



## **DESIGN AUTHORIZATION DATA SHEET Nº ERPAS-1815080**

Authorization Holder:

### **XMOBOTS AEROESPACIAL E DEFESA LTDA**

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ERPAS-1815080-03

Sheet 01

XMOBOTS

ARATOR 5B

**ARATOR 5C**

**7 Apr 2021**

This data sheet, which is part of Design Authorization Process nº 00066.513486/2017-33, prescribes conditions and limitations under which the product, for which the Design Authorization was issued, meets the requirements of the Brazilian Special Aeronautical Regulation RBAC-E nº 94.

### **I - Model ARATOR 5B, approved in June 2018.**

**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:	Single body flying wing.
Wingspan:	1.2 m (3.9 ft).
Length:	0.67 m (2.2 ft).
Structure:	Aramid fiber, Carbon fiber and Nomex Honeycomb structure.

**ENGINE (PROPULSIVE UNIT)** XMobots A5B Propulsion System PN A5BRPAPRO0200000C.  
ANAC Engine Type Certificate: None.  
Type: Direct drive electric brushless motor battery powered.  
Sub-Assembly Units: Motor:  
Manufacturer: Cobra Motors.  
Model: C3520/12 (See NOTE 16).  
XMobots PN: A5BRPAPRO0201000C  
Motor Controller:  
Manufacturer: Hacker Motor GmbH.  
Model: X-70-SB-Pro.  
XMobots PN: A5BRPAPRO0301000C (See NOTE 15)  
Or  
Manufacturer: Cobra Motors.  
Model: Cobra DL150A.  
XMobots PN: A5BRPAPRO0401000C (See NOTES 17 and 18).

**ENGINE LIMITS (PROPULSIVE UNIT LIMITS)**

Max. power output:	0.831 HP (620W) maximum of 15 seconds.
Max. RPM:	10,000 RPM.

**PROPELLER** XMobots A5B 14x8 propeller PN A5BRPAPRO0100000C.  
ANAC Propeller Type Certificate: None.

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Type: carbon fiber reinforced plastic, 2-blade, hinged (folding), fixed pitch, tractor.

Or

XMobots A5B 15x10 propeller PN A5BRPAPRO0100000C.

ANAC Propeller Type Certificate: None.

Type: carbon fiber reinforced plastic, 2-blade, hinged (folding), fixed pitch, Tractor (See NOTES 17 and 18).

Sub-Assembly Units: Propeller:  
 Manufacturer: Aeronaut.  
 Model: 14 x 8" CAM  
 XMobots PN: A5BRPAPRO0106000C (See NOTE 16).  
 Or  
 Model: 15 x 10" CAM (See NOTE 16).  
 XMobots PN: A5BRPAPRO0107000C (See NOTES 17 and 18).  
 Hub:  
 Manufacturer: XMobots.  
 Model: Aluminum 7075T651 14" Hub.  
 XMobots PN: A5BRPAPRO0103000C.

**PROPELLER LIMITS** Max. RPM: 10,000 RPM.

**FUEL** Not applicable.

**BATTERY** XMobots A5B Main Power System PN A5BBATMPS0101000C.  
 Type: Rechargeable lithium polymer battery pack, 11.1V (3S), 10.000mAh.  
 Or  
 XMobots A5B Main Power System PN A5BBATMPS0102000C.  
 Type: Rechargeable lithium ion battery pack, 14.4V (4S), 14.000mAh (See NOTES 17 and 18).

**AVIONICS** XMobots A5B AFNGS PN A5BRPAFNG0300000C.  
 Type: Automatic Flight Navigation and Guidance System (full autopilot).  
 AFNGS Sub-Assembly Computer Unit:  
 Units Manufacturer: XMobots  
 Model: IPCU, Rev "B" or later.  
 XMobots PN: A5BRPAFNG0303000C (See NOTE 15).  
 Software version: V3.00.1823 (See NOTE 10).  
 Navigation and Guidance Unit:  
 Manufacturer: XMobots  
 Model: FNGU, Rev. "D" or later.  
 XMobots PN: A5BRPAFNG0304000C (See NOTE 15).  
 Software version: ASIC (See NOTE 10).  
 Inertial Measurement Unit:  
 Manufacturer: XMobots.  
 Model: IMU, Rev. "A" or later.  
 XMobots PN: A5BRPAFNG0305000C (See NOTE 15).  
 Software version: ASIC (See NOTE 10).  
 GNSS Unit:  
 Manufacturer: XMobots.  
 Model: GNSS, Rev. "A" or later.  
 XMobots PN: A5BRPAFNG0309000C (See NOTE 15).  
 Software version: V3.01 (See NOTE 10).  
 RPA firmware version: Arator5B-3-01-1957.ifs (See NOTE 10).  
 Or  
 RPA firmware version: Arator5B-3-01-3030.ifs (See NOTES 10, 17 and 18).

<b>AVIONICS (CONT'D)</b>	XMobots A5B ACI PN A5BRPAACI0000000C (See NOTE 15). Type: Anti-collision illumination system and 2 km VLOS navigation system.
<b>RECOVERY SYSTEM</b>	XMobots Recovery System PN A5BRPAREC0000000C. Type: Parachute recovery system actuated by normally open solenoid. Sub-Assembly Units: Parachute: Manufacturer: Fruity Chutes Inc. Model/Manufacturer PN: IFC-48-S. XMobots PN A5BRPAREC0301000C (See NOTES 11 and 16).
<b>C2 LINK (RPA)</b>	XMobots ARATOR-5X2400 Air Data Terminal (ADT) PN A5BRPAADT0000000C (See NOTE 15). ANATEL Homologation Certificate: 00679-16-02497. Software version: V6.39.3 (See NOTE 10).
<b>RPS</b>	XMobots HardLock Keys for GCS operation PN A5BRPSGCS0100000C Type: Ground Control Station software for flight planning (XPlanner) and flight execution (XCockpit). Flight planning: Manufacturer: XMobots. Model: XPlanner 3. Software version: v3.00.1823 (See NOTE 10). Flight execution: Manufacturer: XMobots. Model: XCockpit 3. Software version: v3.00.1823 (See NOTE 10). RPS software version: v3.01.1957 (See NOTE 10). Or RPS software version: v3.01.3030 (See NOTES 10, 17 and 18).
<b>C2 LINK (RPS)</b>	XMobots GDT-2X2400 Ground Data Terminal (GDT) PN A5BRPSGDT0000000C. ANATEL Homologation Certificate: 00678-16-02497 (See NOTE 12). Software version: V6.39.3 (See NOTE 10).
<b>RPAS SUPPORT EQUIPMENT</b>	See NOTE 13.
<b>AIRSPEED LIMITS (IAS)</b>	$V_{MAX}$ (See Note 5): 30 m/s (58 KIAS). $V_{MIN}$ (See Note 5): 8 m/s (15.5 KIAS). $V_{NOMINAL}$ (See Note 5): 16 m/s (31 KIAS).
<b>C. G. RANGE</b>	See NOTE 6.
<b>EMPTY WEIGHT C. G. RANGE</b>	See NOTE 6.
<b>DATUM</b>	See NOTE 6.
<b>LEVELING MEANS</b>	See NOTE 6.
<b>MAXIMUM WEIGHT</b>	3.5 kg (7.7 lb).
<b>EMPTY WEIGHT</b>	2.4 kg (5.3 lb).
<b>MINIMUM CREW</b>	One pilot.

<b>NUMBER OF SEATS</b>	Not applicable.
<b>FUEL CAPACITY</b>	Not applicable.
<b>OIL CAPACITY</b>	Not applicable.
<b>MAX. OPERATING ALTITUDE/HEIGHT</b>	609.6 m (2,000 ft) AGL (See NOTE 14).
<b>CONTROL SURFACE MOVEMENTS</b>	Elevons Up 35°, Down 35°.
<b>NOMINAL ENDURANCE</b>	55 minutes above 0 °C (32 °F) or 60 minutes above 0 °C (32 °F) (See NOTES 17 and 18).
<b>FLIGHT LIMITATIONS</b>	<ol style="list-style-type: none"> <li>1. Daylight Visual Flight Rules (VFR) in visual meteorological conditions (VMC), airspace classes F or G.</li> <li>2. Wind: The wind limitations are described in XMobots SFM (See NOTE 3).</li> <li>3. VLOS up to 2 km (1.08 nm) from PIC or observer and EVLOS up to 5 km (2.7 nm) from PIC with the use of observers.</li> <li>4. Operation is permitted in non-urban areas.</li> <li>5. Operation with any inoperative (or missing) instruments or equipment is prohibited.</li> <li>6. Beyond visual line of sight (BVLOS) up to 120 m (400ft) AGL and up to 5 km (2.7 nm) from remote pilot in command.</li> </ol>
<b>SERIAL NUMBERS APPROVED</b>	1, 2 and following (See NOTE 8). 93 and following.
<b>AUTHORIZATION BASIS</b>	Brazilian Special Aeronautical Regulation RBAC-E n° 94, Subpart E, dated 3 May 2017.
<b>PRODUCTION BASIS</b>	None (See NOTE 1).

## **II - Model ARATOR 5C, approved in April 2021.**

<b>RPAS</b>	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).								
<b>RPA</b>	<table border="0"> <tr> <td>Type:</td> <td>Single body flying wing.</td> </tr> <tr> <td>Wingspan:</td> <td>1.2 m (3.9 ft).</td> </tr> <tr> <td>Length:</td> <td>0.67 m (2.2 ft).</td> </tr> <tr> <td>Structure:</td> <td>Aramid fiber, Carbon fiber and Nomex Honeycomb structure.</td> </tr> </table>	Type:	Single body flying wing.	Wingspan:	1.2 m (3.9 ft).	Length:	0.67 m (2.2 ft).	Structure:	Aramid fiber, Carbon fiber and Nomex Honeycomb structure.
Type:	Single body flying wing.								
Wingspan:	1.2 m (3.9 ft).								
Length:	0.67 m (2.2 ft).								
Structure:	Aramid fiber, Carbon fiber and Nomex Honeycomb structure.								
<b>ENGINE (PROPULSIVE UNIT)</b>	<p>XMobots A5C Propulsion System PN A5CRPAPRO0200000C. ANAC Engine Type Certificate: None. Type: Direct drive electric brushless motor battery powered.</p> <p>Sub-Assembly Units: Motor:  Manufacturer: Cobra Motors.  Model: C3520/12 (See NOTE 16).  XMobots PN: A5CRPAPRO0201000C  Motor Controller:  Manufacturer: Cobra Motors.  Model: Cobra DL150A.  XMobots PN: A5CRPAPRO03401000C (See NOTES 17 and 18).</p>								

<b>ENGINE LIMITS (PROPULSIVE UNIT LIMITS) (CONT'D)</b>	Max. power output: 0.831 HP (620W) maximum of 15 seconds. Max. RPM: 10,000 RPM.
<b>PROPELLER</b>	XMobots A5C 15x10 propeller PN A5CRPAPRO0100000C. ANAC Propeller Type Certificate: None. Type: carbon fiber reinforced plastic, 2-blade, hinged (folding), fixed pitch, Tractor (See NOTES 17 and 18). Sub-Assembly Units: Propeller: Model: 15 x 10" CAM (See NOTE 16). XMobots PN: A5CRPAPRO0106000C (See NOTES 17 and 18). Hub: Manufacturer: XMobots. Model: Aluminum 7075T651 14" Hub. XMobots PN: A5CRPAPRO0103000C.
<b>PROPELLER LIMITS</b>	Max. RPM: 10,000 RPM.
<b>FUEL</b>	Not applicable.
<b>BATTERY</b>	XMobots A5C Main Power System PN A5CBATMPS0101000C. Type: Rechargeable lithium ion battery pack, 14.4V (4S), 14.000mAh (See NOTES 17 and 18).
<b>AVIONICS</b>	XMobots A5C AFNGS PN A5CRPAFNG0300000C. Type: Automatic Flight Navigation and Guidance System (full autopilot). AFNGS Sub-Assembly Computer Unit: Units Manufacturer: XMobots Model: IPCU, Rev "B" or later. XMobots PN: A5CRPAFNG0303000C (See NOTE 15). Navigation and Guidance Unit: Manufacturer: XMobots Model: FNGU, Rev. "D" or later. XMobots PN: A5CRPAFNG0304000C (See NOTE 15). Inertial Measurement Unit: Manufacturer: XMobots. Model: IMU, Rev. "A" or later. XMobots PN: A5CRPAFNG0305000C (See NOTE 15). GNSS Unit: Manufacturer: XMobots. Model: GNSS, Rev. "A" or later. XMobots PN: A5CRPAFNG0309000C (See NOTE 15). RPA firmware version: Arator5B-3-01-3030.ifs (See NOTES 10, 17 and 18). XMobots A5C ACI PN A5CRPAACI0000000C (See NOTE 15). Type: Anti-collision illumination system and 2 km VLOS navigation system.
<b>RECOVERY SYSTEM</b>	XMobots Recovery System PN A5CRPAREC0000000C. Type: Parachute recovery system actuated by normally open solenoid. Sub-Assembly Units: Parachute: Manufacturer: Fruity Chutes Inc. Model/Manufacturer PN: IFC-48-S. XMobots PN A5CRPAREC0301000C (See NOTES 11 and 16).
<b>C2 LINK (RPA)</b>	XMobots ARATOR-5X2400 Air Data Terminal (ADT) PN A5CRPAADT0000000C (See NOTE 15). ANATEL Homologation Certificate: 00679-16-02497.

<b>RPS</b>	<p>XMobots HardLock Keys for GCS operation PN A5CRPSGCS0100000C  Type: Ground Control Station software for flight planning (XPlanner) and flight execution (XCockpit).</p> <p>Flight planning:  Manufacturer: XMobots.  Model: XPlanner 3.  Flight execution:  Manufacturer: XMobots.  Model: XCockpit 3.  RPS software version: v3.01.2583 (See NOTES 10, 17 and 18).</p>
<b>C2 LINK (RPS)</b>	<p>XMobots GDT-2X2400 Ground Data Terminal (GDT) PN A5CRPSGDT0000000C.  ANATEL Homologation Certificate: 00678-16-02497 (See NOTE 12).</p>
<b>RPAS SUPPORT EQUIPMENT</b>	See NOTE 13.
<b>AIRSPPEED LIMITS (IAS)</b>	<p>V<sub>MAX</sub> (See Note 5): 30 m/s (58 KIAS).  V<sub>MIN</sub> (See Note 5): 8 m/s (15.5 KIAS).  V<sub>NOMINAL</sub> (See Note 5): 16 m/s (31 KIAS).</p>
<b>C. G. RANGE</b>	See NOTE 6.
<b>EMPTY WEIGHT C. G. RANGE</b>	See NOTE 6.
<b>DATUM</b>	See NOTE 6.
<b>LEVELING MEANS</b>	See NOTE 6.
<b>MAXIMUM WEIGHT</b>	3.6 kg (7.9 lb).
<b>EMPTY WEIGHT</b>	2.4 kg (5.3 lb).
<b>MINIMUM CREW</b>	One pilot.
<b>NUMBER OF SEATS</b>	Not applicable.
<b>FUEL CAPACITY</b>	Not applicable.
<b>OIL CAPACITY</b>	Not applicable.
<b>MAX. OPERATING ALTITUDE/HEIGHT</b>	609.6 m (2,000 ft) AGL (See NOTE 14).
<b>CONTROL SURFACE MOVEMENTS</b>	Elevons Up 35°, Down 35°.
<b>NOMINAL ENDURANCE</b>	60 minutes above 0 °C (32 °F) (See NOTES 17 and 18).
<b>FLIGHT LIMITATIONS</b>	<ol style="list-style-type: none"> <li>1. Daylight Visual Flight Rules (VFR) in visual meteorological conditions (VMC), airspace classes F or G.</li> <li>2. Wind: The wind limitations are described in XMobots SFM (See NOTE 3).</li> <li>3. VLOS up to 2 km (1.08 nm) from PIC or observer and EVLOS up to 5 km (2.7 nm) from PIC with the use of observers.</li> <li>4. Operation is permitted in non-urban areas.</li> </ol>

**FLIGHT LIMITATIONS (CONT'D)** 5. Operation with any inoperative (or missing) instruments or equipment is prohibited.  
6. Beyond visual line of sight (BVLOS) up to 120 m (400ft) AGL and up to 5 km (2.7 nm) from remote pilot in command.

**SERIAL NUMBERS APPROVED** 214, 215 and following (See NOTE 19).

**AUTORIZATION BASIS** Brazilian Special Aeronautical Regulation RBAC-E n° 94, Subpart E, dated 3 May 2017.

**PRODUCTION BASIS** None (See NOTE 1).

**NOTES:**

- NOTE 1** A declaration of conformity, issued by XMobots, must be furnished for each aircraft at the time of first inspection by ANAC.
- NOTE 2** Markings and placards: all markings and placards required by Brazilian Special Aeronautical Regulation RBAC-E n° 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 n° ReD-CER-A5C-SFM-A0.0-20210225, Rev. “A0.0” 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 n° ReD-CER-A5C-MIM-A0.0-20210225, Rev. “A0.0” 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 n° ReD-CER-A5C-SFM-A0.0-20210225, Rev. “A0.0” or later.
- NOTE 8** The RPAS ARATOR 5A (SN 1 to 92) can be converted to model 5B after the application of the Service Bulletin n° TR-A5X-CAER-BS001, Rev. “B1” or later.  
A declaration of conformity, issued by XMobots, is also required for this conversion.
- NOTE 9** Operations shall be conducted by properly designated personnel who have completed training, checking, currency, and recency of experience requirements as approved by ANAC.
- NOTE 10** 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 11** Parachute must be packed as instructed by the XMobots SFM – System Flight Manual n° ReD-CER-A5C-SFM\_A0.0-20210225, Rev. “A0.0” or later.
- NOTE 12** License is not required to utilize the above frequencies.
- NOTE 13** A VHF radio communicator (aeronautical band) is required for flight above 122 m (400 ft).
- NOTE 14** The RPAS was tested up to 1,444 m (4,736 ft) AMSL.
- NOTE 15** 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 16** Some of the external components have its own manufacturer model and PN markings, which are equivalent to XMobots PN for inspection purposes.

- NOTE 17** The RPAS ARATOR 5B (SN 93 to 173) are eligible to the design change approval (SEI nº 00066.000643/2021-21) though the application of the Service Bulletin nº TR-A5B-CAER-BS003, Rev. “B1” or later ANAC. A declaration of conformity, issued by XMobots, is also required for this conversion.
- NOTE 18** The RPAS ARATOR 5B (SN 174 up to 213) are manufactured with design change (SEI nº 00066.000643/2021-21) already applied in line.
- NOTE 19** The RPAS ARATOR 5B (SN 174 up to 213), ARATOR 5B with approved design change and ARATOR 5A converted to ARATOR 5B can be converted to model 5C though the application of the Service Bulletin nº ReD-CER-A5C-BS004\_A0.0-20210311, Rev. “A0.0”, or later ANAC accepted revision. A declaration of conformity, issued by XMobots, is also required for this conversion.

[Document issued by ANAC Letter no. 323/2021/GTPR/GCPP/SAR-ANAC, SEI nº 5558783]

**MÁRIO IGAWA**

**Gerente de Certificação de Projeto de Produto Aeronáutico  
(Aeronautical Product Design Certification, Manager)**





AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL

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Ofício nº 375/2021/GTPR/GCPP/SAR-ANAC

São José dos Campos, 16 April 2021.

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**Subject:** ERPAS-1815080 Revision 03 Errata.

**Reference:** ERPAS-1815080-03, SEI nº 5605478.

1. ANAC hereby issues a new Revision 3 of DADS no. ERPAS-1815080 with corrections in the document No. 5558888 which was issued through Letter No. 323/2021/GTPR/GCPP/SAR-ANAC (5558783) dated 7 April 2021.
2. This DADS revision is available at ANAC website: <https://www.gov.br/anac/pt-br/assuntos/drones/projetos-autorizados>.

**Mario Igawa**

Aeronautical Product Design Certification Branch, Manager



Documento assinado eletronicamente por **Mário Igawa, Gerente de Certificação de Produto Aeronáutico**, em 20/04/2021, às 15:26, 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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