TYPE-CERTIFICATE
DATA SHEET

NO. EASA.A.092

for
E1 Antares

Type Certificate Holder
Lange Aviation GmbH
Brüsseler Straße 30
66482 Zweibrücken
Germany

For models:  E1 Antares
Antares 18T
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Section A: E1 Antares

A.I General

1. Type/ Model/ Variant
   1.1 Type: E1 Antares
   1.2 Model: E1 Antares

2. Airworthiness Category

3. Manufacturer
   Lange Flugzeugbau GmbH
   Brüsseler Straße 30
   66482 Zweibrücken
   Germany

   Lange Aviation GmbH
   Brüsseler Straße 30
   66482 Zweibrücken
   Germany

4. EASA Type Certification Application Date
   30 December 1995

5. EASA Type Certification Date
   14 July 2006

A.II EASA Certification Basis

1. Reference Date for determining the applicable requirements
   Defined by LBA letter I 412-894/96,
   dated 17 January 1996

2. Airworthiness Requirements
   Joint Airworthiness Requirements for
   Sailplanes and Powered Sailplanes (JAR 22),
   Change 6, August 2001

3. Special Conditions
   Special Condition for the Installation of
   Electrical Power in Powered Sailplanes,
   Special Condition for the substantiation of the electrical system
   of powered sailplanes, I 334-MS 92, issued
   15. September 1992

4. Exemptions
   None

5. Deviations
   None

6. Equivalent Safety Findings
   None

7. Environmental Protection
   ICAO Annex 16, Chapter 10
A.III Technical Characteristics and Operational Limitations

1. Type Design Definition
   List of the drawing files E1 Antares, issued 30 June 2006

2. Description
   Single-seat, shoulder-winged Self launching powered sailplane with electrical engine, CRP/GRP-composite construction, T-shaped horizontal tail plane with fin and elevator, Schempp Hirth type airbrakes on upper wing surface, water ballast tanks in the wing, retractable landing gear equipped with brakes and spring suspension, 20 m span with winglets.

3. Equipment
   Min. Equipment:
   1 Air speed indicator (up to 300 km/h)
   1 Altimeter
   1 4-Point harness (symmetrical)
   1 Engine Control Unit
   1 VHF Transceiver
   1 Headset
   1 Rear View Mirror
   1 Parachute
   Additional Equipment refer to Flight and Maintenance Manual

4. Dimensions
   Span 20,0 m
   Wing area 12,52 m²
   Length 7,4 m

5. Engine [electrical propulsion]
   5.1 Model
   Lange EA 42 consisting of Engine EM 42, Power Electronics LE 42 and Power Cables
   5.2 Type Certificate
   TCDS No. EASA.E.015
   5.3 Max. revs.
   1700 RPM
   5.4 Max. continuous revs
   1700 RPM
   5.5 Max. over speed revs
   1750 RPM
   5.6 Max. motor temperature
   120°C
   5.7 Max. power electronics temp.
   85°C

6. Propeller
   6.1 Model
   LF-P42
   6.2 Type Certificate
   TCDS No. EASA.P.015
   6.3 Number of blades
   2
   6.4 Diameter
   2 m
   6.5 Sense of Rotation
   clockwise
7. Battery [electrical propulsion]
   7.1 Model E1-A150 Batteriemodul G5
   7.2 Battery capacity 39 Ah, 41 Ah
   7.3 Non-usable battery capacity 1 Ah
   7.4 Max battery discharge temperature 55°C
   7.5 Min battery discharge temperature 10°C
   7.6 Max battery charge temperature 40°C
   7.7 Min battery charge temperature 19°C
   7.8 Range of permissible cell voltage 3,0 V – 4,1 V

8. Launching Hooks
   Safety hook „Europa G 88“, LBA Datasheet No. 60.230/2

9. Weak Links
   Ultimate Strength:
   - for winch and auto-tow launching max. 750 daN
   - for aero-tow max. 750 daN

10. Load Factors
    +5,30 / -2,65 up to \( V_A \)
    +4,0 / -1,5 up to \( V_{NE} \)

11. Air Speeds
    11.1 Manoeuvring speed \( V_A \) 195 km/h
    11.2 Never exceed speed \( V_{NE} \) 280 km/h
    11.3 Maximum permitted speeds
        - in strong turbulence \( V_{RA} \) 195 km/h
        - in aero-tow \( V_T \) 185 km/h
        - in winch-launch \( V_W \) 160 km/h
        - for gear operation \( V_{LO} \) 195 km/h
        - for extracting engine \( V_{PO \ max} \) 120 km/h
        - with wing flaps at pos. +1, +2 \( V_{FE} \) 210 km/h

12. Approved Operations Capability
    Approved for VFR-flying in daytime.
    Cloud flying according to the specifications in the Flight Manual with restricted maximum mass and without water ballast.
    Aerobatic manoeuvres not permitted.

13. Launch methods
    Aero tow
    Winch launch
    Self-launch

14. Maximum Masses
    14.1 Maximum Take-off Mass 660 kg
    14.2 Max. Mass of non-lifting parts 340 kg

15. Centre of Gravity Range
    Forward Limit 290 mm aft of datum point
    Rearward Limit 398 mm aft of datum point

16. Datum
    The intersection of the projected leading
17. Levelling Means

Upper side of fuselage boom placed at Slope 1000 : 17.5

18. Control Surface Deflections

Refer to Maintenance Manual

19. Minimum Flight Crew

1

20. Maximum Passenger Seating Capacity

0

21. Baggage/ Cargo Compartments

15 kg

22. Lifetime limitations

Refer to Maintenance Manual

A.IV Operating and Service Instructions

1. Flight Manual

Flughandbuch für den Motorsegler E1 Antares, Issue 1 December 2004, or later EASA approved revisions


Wartungshandbuch für den Motorsegler E1 Antares, Issue 22 June 2006, or later EASA approved revisions


Wartungshandbuch für den Motorsegler E1 Antares, Issue 22 June 2006, or later approved revisions


Betriebshandbuch für den Elektromotor EA-42, Issue 12 August 2005, or later approved revisions

5. Operating Manual and Maintenance Manual for Propeller

Betriebshandbuch für den Propeller LF-P42, Issue 23 August 2005, or later approved revisions

6. Operating Manual for the Launching Hook

Betriebshandbuch für die TOST Schleppkupplung, latest revision

A.V Notes

1. Manufacturing is confined to industrial production.

2. All parts exposed to sun radiation - except the areas for markings and registration – must have a white colour surface
Section B: **Antares 18T**

**B.I General**

1. Type/ Model/ Variant
   1.1 Type: E1 Antares
   1.2 Model: Antares 18T

2. Airworthiness Category

3. Manufacturer
   - Lange Flugzeubau GmbH
     Brüsseler Straße 30
     66484 Zweibrücken
     Germany
   - Lange Aviation GmbH
     Brüsseler Straße 30
     66484 Zweibrücken
     Germany

4. EASA Type Certification Application Date
   15 March 2006

5. EASA Type Certification Date
   07 June 2023

**B.II EASA Certification Basis**

1. Reference Date for determining the applicable requirements
   15 March 2006

2. Airworthiness Requirements
   Joint Airworthiness Requirements for
   Sailplanes and Powered Sailplanes (JAR 22),
   Change 6, August 2001

3. Special Conditions
   None

4. Exemptions
   None

5. Deviations
   None

6. Equivalent Safety Findings
   JAR 22.335: The determination of \( V_D \) was
   done according to the report “Concerning
   the deduction of design maximum speed \( V_D \)
   in the airworthiness requirements LFS,
   LFSM, OSTIVAS and JAR 22” of LBA
   Braunschweig, 11.09.2001

7. Environmental Protection
   The aircraft is in accordance with the
   provisions of Article 6.1 of Regulation
   216/2008 without the need to comply with
   the Standard of ICAO Annex 16, Volume I,
   Chapter 10, by virtue of being a self-
   sustaining powered sailplane.
B.III  **Technical Characteristics and Operational Limitations**

1. **Type Design Definition**
   List of the drawing files Antares 18T, issued 27 April 2023

2. **Description**
   Single-seat, shoulder winged self-sustain powered sailplane with an air-cooled two-cylinder two-stroke engine (see also B.V.3), CRP/GRP-composite construction, T-shaped horizontal tail plane with fin and elevator, Schempp-Hirth type airbrakes on upper wing surface, water ballast tanks in the wing, retractable landing gear equipped with brakes and spring suspension, 18 m span with winglets.

3. **Equipment**
   Min. Equipment:
   - 1 Air speed indicator (up to 300 km/h)
   - 1 Altimeter
   - 1 Compass
   - 1 4-Point harness (symmetrical)
   - 1 Engine Control Unit Ilec MCU Antares
   - 1 VHF Transceiver
   - 1 Headset
   - 1 Rear View Mirror
   Additional Equipment refer to Flight and Maintenance Manual

4. **Dimensions**
   - Span 18.0 m
   - Wing area 11.9 m²
   - Length 7.4 m

5. **Engine**
   5.1 Model Solo 2350C
   5.2 Type Certificate TCDS No. EASA E.219
   5.3 Limitations
   - Max. revs 6500 RPM
   - Max. continuous revs 6100 RPM
   5.4 Maximum Continuous Power 20 kW at 6100 RPM

6. **Propeller**
   6.1 Model MT 136 L 67 -1AN
   6.2 Type Certificate TCDS No. EASA P.006 Issue: 04
   6.3 Number of blades 2
   6.4 Diameter 1.36 m
   6.5 Sense of Rotation counter clockwise
7. Fuel capacities
   7.1 Tank in the fuselage 16.5 l
   7.2 Non-usable fuel 0.2 l

8. Launching Hooks
   Safety hook „Europa G 88“, LBA Datasheet No. 60.230/2

9. Weak Links
   Ultimate Strength:
   - for winch and car launch 750 daN
   - for aero-tow max. 750 daN

10. Load Factors
    +5.30 / -2.65 up to $V_A$
    +4.0 / -1.5 up to $V_{NE}$

11. Air Speeds
    11.1 Manoeuvring speed $V_A$ 195 km/h
    11.2 Never exceed speed $V_{NE}$ 280 km/h
    11.3 Maximum permitted speeds
        - in strong turbulence $V_{RA}$ 195 km/h
        - in aero-tow $V_T$ 185 km/h
        - in winch-launch $V_W$ 160 km/h
        - for gear operation $V_{LO}$ 195 km/h
        - for extracting engine $V_{PO\,max}$ 110 km/h
        - with wing flaps at pos. +1, +2 $V_{FE}$ 210 km/h

12. Approved Operations Capability
    Approved for VFR-flying in daytime cloud flying according to the specifications in the Flight Manual with restricted maximum mass and without water ballast. Aerobatic manoeuvres are not permitted.

13. Launch methods
    Aero tow
    Winch launch
    Car launch

14. Maximum Masses
    14.1 Maximum Take-off Mass 600 kg
    14.2 Max. Mass of non-lifting parts 340 kg

15. Centre of Gravity Range
    Forward Limit 290 mm aft of datum point
    Rearward Limit 408 mm aft of datum point

16. Datum
    The intersection of the projected leading edges of the inner wings at the center of the fuselage

17. Levelling Means
    Upper side of fuselage boom placed at Slope 1000 : 17,5

18. Control Surface Deflections
    Refer to Maintenance Manual

19. Minimum Flight Crew
    1

20. Maximum Passenger Seating Capacity
    0
21. Baggage/Cargo Compartments: 15 kg
22. Lifetime limitations: Refer to Maintenance Manual

B.IV  Operating and Service Instructions

1. Flight Manual: Flughandbuch für den Motorsegler Antares 18T, Issue 01 June 2023, or later EASA approved revisions
3. Structural Repair Manual: Wartungshandbuch für den Motorsegler Antares 18T Chapter 9, Issue 01 June 2023, or later EASA approved revisions
6. Operating Manual for the Launching Hook: Betriebshandbuch für die TOST Schleppkupplung Europa G 88, latest revision

B.V  Notes

1. Manufacturing is confined to industrial production.
2. All parts exposed to sun radiation - except the areas for markings and registration – must have a white colour surface.
3. Operation with the engine removed is permitted.
Section C: Administrative Section

C.I Acronyms & Abbreviations
CFRP Carbon Fibre Reinforced Plastic
JAR Joint Aviation Requirements
EASA European Union Aviation Safety Agency
GFRP Glass Fibre Reinforced Plastic
LBA Luftfahrt-Bundesamt
MCU Motor Control Unit
VFR Visual Flight Rules

C.II Type Certificate Holder Record
Lange Flugzeugbau GmbH
Brüsseler Straße 30
66482 Zweibrücken
Germany

Lange Aviation GmbH
Brüsseler Straße 30
66482 Zweibrücken
Germany

C.III Change Record

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<td>14 July 2006</td>
<td>Initial Issue</td>
<td>Initial Issue, 14 July 2006</td>
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<td>25 January 2016</td>
<td>TC-Holder renamed to Lange Aviation GmbH</td>
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<td>03</td>
<td>09 June 2023</td>
<td>Introduction of new model Antares 18T; Correction of A.III. 16</td>
<td>07 June 2023</td>
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<td>04</td>
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<td>Correction of B.III.3, addition of B.V.3., editorial correction</td>
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