



G7X
DEFENCE TECHNOLOGY SOLUTIONS

RAVEN

COMPACT

INTEGRATED MULTI-SENSOR AND RADAR SYSTEM

A compact, high-performance node that combines observation and detection in one mount: co-aligned day/night and thermal cameras on a stabilised pan-tilt platform, working with a radar that cues them. Built for continuous operation.

PRODUCT DATASHEET

EDITION 01 · 2026



RADAR

DETECT AND TRACK THE DRONE

ECHODYNE 4D MESA RADAR

The radar automatically detects and tracks aerial targets, providing their position, altitude, direction and speed to RAVEN C2.

It provides a 30 km instrumented range, while actual drone tracking range depends on the size and radar signature of the target.

-40 TO +65 °C • IP67 • MIL-STD-810H
10 GBE DATA • 1 GBE TRACKS • 21.5-33 VDC

MISSION SETS • SWITCHED IN SOFTWARE

COUNTER-UAS

COUNTER-UAS 2

GROUND SURVEILLANCE

COASTAL SURVEILLANCE

AIRSPACE MANAGEMENT

ON-THE-MOVE

RADAR SPECIFICATIONS

Size
42.5 × 33 × 18 cm
16.7 × 13 × 7 IN

Field of view
130 × 90°
AZ × EL

Weight
17.8 kg
39.2 LB

Track accuracy
< 0.5°
AZ AND EL

Power
< 250 W
+21.5 TO +33 VDC

Update rate
10 Hz
TRACK OUTPUT

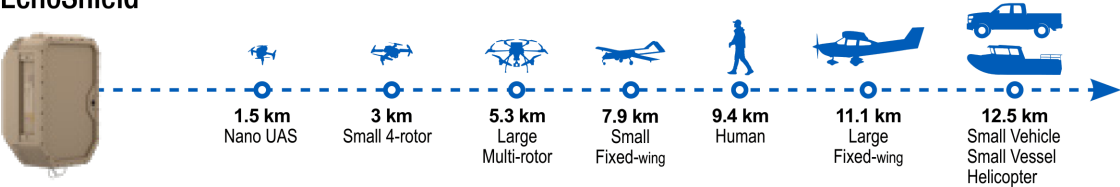
Frequency
15.4 – 16.6 GHz
KU-BAND

Max tracks
> 1,000
OBJECTS OF INTEREST

ECHODYNE PUBLISHED MEAN TRACKING RANGES • INSTRUMENTED RANGE 30 KM, MISSION DEFINED • GROUP 1 -20 TO -10 DBSM • GROUP 2 -10 TO -3 DBSM • GROUP 3 -3 TO 5 DBSM

MEAN TRACKING RANGE BY TARGET

EchoShield



RAVEN C2

ONE OPERATING PICTURE · ONE OPERATOR INTERFACE

RAVEN C2 brings all connected sensors and response options into one operating picture.

The operator can see the threat, verify it, select the authorised response and control the system from one interface.

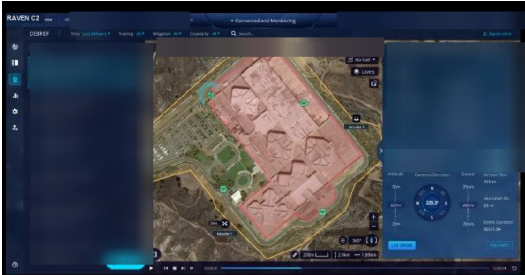
Multiple RAVEN systems can be connected to the same command-and-control environment for centralised monitoring and control.

OPERATING PICTURE	Single integrated view
SENSOR FUSION	Real-time
MULTI-SITE	Centralised monitoring and control
RESPONSE	Operator authorised
RECORDING	Mission recording and replay
INTEGRATION	REST API and WebSocket

OPTIMISATION



DEBRIEF



ANALYTICS



HEATMAP



ONE MOUNT, ONE SEQUENCE

FROM FIRST DETECTION TO A GRID REFERENCE

RAVEN Compact both finds a target and proves what it is. Radar and passive RF search continuously; the cameras are pointed by what they find, not by an operator hunting the sky.

Everything on the mast is combined by the video processing unit into one device on one Ethernet connection. A command station sees one system, not eight. The node stands alone on its tripod or joins other RAVEN systems in a single operating picture.

RADAR SECTOR

130 × 90°

RF DETECTION

3km

ALIGNMENT

< 0.05°

TEMPERATURE

−32 to +55°C

HUMIDITY

95%

INGRESS

IP67

01

DETECT

The radar tracks aerial and ground targets, reporting position, altitude, direction and speed. In parallel the RF unit reads the link between a drone and its operator, passively, out to three kilometres.

02

CUE

The track is handed to the pan-tilt platform, which slews the co-aligned cameras onto the target. The optics are already looking before anyone is asked to decide.

03

IDENTIFY

Both channels stream simultaneously: the cooled thermal channel through darkness and obscurants, the day/night channel for detail at 83× optical zoom.

04

FIX

The rangefinder measures the distance and the true-heading unit supplies true north. Bearing plus range becomes a grid reference the rest of the estate can act on.

05

HOLD

The processing unit's hardware tracker holds the target through stabilised, roll-corrected video, automatically or on remote command.

06

DECIDE

All video, status and control reach the command station over one Ethernet connection. The operator verifies the target and selects the authorised response.

WHAT IS IN THE SYSTEM

TEN ITEMS, DELIVERED AS ONE INTEGRATED NODE

01
Cooled MWIR thermal camera
640 × 512, 3–5 µm, NETD ≤ 21 mK, continuous 20× optical zoom

03
Pan-tilt positioner
200 kg load, n × 360° pan, ±90° tilt, 0.01° accuracy, no backlash

05
Laser rangefinder
Eye-safe Class 1M, wide-beam variant optimised for small aerial targets

07
RF detection unit
Passive detection, identification and tracking of drones to 3 km

09
Power supply unit
With 10 m connection cable; status monitored from the command station

ENVIRONMENTAL QUALIFICATION

Vibration
IEC 60068-2-64

Shock
IEC 60068-2-27

02
Day/night camera
1920 × 1080 CMOS, f 15–1250 mm, continuous 83× optical zoom

04
Video processing unit
Combines every payload and the positioner behind one Ethernet connection

06
True-heading unit
Position, true heading, pitch and roll — targeting without a magnetic reference

08
EchoShield radar
Pulse-doppler cognitive radar with electronically scanned beamforming

10
Interconnection set
Connection cables between all components

Icing
NEMA 250

Salt fog
IEC 60068-2-52

TWO CO-ALIGNED CHANNELS

COOLED MID-WAVE INFRARED · MEGAPIXEL DAY AND NIGHT

01 COOLED THERMAL

DETECTOR	Cooled MWIR, 640 × 512, 15 µm pitch
SPECTRAL RANGE	3 to 5 µm
FRAME RATE	25 / 30 Hz
NETD	≤ 21 mK
FOCAL LENGTH	40 to 825 mm
FIELD OF VIEW	13.7° to 0.7° horizontal
ZOOM	Continuous optical to 20× · digital to 16×
FOCUS	Automatic or manual, remote
PROCESSING	Tuneable digital detail enhancement · histogram equalisation · non-uniformity correction · white-hot / black-hot · colour palette
VIDEO OUTPUT	Analog or HD-SDI · optional RTSP H.264
CONSUMPTION	35 W typical · < 120 W with heaters and defrost
SIZE AND MASS	572 × 247 × 242 mm · 19 kg

02 DAY AND NIGHT

SENSOR	1/1.8" CMOS · 1/2.4" used area equivalent
RESOLUTION	1920 × 1080
SENSITIVITY	Colour 0.05 lx · monochrome 0.005 lx, F2.9 at 25 fps
FOCAL LENGTH	15 to 1250 mm
FIELD OF VIEW	21° to 0.26°
ZOOM	Continuous optical to 83× · digital to 8×
FOCUS	Automatic or manual, remote
PROCESSING	Digital fog removal and auto contrast · wide dynamic range · dynamic noise reduction · auto or manual white balance and gain
OPTICAL FILTERS	Colour IR-cut · monochrome VIS + NIR · monochrome defog, NIR only
VIDEO OUTPUT	HD-SDI or analog · optional RTSP H.264
CONSUMPTION	15 W typical · < 60 W with heaters and defrost
SIZE AND MASS	777 × 216 × 206 mm · 18 kg

DETECTION, RECOGNITION, IDENTIFICATION

THERMAL CHANNEL • STANAG 4347 • AT TWO ATMOSPHERES

TARGET AND TASK $\Sigma = 0.2 / \text{KM}$ $\Sigma = 1.0 / \text{KM}$

NATO VEHICLE TARGET • 2.3 × 2.3 M

Detection	23.56 km	6.33 km
Recognition	15.49 km	5.28 km
Identification	10.65 km	4.48 km

HUMAN TARGET • 1.8 × 0.5 M

Detection	17.22 km	5.50 km
Recognition	9.17 km	4.25 km
Identification	4.89 km	3.15 km

DJI PHANTOM CLASS - 0.4 x 0.3 M

Detection	9.87 km	4.35 km
Recognition	3.65 km	2.65 km
Identification	1.87 km	1.69 km

ALL TOLERANCES WITHIN 10 PER CENT • THE DRONE-CLASS ROW IS THE FIGURE THAT GOVERNS A COUNTER-UAS ENGAGEMENT

HOW TO READ THIS TABLE

The two columns are two atmospheres, not two products. $\sigma = 0.2$ per km is a clear day; $\sigma = 1.0$ per km is haze, humidity or dust. The same camera delivers both sets of figures.

Detection is knowing something is there. **Recognition** is knowing what class it is. **Identification** is knowing which one. A counter-UAS decision needs the second; a rules-of-engagement decision needs the third.

TEST CONDITIONS

METHOD	STANAG 4347
PROBABILITY	50 %
DELTA T	2 K
BACKGROUND	288 K

These are the manufacturer's modelled figures under the stated conditions. Performance in service varies with target size, aspect, atmospheric visibility and thermal contrast.

POSITIONER AND PROCESSING

WHAT CARRIES THE PAYLOADS, AND WHAT MAKES THEM ONE SYSTEM

03 PAN-TILT POSITIONER

LOAD CAPACITY	200 kg
TORQUE	300 Nm tilt · 255 Nm pan
PAN AXIS	n × 360° · 0.01 to 40 °/s
TILT AXIS	±90°, application dependent · 0.01 to 30 °/s
ACCURACY	0.01°, no backlash
BRAKE	Self-locking
VOLTAGE	24 VDC · 800 W maximum
COMMUNICATION	Ethernet · RS-232 · RS-485/422 optional
MATERIAL	Aluminium
ENVIRONMENTAL	-32 to +55 °C · IP67
SIZE AND MASS	639 × 452 × 390 mm · 60 kg

A GYRO-STABILISED PAN-TILT PLATFORM IS AVAILABLE AS AN OPTION

04 VIDEO PROCESSING UNIT

The processing unit is what makes the payloads and the positioner behave as one device to the outside world: a single Ethernet connection carries every video stream, all status and all control.

FUNCTION	Power control and communication with each device · built-in test per device · integrated Ethernet switch
ENCODING	H.264 for all video payloads · two separate output streams
PROCESSING	Video stabilisation with roll correction · hardware scene and object tracking · on-screen display
INTERFACES	Ethernet UDP and serial · control and video over Ethernet, control only over serial
CONNECTORS	Four military standard · three input, one output
POWER	18 – 32 Vdc · 30 W maximum
ENVIRONMENTAL	-32 to +55 °C · IP67, built to MIL-810
SIZE AND MASS	261 × 185 × 73 mm · 3.0 kg

RANGING AND TRUE HEADING

WHAT TURNS A BEARING INTO A GRID REFERENCE

05 LASER RANGEFINDER

A wide-beam variant optimised for small aerial targets, with continuous measurement to 40 per second in single mode and to 500 Hz in burst.

EYE SAFETY	Laser Class 1M · do not use telescopic optics inside the ENOHD distance, 8 m with an 8 × 50 mm binocular
MEASUREMENT RANGE	50 m to 32,000 m
AGAINST 2.3 × 2.3 M	6,800 m
AGAINST 1.0 × 1.0 M	4,600 m
AGAINST 0.25 × 0.25 M	2,400 m
PRECISION	0.01 to 1.5 m, with distance and target reflectivity
BEAM AND WAVELENGTH	2.0 mrad divergence · 1.54 µm
MEASUREMENT RATE	1, 4, 10, 20, 100, 200, 500 Hz
DISCRIMINATION	< 30 m · up to three returns, first, second and last
POWER	18 – 32 Vdc · 4 W standby, 7 W measuring
SIZE AND MASS	172 × 151 × 75 mm with connector · 2 kg
TARGET RANGES AT 25 KM VISIBILITY, 30 % REFLECTIVITY, DETECTION PROBABILITY ABOVE 90 %	

HORIZONTAL POSITION QUOTED RMS AT 67 PER CENT · VERTICAL POSITION QUOTED 2DRMS AT 95 PER CENT

06 TRUE-HEADING UNIT

Provides position, true geographical heading and two Euler angles. True north without a magnetic reference is what lets a bearing from this mount become a grid reference the rest of the estate can act on.

HEADING ACCURACY	0.16° at 0.5 m antenna separation · 0.08° at 1.0 m · 0.04° at 2.0 m · 0.02° at 5.0 m, RMS
PITCH AND ROLL	0.5° RMS
POSITION, AUTONOMOUS	1.2 m horizontal · 2.5 m vertical
POSITION, SBAS	0.3 m horizontal · 0.6 m vertical
POSITION, RTK	10 mm + 1 ppm · 20 mm + 2 ppm vertical
HEAVE	30 cm differential · 5 cm RTK, RMS
COMMUNICATION	RS-232 · RS-485 · RS-422 · Ethernet 10Base-T
PROTOCOL	NMEA
POWER	18 – 32 VDC · 2.5 W
ENVIRONMENTAL	–40 to +55 °C · IP67
MASS AND MATERIAL	1.4 kg · plastic and aluminium
POSITION ACCURACY DEPENDS ON MULTIPATH, SATELLITES IN VIEW AND SATELLITE GEOMETRY	

PASSIVE RF DETECTION

DETECT, IDENTIFY AND TRACK THE DRONE – AND LOCATE ITS OPERATOR

The RF unit detects small drones passively — it transmits nothing — by reading the link between the aircraft and its controller, out to three kilometres.

- ✓ **Passive** RF signal detection, so the unit does not reveal itself
- ✓ **Attributes, not just a contact** — serial number, model number, frequency band, azimuth, speed, altitude and trace, distinguishing between models of the same brand
- ✓ **Operator location** — pinpoints the pilot or the controller, not only the aircraft
- ✓ **Whitelist** — approved drones are marked and exempted, so the operator is not trained to ignore alarms
- ✓ **Multi-target** — thirty simultaneous detections, ten flight paths tracked in distinct colours
- ✓ **Single device** locates the target on its own, with no second receiver needed
- ✓ **Deployable** — carried, in a backpack, on a vehicle, or fixed to a building

FREQUENCY	800 MHz · 900 MHz · 915 MHz · 1.4 GHz · 2.4 GHz · 5.2 GHz · 5.8 GHz
DETECTION RADIUS	Up to 3 km, open air, line of sight
COVERAGE	360° azimuth and elevation
REFRESH	2 s
LOCATING ACCURACY	Within 10 m
RECEIVER	One receiver, two channels, one used
BANDWIDTH	55 MHz real time
NOISE FLOOR	−85 dBm
SENSITIVITY	−115 dB device optimum · −95 dB measured in field test
SIMULTANEOUS	30 drones detected · 10 routes tracked
ANTENNA	High-gain omnidirectional
POWER	12 V / 2.5 A · approximately 8 hours on battery
ENVIRONMENTAL	−40 to +60 °C · IP67
MASS	Approximately 6.5 kg



RAVEN

01

FIXED SITE

02

COMPACT

03

C2

04

GEOINT

05

SHIELD

CONTACT

arm@g7xdefense.com
www.g7xdefense.com

LOCATION

Seef Platinum Tower
Manama, Kingdom of Bahrain

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