





# LYNRED Linear **PEGA**

(600x3) x4 – 30  $\mu$ m pitch – MCT - MW to VLW

LYNRED Linear PEGA is a **large linear detector** specially tailored for **earth observation** applications from MWIR up to VLWIR spectral range.

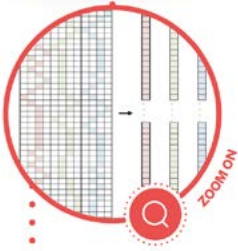
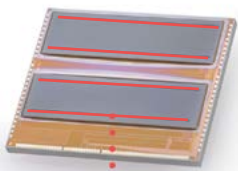
Based on LYNRED space proven MCT technology, LYNRED Linear PEGA detector, developed in the frame of TRISHNA mission offers the **highest level in terms of performance** (100% operability, high frame rate, large dynamic range...) and **versatility** (compatible design with staggered/butted configuration, external TDI, gain selection, integration time adjustment per readout line...).

## SPECIALLY DESIGNED FOR **EARTH OBSERVATION** IMAGING APPLICATIONS

-  **MULTISPECTRAL AND MULTI LINEAR ARRAY INFRARED DETECTOR**
-  **TAILORED ARCHITECTURE FOR PUSHBROOM AND WHISKBROOM INSTRUMENTS**
-  **VERSATILE AVAILABLE CONFIGURATIONS**
-  **FROM 600 PIXELS UP TO >3,000 PIXELS PER LINE**

SPACE





12 READOUT LINES  
(3 PER CHANNEL)  
OF 600 PIXELS  
AT ROIC LEVEL



VERSATILE  
ARCHITECTURE



100%  
OPERABILITY



SPACE PROVEN  
ARCHITECTURE



ON BOARD  
TRISHNA MISSION



Nominal configuration

On demand

### ARRAY FEATURES

Sensitive array	<ul style="list-style-type: none"> <li>4 channels [8 – 12<math>\mu</math>m]</li> <li>2 arrays (LWIR &amp; VLWIR)</li> </ul>	<ul style="list-style-type: none"> <li>MWIR/LWIR/VLWIR [3 – 14<math>\mu</math>m]</li> </ul>
Format & Pixel pitch	<ul style="list-style-type: none"> <li>9 readout lines of 600 pixels</li> <li>30 <math>\mu</math>m pixel pitch</li> </ul>	<ul style="list-style-type: none"> <li>1 to 12 readout lines (3 readout lines per channel)</li> </ul>
Operating temperature	<ul style="list-style-type: none"> <li>60K</li> </ul>	<ul style="list-style-type: none"> <li>[50K – 110K]</li> </ul>

### ROIC (READ-OUT INTEGRATED CIRCUIT)

ROIC architecture	<ul style="list-style-type: none"> <li>Snapshot integration type (IWR &amp; ITR mode)</li> <li>External TDI (3 readout lines per channel)</li> <li>1 analog output per readout line (Pseudo-differential mode, 2.6V maximum output voltage swing)</li> </ul>
ROIC main functionalities	<ul style="list-style-type: none"> <li>Pixel selection (1 among 4 for each column)</li> <li>Integration time adjustment per readout line</li> <li>Gain selection (1 among 7) per readout line</li> <li>Readout line deactivation for power saving</li> <li>Anti-blooming</li> </ul>
Operating characteristics	<ul style="list-style-type: none"> <li>Nominal Frame rate: 4.5 kHz @3MHz pixel rate (Available operation up to 8MHz pixel rate)</li> <li>Integration time: From 15 <math>\mu</math>s up to (Frame time – 15<math>\mu</math>s)</li> </ul>
Charge Handling Capacity	<ul style="list-style-type: none"> <li>7 gains available: 3, 4.3, 7.3, 10.8, 13.8, 15.1, 18.1 Me-</li> </ul>

### TYPICAL PERFORMANCES (NOMINAL CONFIGURATION)

Detection efficiency	<ul style="list-style-type: none"> <li>From 60% (VLWIR) up to 80% (MWIR)</li> </ul>
PRNU	<ul style="list-style-type: none"> <li>&lt; 3%</li> </ul>
Dark Current @60K	<ul style="list-style-type: none"> <li>&lt; 10 fA/<math>\mu</math>m<sup>2</sup> (LWIR array) &amp; &lt; 2500 fA/<math>\mu</math>m<sup>2</sup> (VLWIR array)</li> </ul>
MTF @Nyquist	<ul style="list-style-type: none"> <li>&gt; 0.6</li> </ul>
Non linearity	<ul style="list-style-type: none"> <li>&lt; 1% p-p from 5 to 90% of CHC</li> </ul>
ReadOut Noise @60K	<ul style="list-style-type: none"> <li>From 230e- (Gain 1) up to 660 e- (Gain 7)</li> </ul>
Operability	<ul style="list-style-type: none"> <li>100%</li> </ul>
Power Dissipation	<ul style="list-style-type: none"> <li>100mW @ 3 MHz for 9 activated readout line</li> <li>+ 8 mW/additional activated readout line</li> </ul>
Radiation hardness	<ul style="list-style-type: none"> <li>Maximum TID: up to 20 krad(Si)</li> <li>Maximum TNID: up to 6e10 protons/cm<sup>2</sup> @ 60MeV</li> <li>SEE robustness: SEL free / Low SEU &amp; SEFI rate</li> </ul>

Single module

Multi module  
(Design compatible with Butted and staggered configuration)

### DETECTOR CONFIGURATIONS \*

Passive configuration (without cryocooler)		
Active configuration (with high reliability cryocooler >60,000h)		

In collaboration with Absolut System

\*Detailed technical information available on request

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