Mhz	65°C	28-pin
LMA-15 Series – One stage TE cooled PbSe Linear Multiplexed Array										
LBXT1-R28T-250	17108	450x40	50	- 4 C	4 typ	1.0x10 ¹⁰ typ	< 10 μs	4 Mhz	85°C	28-pin
LBXT1-S28T-250	17105	40x40								

1. Input power requirements: 7 VDC mux, Cooler 8 VDC @ 1.7 A max
2. Modulation frequency: LAT1 series - 650 Hz, LBXT1 series – 1000 Hz

Optional: USB Controller Board Features

- Direct interface to standard 28-pin LMA package
- Tight cooler control circuit
- Programmable operating temperature set points
- 16 bit A/D converter at 500 ksamples/sec
- 100 kHz readout rate – (board only)
- Manages all multiplexed functions

Optional: Development System Features

- Convenient system to facilitate the prototype process
- Includes one LMA, USB controller board, copper mounting block, heatsink with fan, USB cable, power supply module, and Cal Sensors GUI software and SDK library.

LMA Mechanical Drawing

