

型号认证数据单
THE VALIDATION DATA SHEET

编号/No: VTC.... A

版次/Revision: 0

型别/Models:

FM250 Vampire

批准人/Approved By:

职务/Title: Director General of CAAC-AAD

日期/Date: 2017年7月4日

本数据单是型号认证（编号：VTC.... A）的组成部分，它规定了符合中国民用航空局的适航要求所颁发此型号认证的产品的状态和限制。

This data sheet, which is part of Validation of Type Certificate (No: VTC.... A), prescribes condition and limitation under which the product for which the type certificate was issued meets the airworthiness requirements of the Chinese Civil Aviation Regulation.

型号认证持有人/Validation of Type Certificate Holder:

CARBON DESIGN s.r.o.
Hradecka 315, Prazske Predmesti 551 01 Jaromer
Czech Republic

有效页清单/List of effective pages :

页数/ Pages	1	2	3	4	5	6	7	8	9					
版次/Revision	0	0	0	0	0	0	0	0	0					

第1部分 概述

Section 1 GENERAL

1. CAAC认可数据单和型号合格证数据单

CAAC Validation Data Sheet and Type Certificate Data Sheet

	中国民用航空局认可数据单号、版次和颁发日期 CAAC Validation Data Sheet Number, Revision and issuance date	型号合格证数据单号、版次和颁发日期 Type Certificate Data Sheet Number, Revision and issuance date
当前 Current	。。。。A, 版次0, 2017年06月。。日	ULL-03/2009, 30.11.2016
历史 History		

2. 飞机类型/Airworthiness Category:

特殊类别航空器 - 超轻型飞机

Special Class Aircraft – Ultra Light Airplane

3. 认可当局/Validation Authority:

中国民用航空局/CAAC

审定当局/Certifying Authority:

捷克轻型运动飞机协会

Light Aircraft Association CR

4. 型号证持有人/Type Certificate Holder:

CARBON DESIGN s.r.o.

Hradecka 315,

Pražské Předměstí 551 01 Jaromer

Czech Republic

第2部分 数据单

Section 2 DATA SHEET

I. 捷克轻型航空器协会审定基础/Certification Basis of Light Aircraft Association CR

1. 适航要求:
Airworthiness requirements: UL 2-part I., 超轻型航空器适航要求, 空气动力控制超轻型飞机, 2002年10月17日修订。
UL 2-part I. Ultralight aircraft airworthiness requirements, Aerodynamically controlled ultralight aircraft, modified regulations from 17.10.2002.
2. 专用条件:
Special Conditions: 无/None
3. 豁免/Exceptions: 无/None

II. CAAC 认可审定基础/CAAC Validation Certification Basis

1. 中国民用航空局认可捷克轻型运动飞机协会确定的型号审定基础。
CAAC accepts the Certification Basis of Light Aircraft Association CR as the Validation Basis.
2. CAAC 的附加技术条件/CAAC identify the following Additional Technical Conditions:
- a. 依据中国民用航空规章 CCAR21.29(e)要求, 机上所有用于提示、警告和通知旅客的文字标记和标牌必须至少是中文; 机上所有向旅客或者机外营救人员指示应急出口和门的位置以及开启方法的文字标记和标牌必须至少是中文; 旅客可能使用的机上所有应急设备的操作说明必须至少是中文。
As per CCAR 21.29(e), all markings and placards on the airplane used for advising, warning, or notifying passengers must be at least in Chinese; all markings and placards on an airplane used for indicating passengers or outboard rescue personnel of the location of emergency exits and doors and their means of opening must be at least in Chinese; and all the operation instructions of airplane emergency equipment that may be used by passengers must be at least in Chinese.
- b. 操作系统与支承结构/Control System and Supporting Structure
- (a) 操作系统与支撑结构应按加拿大 DS 10141E 第 003 修正案的 35 条规定的表面载荷产生的铰链力矩的至少 125% 来设计, 但不必超过下列驾驶员操纵力所产生的载荷:
The control system and supporting structures shall be designed for 125% hinge moments resulting from the surface load from section 35 of Canada DS 10141E amendment 003, but need not exceed the loads from the following pilot forces:
- (1) 在驾驶杆握把上/at the grip of the stick:
- (i) 俯仰 445 牛顿 (100 磅) /445 N (100 lbs) in pitch
- (ii) 滚转限制载荷 178 牛顿 (40 磅) /178 N (40 lbs) in roll limit loads; and
- (2) 在脚蹬上/at the rudder pedals: 航向 578 牛顿 (130 磅) /578 N (130 lbs) in yaw.
- (b) 如果安装双操纵组件, 该相关系统应按驾驶员反向操纵情况进行设计。
When dual controls are installed, the relevant system shall be designed for the pilots operating in opposition.
- (c) 操作面质量平衡的配重应设计成:
Control surface mass balance weights shall be designed for:
- (1) 24g 极限载荷, 垂直于操作面/24 'g' ultimate normal to the surface; and
- (2) 12g 极限载荷, 向前和向后和平行于铰链轴线

12 'g' ultimate fore and aft and parallel to the hinge line.

- (d) 对于对称运行，右和左襟翼应当同步。

Right and left flaps shall be synchronized for symmetrical operation.

- (e) 所有主操纵界器件在系统中应有止动器，以承受操纵力、125%操作面载荷、或地面突风载荷中的较大值。

All primary controls shall have stops within the system to withstand the greater of pilot force, 125% surface loads, or ground gust loads.

- (f) 次操纵器件应按正常运行中驾驶员可能施加的最大操纵力来进行设计。

The secondary controls shall be designed for the maximum forces a pilot is likely to apply in normal operation

III. 规范、性能和运行限制/Specifications, performance and operational limitations.

1. 型号规范/Type specification

型号由2007年5月15日的《型号定义》和2007年12月31日编号从FM 250-0-01-01到FM 250-6-04-23的图纸定义。

The type is defined by the Type design dated 15.5.2007 and by the drawings No. FM 250-0-01-01 to FM 250-6-04-23 31.12.2007.

描述/Description:

FM250 Vampire是并排双坐单发悬臂下单翼航空器。航空器为全复合材料，由玻璃纤维夹层结构和碳纤维梁构成。机翼为梯形，带有分离式着陆襟翼。着陆襟翼有15°和33°两个位置。前三点起落架，主轮带液压盘式刹车。主起落架支腿为复合材料，前轮可操控，弹簧减震。尾部标准设计，水平安定面位于机身轴线上。整体油箱位于机翼内。设备：为获得超轻型航空器适航证件，每一架航空器必须具备第II章条款适航要求的基本仪表。

FM250 Vampire is a two seat single engine cantilever low wing UL aircraft with side by side seating. The aircraft has an all composite construction consisting of fiberglass sandwich combined with carbon rowing spars. The wing is of trapezoid shape with main and Real wing spars and is equipped with split landing flaps. The landing flap is of a split type with position 15° and 33°. Tricycle landing gear is of a nosewheel design equipped with hydraulic disc brakes on the main wheels. Main landing legs are composite, front landing wheel is controlled and spring loaded. Tail section has a standard design with horizontal stabilizer in the fuselage axis. Integral fuel tanks are placed in the wings, Equipment: To receive the UL aircraft airworthiness certificate, every produced aircraft must be equipped with basic instruments, in accordance with airworthiness requirements stated in the chapter II. Regulations.

2. 基本技术规范/Basic technical specifications

翼展	7.8 m
长度	6.049 m
高度	2.164 m
机翼面积/Wing area	10.05 m ²
翼形/Airfoil	MS 313
MAC	1312 m
展弦比/Aspect ratio	6.054
最大起飞重量下机翼载荷 Wing loading at MTOW	450 kg = 44,7 kg/m ²
副翼长度/Aileron length	0.85 m
副翼面积/Aileron area	0.21 m ²
副翼偏转/Aileron deflections	向上: 25° 向下: 15°

着陆襟翼长度/landing flap length	2.2 m
着陆襟翼面积/landing flap area	0.811 m ²
襟翼偏转/flap deflections	起飞/Take off: 15° 着陆/landing: 33°
水平尾翼翼展/Horizontal tail area	2.63 m
水平尾翼面积/Horizontal tail area	1,82 m ²
水平尾翼偏转/Horizontal tail deflections	+/- 19°
轮距/Wheel track	1.94 m
轴距/Wheel base	1.52 m
轮胎尺寸/Wheels dimensions	350 x120 mm
轮胎压力/Tire pressure	1,8 + 0,2 kPa
刹车/Brakes	液压盘式/hydraulic discs
主起落架支腿弹性装置/Main landing gear legs springing	轮胎, 复合材料起落架支腿 tires, composite landing gear legs
前起落架支腿弹性装置/Front landing gear legs springing	钢弹簧/Steel spring

3. 重量/Weight

最大起飞重量/Max. take off weight MTOW	450 kg
最大起飞重量只有在安装弹射回收系统 (BRS) 时才可以被超出 MTOW can be exceeded only for the weight of the ballistic recovery system (BRS). MTOW including BRS	472,5 kg
空重/Empty weight	安装Rotax 912发动机, 无弹射回收系统时 265 kg。 265 kg in basic configuration with engine Rotax 912 without BRS. 安装Rotax 912发动机, 配备弹射回收系统时 285 kg。 286 kg in basic configuration with engine Rotax 912 with BRS.
最大有效载荷 Max. useful load	187 kg
机组最小重量/Min. weight of the crew	50 kg
最大行李重量/Max. weight of the baggage	8 kg
燃油箱容积/Fuel tank capacity.	一个68升, 可选2个68, 总共136升。 1 x 68 l, optional 2 x 68 l, total 136 l.

4. 性能/Performance

以下数据是飞机在海平面标准大气条件下获得的。

The following figures correspond to MSA conditions for the aircraft equipped with:

装配ROTAX 912 UL (59,6 kW / 80 hp) 发动机, DUC Swirl三叶螺旋桨, 直径1730mm。
Engine ROTAX 912 UL (59,6 kW / 80 hp) Propeller DUC Swirl, 3 blade, diameter 1730 mm.

起飞重量/Take off weight	472,5 kg
飞行速度 (校准空速) /Flight speed CAS:	

着陆构型失速速度/Stall speed in landing configuration V_{SO}	63,0 km/h
干净构型失速速度/Stall speed in clean configuration V_{S1}	78,0 km/h
襟翼伸出时最大速度/Max. flap extended speed V_{FE}	120 km/h
设计机动速度/Design maneuvering speed V_A	156 km/h
最大平飞速度/Max. speed in level flight V_H	223 km/h
不可超越速度/Never exceed speed V_{NE}	270 km/h
颠簸速度/Rough air speed V_{RA}	187 km/h
15米越障起飞距离/Take off distance over 15 m obstacle	290 m
爬升率/Climb rate	5,1 m/sec, 120 km/h

装配ROTAX 912 ULS (73,5 kW / 100 hp) 发动机, DUC Swirl三叶螺旋桨, 直径1730mm。
Engine ROTAX 912 ULS (73,5 kW / 100 hp) Propeller DUC Swirl, 3 blade, diameter. 1730 mm.

爬升率/Climb rate	6,09 m/sec, 120 km/h
最大平飞速度/Max. speed in level flight V_H	232 km/h
15米越障起飞距离/Take off distance over 15 m obstacle	270 m

5. 重心限制/Center of gravity (CG) limits

以下数据是飞机在海平面标准大气条件下获得的:

前重心限制/Forward CG limit:	24%平均空气动力弦长/MAC
后重心限制/Aft CG limit:	34 %平均空气动力弦长/MAC
基准/Datum:	机翼前缘为基准 Wing leading edge is the datum
平均空气动力弦长/Mean aerodynamic chord:	MAC=1,312 m

平均动力弦位于距离翼根前缘127 mm处

MAC is 127 mm away from the leading edge of the wing root airfoil:-

6. 载荷系数/Load factors

最大正/负载荷系数/Maximum positive/negative: +4,0 / -2

7. 发动机/Engine

Rotax 912 UL或者Rotax 912UL S

发动机运行限制/Operational engine limitations:

Rotax 912 ULS:

最大起飞功率/Maximum take off power	73,5 kW/5800 min ⁻¹ (5分钟for 5 minutes)
最大连续/Maximum continues power	69 kW/5500 min ⁻¹

Rotax 912 UL:

最大起飞功率/Maximum take off power	59,6 kW/5800 min ⁻¹ (5分钟for 5 minutes)
最大连续/Maximum continues power	58 kW/5500 min ⁻¹

8. 螺旋桨及限制/Propeller and limitations

型号/Type	DUC Swirl
生产商/Producer	DUC Helices, 法国/France
描述/Description	地面可调, 复合材料, 3叶螺旋桨。直径1730 mm on the ground adjustable, composite, 3- blade. Diameter: 1730 mm

型号/Type	FITI ECO COMPETITION 3LR 158
生产商/Producer	FITI design s.r.o.
描述/Description	地面可调, 复合材料, 3叶螺旋桨。直径1580 mm on the ground adjustable, composite, 3- blade. Diameter: 1580 mm

型号/Type	Křemen SR 2000, SR 3000
生产商/Producer	Woodcomp s.r.o.
描述/Description	地面可调, 木质, 3叶螺旋桨。直径1680 mm on the ground adjustable, wooden, 3- blade. Diameter: 1680 mm

型号/Type	Peszke AS 1730/1950
生产商/Producer	Peszke S.C.
描述/Description	地面可调, 碳纤维, 3叶螺旋桨。直径1730 mm on the ground adjustable, laminated, 3- blade. Diameter: 1730 mm

型号/Type	SR 3000 / 2W
生产商/Producer	Woodcomp s.r.o.
描述/Description	空中可调, 混合构造, 3叶螺旋桨。直径1625至1750 mm in flight adjustable, mixed construction, 3- blade. Diameter: 1625 to 1750 mm

型号/Type	KA-2/5-PA
生产商/Producer	Kašpar a synové- Strojírna Kalmar s.r.o.
描述/Description	空中可调, 混合构造, 3叶螺旋桨。直径1720 mm in flight adjustable, mixed construction, 3- blade. Diameter: 1625 to 1720 mm

9. 燃油/Fuel

符合DIN 51607,Ö-NORM 1100的EUROSUPER RON 95无铅汽油和100LL航空汽油。
EUROSUPER RON 95 lead free accord. to DIN 51607,Ö-NORM 1100 AVGAS 100 LL.

捷克共和国推荐BA 95号燃油。

BA 95 Natural is recommended for the Czech Republic.

10. 滑油/Oil

Rotax 912: 滑油等级为API SF(SG)或更高, 用于4冲程摩托车的滑油(带有春润滑添加剂)。
Rotax 912: oil classification API SF(SG) or higher, intended for use in 4-cycle motorcycles (with additives for gear lubrication)

IV. 运行和维护文件/Operations and maintenance documents

- FM250 Vampire 飞行手册
FM250 Vampire flight manual
- ROTAX 912用户手册
ROTAX 912 user manual

- 螺旋桨技术规范和运行指令
Propeller technical specifications and operational instructions
- Ballistic降落伞系统（BRS）用户手册（如果配备了BRS）
BRS user manual (if aircraft is equipped with BRS)
- 选装设备手册
Optional equipment manuals

V. 附加/Additions

附加(a), 2011年3月31日: 机身更改-商用名称FM250 Vampire II

Addition (a), 31.3.2011: Fuselage modification – trade name FM250 Vampire II

FM-250 Vampire II源自FM-250 Vampire。机身长度为6,232米, 比原先要长一些, 是因为发动机前移了100毫米, 并且垂尾的截面形状有所改变。发动机整流罩形状为了配合发动机的安装也略作修改。飞机重心位置保持不变。

FM-250 Vampire II originates from the FM-250 Vampire. The fuselage length is now 6,232m, which is longer comparing to the previous model. It is due to moving the engine mount 100mm forward and changing the vertical tail section shape. Engine cowling has been reshaped slightly and was modified to accommodate the engine mount. In spite of all mentioned modifications, the CG position remains in the original range.

垂尾截面形状改变只要是外观上的, 前缘与机身纵轴的夹角与原来不同。垂尾的面积有原来的 $0,814\text{m}^2$ 变为 $1,155\text{m}^2$ 。这些变化并未改变飞机的飞行特性和操控性。

Vertical tail section has also been re-shaped. The change is mainly cosmetic, leading edge of the new shape of vertical tail now forms a different angle with longitudinal fuselage axis. Vertical tail section area has changed to $1,155\text{m}^2$ from the original $0,814\text{m}^2$. All above modifications have not changed flight characteristics and controllability of the aircraft comparing to the previous model.

除了之前使用过的螺旋桨, 飞机也可使用Woodcomp SR3000/2W螺旋桨。该型螺旋桨的重心在允许范围内。飞行试验确认爬升率增加, 并且为超过最大水平速度 V_h 。发动机仍为原来的Rotax 912 UL或912 ULS。

Besides the previously used propellers, the aircraft will now also use type Woodcomp SR3000/2W. The CG range with this propeller remains within the permitted range. Flight tests confirmed that climb ratio has increased and max. horizontal speed V_h was not exceeded. Engine: remains Rotax 912 UL or 912 ULS as originally mounted, according to the type certificate.

附加(b), 2011年3月31日: 滑翔飞行最大重量为520千克

Addition (b), 31.3.2011: Glider airtows up to 520 kg

牵引绳薄弱环节最大强度 $300\text{daN} \pm 30 \text{ daN}$ 。

Max. Strength of the towing rope weak link $300\text{daN} \pm 30 \text{ daN}$.

牵引滑翔机最大重量520公斤。

Max. Weight of the towed glider 520 kg.

最低牵引速度110公里/小时。

Min. Speed during towing 110 km/h.

最大爬升率飞行速度120公里/小时。

Max. Rate of climb at the speed 120 km/h.

最大牵引速度156公里/小时（或根据滑翔机）。

Max. Speed during towing 156 km/h (or according to glider).

牵引飞机必须符合UL-2中第I章的补充III的规定（对超轻型牵引飞机的额外要求）。飞行牵引的程序和限制都在飞行手册的补充条目里。

Tow plane must comply with regulations of the Supplement III of the regulations UL-2 / section I. (additional requirements for UL tow planes). Procedures and limitations for airtows are included in the flight manual supplement.

附加(c), 2014年3月14日: 滑翔飞行最大重量为750千克

Addition (c), 14.3.2014: Glider airtows up to 750 kg

滑翔机飞行牵引的最大重量增至750千克, 其他的数据均和附加(b)一致。使用KA-2/5-PA螺旋桨（在第III章第8条有详细的叙述）。

Maximum weight of glider airtows is increased to 750 kg, other data are identical to the addition b). Using of propeller KA-2/5-PA (more detail in Section III./8.)

附加(d), 2014年3月14日: 名称由FM - 250 Vampire改为FM250 Vampire, TC持证人变为CARBON DESIGN s. r. o.

Addition (d), 14.3.2014: Change of type designation from FM - 250 Vampire to FM250 Vampire and a change of the type certificate holder CARBON DESIGN s. r. o.

Notes:

1. 每一架申请超轻型飞机适航证的飞机必须有重量平衡协议, 其中包含了具体空重飞机的装备列表。

Every aircraft applying for the UL airworthiness certificate must have Weight and balance protocol which contains list of the equipment of the specific empty aircraft.

2. 飞机必须装有飞行手册中列出的标语牌、标识与标志。

The aircraft must be equipped with placards and signs listed in the Flight manual.

- 结束 / END -