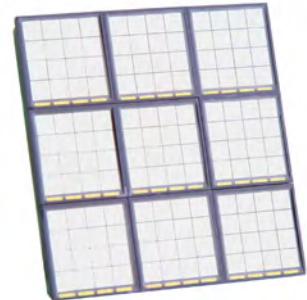


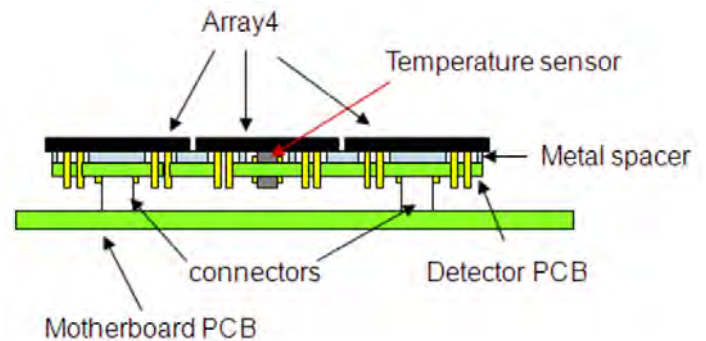
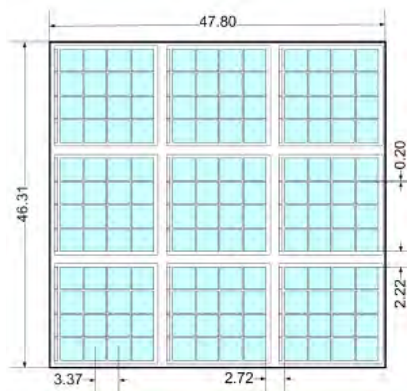
Large Area, Position Sensitive Silicon Photomultiplier Matrix in a Four-Side Scalable Package

Building on SensL's high volume production capabilities for silicon photomultipliers (SPM), ArraySL-4P9 is a low cost 144 pixel, position sensitive low light detector integrating SensL ArraySL-4 ceramic packaged SPMs. Signal readout for each pixel takes place through two board-to-board connectors, allowing for easy mounting of ArraySL-4P9 on a PCB. The detector height is ~10 mm (including connectors) allowing for a highly compact system design. An integrated digital sensor measures detector temperature to $\pm 0.1^\circ\text{C}$, allowing for precise compensation of SPM signal gain variations with temperature. The detector head is four side scalable with a pixel size of $3 \times 3\text{mm}^2$.



DETECTOR DETAILS

The 144 SPM detectors integrated on the ArraySL-4P9 are pre-selected to have an optical response uniformity within $\pm 10\%$, or 1 : 1.2 in comparison to a multi-anode PMT. The ArraySL-4P9 operates at 30V simplifying HV infrastructure. Mechanical robustness and safe to handle, it is undamaged by exposure to ambient lighting and is insensitive to magnetic fields up to 7 T.



APPLICATIONS

ArraySL-4P9 addresses a range of applications that are currently realized using a multi-anode PMT, or APD and PIN photo diode arrays, such as:

- PET
- SPECT
- Gamma, Anger and X-ray cameras
- Readout of fiber bundles

ORDERING INFORMATION

Product Code	No. pixels	Pixel size	Microcell
ArraySL-4P9-30035	144 (12x12)	3x3mm ²	35μm

Parameter	Unit	Min.	Max.
No. of microcells per pixel			4774
Peak sensitivity wavelength	nm		500
Spectral range	nm	400	1000
Signal gain			2.4x10 ⁶
Peak PDE @ V _{op}	%		14*
Dark current per pixel @ V _{op}	μA		3
Microcell recovery time	ns		130ns
dE/E (FWHM) for LYSO at 511keV	%		< 17

* Includes the effects of crosstalk and afterpulsing.