



# Compact I<sup>2</sup>R Seeker

## Precision Weapon Guidance System

The Compact I<sup>2</sup>R Seeker product is a precision guidance solution giving even small calibre weapons a capability to detect and track targets using high performance uncooled infrared imagery and wide angle sightline steering and stabilisation in a very compact and affordable package.

In comparison with an equivalent conventional gimbal configuration, due to its unique design the Compact I<sup>2</sup>R Seeker can achieve an approximately 30% reduction in calibre size, whilst maintaining high performance.

The complexity and dynamics of modern land battlefield and short-range air defence scenarios places challenging demands on guidance systems for precision attack weapons, in particular for compact and low cost systems. The requirement for highly target-selective and accurate terminal guidance across a broad range of scenarios cannot be achieved by GPS/INS, commanded or designated line of sight systems alone.

Compact I<sup>2</sup>R Seeker builds upon Leonardo's world leading electro-optical seeking capabilities and has been developed to meet the increasing demand for affordable and compact high precision guided weapons.

The Seeker sensor with its high performance detection and tracking algorithms is designed for compatibility with future surface or air launched guided weapons and for prosecution of modern battlefield and short-range air defence threats.

The Compact Seeker is equipped with a number of sub-modes, enabling the seeker to work with customer developed detection and tracking algorithms or to retain Leonardo's high performance algorithms.

# MAIN FEATURES

- Compatible with Lock-on-before-launch (LOBL) or Lock-on-after-launch (LOAL) concepts of operation, either of which can be operated autonomously or via an operator
- Baseline body calibre of 76.2mm and a mass of approximately 1.5kg
- Body calibre tailorable to higher calibre systems to offer additional performance benefits
- Uncooled imaging IR sensing performance, building upon Leonardo's pedigree from proven in-service uncooled imaging IR based guided weapon systems
- Highly agile sightline steering and stabilisation providing compatibility with severe weapon base motion and maximum flexibility for acquisition, tracking and guidance techniques

The Compact I<sup>2</sup>R Seeker employs a novel “micro-stabilised” configuration to achieve the combination of physical compactness and high performance sightline steering and stabilisation.

The I<sup>2</sup>R camera performance is maintained under dynamic missile flight environments. To achieve this the seekers’ uncooled focal plane array IR detector is steered and stabilised in the lateral X-Y body axes behind a fixed multi-element lens assembly which presents an over-sized image.

The uncooled long-wave infrared detector employed in the current Compact Seeker is a high performance amorphous-silicon device with 480 x 640 pixel count. There is a low risk path to utilise the equivalent 288 x 384 pixel count device where this cost versus performance trade-off is beneficial.

The Company has pioneered the adoption of commercial off-the-shelf based uncooled I<sup>2</sup>R technology for guided weapon seekers, having designed and built the first such production seeker in the UK. Compact Seeker is founded on over 10 years of pedigree and intimate understanding in this field.

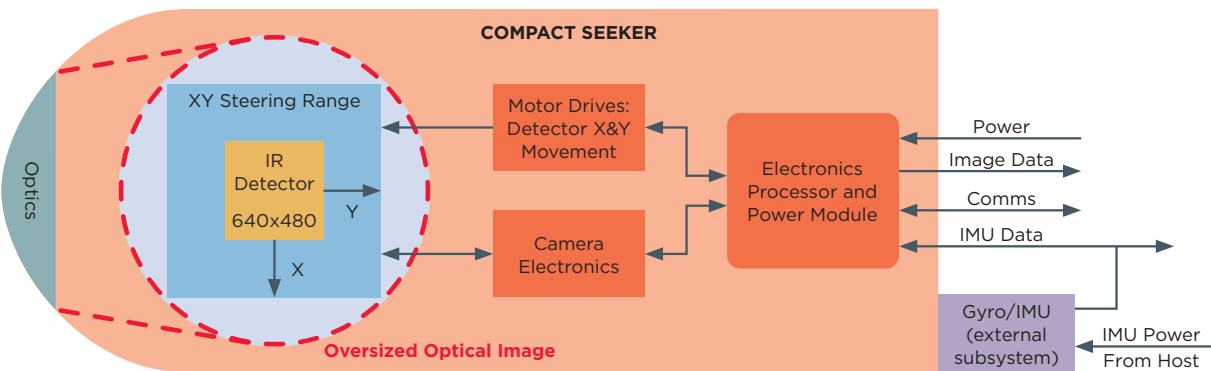
The Compact I<sup>2</sup>R Seeker interfaces with gyro and accelerometer inputs from the weapon navigational subsystem which needs to be rigidly mounted to the rear interface of the seeker.

The Company is able to provide a bespoke solution to complement the seeker hardware with simulation & modelling, seeker/weapon integration, target acquisition & tracking algorithms, trials planning and performance assessment.

## Technical Specification

<b>Baseline 76.2mm calibre variant</b>	
<b>Spectral response</b>	8-12um long-wave infrared
<b>Baseline variant 480 x 640 array format</b>	
<b>High resolution field of view</b>	
<b>Field of regard</b>	> 40° (full-angle)
<b>Sightline Slew</b>	> 100rad/s <sup>2</sup>
<b>Acceleration</b>	
<b>Angular reporting accuracy</b>	< 2mrad
<b>Input voltage range</b>	28V DC nominal
<b>Power dissipation</b>	< 50W (mean)
<b>Dimensions</b>	76.2mm diameter x <230mm length (excluding external connectors and IMU)
<b>Mass</b>	< 1.5kg
<b>Operating temperature</b>	Proven against -40°C to +71°C
<b>Storage temperature</b>	-50°C to +85°C
<b>Latax</b>	Proven against sustained 30g
<b>Vibration</b>	Proven against typical >4g ms spectrum

→ Further technical information available upon request.



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