



**THERMAL
SOLUTIONS
FOR UNMANNED
SYSTEMS UxS**



OVERVIEW OF THE MARKET

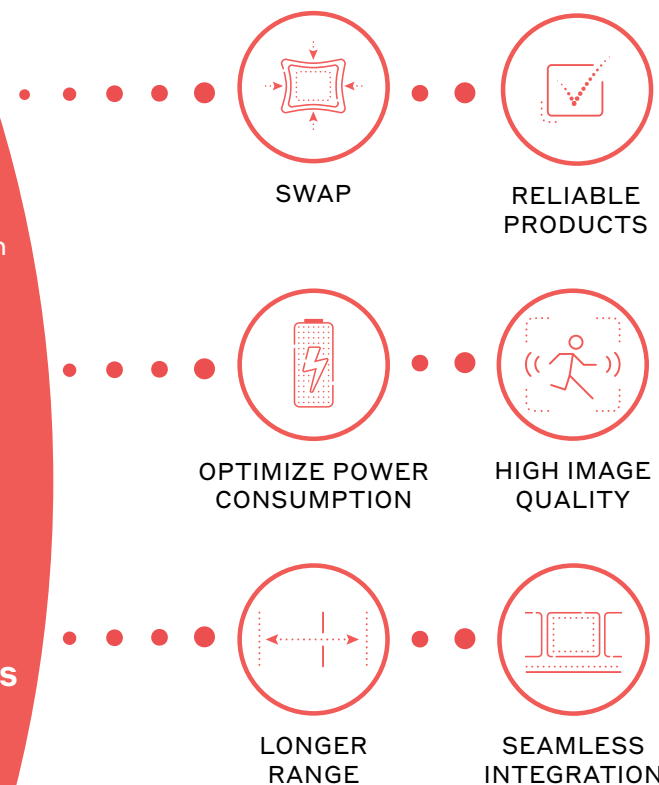
SEGMENTS & APPLICATIONS

Growth is surging in the unmanned vehicle market, driven by a wide and varied range of applications:

- In the defense industry, unmanned systems can lead reconnaissance, surveillance and intelligence operations, and even be used for attack missions with their superior precision while minimizing the risks for infantry troops.
- In the civilian sector, they can bring effective performance to a variety of applications at a lower cost compared to traditional methods.

Thermal imaging represents a technological breakthrough for seeing, detecting and targeting, as well as locating and measuring. Thermal imaging detectors offering augmented performance can be incorporated into UxS solutions for improved accessibility and effectiveness, while delivering reliable and accurate detection capabilities.

Drones play a vital role in critical missions, supporting surveillance, reconnaissance, targeting, and logistics. Thermal imaging isn't just an enhancement, it's essential for success in challenging environments.



Commercial

- Surveillance and emergency service missions (firefighting, search and rescue, perimeter and industrial site surveillance, wildlife observation, public safety, etc.)
- Linear infrastructure inspections (solar farms, powerlines, transformers, engineering structures, etc.)
- Temperature measurements (industrial maintenance, roofs, energy surveys, etc.)
- Precision agriculture (soil analysis, moisture control, monitoring of crops and grazing herds, etc.)
- Gas detection (OGI)

Defense

- Surveillance and intelligence missions
- Combat support
- Geopositioning, GNSS-denied
- UGV for heavy lift
- Medical Evacuation (Med Evac)
- Loitering munition



LYNRED THERMAL IMAGING MISSIONS

Provide the market with a range of cooled and uncooled products to meet the requirements of these new platforms.

Address the need to facilitate integration through turnkey solutions, and standardized mechanical and electrical interfaces using the PlugUp™ platform.

Ramp up systems development to shorten the time to market.

LYNRED infrared solutions bring your thermal systems to life with the introduction of two new solutions:

- Cooled detectors on the PlugUp™ platform
- Advanced Thermal Imager (ATI) modules

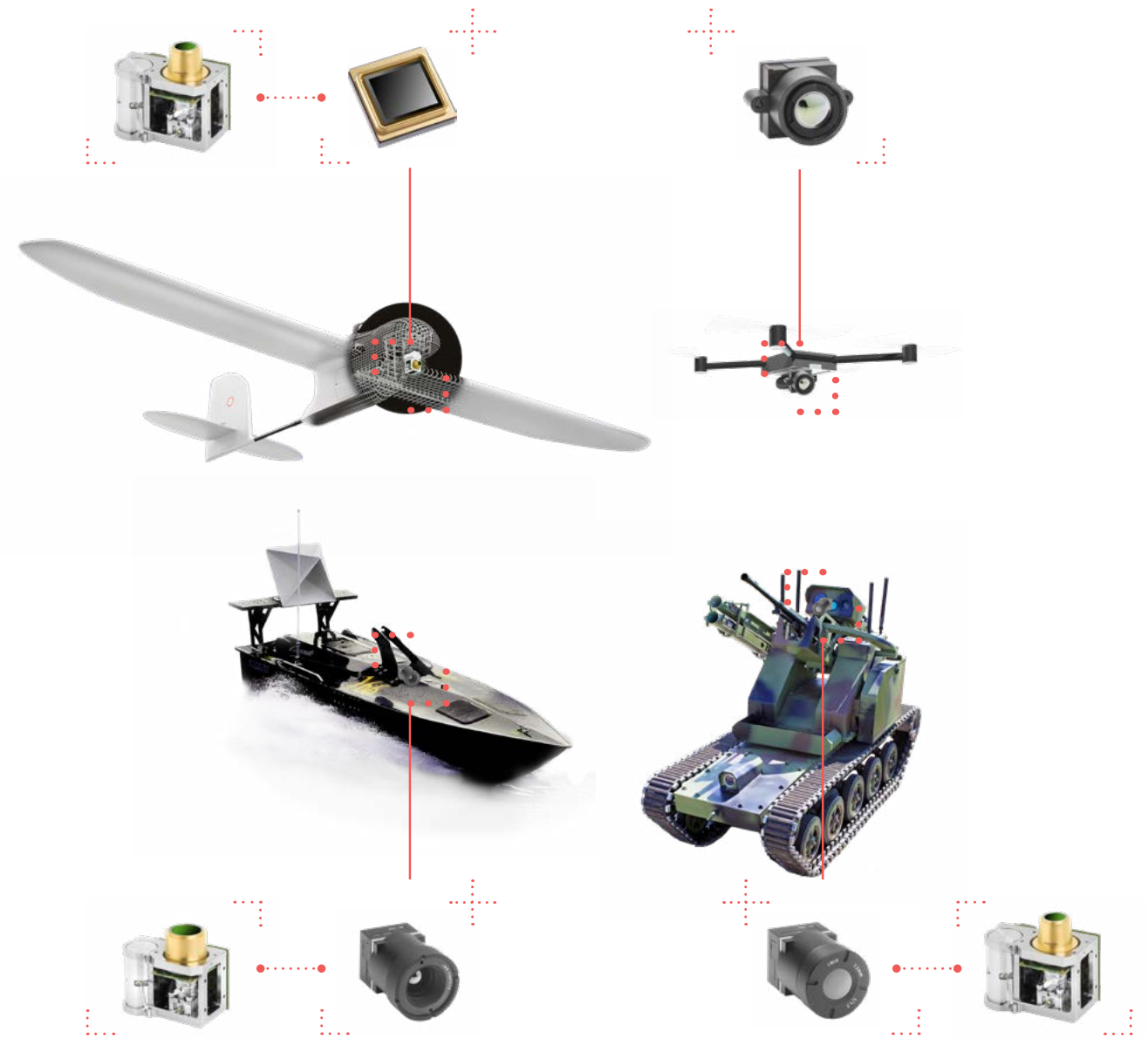
LYNRED: the partner you can rely on

- **Independent supplier** located in Europe
- **Over 30 years' experience in producing high-performance infrared detectors** (high sensitivity, high frame rate, high uniformity, etc.)
- **Extensive range of cooled and uncooled thermal detectors** covering the entire infrared spectrum (from SWIR to VLWIR)
- **A dedicated customer care team** focused on providing assistance and technical support. We take a proactive approach to responding to your questions and needs. Our engineers possess the skills to work efficiently with your people, from R&D through to engineering. Our customer care services are fully integrated into our product lineup, with personalized support available to all our customers. Our mission is to help you boost your technical capabilities and inject even greater efficiency into your infrared solution development processes, while shortening the time to market.



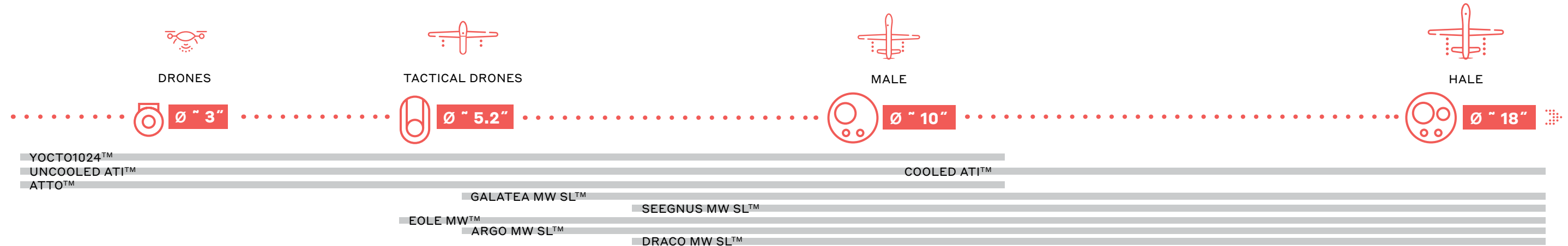
3 million detectors
delivered since 2016

LYNRED infrared detectors
bring your thermal systems to life



MAIN LYNRED PRODUCT RANGE

Check out all
our unmanned
products



ATI Thermal Imaging Cameras										RECOGNITION* DISTANCE FOR HUMAN MEASURING 1.8X0.5m		
	PRODUCT		FORMAT & PIXEL PITCH	SPECTRAL BAND	TYPICAL NETD	POWER CONSUMPTION	WEIGHT	SIZE	EMBEDDED ALGORITHMS			
UNCOOLED		ATI320™	QVGA, 320 x 480, 12µm	8 - 14µm	≤ 50mK (f/1, 300K, 60Hz)	< 400mW	7g	16 x 16 x 17.9mm	Included	7.8 mm Lens	165m	
		ATI640™	VGA, 640 x 480, 12µm	8 - 14µm	≤ 24mK (f/1, 300K, 60Hz, de-noising)	< 1W	15g (core)	24.6 x 24.6 x 19mm (core)	Included	25 mm Lens	540m	
		ATTO640D-04™	VGA, 640 x 480, 12µm	LWIR	35mK (f/1, 300K, 30Hz)	< 150mW @ 60Hz (analog output mode) < 140mW @ 30Hz (analog output mode) < 320mW @ 60Hz (digital output mode)	< 3g	17.3 x 17.3 x 4.9mm³ (Wafer-level packaging)	N/A	35 mm lens	866m	
		ATTO1024-02™	XGA, 1024 x 768, 12µm	8 - 14µm	< 50mK (f/1, 300K, 30Hz)	≤ 470mW @ 50Hz (2 outputs) ≤ 550mW @ 100Hz (4 outputs)	< 10g	29.5 x 29.5 x 5.6mm³	N/A	70 mm Lens	1670m	
		ATTO1280-02™	SXGA, 1280 x 1024, 12µm	8 - 14µm	< 50mK (f/1, 300K, 30Hz)	≤ 470mW @ 30Hz (2 outputs) ≤ 550mW @ 60Hz (4 outputs)	< 10g	29.5 x 29.5 x 5.6mm³	N/A	88 mm Lens	2090m	
		YOCTO1024™	XGA, 1024 x 768, 8.5µm	8 - 14µm	50mK (f/1, 300K, 30Hz)	< 260mW	< 4g	18 x 18 x 4.85mm³ (Ceramic)	N/A	50 mm Lens	2791m	
COOLED		EOLE MW™		VGA, 640 x 512, 15µm	3.2 - 3.55µm	20mK (300K, 50% WF, F/1.3, 25Hz)	< 3.4Wdc	360g	56 x 77.5 x 72mm	Available with ATI EOLE™	N/A	N/A
		GALATEA MW SL™		VGA, 640 x 512, 15µm	3.6 - 4.2µm	42mK (300K, 50% WF, 25Hz)	< 3.0Wdc	360g	56 x 77.5 x 72mm	Available with ATI GALATEA SL™	300 mm Lens	3740m
		SEEGNUS MW SL™		SXGA, 1280 x 1024, 7.5µm	3.6 - 4.2µm	40mK (300K, 50% WF, 25Hz)	< 3.7Wdc	360g	56 x 77.5 x 72mm	N/A	300 mm Lens	5060m
		ARGO MW SL™		VGA, 640 x 512, 15µm	3.7 - 4.8µm	< 33mK (300K, 50% WF, 25Hz)	< 3.8Wdc	360g	56 x 77.5 x 72mm	Available with ATI ARGO MW SL™	300 mm Lens	4100m
		DRACO MW SL™		SXGA, 1280 x 1024, 7.5µm	3.7 - 4.8µm	35mK (300K, 50% WF, f/3, 25Hz)	< 4.7Wdc	360g	56 x 77.5 x 72mm	N/A	300 mm Lens	6000m

*Range for Johnson's criteria, target delta T = 2K, Perfect atmospheric and optics transmission, theoretical square pixel



40^{years}

of experience

80%

exports

1,000

Qualified
workforce

15%

revenue
invested in R&D

***LYNRED, global infrared industry
leader offering a very large
products portfolio.***

- LYNRED, an european leader
in sovereign critical technologies
at the heart of strategic rearmament
- LYNRED, a dependable partner of choice
creating infrared solutions for a safer world

**LYNRED HEADQUARTERS
DEVELOPMENT & PRODUCTION CENTER**

Actipole - CS 10021
364, route de Valence
38113 Veurey-Voroize, France

Phone +33 (0)4 76 28 77 00
info@lynred.com



www.lynred.com

LYNRED USA

373 US Highway 46W
Fairfield, NJ 07004, USA
Phone +1 973.882.0211
info@lynred-usa.com



www.lynred-usa.com

**NIT (NEW IMAGING TECHNOLOGIES)
PREMIUM SWIR BY LYNRED**

1 impasse de la Noisette
91370 Verrières-le-Buisson, France
Phone +33 (0)1 64 47 88 58
info@new-imaging-technologies.com



www.new-imaging-technologies.com