RZECZPOSPOLITA POLSKA
REPUBLIC of POLAND

Urząd Lotnictwa Cywilnego

Prezes Urzędu Lotnictwa Cywilnego
President of the Civil Aviation Authority

ŚWIADECTWO UZNANIA ZATWIERDZENIA TYPU
Type Approval Recognition Certificate

NUMER: **UL.A.00 – 016/2023**
Reference:

Niniejsze świadectwo uznania zatwierdzenia typu zaświadcza, że określony typ/model ultralekkiego statku powietrznego został uznany za akceptowalny w Rzeczypospolitej Polskiej zgodnie z obowiązującymi przepisami polskiego lotnictwa cywilnego i pozostaje w mocy przez czas nieokreślony, chyba że zatwierdzenie zostanie zrzeczone, zawieszone lub cofnięte oraz że został wpisany na listę typów zatwierdzonych prowadzoną przez Prezesa Urzędu Lotnictwa Cywilnego, o której mowa w przepisach wydanych na podstawie art. 33 ust. 2 i 4 ustawy – Prawo lotnicze (Dz.U. z 2022 r. poz. 1235, 1715, 1846, 2185 i 2642).

This Type Approval Recognition Certificate certifies that the ultralight aircraft type/model specified has been found acceptable in Republic of Poland in accordance with the applicable Polish Civil Aviation regulations and shall remain as such for an unlimited duration unless the approval is surrendered, suspended or revoked and has been entered on the list of approved flying device types managed by the President of the Civil Aviation Authority, referred to in the regulations issued on the basis of Art. 33 para 2 and 4 of the Aviation Law Act dated July 3rd, 2002 (JL. 2022, item 1235, 1715, 1846, 2185 and 2642).

Państwo projektu *State of Design*	**Czech Republic**
Państwo produkcji *State of Manufacture*	**Czech Republic**
Posiadacz zatwierdzenia typu *Type Approval Holder*	**Evektor, spol. s r.o.** Letecká 1008, 686 04 Kunovice, Czech Republic
Wytwórca *Manufacturer*	**Evektor-Aerotechnik a.s.** Letecká 1384, 686 04 Kunovice, Czech Republic
Oznaczenie typu produktu *Product Type Designation*	**Harmony**
Numer zatwierdzenia typu *Type Approval Number*	**ULL 01/2023**
Arkusz danych do zatwierdzenia typu *Type Certificate Data Sheet*	**ULL 01/2023**
Przyjęte wymagania techniczne *Type Certification Basis*	UL2 – part I. of the 1. 2019. Ultralehké letouny řízené aerodynamicky, adapted version of 27.3.2019
Uwagi *Remarks*	Approved by LAA CR the Technical Commision on: 03.03.2023 – ULL 01/2023 - first edition, 05.05.2023 – ULL 01/2023 – supplement a EZD ref. LTT-3.5460.25.2023

Z upoważnienia Prezesa Urzędu Lotnictwa Cywilnego
On behalf of President of the Civil Aviation Authority
Marcin Perkowski
Zastępca Dyrektora Departamentu Techniki Lotniczej
Deputy Director, Aviation Technical Department
(pismo zostało wydane w postaci elektronicznej i opatrzone kwalifikowanym podpisem elektronicznym)
(the letter was published in electronic form and signed with a qualified electronic signature)

Data pierwszego wydania: **07.09.2023**
Date of original issue:
Data ostatniej zmiany: - -
Date of last revision:

Letecká amatérská asociace ČR – Light Aircraft Association of the Czech Republic

Type Certificate

Issued by the Light Aircraft Association of the Czech Republic(hereinafter LAA CR), based on the delegation by the Ministry of Transport to perform the state administration in the matters of sports flying equipmentin accordance with the Section 82, Subsection 1 of Act No. 49/1997 Coll. On civil aviation and amending and supplementing Act No. 455/1991 Coll. On Trade Licensing (The Trade Licensing Act), as amended by later regulations of the Ministry of Transport

Aircraft type designation:

Two-seat, single-engine, aerodynamically controlled, all-metal upper wing, aircraft– Sport Flying Equipment.

Type designation: **Harmony**

Maximum take off mass 600 kg including the ballistic recovery parachute.
Detailed technical specification is stated in the Data Sheet.

Supplement a) 5.5.2023

- propeller DUC SWIRL-3-L
- electrically controlled flaps

Type certificate holder:

Evektor, spol. s r.o.
Letecká 1008
686 04, Kunovice
Czech Republic

ID: 16361733

Approved by the LAA CR Technical commission on:

March 3, 2023

The Type certificate is registered at the LAA CR under the reference:

ULL 01 / 2023

LAA CR Chief Technical Inspector: **ing. Petr Tax**

Type certificate number:	**ULL – 01 / 2023**
Type certificate holder:	Evektor spol. s r.o.
Type SLZ:	**Harmony**
Date of issuance:	10/03/2023
Supplement a) 5.5.2023	-propeller DUC SWIRL-3-L
	-electrically controlled flaps

Type certificate annex no. ULL - 01 / 2023

I. Generally

1. Type designation: **Harmony**
2. Category: Sport flying device, aerodynamically controlled ultralight aircraft
3. Type certificate holder: Evektor spol. s r.o.
   Letecká 1008
   686 04, Kunovice
   Czech Republic
   ID: 16361733
5. Application date: 15th December 2021
6. Approval date: 3rd March 2023

II. Certification specification

1. Airworthiness requirements: UL2 – part I. of the 1. 2019. Ultralehké letouny řízené aerodynamicky, adapted version of 27.3.2019.
2. Special conditions: N/A
3. Exceptions: N/A

III. Technical data, performance, operation limitation

1. Type definition: Aircraft type is defined by set of drawings and Type definition

2. Description: The Harmony is an aerodynamically controlled, single-engine, two-seat low-wing monoplane with side-by-side seat configurations. The aircraft is equipped with a Rotax 912ULS engine.

2.1 Fuselage: The primary hull structure is a half-shell structure riveted from aluminum alloys with a composite aerodynamic body at the rear of the fuselage. The cab frame body, including the cab frame itself, is also made of composite.
The landing gear of the aircraft is of the three-wheel type. The front chassis leg is metal, the wheel is mounted in a duralumin fork. The main chassis consists of a composite spring.

2.2 Wing: The wing is rectangular in shape of a half-shell structure, the ends of the wing are trapezoidal. The ends of the wings are terminated by an end arc made of composite. Each wing includes an integral fuel tank with a capacity of 60 liters.
Differentiated ailerons and flaps are half-shell construction. Ailerons and flaps are controlled by rods. The flaps are controlled by mechanic or reguest by an electric motor in combination with rods.

2.3 Tail surfaces: Horizontal tail surface-classic all-metal stabilizer with main rear and front beam with symmetrical profile is riveted blind rivets and in critical places glued from duralumin sheets and pressed ribs. The vertical tail surface is of a similar design as the horizontal tail surface.

3. Equipment: For technical airworthiness approval of light sport aircraft issue, basic equipment according certification specification listed in chapter II must be installed.

4. Basic technical data:

1. Dimensions

Span	9,28 m
Length	6,25 m
High	2,476 m

Wing

Area	10,36 m^2
MAC	1,185 m

Aspect ratio	8,31
Wing loading at MTOM 600kg	57,9 kg/m^2

Aileron

Span	1,4 m
Area	0,318 m^2
Aileron deflection (up/down)	20 ^{0}/15 ^{0}

Flap

Span	2,25 m
Area	0,51 m^2
Flap deflection - cruise	0 ^{0}
Flap deflection – take-off	15 ^{0}
Flap deflection – approach, landing	30°, 50 ^{0}

Horizontal stabilizer

Span	2,77 m
Area	2,04 m^2
Area- elevator	0,901 m^2
Elevator deflection (up/down)	25^0 / 20^0

Vertical fin

Span	1,38 m
Area	1,073 m^2
Area rudder	0,461 m^2
Rudder deflection	+/- 30^0

Undercarriage

Main undercarriage wheelbase	1,95 m
Main and front undercarriage wheelbase	1,45 m
Main wheel dimensions	380mm 15x6,00-6
Front wheel dimension	380mm 15x6,00-6
Main undercarriage tire pressure	120+20 kPa
Front undercarriage tire pressure	120+20 kPa
Brakes	Hydraulic disc brakes
Main undercarriage suspension	Composite spring
Front undercarriage suspension	Elastomer

2. Mass

Max. take-off mass	600 kg
Max. take-off mass with emergency parachute system	380 kg
Max. useful load	220 kg (EW – 380 kg)
Min. crew mass	55 kg

Max. baggage mass	25 kg
Wing fuel tanks	2x60 l
Standard Empty mass including emergency parachute system	380 kg

3. Airspeed and performance

Engine ROTAX 912 ULS (73,5 kW / 100 HP), propeller Woodcomp Klassic 170/3 R

Performance in ISA conditions.	Take-off mass 600 kg Airspeed CAS
Stall speed flaps extended V_{SO}	67 km/h
Stall speed flaps retracted V_{S1}	79 km/h
Max. speed – flaps extended (30°) V_{FE}	140 km/h
Design airspeed V_A	186 km/h
Max. horizontal flight airspeed V_H	220 km/h
Never exceed speed V_{NE}	270 km/h
Take-off length 15 m obstacle, (grass/concrete)	390/420 m
Rate of climb	3,7 m/s at 115 km/h
Rough airspeed V_{RA}	211 km/h

Engine ROTAX 912 ULS (73,5 kW / 100 HP), propeller DUC SWIRL-3-L

Performance in ISA conditions.	Take-off mass 600 kg Airspeed CAS
Stall speed flaps extended V_{SO}	68 km/h
Stall speed flaps retracted V_{S1}	79 km/h
Max. speed – flaps extended (30°) V_{FE}	140 km/h
Design airspeed V_A	186 km/h
Max. horizontal flight airspeed V_H	200 km/h
Never exceed speed V_{NE}	270 km/h
Take-off length 15 m obstacle, (grass/concrete)	370/400 m
Rate of climb	3,7 m/s at 115 km/h
Rough airspeed V_{RA}	211 km/h

4. CG position range

Limit front CG position: **21 %** MAC
Limit aft CG position: **31 %** MAC

The Datum is located at the realedge of the central profile of the wing. Mean aerodynamic chord length MAC=1,185m, MAC shift aft of main rib is 56,15 mm.

5. Flight load factors

Maximal positive / negative ……. +4,0 / -2,0.

6. Power-plant

Rotax 912 ULS.

Maximal take-off power	73,5 kW/ 5800 min^{-1} (max duration 5 min).
Maximal continuous power	69 kW/5500 min^{-1}.

7. Propeller

- Woodcomp Klassic 170/3/R, ground adjustable.
- DUC SWIRL-3-L, ground adjustable.

8. Fuel

- Automotive gasoline with an octane number of min. RON 95 (or knock resistance index min. AKI 91) meeting EN 228 Super/ EN 228 Super Plus standards.
- AVGAS 100LL aviation gasoline meeting ASTM D910
- AVGAS UL91 aviation gasoline (unleaded petrol) meeting ASTM D7547

9. Oil

Oil specification API SF(SG) or higher, designated for 4-stroke motorcycles
(with gear lubrication additives).

10. Rescue parachute system

1) Magnum 601 S-LSA installed according “Stratos s.r.o.” company standards.
2) Galaxy GRS 6/600-SL installed according “Galaxy holding s.r.o.” company standards.

IV. Operation and maintenance documents:

- Flight and maintenance manual together with appendix of optional equipment.
- Operation manual ROTAX 912 ser. OM-912.
- Maintenance manual for Rotax 912 ser. MML-912, MMH-912.
- User manual for propeller Woodcomp Klassic 170/3/R UM-07 CZ
- Installation manual for propeller DUC SWIRL-3, DH_SW_3_BE_02
- Maintenance manual for rescue parachute system (Galaxy or Magnum).
- Manuals for optional accessories according to the client's specification.

V. Annex:

No Annex.

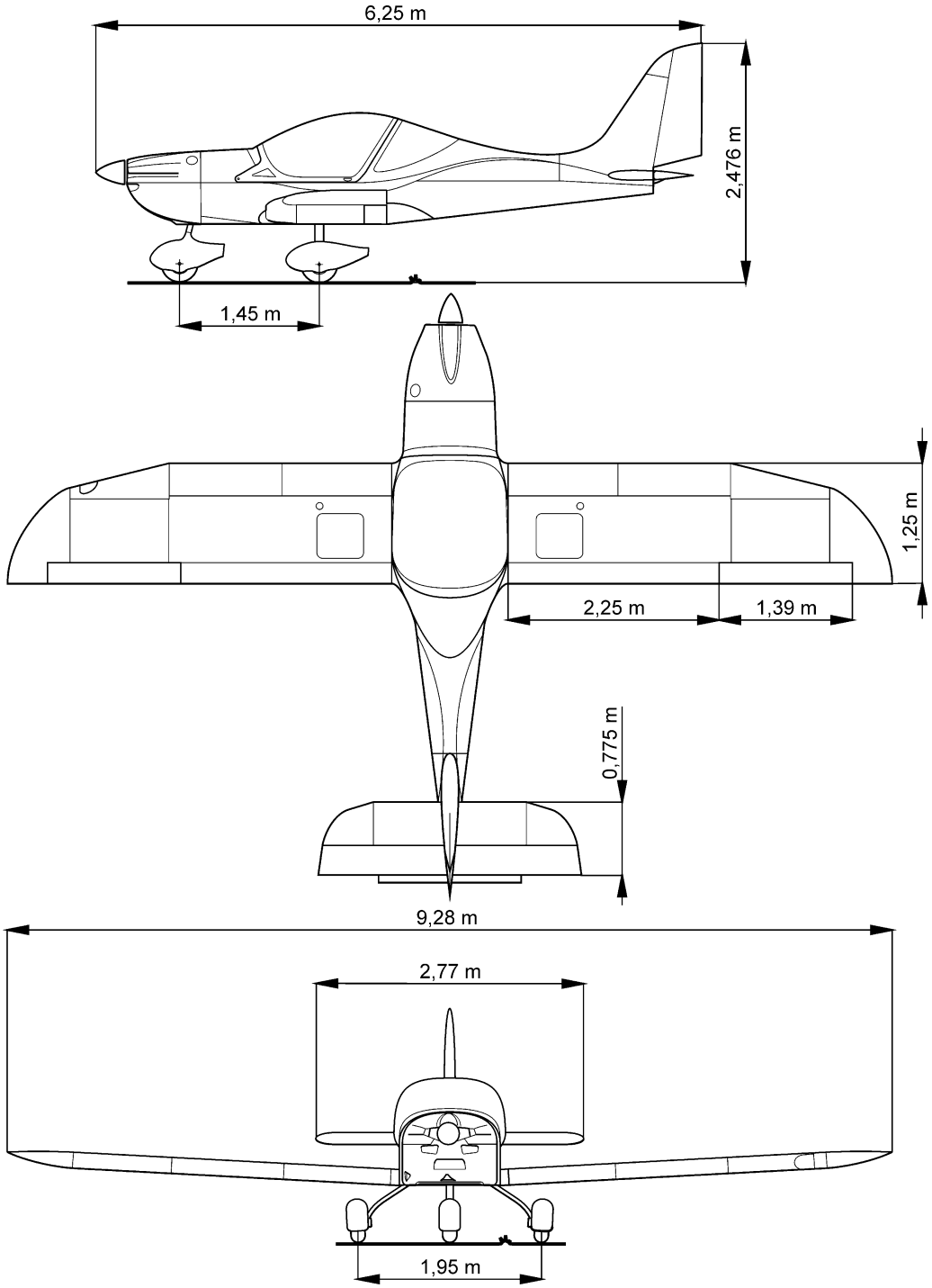
Notes: Each aircraft must be equipped with actual weight and balance protocol with equipment list to issue airworthiness technical approval.

1. Aircraft must be equipped with placards listed in flight manual

VI. Appendix:

Harmony aircraft drawing according type definition ULL 01/2023.

3D Harmony aircraft drawing according type definition ULL 01/2023.



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