



/// AscTec Falcon 8* + AscTec Trinity – Safety data sheet.

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 Konrad-Zuse-Bogen 4, 82152 Krailling, Germany

/// Summary

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

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1. Technical data

Technical specifications

Type	V-Form Octocopter
Dimensions	770 x 820 x 125 mm
Engines	8 electrical, brushless (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 ³ m/s /// 15 ⁴ m/s

Navigation Sensors

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

~ Max. airspeed¹

Manual mode	15 m/s
Height mode	15 m/s
GPS mode	4.5–10 m/s ⁵

~ Max. climb/sink rate¹

Manual mode	6–10 m/s
Height mode	3 m/s
GPS mode	3 m/s

~ 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 (10⁶ to 63 mW)⁷
1 analogue diversity 5.8 GHz video receiver (25⁶ or 100 mW)

LiPo battery types [mAh]

PP 6250, 3 Cells 6250 (~426 g)

Available payload options⁸

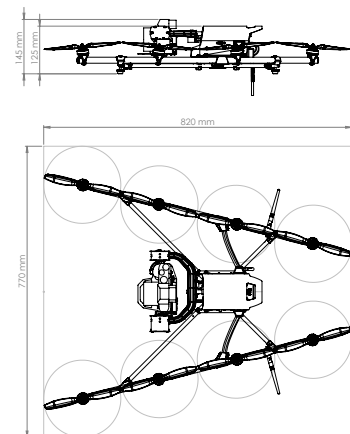
Sony Alpha 7R
Sony Alpha 6000
Panasonic Lumix TZ71
Sony Camcorder HDR-PJ810E
Inspection Payload TZ71
MicaSense RedEdge

Mountable, but no longer available payload options:
Sony Alpha 7, Sony Alpha NEX-7, Sony Alpha NEX-5,
Panasonic Lumix TZ31/41, Panasonic Lumix DMC-LX3/5/7,
Sony Camcorder PJ780VE, Sony Camcorder CX410VE,
Sony Camcorder CX730E, Panasonic Lumix TZ41/61,
Inspection Payload CX410/TZ41/TZ61, NIR Tetracam ADC Micro,
NEC F30, FLIR TAU 640 2

Certification

CE
RoHS

Drawings:



¹ Depending on battery conditions, payload and environmental conditions like temperature, weather. ² Depending on your link setting; recommended: line of sight (~250m) ³ GPS mode ⁴ Manual mode, Height mode ⁵ 5.8 m/s in GPS-based video mode. Up to 10m/s in Quick Survey and waypoint automation flights preprogrammed with AscTec Navigator ⁶ Legal limit in Germany. Please pay attention to the local limits at the site. ⁷ Adjustable ⁸ incl. actively stabilized and dampened AscTec Camera Mount. ⁹ 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.



▼ A new era of flight control & a new safety level: AscTec Falcon 8 + AscTec Trinity.

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

- ▼ **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.

- ▼ **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.

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.

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

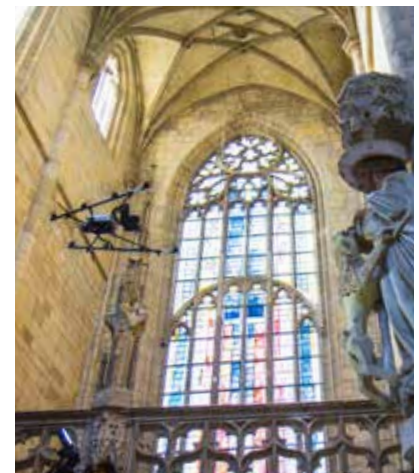
▼ Mobile Ground Station, video goggles, high quality preview monitor & Independent Camera Control.



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.

/// 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.



▼ Indoor & outdoor operation: Possible thanks to precision control even in GPS-denied environment.

- ▼ **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.

Security advice and disclaimer: Products from Ascending Technologies (AscTec Falcon, AscTec Firefly, AscTec Hummingbird, AscTec Pelican) are very easy to operate. High quality standards are held during the production process, to ensure our products are reliable and safe. However, situations in which the skills of the pilot are required can arise at any time (e.g.: sudden fresh wind in excess of 12 m/s; magnet fields by intentional or accidental take-off close to a strong magnetic field; masking of or disruption to GPS signals). These situations can occur and require the appropriate reaction of the operator to the warnings of the system. Ascending Technologies GmbH does not accept any liability for damages resulting from pilot errors. The correct operation of the system can be learned in training sessions, which are expressly recommended for every customer. The customer is always responsible for operating the system. Please see our General Terms and Conditions of Business and the safety instructions for further details. **Note:** At the time of publication of this safety information, all other previous safety information thereby become invalid. All texts, images, and graphics published in this flyer are exemplary illustrations and protected by copyright. Reproduction or the use of these texts, images and graphics in other digital or printed publications are not permitted without the express permission of the author. © 2015 Ascending Technologies GmbH. All rights reserved.