

■ PRODUCT LINE

FX-GROUND

AI-enabled electro-optical camera systems. Cooled and uncooled thermal PTZ and day/night cameras — one software stack.



35+ km

Vehicle detection, FX-Hawk L

Edge AI

AI detection and tracking, no cloud

6 variants

Three families, one stack



COOLED MWIR · PTZ

FX-Hawk Series

FX-HAWK · FX-HAWK M · FX-HAWK L

Long-range cooled thermal PTZ for defence, border and naval deployment.



UNCOOLED LWIR · PTZ

FX-Sentinel Series

FX-SENTINEL · FX-SENTINEL L

Uncooled thermal PTZ for critical infrastructure, industrial sites and urban perimeters.



DAY/NIGHT CMOS

FX-Bullet

COMPACT

3 MP global-shutter day/night camera with a 10× motorised zoom and integrated IR illumination, for urban perimeters.

PRODUCT LINE PHILOSOPHY

FX-Ground is a unified family of AI-enabled electro-optical camera systems for defence, critical infrastructure, public safety and industrial security. Six variants, one stack — and **the stack is ours**: AI models, control software and system integration, all built in-house. **No third-party analytics licence, no black boxes**. New capability arrives as a software update, not a new procurement.



Detection, classification, tracking and fusion run on the camera itself — at full frame rate, with no cloud dependency.

Detect. Classify. Track.

AI at the edge detects and classifies people and vehicles in real time on thermal and fused video, at full frame rate. Multi-target tracking holds persistent IDs through occlusion; PTZ auto-follow locks onto an object hands-free at any zoom.

Fusion — evidence, not pixels

A day camera sees a human shape. The thermal channel sees no heat where a body should be. Neither sensor reaches that conclusion alone — it lives in the disagreement between them. We fuse evidence, not pictures: independent observations, weighted by conditions, resolved into a single assessment with a confidence value.

Site-specific models

Every site has its own terrain, clutter and thermal signatures. We tune models per deployment at commissioning and refine them as field data accumulates. FX-Sim, our simulation engine, generates physically modelled thermal and EO scenes for conditions that are hard to capture in the field. The camera gets better at your site.

FX-Ctrl — the operator software

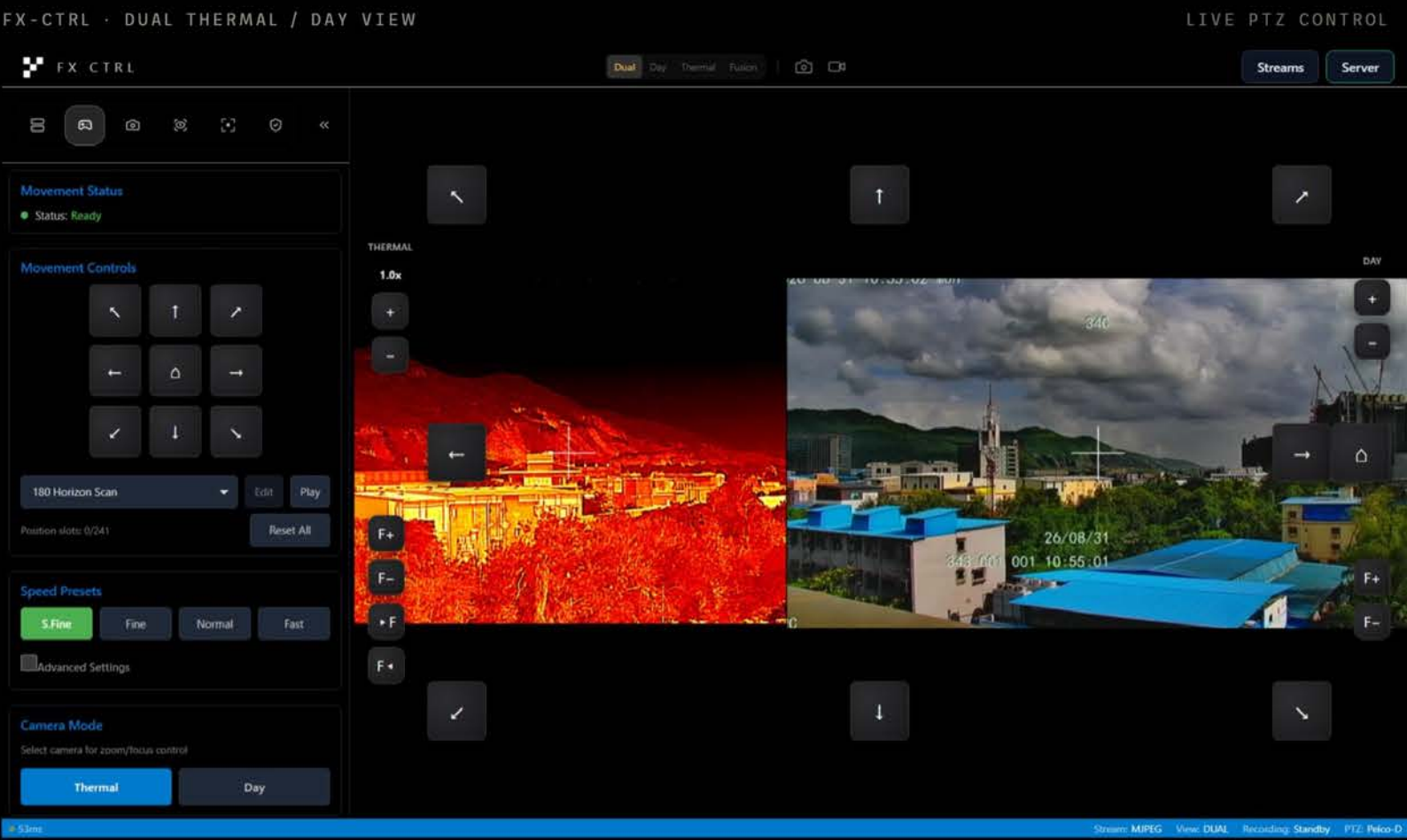
A browser-based operator interface for single-feed and multi-feed work: detection zones and tripwires, event logging with snapshot evidence, ONVIF/RTSP into existing NVR and VMS, full PTZ with click-to-track.

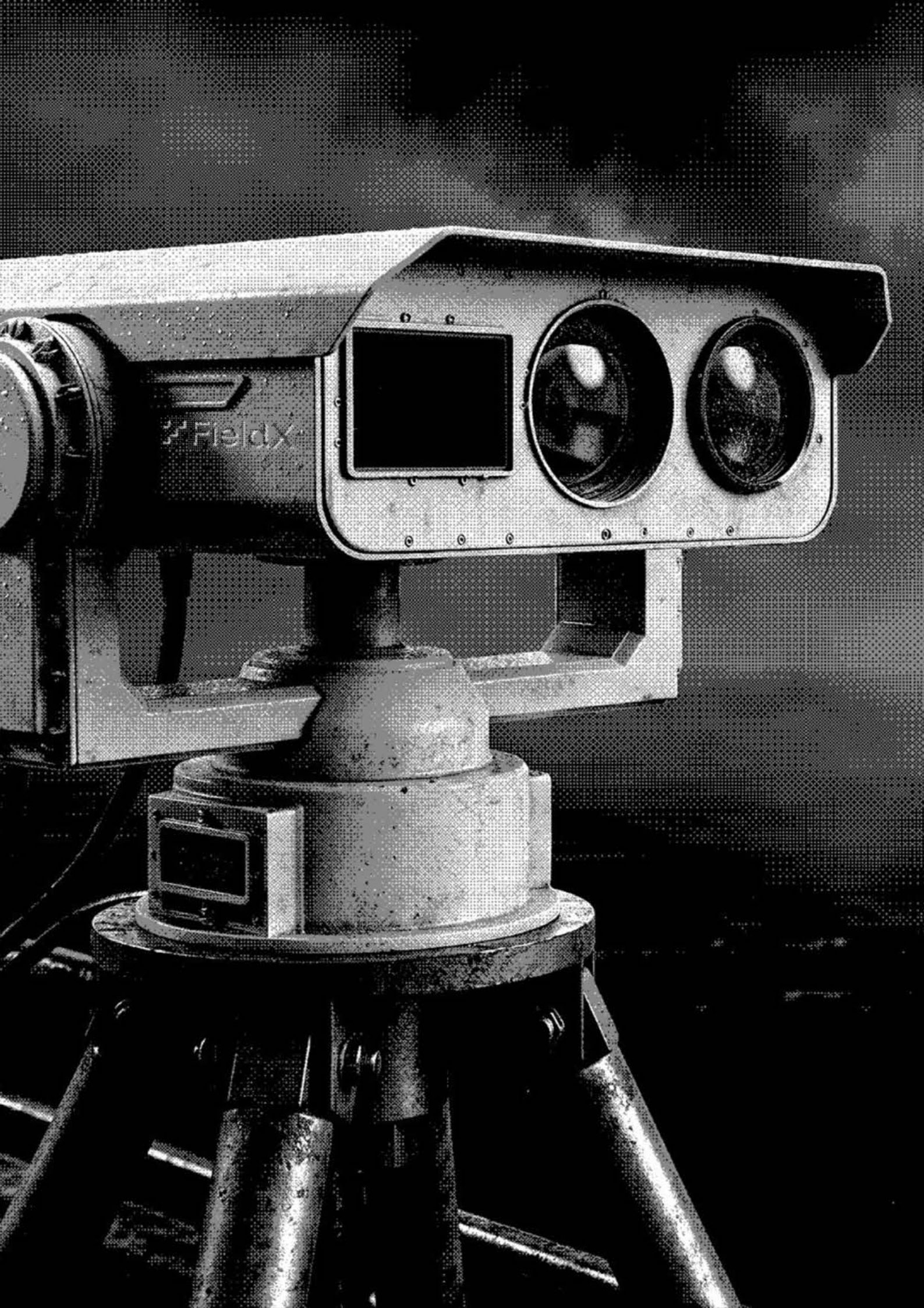
Autonomous at the edge

All inference runs on board. A camera on a disconnected network keeps detecting, tracking and alerting. Imagery never has to leave the site — a data-protection property before it is a latency one. The operator always keeps control.

Built to be networked

Everything above makes one camera intelligent. The architecture is designed to make several of them intelligent together — nodes corroborating a detection, a track keeping its identity as it passes between them. Because the stack is ours end to end, that arrives as software: hardware deployed today grows tomorrow.





■ DESIGN PRINCIPLES

Vertically integrated

Every FX-Ground variant ships with its complete software stack — control server, operator UI, ONVIF stack and AI models — plus integrated MANET/RF communication modules. No dependency on third-party software or communication stacks.

AI-native by default

Every variant ships with on-board AI compute and a proprietary AI stack. Detection, classification, tracking and fusion are standard, not options.

Fibre-optic video backbone

Video and control data run over fibre-optic SFP/SFP+ interfaces, giving long-distance, EMI-immune and tap-resistant links between camera and command post.

Mesh communications

The cooled FX-Hawk variants carry MANET/RF software-defined radio modules for field deployments. Multiple camera nodes can form **self-healing mesh networks for distributed coverage**.

Sensor-network ready

The cooled FX-Hawk variants are designed for integration into multi-sensor networks, accepting cues from external sensors for counter-drone and maritime operations.

Man-portable by design

The mechanical design is broken into modular, man-portable components. A small team can carry and assemble a system in the field without heavy equipment or vehicles.

FX-Ground

Product line overview

RANGES PER JOHNSON CRITERIA (DRI); DEPENDENT ON OPTICS, VISIBILITY AND OBJECT CONTRAST

	COOLED · FX-HAWK SERIES			UNCOOLED · FX-SENTINEL SERIES		DAY/NIGHT
	FX-Hawk	FX-Hawk M	FX-Hawk L	FX-Sentinel	FX-Sentinel L	FX-Bullet*
TIER	Flagship	Flagship, naval	Flagship, naval	Standard	Professional	Entry
SENSOR CLASS	Cooled MWIR	Cooled MWIR	Cooled MWIR	Uncooled LWIR	Uncooled LWIR	Day/night CMOS
RESOLUTION (DAY)	1920 × 1080	1920 × 1080	1920 × 1080	1920 × 1080	1920 × 1080	3 MP, 2048 × 1536
ZOOM (DAY)	55×	72×	108×	30×	30×	10×, 5–50 mm
RESOLUTION (THERMAL)	640 × 512	640 × 512	1280 × 1024	640 × 512	640 × 512	—
THERMAL LENS	25–275 mm	25–660 mm	25–1350 mm	15–100 mm	25–225 mm	—
NETD	< 20 mK	< 15 mK	< 15 mK	< 35 mK	< 35 mK	—
IR ILLUMINATION	—	—	—	—	—	Integrated [range TBD]
DETECTION (VEHICLE)	20–25 km	25–30 km	35+ km	6–8 km	12–17 km	—
DETECTION (PERSON)	10–15 km	15–20 km	20+ km	3–5 km	6–8 km	690 m
RECOGNITION (PERSON)	4–6 km	6–8 km	8–10 km	1–2 km	2–3 km	140 m
IDENTIFICATION (PERSON)	2–3 km	3–5 km	5–7 km	0.5–1 km	1–1.5 km	70 m
LASER RANGEFINDER	10–15 km	20–25 km	35+ km	—	Optional, 10 km	—
STABILISATION	Optional	3-axis gyro	3-axis gyro	—	—	—
PTZ TILT	–40° to +85°	–40° to +85°	–40° to +85°	–30° to +85°	–40° to +85°	Fixed, motorised zoom
VIDEO OUTPUT	Fibre (SFP+), GigE	Fibre (SFP+), GigE	Fibre (SFP+), GigE	Fibre (SFP), GigE	Fibre (SFP+), GigE	Ethernet 10/100
RF COMMS	MANET/RF, std	MANET/RF, std	MANET/RF, std	MANET/RF, opt	MANET/RF, opt	—
DEPLOYMENT	Modular, man-portable	Deck-mount	Deck-mount	Single-carry	Modular, man-portable	Wall or pole mount
ENVIRONMENTAL	IP67, MIL-STD-810H	IP67, 810H, salt-fog	IP67, 810H, salt-fog	IP66	IP67	IP67
WEIGHT	< 20 kg	< 35 kg	< 35 kg	< 7 kg	< 18 kg	[TBD]
PRIMARY USE	Defence, border	Navy, coast guard	Naval, long range	Industry, urban	Critical infrastructure	Urban perimeter

* FX-Bullet person ranges are calculated at 50 mm per IEC 62676-4 (DORI), a camera-image standard; thermal variants are rated per Johnson criteria (DRI). The two methods are not directly comparable.



The sealed head carries the thermal and day optics together with an integrated laser rangefinder.

■ COOLED MWIR · PTZ

FX-Hawk Series

Cooled mid-wave infrared gives the contrast and sensitivity needed at long range and over water. **Three variants share one camera architecture and one software stack** — from man-portable land systems to gyro-stabilised naval installations.

FX-Hawk

LAND FLAGSHIP

Vehicle detection	20–25 km
Person detection	10–15 km
Person recognition	4–6 km
Person identification	2–3 km

Designed for forward deployment by border observation posts and quick-reaction teams. The whole system breaks down into **man-portable modules** for field assembly without vehicle support.

FX-Hawk M

MARINISED NAVAL

Vehicle detection	25–30 km
Person detection	15–20 km
Person recognition	6–8 km
Person identification	3–5 km

Shipboard, coastal and offshore. A longer 25–660 mm lens, a **20–25 km laser rangefinder** and **3-axis gyro stabilisation** that holds the image steady in sea state 3–4.

FX-Hawk L

ULTRA-LONG-RANGE NAVAL

Vehicle detection	35+ km
Person detection	20+ km
Person identification	5–7 km
Surface vessel	> 40 km

The highest-resolution sensor in the line — 1280 × 1024 cooled MWIR with a 25–1350 mm continuous zoom — for exclusive economic zone (EEZ) monitoring and maritime domain awareness.

SPECIFICATIONS

	FX-Hawk	FX-Hawk M	FX-Hawk L
DETECTOR	Cooled MWIR, 3–5 μm	Cooled MWIR, 3–5 μm	Cooled MWIR, 3–5 μm
RESOLUTION (THERMAL)	640 × 512	640 × 512	1280 × 1024
THERMAL LENS	25–275 mm	25–660 mm	25–1350 mm
NETD	< 20 mK	< 15 mK	< 15 mK
DAY CAMERA	1920 × 1080, 55×	1920 × 1080, 72×	1920 × 1080, 108×
LASER RANGEFINDER	Eye-safe 1M, 10–15 km	Eye-safe 1M, 20–25 km	Eye-safe 1M, 35+ km
STABILISATION	Optional	3-axis gyro	3-axis gyro
PTZ	360° continuous, –40° to +85°	360° continuous, –40° to +85°	360° continuous, –40° to +85°
AI STACK	Detection, classification, tracking, fusion	Detection, classification, tracking, fusion	Detection, classification, tracking, fusion
VIDEO OUTPUT	Fibre (SFP+), GigE, H.264/H.265, STANAG 4609	Fibre (SFP+), GigE, H.264/H.265, STANAG 4609	Fibre (SFP+), GigE, H.264/H.265, STANAG 4609
RF COMMS	MANET/SDR, encrypted mesh	MANET/SDR, shipboard mesh, shore link	MANET/SDR, shipboard mesh, shore link
SENSOR NETWORK	Cue ingestion, slew-to-cue	Cue ingestion, slew-to-cue	Cue ingestion, slew-to-cue
MARINE	—	Sea state 3–4, salt-fog, wiper/washer	Sea state 3–4, salt-fog, wiper/washer
MOUNTING	Modular, man-portable	Deck-mount, STANAG pedestal	Deck-mount, STANAG pedestal
POWER	24 V DC, < 80 W	24 V DC / 110 V AC, < 120 W	24 V DC / 110 V AC, < 120 W
ENVIRONMENTAL	IP67, MIL-STD-810H, –40 to +55 °C	IP67, MIL-STD-810H, –40 to +55 °C	IP67, MIL-STD-810H, –40 to +55 °C
WEIGHT	< 20 kg	< 35 kg	< 35 kg

TARGET SEGMENTS

Armed forces (border surveillance, air defence sites), high-value asset protection, forward observation posts, navy and coast guard, coastal surveillance, port and harbour security, offshore platforms.



■ UNCOOLED LWIR · PTZ

FX-Sentinel Series

Uncooled thermal PTZ cameras with the full AI stack. **No cooler, instant-on, low maintenance.** Two variants share one platform and one software stack — from a compact single-carry unit to the long-range FX-Sentinel L.

FX-Sentinel

COMPACT · SINGLE-CARRY

Vehicle detection	6–8 km
Person detection	3–5 km
Person recognition	1–2 km
Person identification	0.5–1 km

Compact and lightweight. At **under 7 kg** it is a single-carry unit that one person can transport and install without tools or vehicle support.

FX-Sentinel L

LONG RANGE · 225 MM

Vehicle detection	12–17 km
Person detection	6–8 km
Person recognition	2–3 km
Person identification	1–1.5 km

The volume product of the line. A **25–225 mm continuous zoom** extends vehicle detection to 12–17 km and bridges the gap to the cooled FX-Hawk series at a fraction of the cost.

SPECIFICATIONS

	FX-Sentinel	FX-Sentinel L
DETECTOR	Uncooled LWIR, 8–14 μm	Uncooled LWIR, 8–14 μm
RESOLUTION (THERMAL)	640 × 512	640 × 512
THERMAL LENS	15–100 mm	25–225 mm continuous zoom
NETD	< 35 mK typical	< 35 mK typical
DAY CAMERA	1920 × 1080, 30× zoom	1920 × 1080 low-light, 30× zoom
LASER RANGEFINDER	—	Optional, 10 km, eye-safe
PTZ	360° pan, –30° to +85° tilt	360° continuous pan, –40° to +85° tilt
AI STACK	Detection, classification, tracking, fusion	Detection, classification, tracking, fusion
SOFTWARE	Control server, operator UI, ONVIF, RTSP	Control server, operator UI, ONVIF, RTSP
VIDEO OUTPUT	Fibre (SFP), GigE, H.264/H.265	Fibre (SFP+), GigE, H.264/H.265
RF COMMS	MANET/SDR (optional)	MANET/SDR (optional)
POWER	24 V DC or PoE+, < 35 W	24 V DC, < 50 W typical
ENVIRONMENTAL	IP66, –20 °C to +60 °C	IP67, –30 °C to +60 °C
DEPLOYMENT	Single-carry, one-person install	Man-portable modules, field-assemblable
WEIGHT	< 7 kg	< 18 kg total system

TARGET SEGMENTS

Airports, seaports, power plants, chemical industry plants, oil refineries, military bases (perimeter), high-security government installations, smart-city projects, industrial sites, warehouse and logistics complexes.



■ DAY/NIGHT · 3 MP GLOBAL SHUTTER

FX-Bullet

COMPACT · MOTORISED ZOOM



Person detection	690 m
Person observation	280 m
Person recognition	140 m
Person identification	70 m

The FX-Bullet is the compact entry point to the FX-Ground line — a 3 MP day/night camera built around a **global-shutter sensor with a 10× motorised zoom**. Global shutter captures fast-moving objects without motion blur, and the ultra-low-light sensor keeps colour down to 0.001 lux; integrated IR illumination covers full darkness. On-board analytics flag area intrusions, line crossings and loitering, and ONVIF integration brings it into FX-Ctrl, so a site can mix Bullet, Sentinel and Hawk cameras under one operator interface.

TARGET SEGMENTS

Smart-city projects, urban perimeter protection, industrial sites, chemical industry plants, warehouse and logistics complexes, public-sector facilities.

RANGES CALCULATED AT 50 MM PER IEC 62676-4 (DORI)

SPECIFICATIONS

FX-Bullet

SENSOR	1/3.1" global-shutter CMOS, 3 MP (2048 × 1536)
LENS	Motorised 5–50 mm (10× optical, 16× digital), F1.8–F2.5, autofocus
FIELD OF VIEW	Horizontal 59°–7°
DAY/NIGHT	Auto IR-cut filter; auto, manual, scheduled or alarm-triggered switching
IR ILLUMINATION	Integrated IR illuminators
MIN. ILLUMINATION	Colour 0.001 lux, B/W 0.0005 lux (F1.8)
IMAGE	WDR, 3D noise reduction, defog, electronic image stabilisation
ANALYTICS	Area intrusion, line crossing, loitering, fast movement, audio anomaly
VIDEO	H.265/H.264, triple stream, up to 60 fps at 2048 × 1536
INTEGRATION	ONVIF Profile S/G, RTSP; VISCA / Pelco control; FX-Ctrl
NETWORK	Ethernet 10/100
STORAGE / I/O	microSD up to 256 GB; NAS (NFS, SMB/CIFS)
POWER	12 V DC
ENVIRONMENTAL	IP67 housing, –30 °C to +60 °C
SIZE / WEIGHT	< 1 Kg

As the age of autonomy reshapes defence, FieldX develops autonomous defence technologies.

FieldX is a **robotics lab** developing intelligent systems that turn existing sensors into coordinated autonomous platforms.

Our AI multiplies the intelligence of existing sensor systems across **airspace security**, **ground surveillance** and **soldier systems**. Our AI models and software are designed in-house.

Our goal is to turn fragmented sensor networks into **one high-speed, coordinated platform** for demanding environments worldwide.

ABOUT OUR FOUNDER

Kaustuv De Biswas
Founder and CEO, FieldX

Kaustuv De Biswas **has spent two decades building at the intersection of artificial intelligence, robotics and computational design** — across research, enterprise software and now defence. The throughline has always been the same: embedding intelligence into things, and shipping it into the real world. He founded FieldX to build the hard technology most players import, and to put it where it matters most — defence, critical infrastructure and industry.

An **MIT-trained engineer** and **TED Senior Fellow**, Kaustuv previously **built and sold a Silicon Valley venture, VibrantData, to Rakuten in 2016**. He pairs frontier research depth with a builder's bias for shipping — and still keeps a bench, because at FieldX the founder builds.

FOUNDER HIGHLIGHTS

20 years AI · ROBOTICS · COMPUTATIONAL DESIGN	MIT TRAINED ENGINEER
TED SENIOR FELLOW	Exit 2016 VIBRANTDATA, ACQUIRED BY RAKUTEN

ISO 9001:2015 certified quality management.



CERTIFIED SCOPE

“Design and development of thermal imaging cameras, ground surveillance systems and counter-drone systems with embedded AI software.”

STANDARD	ISO 9001:2015
CERTIFICATE NO.	AMER501783
ISSUED	July 2026
AUDITS	Annual surveillance
RECERTIFICATION	July 2029
CERTIFIED BY	Americo Quality Standards Registech (UAF-accredited)

■ CONTACT

Talk to us about your site.

Evaluations, site surveys and demonstrations are arranged through FieldX or our regional partners.

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