

ELECTRONICS DIVISION



CREX-B

Micro Electric Fixed-Wing
Unmanned Aerial System
(UAS)



CREX-B is a fixed-wing, electrically powered UAS with endurance of over 70 minutes. It can be hand-launched from enclosed spaces by a single operator, without the need for run-ups. The system can be transported in a back pack and operated by a single operator.

Typical applications include tactical, close-range over the hill surveillance and reconnaissance. The aircraft can be assembled in the field without special tools in less than 10 minutes using a simple plug & play assembly system.

The air segment is composed of an electrical single propeller plane. The air vehicle carries a bottom-placed stabilised interchangeable gimbal camera (D/N or IR/Thermal) which provides real-time monitoring of the ground over which the vehicle is flying and to lock & track a target with a loiter manoeuvre.

The CREX-B UAV system is based on proprietary technological solutions, including avionics components.

This enables a high degree of customisations to satisfy unique customer requirements. The system utilises Tx/Rx digital communication links with a range of over 10 km Line of Sight (LOS), with Hopping Spread Spectrum (FHSS) and data encryption feature. Different range frequencies are available depending on the specific requirement.

The standard CREX-B configuration includes:

- › Three unmanned, electrical, fixed-wing aerial vehicles, weighing approximately 2kg, capable of flying in manual, automatic and semi automatic modes
- › 3 stabilised payload modules for real-time monitoring:
 - › Two 'Colour TV' modules
 - › One 'Infra Red' module
- › One man-portable Ground Command and Control Station (GCCS) for controlling the UAS and its payload. The GCCS also receives and archives data and video
 - › An optional Mission Controller/Observer unit can also be supplied for remote payload and navigation control
- › Accessories (carry case, battery chargers etc) to allow the transportation, maintenance and operation of the system

FEATURES AND CAPABILITIES

- › Simple, safe and reliable operation
- › Single wing design - reduced landing damage
- › Lightweight and easy assembly
- › Man-portable (weighs less than 2kg)
- › One-man operation
- › Hand release launch method
- › Short landing capability
- › Waypoint navigation, auto landing, autonomous or semiautonomous flight modes, homing mode
- › Pan and tilt stabilised gimbal
- › Electrical propulsion for minimal audio signature
- › Digital links
- › Low lifecycle costs
- › Built-in video enhancement features (stabilisation, visual tracking, mosaicing, target locking)
- › Compliant with NATO standards



GROUND COMMAND & CONTROL STATION (GCCS)

CREX-B also includes the portable Ground Command & Control Station (GCCS) and associated antennas - common command and control component of all of the company's unmanned aerial systems. The GCCS is a custom-designed control unit which includes all the subsystems needed to operate the UAS and its payload.

The GCCS has an overall weight of 7kg and an endurance of approximately 2hrs.

Components include:

- › The Ground Data Terminal (GDT) houses both the RF terminals and the central CPU, along with with the storage memory. It is also equipped with a GPS receiver for locating the UAVs position
- › The Human Machine Interface (HMI) combines live video feed and a map overlay onto a single monitor. It also includes a 7" touch screen and flight controls
- › The Mission Controller (MCO) is an optional Payload Operator Station consisting of a rugged PC equipped with proprietary software that connects to the SCCV to displays the same telemetry and video. A payload operator working on this station is able to perform payload video processing, leaving the GCCS Operator (pilot) to focus on flying the UAS. The MCO can also be used for mission planning, map preparation and general C4I.

GCCS main functions

- › Mission planning
- › Map database management
- › Command and control of aerial vehicle through telemetry link
- › Receipt of payload video through video link
- › Navigation data and video recording
- › Video processing (stabilisation, tracking, OSD)
- › Storage of telemetry data and video stream

During operation, the GDT can be backpacked for ease of transportation or placed on the ground with an antenna support tripod. An Ethernet connection is available for real time video and data dissemination to a C4i network.

Software

The GCCS contains both commercial and custom software. The custom software is developed according to RTCADO178 level B.

Compliance

- › STANAG 4586 via LAN
- › STANAG 4545
- › STANAG 4609





TECHNICAL SPECIFICATION

- › Wingspan: 1.7m
- › Fuselage length: 0.45m
- › Maximum take off weight: < 2.1kg (±5%)
- › Maximum endurance: Approx. 75 minutes (at maximum take off weight at sea level)
- › Airspeed (max): 110km/h
- › Airspeed (cruise): 36km/h
- › Altitude (max): 3100m ASL
- › Altitude (operational): 30-500m (AGL)
- › Maximum rate of climb: 7.2km/h
- › Steady state wind: 46.8km/h
- › Rain proof: 10mm/hr (MIL-STD-810F, 506.4)
- › Operating temperature: -20°C to +49°C (MIL-STD 810F, 501.4 & 502.4)
- › Storage temperature: -20°C to +49°C (MIL-STD 810F, 501.4 & 502.4)
- › Maximum data link: 10km LOS

PAYLOAD: DAY/NIGHT EO STABILISED GIMBAL

- › Sensor: 1/4-type EXview HAD CCD
- › Resolution: 530 TV lines
- › Minimum lux: 1.0 lx (typical) (F1.8, 50 IRE)
- › Zoom: 10x optical
- › Horizontal FOV: 4.6°- 46°
- › Movement: Pan and tilt

PAYLOAD: INFRARED (IR) STABILISED GIMBAL

- › Sensor: Uncooled VOx micro bolometer
- › Resolution: 320x240
- › Frame rate: 60Hz
- › Zoom: 2x digital
- › FOV: 40° x 30°
- › Movement: Pan and tilt
- › IR illuminator: IR class eye safe
- › Noise signature: Less than 65dB at 50m (inaudible in urban environment at > 50m)
- › Radio link range: 10km LOS
- › Data link: Uplink/downlink - 4 patterns of hopping
- › Video link: Downlink 4 selectable channels

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