



## CapGuard™ - cUAS

### All In One System: Radar EG, Optical

### PN: ATID-300-1EG-1CU1T150

#### CapGuard™ platform

micro-Doppler radar mounted on a light weight 360° tracking system which can detect and from 20m to 1-2 km different kind of SUAVD.

#### SUAD

Small Unmanned Aerial Vehicles Drone (SUAVD) weighing <20 kg, which typically range from 15 cm to 1 m in width.

can be used for dropping explosive material or conveying transportation, transmitting illegal video streaming, and taking images of critical national infrastructure.

Possess a clear threat for arm personal, civilian population and infrastructure and its usage is rapidly growing in short range insurrection war world wide.



picture for illustration purpose only.

- cUAS All-in-One System
- RADAR:
  - Micro-Doppler detection and differentiation of both drones & birds.
  - Operating in Ku, K band
  - Drone Detection UP 2km
  - Optical Detection up to 20km
  - Multi classification capability in Realtime
  - Elimination/jamming: 9 channels 0.6Ghz-6Ghz
- Optical day/night and Thermal tracking
- Dimension- Super small sizes 58 x 67 x 65 cm
- 360° tracking system

#### Intro to SUAD Threats

The SUVAD family has a small body with micro-Doppler signatures characteristic which is hard to detect by conventional air radar system.

Due to the substantial increase in the number of affordable drones in the consumer market and their regrettable misuse, there is a need for efficient technology to detect drones in civilians and in combat sensitivity airspace, combat and noncombatant area with the ability to destroy them in very safe reliable and extremely accurate measures.

The unique micro-Doppler characteristic of both drones and birds poses a difficulty for airspace surveillance systems to cope and distinguish between them.

Micro-Doppler is generated due to the micro motion of the various components within a target. In the case of a drone, it is generated by the propeller blade rotation and for birds it is due to the wings flapping. Along with the bulk Doppler due to the target's radial velocity, micro-Doppler signatures can be measured with radar which is coherent (i.e. the signal phase change is in direct correlation with the target motion).

A conventional air surveillance radar system (operating usually at L-band or S-band) can rely on the radar cross section (RCS) of an aircraft for detection, but this may not always provide reliable detection in case of drones. Even if a dedicated system is built to be sensitive enough to detect a small object like a drone, RCS information is not adequate. Birds have similar physical size to drones and will fly at similar altitudes and speeds. A reliable drone detection radar system must have the capability to discriminate between a bird and a drone.



## System parameters by subsystem

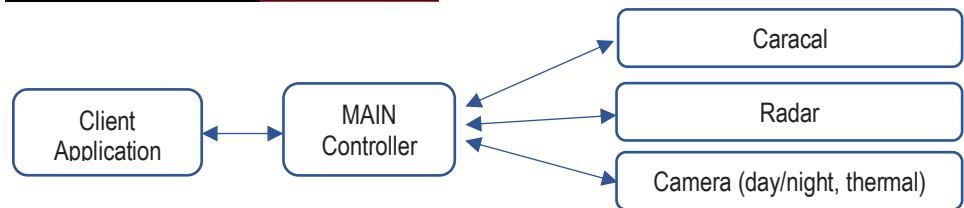
### Enhancing CapGuard™: Search, Detect, Control & Eliminate!

The CapGuard™ can be upgraded with weaponry system capabilities. By adding the SnapGuard weaponry installation kit, the CapGuard™ not only provides threat detection but also enables elimination.

For more information on any of our products or services please visit us on the Web at:



- MOVING MAP SOFTWARE
- PICTURE IN PICTURE VIDEO
- AUTOMATIC OBJECT TRACKING
- MOVING MAP SOFTWARE.



### Pan Tilt parameters

Pan/Tilt Range	Pan: 360° rotate; Tilt: -45°~+45°
Pan Speed	Configurable, pan: 0.01°~40°/s
Tilt Speed	Configurable, pan: 0.01°~20°/s
Precision of pre-positioning	±0.01°
Positioning Accuracy	0.01°
Waterproof	IP66
Power	DC24V power
Power Consumption	Standby: 20-50W, Max.: 210W
Working Condition	-40°C~+70°C, humidity: <90%
Dimensions(L*W*H)	494mm*594mm*540mm
Weight	Approx. 10kg
Heater ,wiper,fans	Support
Transmission mechanism	Worm gear and worm
Scheduled Task /Idle Action	Preset/Auto Pattern/Auto Tour/Auto Pan/Auto Scan
Power Off Memory & self-locking	Support
Control mode	Speed, position
Preset	256
Tour	8, Up to 32 Presets Per Tour
Auto Scan	4
Ethernet	1x RJ45 (10/100Mbps self-adaptive Ethernet ports)



SERVICES AVAILABLE

Technical Support , Installation and Setup

Maintenance

Application and Hardware Support

Guaranteed Warranty

**Radar parameters EG**

<b>DC Power</b>	Recommended DC power: +24 VDC @ typically 45 Watts Abs Max DC power: +12 to +25 VDC @ 50 Watts Current Limit = 50 Watts/VOPERATING Power on Hot Standby (No Transmission) ≤ 7 Watts
<b>Discrete Control Digital Lines</b>	Discrete 3.3V TTL Control Wires
<b>RF Transmit Power</b>	3.2 Watts CW (35 dBm)
<b>Operation center frequency</b>	24.05-24.25 GHz
<b>Frequency Accuracy</b>	± 10ppm (± 250kHz) including temperature and aging 8 years
<b>Waveforms</b>	FMCW 32 chirp CPI with 45MHz swept BW over 200uSec SAWTOOTH (default) with power blanking.
<b>Polarization</b>	Linear, Horizontal
<b>Cross-pol</b>	Typically, 20 dB
<b>AZ/EL (HPBW), typical</b>	2° horizontal (E-plane, at broadside), 6° vertical (H-plane, at broadside) Note: Beam width increases 30-50% at FOV edges.
<b>Field of regard</b>	Azimuth ± 60° / Elevation ± 40°
<b>Beam Step resolution/accuracy</b>	2° Resolution, ≤1° pointing accuracy
<b>Realized Gain at broadside</b>	21 dBi typ. (safety absolute maximum gain of 22 dBi)
<b>Gain average roll-off</b>	2.0 dB typical over full field of regard
<b>Side lobe level</b>	Two-way radar Sidelobes Center (< ±40° Az or El ) SLL -32 dB average Edges SLL -28 dB average
<b>Next-beam buffer time</b>	< 100 microseconds (serial write time)
<b>Beam-to-beam transition time</b>	< 1 microseconds (after enable)
<b>Range</b>	Minimum 20 meters, Maximum 5987 meters operational
<b>Range Resolution</b>	3.25 m typ.
<b>Velocity Resolution</b>	0.91 m/s typ.
<b>Angular Resolution</b>	±1° Az and ±3° El in Search Mode, smaller for tracked targets
<b>Track acquisition</b>	New tracks acquired in < 1 sec
<b>Track updates</b>	5-10 updates /sec (for each track) depending upon Operation Mode
<b>Max Tracks</b>	20 simultaneous tracks dynamically allocated via i-SCAN
<b>Modes</b>	Search & Search-While-Track
<b>Size</b>	18.7cm x 16.2cm x 5.1cm
<b>Weight</b>	< 1250 grams fixed install natural convection (no-fans)
<b>Operational Temp</b>	-40 ° C to 75 °C Continuous Operation
<b>Storage Temp</b>	-55 ° C to 95 °C (Non-Operational)
<b>Humidity (operation)</b>	< 95 % non-condensing
<b>Moisture Resistance</b>	Main Radar package is an IP67
<b>Sand &amp; Dust</b>	Tolerant with protective cap or connector attached.
<b>MTBF</b>	110,000 hours, per MIL-STD-217, Ground Fixed environment
<b>Operational altitude</b>	0-30,000 ft (0 to 9.1 km) AGL
<b>Safety and regulation</b>	CE,ROHS3,RED



### Camera parameters day/night

Image Sensor	1/1.8" Sony Starvis progressive scan CMOS
Effective Pixels	Aprox. 8.41 Megapixel
Focal Length	11.3mm-1000mm, 88x Optical Zoom
Aperture	F2.1~F7.5
Field of View	H: 37.5°~0.44°, V: 21.6°~0.25°, D: 43°~0.5°
Close Focus Distance	5m~10m
Zoom Speed	Approx. 8s (Optical Wide~Tele)
DORI Distance (Human)	Det':20,000m ; Obs':7,900m ; Rec': 4,000m ; Ide':2,000m
Compression	H.265/H.264/H.264H/MJPEG
Streaming Capability	3 streams
Resolution	50Hz: 25fps@8MP(3840×2160)60Hz: 30fps@8MP(3840×2160)
Video Bit Rate	32kbps~16Mbps
Minimum Illumination	Color: 0.1Lux/F2.1; B/W: 0.01Lux/F2.1
Exposure Mode	Auto, Aperture Priority, Shutter Priority, Gain Priority, Manua
Exposure Compensation	Support
Shutter Speed	1/3~1/30000s
Day/Night	Electrical, ICR(Auto/Manual)
Electronic Defog	Support
Optical Defog	Support, 750nm~1100nm channel is Optical Defog
Network Protocol	Onvif, HTTP, HTTPS, IPv4, IPv6, RTSP, DDNS, RTP, TCP
Communication Protocol	SONY VISCA, TCP I/P

### Camera parameters Thermal

Image Sensor	Uncooled Vox microbolometer 30-150mm
Resolution	Sensor- 640 x 512 ; 50Hz: 25fps@(704x576)
Motorized Thermal Lens	30-150mm
Pixel size	12 μm
Spectral Range	8-14 μm
Focal Length	30mm~150mm, 5x Optical /8x digital Zoom
Aperture / F value	F0.9~F1.2
Field of View	14.6° x 11.7° ~ 2.9° x 2.3°
Compression	H.265/H.264/H.264H/MJPEG
Pseudo color	Support: White Hot, Black Hot, Iron Red, Rainbow 1, Fulgurite, Rainbow 2, Fusion, Bluish Red, Amber, Arctic, Tint
Streaming Capability	Main stream: 25fps@(704x576), 25fps@(352x288) Sub Stream: 25fps@(704x576), 25fps@(352x288)
Network Protocol	Onvif, HTTP, HTTPS, IPv4, IPv6, RTSP, DDNS, RTP, TCP, etc...

#### Contact us

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