

सत्यमेव जयते

GOVERNMENT OF INDIA
DIRECTORATE GENERAL OF CIVIL AVIATION
DRONE DIRECTORATE

TYPE CERTIFICATE

No. : T12220000006

This certificate, issued to ***M/s*** **Garuda Aerospace Private Limited*, Chennai*** *certifies that the Unmanned Aircraft System*

*"***GA-AD***",*

*its technical specifications and operating limitations for which are contained in Datasheet No.***T12220000006** *dated* ***23rd December, 2022*** *is of proper design, material, specification, construction and performance for safe operation based on the recommendation of* ***M/s*** **TQ Cert Services Private Limited** *as required by the Certification Scheme for Unmanned Aircraft Systems notified by the Ministry of Civil Aviation vide S.O. 347(E) dated the 26th of January, 2022.*

This Type Certificate is issued under the provision of Rule 8 and Rule 9 (3) of the Drone Rules 2021.

This certificate shall remain valid until suspended or cancelled.

Date: 23rd December., 2022

Director General of Civil Aviation

Technical Specifications of M/s GARUDA AEROSPACE PRIVATE LIMITED's UAS model GA-AD

Manufacturer's Name	GARUDA AEROSPACE PRIVATE LIMITED
Address	24,46, KB Dasan Rd, Seetammal Colony, Lubdhi Colony Alwarpet, Chennai, Tamil Nadu 600018
UAS Model Name	GA-AD
Description	GA-AD is a Remotely Piloted Aircraft System (RPAS)/Hexacopter of Small class rotorcraft UAS with 08 liters payload tank capacity. It is made to be utilized in spraying operations for agricultural applications.
UAS Details	
Category/Sub-Category	Rotorcraft (RPAS)
Class	Small
Maximum all-up-weight (including payload) in kg	24.560 Kg
Overall dimensions (l x b x h) in mm	1988 X 1988 X 566
Payload Details	
Details of each Compatible Payload (including Manufacturer Name, Payload Specifications with Model No., Intended Applications)	Sprayer tank with maximum capacity of 08 liters/Kg for spraying mode only.
Variable Load/Consumables (Like fluid etc.,if any)	Pesticides, Organic Fertilizers, Plant Nutrients (Agro Chemicals)
Power Plant Details	
Engine details (Manufacturer details, Model No.)	Not Applicable
Engine/Motor details	Motor Model: Hobbywing X6/BLDC
Power Rating (Watt)	3000 Watts
No. of Engines/ Motors	06 Motors
Total fuel capacity (kg)/battery Capacity (mAH)	Battery Capacity:16000mAH

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Propeller details (Diameter & Pitch (inch),Max RPM)	Diameter – 23", Pitch – 8.8" , Maximum RPM - 6500
Equipment Details	
GNSS	Available
Autonomous Flight Termination System or Return Home (RH)	Available
Flashing anti-collision strobe lights	Not Available
RFID and GSM SIM Card	Not Available
SSR transponder (Mode 'C' or 'S') or ADS-B OUT equipment	Not Available
Barometric equipment (with capability for remote sub-scale setting) (If applicable)	Not Available
Geo-fencing Capability	Available
Detect and Avoid Capability (if applicable)	Not Available
Remote Pilot Station	
Ground Control Station Model No.	DK-32 [DK-32 is Remote Control Model No., any laptop or smart phone installed with Aero GCS App is the GCS]
GCS App. Version	Aero GCS 2.2
C2 Link	
Equipment details	Remote Control Model No. DK32
Frequency Band (GHz)	2.4-2.48 GHz band
ETA issued by WPC Wing, DoT	ETA-1491/2017-RLO(SR) dated 27-01-2020
Performance Details	
Maximum Endurance (hr/m)	07 minutes (With Full Payload)
Maximum Range (in km)	0.5 km
Maximum Speed (in m/s)	5 m/s
Maximum Height attainable/MaximumCeiling Height (in ft)	49.21 ft
Operating Altitude (in ft)	49.21 ft
Operational Envelope	Day, VLOS Operations only (within the operations/performance limitations specified in the frozen manuals mentioned in the Document/Manual Section)

Technical Specifications of M/s GARUDA AEROSPACE PRIVATE LIMITED's UAS model GA-AD

Engine limits (Maximum RPM)/Max. Battery Temperature (in deg C)	Battery Temperature: Upto 50 degree Celsius
Propeller limits (Maximum RPM)	6500 RPM
Documents / Manuals	
Manufacturer's Operating Manual (as applicable)	Flight Manual Version 4.0 dated 8th December 2022
Manufacturer's Maintenance guidelines (as applicable)	Maintenance Manual Version 4.0 dated 8th December 2022
Maintenance Inspection Schedule/Overhaul interval	Maintenance Inspection Schedule Version 5.0 dated 8th December 2022
Maintenance Log Book	Maintenance Log Book Version 1.0 dated 27th May 2022
Flight Log Book	User Log Book Version 1.0 dated 27th May 2022
User Guide/Self-Explanatory Information Booklet for end users	User Manual Version 4.0 dated 8th December 2022
Intended Applications	
Intended Applications	GA-AD is an agriculture drone mainlyused for agrochemical spraying over the crops.

Limitations & Conditions to M/s GARUDA AEROSPACE PRIVATE LIMITED for manufacturing of UAS model 'GA-AD'

1. Manufacturer shall comply with the regulations, circulars issued by the DGCA from time to time. The manufacturer shall comply with the mandatory safety features (if any) as and when notified by Ministry of Civil Aviation.
2. Design documents and manuals submitted shall be frozen and controlled. Any changes effecting to the Type Certificate/Datasheet, the manufacturer shall approach through Authorised Testing Entity for up-dation of the Type Certificate/Data Sheet.
3. Manufacturer shall ensure that UAS is not tampered at the time of sale and also at the time of maintenance. Manufacturer shall monitor the same and inform DGCA in case of any tampering (Hardware and/or Software) is found during maintenance.
4. Manufacturer shall maintain list of their vendors, bill of materials, inventory of UAS including end user details etc. and access to the same shall be provided to DGCA during surveillance and as & when requested for.
5. Manufacturer shall ensure that operations is restricted to Day Light, Visual Line of Sight Operations only and within the operations/performance limitations specified in the frozen manuals.
6. Manufacturer shall affix fireproof plate for indicating UIN, Manufacturer's name, model no. and serial no. in all the UAS manufactured.
7. Manufacturer shall intimate DGCA about any violations, defects, faults, malfunctions, incidents and accidents involving the subject UAS model quarterly and as when sought for.
8. Manufacturer shall be responsible for rights related to design and development of the UAS model "**GA-AD**" and DGCA shall not be party to any dispute arising due to proprietary right issues.
9. Manufacturer shall abide by the IT Act 2000 and any subsequent revision.
10. In case of violation of any of the above mentioned conditions and/ or operating requirements & restrictions specified in this Type Certificate, penal action shall be initiated in line with the Drone Rules, 2021.

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