



DESIGN AUTHORIZATION DATA SHEET Nº ERPAS-5403080

Authorization Holder:

XMOBOTS AEROESPACIAL E DEFESA LTDA
Rodovia Washington Luiz, S/N, KM 226 + 738 m
São Carlos/SP
CEP: 13571-291
Brazil

ERPAS-5403080-00

Sheet 01

XMOBOTS
ECHAR 20D

10 Mar 2021

This data sheet, which is part of Design Authorization Process No. 00066.513406/2017-40, prescribes conditions and limitations under which the product, for which the Design Authorization was issued, meets the requirements of the Brazilian Civil Aviation Special Regulation RBAC-E No. 94.

I - Model ECHAR 20D, approved in March 2021.

RPAS This is a Remotely Piloted Aircraft System (RPAS) that is comprised of the Remote Piloted Aircraft (RPA), a ground data terminal and the Remote Pilot Station (RPS).

RPA

Type:	Flying wing composed of a central region and two wings.
Wingspan:	2.14 m (7.02 ft).
Length:	0.945 m (3.1 ft).
Structure:	Composite material comprised mainly of aramid fiber and carbon fiber.

**ENGINE
(PROPULSIVE UNIT)**

XMobots E20D Propulsion System PN: E20DRPAPRO0100000C
ANAC Engine Type Certificate: None.
Type: Direct drive electric brushless motor battery powered.

Sub-Assembly	Motor:
Units:	Manufacturer: Scorpion. Model: SII-4025-440KV (See NOTE 13). XMobots PN: E20DRPAPRO0200000C
	Engine Speed Controller - ESC: Manufacturer: Cobra Motors. Model: DL150 XMobots PN: E20DRPAPRO0301000C (See NOTE 13).

**ENGINE LIMITS
(PROPULSIVE UNIT
LIMITS)**

Max. power output:	2,000 W (2.68 hp) maximum of 15 seconds.
Max. RPM:	10000 RPM.

PROPELLER

XMobots E20D 15x10 propeller PN: E20DRPAPRO0100000C
ANAC Propeller Type Certificate: None.
Type: carbon fiber reinforced plastic, 2-blade, hinged (folding), fixed pitch, pusher

PROPELLER (CONT'D)	Sub-Assembly Units:	Propeller: Manufacturer: Aeronaut. Model: 15x 10" CAM (See NOTE 13). XMobots PN: E20DRPAPRO0101000C Hub: Manufacturer: Xmobots Model: Aluminum 7075T651 Hub XMobots PN: E20DRPAPRO0104000C
FUEL	Not applicable.	
BATTERY		XMobots E20D Main Power System PN: E20DBATMPS0100000C Type: Rechargeable lithium-ion 6S9P battery pack, 21.81V, 31,500 mAh.
AVIONICS		XMobots E20D AFNGS PN: E20DRPAFNG0500000C Type: Automatic Flight Navigation and Guidance System (full autopilot). AFNGS Sub- Assembly Units: Integrated Processing and Control Unit: Manufacturer: XMobots Model: IPCU Rev "B" or later XMobots PN: E20DRPAFNG0503000C (See NOTE 12). Automatic Flight Navigation and Control Unit: Manufacturer: XMobots Model: AFNGU Rev "D" or later XMobots PN: E20DRPAFNG0504000C (See NOTE 12). Visual Navigation System (VNS) Manufacturer: Xmobots Model: XMB Visual Navigation System Xmobots PN: E20DRPAFNG0700000C (See NOTE 12). RPA firmware version: 3.01.0078 (See NOTE 9). XMobots ACI PN: E20DRPAACI0000000C (See NOTE 12). Type: Anti-collision illumination system installed on both wingtips composed of 3 boards with 12 white LED lights each.
LAUNCH SYSTEM		XMobots Launch System PN: E20DRPADEP0000000C Type: Catapult
RECOVERY SYSTEM		XMobots Recovery System PN: E20DRPAREC0000000C Type: Parachute recovery system actuated by normally open solenoid. Sub-Assembly Units: Parachute: Manufacturer: Fruity Chutes Inc. Model/Manufacturer PN: IFC-72-S-OB (See NOTE 15). XMobots PN: E20DRPAREC0401000C
C2 LINK (RPA)		XMobots ECHAR 20X900 Air Data Terminal (ADT) PN: E20DRPAADT0000000C (See NOTE 12). ANATEL Homologation Certificate: 00681-16-02497. (See NOTE 10).

RPS	<p>XMobots Hard Lock Keys for GCS operation PN: E20DRPSGCS0100000C Type: Ground Control Station software for flight planning (XPlanner) and flight execution (XCockpit).</p> <p style="padding-left: 40px;">Flight planning: Manufacturer: XMobots. Model: XPlanner.</p> <p style="padding-left: 40px;">Flight execution: Manufacturer: XMobots. Model: XCockpit.</p> <p style="padding-left: 80px;">RPS software version: 3.01.2634 (See NOTE 9).</p>
C2 LINK (RPS)	<p>XMobots GDT 20X900 Ground Data Terminal (GDT) PN: E20DRPSGDT0000000C ANATEL Homologation Certificate: 00676-16-02497 (See NOTE 10).</p>
RPAS SUPPORT EQUIPMENT	See NOTE 11.
AIRSPEED LIMITS (IAS)	<p>V_{MAX} (See Note 5): 40 m/s (77.8 KIAS). V_{MIN} (See Note 5): 13.5 m/s (26.2 KIAS). $V_{NOMINAL}$ (See Note 5): 21 m/s (40.8 KIAS).</p>
C. G. RANGE	See NOTE 6.
EMPTY WEIGHT C. G. RANGE	See NOTE 6.
DATUM	See NOTE 6.
LEVELING MEANS	See NOTE 6.
MAXIMUM WEIGHT	8.0 kg (17.6 lb).
EMPTY WEIGHT	4.7 kg (10.4 lb).
MINIMUM CREW	One remote pilot.
NUMBER OF SEATS	Not applicable.
MAX. OPERATING ALTITUDE	1,828.8 m (6,000 ft) AMSL.
CONTROL SURFACE MOVEMENTS	Elevons Up 28°, Down 28°.
NOMINAL ENDURANCE	120 minutes (flight conditions: temperature 30°C, 2400ft AMSL, wind 10 KTAS, mapping flight).
FLIGHT LIMITATIONS	<ol style="list-style-type: none"> 1. Daylight Visual Flight Rules (VFR) in visual meteorological conditions (VMC), airspace classes F or G. 2. Wind: The wind limitations are described in XMobots SFM (See NOTE 3). 3. Beyond visual line of sight (BVLOS) up to 30 km (2.7 NM) from Ground Data Terminal - GDT. 4. Operation is permitted in non-urban areas. 5. Operation with any inoperative (or missing) instruments or equipment is prohibited.

SERIAL NUMBERS APPROVED 1, 2 and following. (See NOTE 14)

AUTORIZATION BASIS Brazilian Special Aeronautical Regulation RBAC-E nº 94, Subpart E, dated 3 May 2017.

PRODUCTION BASIS None (See NOTE 1).

NOTES:

- NOTE 1** A declaration of conformity must be furnished by the authorization holder for each aircraft for issuance of its airworthiness certificate.
- NOTE 2** Markings and placards: all markings and placards required by Brazilian Special Aeronautical Regulation RBAC-E No. 94 must be installed in the appropriated locations.
- NOTE 3** The RPAS shall be operated under RBAC E-94 and in accordance with XMobots SFM – System Flight Manual No. TR-E20D-CAER-SFM#D8-20210223, Rev. “D8”, or later.
The operation shall also be conducted in accordance with DECEA regulations applicable.
- NOTE 4** The RPAS must be maintained in accordance with XMobots Maintenance Manual No. TR-E20D-CAER-MIM#D7-20210223, Rev. “D7” or later.
- NOTE 5** The RPAS by design sets the flight speed at $V_{NOMINAL}$. The pilot cannot directly change the RPAS flight speed. The RPAS will automatically terminate the flight above V_{MAX} and below V_{MIN} .
- NOTE 6** The RPAS is approved for a single C.G. and weight setting. No weight and balance task is required before operation. Empty weight excludes weight of the battery and payload modules.
- NOTE 7** Personnel Keep Out Zones. Typical exclusion zones apply for Launch and Recovery as described in the SFM – System Flight Manual No. TR-E20D-CAER-SFM#D8-20210223, Rev. “D8” or later.
- NOTE 8** Operations shall be conducted by properly designated personnel who have completed training, checking, currency, and recency of experience requirements as defined by ANAC.
- NOTE 9** The software version can be inspected: a) with the maintenance logbook; b) directly running the XPlanner software; or c) with the XMRO software, also included in the XPlanner installation bundle.
- NOTE 10** License is not required to utilize the allocated frequencies.
- NOTE 11** A VHF radio communicator (aeronautical band) is required for flights above 122 m (400 ft).
- NOTE 12** The RPA fuselage is sealed and its opening may violate its integrity. A statement from the manufacturer detailing all internal components part numbers must be available to ANAC at the time of the aircraft inspection.
- NOTE 13** Some of the external components have its own manufacturer model and PN markings, which are equivalent to XMobots PN for inspection purposes.
- NOTE 14** RPAS ECHAR 20A, ECHAR 20B and 20C (from SN 01 to 100) can be converted to model 20D after the application of the Service Bulletin nº TR-E20D-CAER-BS001, Rev. “D1” or later. A declaration of conformity, issued by XMobots, is also required for this conversion.
- NOTE 15** Parachute must be packed as instructed by the XMobots SFM – System Flight Manual nº TR-E20D-CAER-SFM#D8-20210223, Rev. “D8” or later.

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MÁRIO IGAWA
Gerente de Certificação de Projeto de Produto Aeronáutico
(Aeronautical Product Design Certification Branch, Manager)



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL

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São José dos Campos, 10 March 2021.

XMOBOTS AEROESPACIAL E DEFESA LTDA

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Brazil

Subject: **Design Authorization of the RPAS Xmobots Echar 20D.**

Enclosed: **Design Authorization Data Sheet (DADS) No. ERPAS-5403080-00.**

1. After receiving the data you submitted to comply with requirements of the Brazilian Special Aeronautical Regulation RBAC-E No. 94, the ANAC grants to XMobots Aeroespacial e Defesa Ltda this **design authorization** for the **RPAS Xmobots Echar 20D**.
2. ANAC also hereby issues the **Design Authorization Data Sheet No. ERPAS-5403080-00** related to this authorization.

Roberto José Silveira Honorato
Airworthiness Superintendent

Mario Igawa
Aeronautical Product Design Certification Branch, Manager



Documento assinado eletronicamente por **Mário Igawa, Gerente de Certificação de Projeto de Produto Aeronáutico**, em 10/03/2021, às 17:35, conforme horário oficial de Brasília, com fundamento no art. 6º, § 1º, do [Decreto nº 8.539, de 8 de outubro de 2015](#).



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