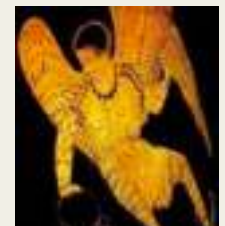




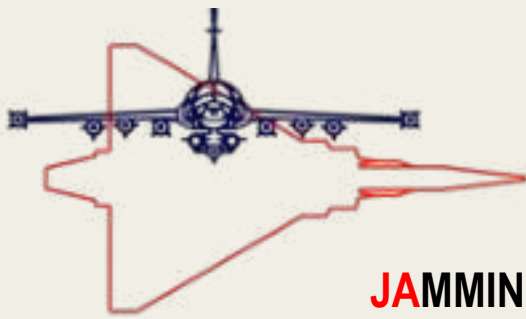
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KERES I (*)

JAMMING RESISTANT DATA LINK DRONE CONTROL SYSTEM



* Κήρες



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JAMMING RESISTANT DATA LINK DRONE CONTROL SYSTEM

INTRODUCTION CONCEPT

“Nemesis” of every unmanned system, drone, U.A.V, etc is Jamming, spoofing and all associated electronic warfare technologies which when applied in the field, achieve, either mission denial or even crash of a drone.

KERES is a system which can be either retrofitted to an existing drone or U.A.V in the place of its original links (telemetry and video) or can be integrated right from the design and assembly stages of a new one.

KERES cannot prevent drone shooting down (even small cal. 7.62 mm or 12.7 mm Browning or DShK, etc ammo. will suffice) but ensures that a KERES equipped drone shall continue to receive commands, to transmit video to its ground control and for attack or suicide drones, to release weapons or impact on target.





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INTRODUCTION DESCRIPTION

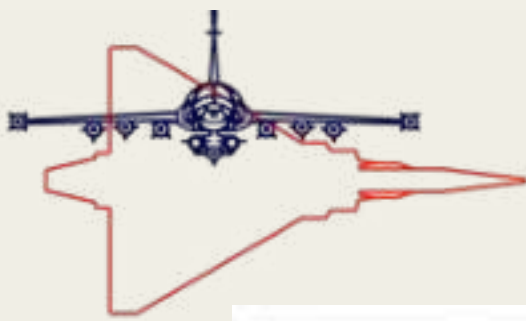
Heart of KERES is a state of the art, with continuous upgrade potential, set (pair) of links.

One ground based (master) and one airborne (slave).

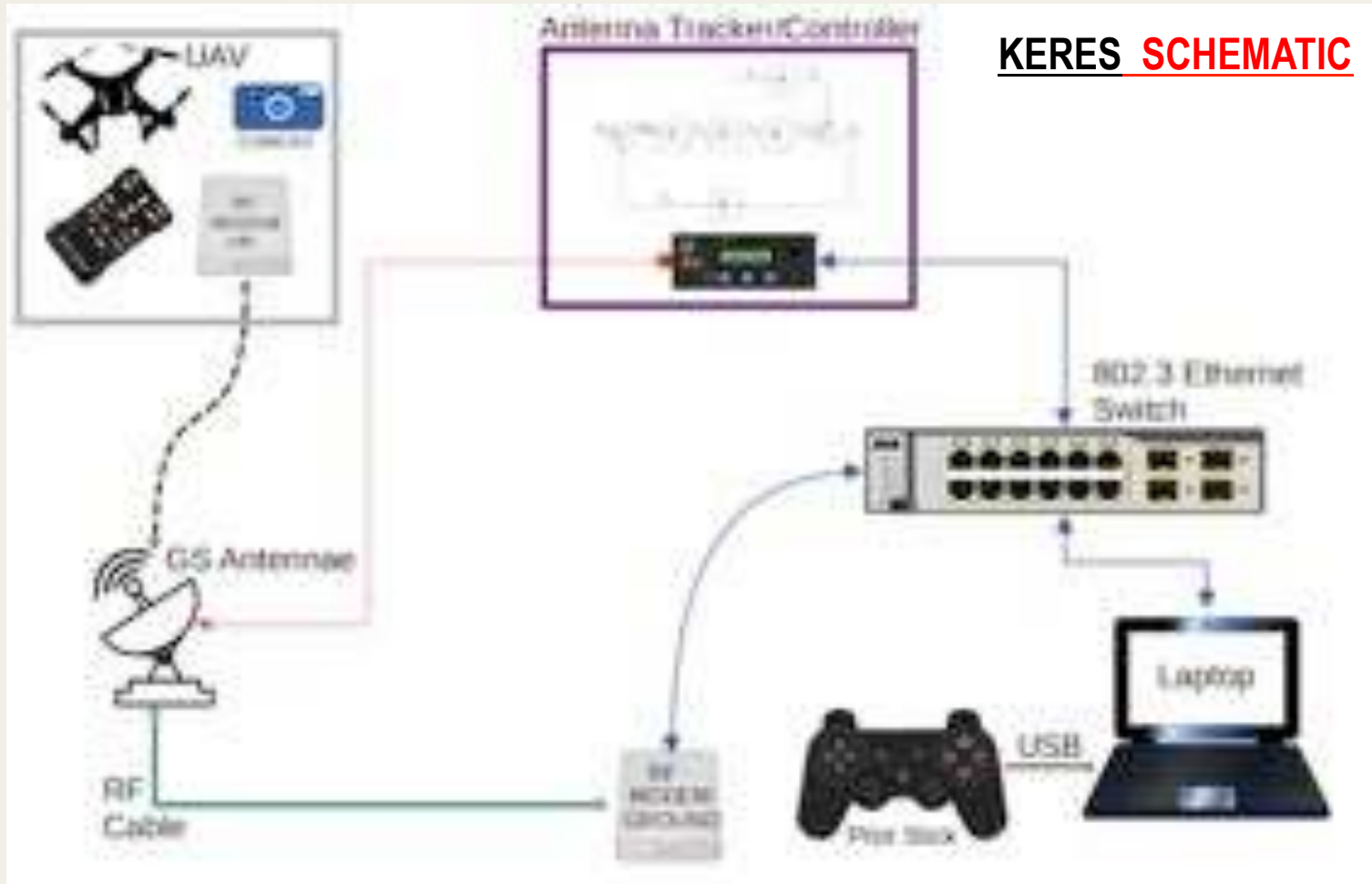
Lightweight, compact and using state of the art

Scalable Orthogonal Frequency Division Multiplexing (SOFDM) algorithms can successfully resist and defeat every known, field deployable, jammer.





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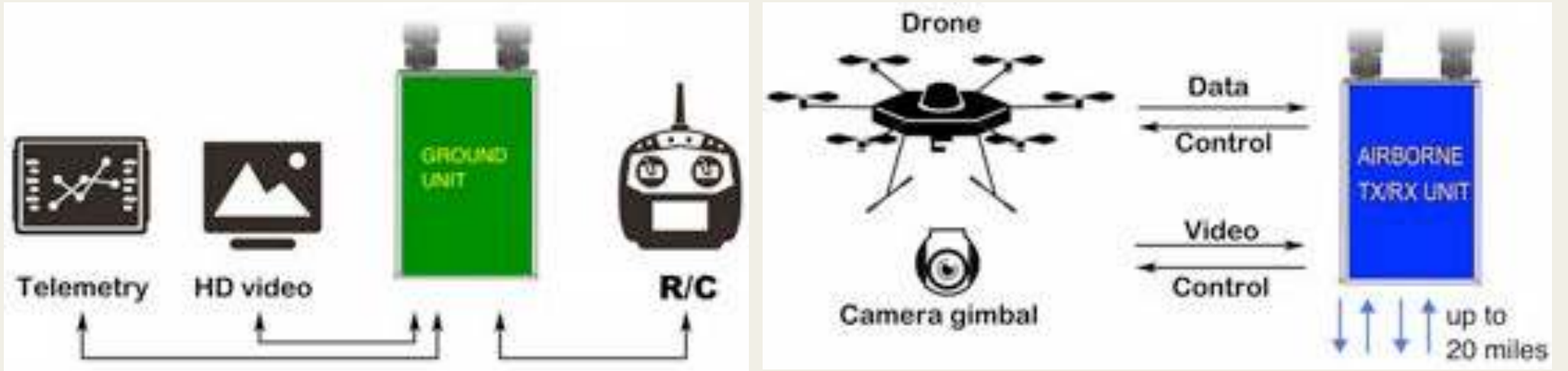


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MAIN FEATURES – part 1 STANDARD VERSION

- Pre-flight user selectable TX/RX bands and channel frequency. Not restricted to use the standard ISM frequency bands that commercial drones and most (i.e. not sophisticated) jammers use. User carries full responsibility for unauthorised use.
- Pre-flight user selectable hardware RF filters to improve out of band interference.
- Channel frequency change during flight commanded by the user.
- OFDM modulation for improved narrow band interference.
- Interference and/or bad signal conditions alert before as well as during flight.
- Option for ground station directional antennae.



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MAIN FEATURES – part 2 UPGRADE OPTIONS

- Option A : MIMO Support
- Option B : Direct Sequence Spread Spectrum DSSS
- Option C : Frequency Hopping Spread Spectrum FHSS
- Option D : Airborne RX band stop filters for known jammer bands.



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OTHER FEATURES AND UPGRADES OPTIONS part 3

- Free from usage restrictions regarding geographical area, time and duration of use. Cannot be remotely locked or in any way disabled or degraded by O.E.M ORDTECH in contrast to the normal practice of manufacturers of other systems.
- UPGRADE D
Data link Encryption
- UPGRADE E
Chirp Spread Spectrum CSS (reduced detection and intercept characteristics against sophisticated electronic warfare enemy units).
- UPGRADE F
RF site survey features of the ground control unit.



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CHARACTERISTICS – part 1

Airborne Unit (Slave)

- Mass :
 - < 1 Kg (powered by drone batteries)
 - < 2 Kg (using own batteries)
- Dimensions :
15 cm X 15 cm X 5 cm
- Number of Antennae :
4
- Antennae Type :
Omnidirectional Single or Dual Band

Ground Unit (Master)

- Mass :
 - < 10 Kg
 - < 2 Kg (using own batteries)
- Case Enclosure :
Suitcase Type



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CHARACTERISTICS – part 2a

Ground Control Unit Antennae

- Number of Antennae: 4
- Antenna Type:
 - Omnidirectional Single or Dual Band (Standard Type)
 - Directional Log-Periodic Broadband (Optional)
 - Directional Patch Panel Multi-band (Optional)



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CHARACTERISTICS – part 2b

Ground Control Unit Antennae Mounting Options

- On Ground Station for Rod Type (Standard Version).
- Static Base for Log-Periodic and Patch Panel (Optional).
- Two-Axii (Azimuth & Elevation) **Pedestal Manual Movement** for Log-Periodic and Patch Panel (Optional).
- Two-Axii (Azimuth & Elevation) **Pedestal Electric Movement** for Log-Periodic and Patch Panel(Optional).
- Two-Axii (Azimuth & Elevation) **Automatic Tracking** for Log-Periodic and Patch Panel(Optional).



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RADIO SPECIFICATIONS – part 1

- | | |
|-------------------------------------|--|
| • Radio Type : | Software Defined Radio (SDR) |
| • Frequency Range : | 70 MHz to 6 GHz |
| • ADC and DAC Resolution : | 12 bit |
| • ADC and DAC Sampling Rate : | 61 MS/s |
| • ADC Spurious-Free Dynamic Range : | 78 dBcs |
| • Receive Noise Figure : | < 8 dB |
| • Transceiver Operating Mode : | Full Duplex |
| • Antennae Ports : | 2 TX and 2 RX with fully
Coherent 2X2 MIMO capability |



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RADIO SPECIFICATIONS – part 2

- Antenna Impedance : 50 Ohm
- RF Instantaneous Analogue Bandwidth : 55 MHz in 1X1 SISO mode
2X30 MHz in 2X2 MIMO mode
- TX Front-End Gain: 88 dB adjustable
- RX Front-End Gain: 75 dB adjustable
- Maximum TX Power : 15 dB to 30 dBm (user option)



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DATA LINK SPECIFICATIONS

- Video Input Port Options :
 - MIPI CSI-2
 - LAN
 - USB
- Serial Interface :
 - 1 Serial Port Full Duplex
- S. Bus :
 - 2



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JAMMING RESISTANCE BANDS

- 310 ~ 470 MHz
- 840 ~ 930 MHz
- 1171 ~ 1381 MHz
- 1400 ~ 1452 MHz
- 1510 ~ 1620 MHz
- 2385 ~ 2500 MHz
- 5150 ~ 5350 MHz
- 5725 ~ 5900 MHz



KERES I

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Keres (Κήρες) were evil nocturnal demons, daughters of goddess Nyctia (Νύχτα), that followed god Ares (Mars) in all battlefields. They wore a red mantel soaked in the blood of dead soldiers. Their face was black and abominable. Claws and fangs long and sharp just like those of carnivorous predators. Two large black wings enabled rapid flight to any battlefield god Ares initiated. Κήρες followed god Άρης with the sole purpose to feed themselves. During battle they tore with their sharp claws and fangs the flesh of dead or wounded soldiers and sucked their blood to its very last drop.





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