AscTec Trinity is the first fully adaptive control unit (autopilot) with up to 3 levels of redundancy for multi-rotor flight systems. AscTec Trinity makes your AscTec Falcon 8 even more efficient and safe in daily operation. Three IMUs synchronize all sensing data and would identify, signal and compensate in case of trouble. Advanced algorithms and quaternions for smarter and more reliable data fusion. Unmatched position accuracy can even be guaranteed at high speeds in highly dynamic flights.

- **Redundant propulsion system.** Automatic compensation of defect propellers, motors or motor controllers.
- **Perfectly predictable flight behavior** even in weak GPS environment or magnetic fields.
- **Unbelievable position accuracy!** Tiny positional corrections are possible with extreme precision.
- **Minimal impact energy!** Super light weight system with micro sized 8" propellers.

Ascending Technologies is leading developer and manufacturer of micro UAS for professional, civil and research use. With over 1,000 flight systems sold worldwide, we provide unique technology solutions. Profit from the expertise of the long-standing technology leaders in UAV, an extremely high level of production depth and experience innovation “Made in Germany”.

**Product: AscTec Falcon 8**

By Ascending Technologies GmbH | A Part of Intel

Korrad-Zuse-Bogen 4, 82152 Krailling, Germany

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**1. Technical data**

**Technical specifications**

- **Type**: V-Form Octocopter
- **Dimensions**: 770 x 820 x 125 mm
- **Engines**: 8 electrical, brush less (sensorless) motors
- **Rotor diameter**: 8" (~20 cm)
- **Number of rotors**: 8
- **Rotor weight**: ~6 g
- **Empty weight**: 1.1 kg
- **Max. take off weight**: 2.3 kg
- **Max. payload**: 0.8 kg
- **Max. flight time**: 12–20 min. 1
- **Max. range**: 1 km 2
- **Tolerable wind speed**: 12–20 m/s /// 15 m/s 4

**Navigation Sensors**

AscTec Trinity (IMU, barometer & compass), AscTec High-Performance GPS (GNSS)

- **Max. Turn-Rate**
  - Manual mode: 115°/s
  - Height mode: 115°/s
  - GPS mode: 75°/s

**Wireless Communication**

- 2 independent (diversity) 2.4 GHz FHSS link control/data links (105 to 63 mW) 7
- 1 analogue diversity video receiver (25° or 100 mW)

**LiPo battery types [mAh]**

- PP 6250, 3 Cells: 6250 (~426 g)

**Available payload options**

- Sony Alpha 7R
- Sony Alpha 6000
- Panasonic Lumix TZ71
- Sony Camcorder HDR-PJ810E
- Inspection Payload TZ71
- MicaSense RedEdge

Questions regarding flight systems and payload options are very much welcome. If you have a specific project in mind and need further information on cameras or custom solutions, feel free to contact us.

**Contact:**

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**Summary**

This safety data sheet contains all relevant information about the flight system to apply for a take-off permission.

**Table of content:**

1. Technical data p. 1
2. Standard safety features p. 2
3. Safe operation p. 2

**Certification**

- CE
- RoHS

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1 Depending on battery conditions, payload and environmental conditions like temperature, weather.
2 Depending on your link setting; recommended: line of sight (~ 250 m) /// 4 GPS mode /// 5 Manual mode, Height mode /// 16 m/s in GPS-based video mode. Up to 10 m/s in Quick Survey and waypoint automation flights preprogrammed with AscTec Navigator /// 7 Legal limit in Germany. Please pay attention to the local limits at the site. /// 8 Including actively stabilized and damped AscTec Camera Mount. /// *This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained.

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2. Standard safety features

- All flight data saved in Blackbox:
  All relevant parameters of the flight system, pilot inputs and external factors like GPS satellite constellations are saved to a SD card at 10Hz safe from manipulation.

- 3 Safety modes if data link is lost:
  "Direct landing", "Comehome straight" (at its current height) or "Comehome high" (at max. mission height).

- Redundant control link: Two completely independent digital data links are responsible for the transmission of all commands and telemetry data. The failure of one of these links has no influence on the control of the flight system. This leads to a very robust communication between the RC and the UAV, even in industrial or urban areas with sources of disturbance or multi-path effects.

- Triple redundant sensor data verification: All important sensor and system parameter values from the AscTec Falcon 8 are assessed permanently.

3. Safe operation

/// The AscTec Falcon 8 is remotely controlled with the Mobile Ground Station.
All relevant flight data is displayed live on the MGS. The pilot can fly the system with GPS aided position and barometric pressure aided height control, but can also deactivate these functions anytime and fly manually. A single motor failure, bend-, broken- or lost-propeller is automatically compensated by the autopilot, to allow for a safe landing. For independent camera control from a second camera man the Mobile Ground Station can be equipped with gamepad and video goggles. Software updates can be loaded onto the AscTec Falcon 8 via an USB interface. In pre-programmed waypoint flights the pilot can overtake control at anytime and will overwrite these commands by manual control input.

/// The Mobile Ground Station consists of:
- Remote Control via Diversity Datalink: The Futaba FX-22 remote control is only used as a control input device and for powering the Diversity Datalink and Status Display. The wireless transmission is done via the Diversity Datalink implemented by Ascending Technologies.
- Status Display: The pilot receives all telemetry data like GPS position, flight altitude and airspeed, battery voltage, data link or GPS quality and information about external factors like strong wind. It is displayed on the Status Display of the Mobile Ground Station.

Critical situations will clearly be indicated to the pilot from the Mobile Ground Station with visual (German/English) and acoustic warnings.

- Automated pre-flight check: The system automatically checks itself in the moment it is switched on. So you can’t take off with any critical malfunctions.
- Video receiver: Used to receive the 5.8Ghz analogue video signal from the AscTec Falcon 8.
- HD video monitor: Shows the camera view from the AscTec Falcon 8.