

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

MICROLIGHT TYPE APPROVAL DATA SHEET (TADS)

**NO: BM-72 ISSUE: 1**

TYPE: Flight Design CTSW

- (1) MANUFACTURER: P & M Aviation Ltd, Unit B, Crawford St, Rochdale.  
(UK type approval holder for Flight Design GMBH)
- (2) UK IMPORTER: P & M Aviation Ltd.
- (3) CERTIFICATION: BCAR section S issue 3, JAR-VLA parts C & D.
- (4) DEFINITION OF BASIC STANDARD: CTSW master drawings list AS.010.00001 revision 1,  
18/11/05
- (5) COMPLIANCE WITH THE MICROLIGHT DEFINITION

(a) MTOW	450 kg
(b) No. Seats	2
(c) Maximum Wing Loading	45 kg/m <sup>2</sup>
(d) V <sub>so</sub>	33 kt CAS
(e) Permitted range of pilot weights	55 – 100 kg per seat. 180kg total.
(f) Typical Empty Weight (ZFW)	266 kg
(g) ZFW + 172 kg crew + 1 hr fuel (14litres / 10kg)	448 kg
(h) ZFW + 86 kg pilot + full fuel (130 litres / 93kg)	445kg
(i) Max ZFW at initial permit issue	268kg

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(6) POWER PLANTS

Designation	Rotax 912 ULS	Rotax 912 ULS	
Engine Type	4 cylinder 4 stroke horizontally opposed	4 cylinder 4 stroke horizontally opposed	
Reduction Gear	2.43:1	2.43:1	
Exhaust System	Rotax underslung muffler	Rotax underslung muffler	
Intake System	2 x K&N filters	2 x K&N filters	
Propeller Type	Neuform Novaprop TXR2	Warp Drive 3 bladed carbon composite	
Propeller Dia x Pitch	1660mm x 21° at blade undersurface at 75% radius	1676mm x 19° at blade undersurface at tip	
Noise Type Cert No.	<i>174M issue 1</i>	<i>174M issue 2</i>	
AAN approving configuration	<b><i>BMAA-AAN 1018</i></b>	<b><i>BMAA-AAN 1018</i></b>	

(7) MANDATORY LIMITATIONS:

- (A) Max Take-Off Weight 450kg
- (B) CG Limits 450mm aft of datum (38% mac)  
271mm aft of datum (23 % mac)
- (C) CG datum Leading edge at any point of span
- |                      |           |           |       |
|----------------------|-----------|-----------|-------|
| (D) Cockpit Loadings | Port      | Starboard | Total |
|                      | Min 0kg   | 0kg       | 55kg  |
|                      | Max 100kg | 100kg     | 180kg |
- (E) Never Exceed Speed Vne 150 kt
- (F) Manoeuvring Speed Va 86kt
- (G) Max speed for full flap Vf 64kt
- (H) Max rough air speed Vc 115kt
- (I) Permitted Manoeuvres Non Aerobatic  
Normal acceleration limits, +3.8 -1.5g
- (J) Fuel Contents (Max Useable) 130ltr

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(I) Power Plant See Table

Engine	Rotax 912 ULS	
Max RPM	5800 (5min) 4800 (Continuous)	
MAX CHT	135°C	
MAX EGT	925°C	
Fuel Spec	95 RON minimum unleaded to BS(EN)228 Premium, Premium plus or 97+ octane 4-star /MOGAS leaded fuel to BS 4040, or AVGAS 100LL.  (Unleaded preferred – see engine manual).	
Engine Oil Spec	SAE 10W-40 To API SF or SG See engine manual viscosity table.	
Gearbox oil spec	Integral supply with engine	
Fuel/Oil Mix	N/A	
Coolant Temperature	135 C	
Oil Pressure	Normal 2-5 bar above 3,500 rpm Min 0.8bar at idle Max 7bar	
Oil Temperature	50 – 130 C	
Fuel Pressure	0.15 – 0.4 bar	

**(8) INSTRUMENTS REQUIRED:**

ASI	Altimeter	RPM	CHT	Compass	Oil press/temp	Fuel Pressure	VSI	Slip ball
Required (32-160kt)	Required	0-6000	0-150 C	Option	0-8bar 0-150C	Option	Option	Recommended

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**(9) CONTROL DEFLECTIONS:**

Control Surface	Datum	Deflection measured at trailing edge +ve = surface downwards
Ailerons	Neutral, measure from flap T.E ,flaps up	Up -110mm ±10, Down 50mm ±5
Flaps	Fuselage fairing trailing edge	Flaps fully up = - 60mm +-5 (-12°) Flaps 0 (takeoff) = 0 mm (0°) Flaps fully down = 175mm +-10 (40°)
Stabilator	Measure top surface of ventral fin to Lower trailing edge of stabilator.	Up -185mm ±10, Down - 30mm ±5
Trim tab	With stabilator neutral (aligned with fuselage fairing)	Trim full nose up 7mm +-3 Trim full nose down - 25mm +-5
Rudder	Rudder horn aligned with fin, apply full pedal deflection	Left 145mm ±10, Right 145mm±10

**(10) PILOT'S NOTES, MAINTENANCE MANUALS REFERENCES:**

**10.1 Manuals approved for use with this aircraft.**

- (a) Cyclone Airports manual ref : CTSW Man current issue.
- (b) Rotax 912 engine (all versions) operators manual current issue.

**10.2 The following placards are to be fitted (see manual for full set):-**

On main panel:

LIMITATIONS CTSW	
MAX AUW	450KG
EMPTY WEIGHT	<input type="text"/>
(MAX EMPTY WEIGHT 268KG)	
NON-AEROBATIC, LIMITS +3.8G, -1.5G	
TOTAL LOAD	FUEL
55-89KG	130L(FULL)
130KG	72L
160KG	31L
172KG	14L
V <sub>so</sub> FLAPS 40°	33KT
V <sub>S1</sub> FLAPS -12°	40KT
V <sub>F</sub> MAX FLAPS	66KT
V <sub>a</sub> MANOEUVRE	89KT
V <sub>c</sub> CRUISE	118KT
V <sub>ne</sub>	150KT
MAX CONTIN RPM	4800
OIL PRESS (3500+ rpm)	2-5BAR
OIL TEMP MAX	130°C
COOLANT MAX	135°C

At each filler cap:

<p><b>CAPACITY 65L</b>  <b>FUEL TYPE:</b>  <b>Min. RON 95</b>  <b>EN228 PREMIUM PLUS</b>  <b>AVGAS 100LL (SEE MANUAL)</b></p>
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At cowl hatch:

<p><b>ENGINE OIL</b>  <b>SEMI-SYNTHETIC</b>  <b>SAE 10-40</b></p> <p><b>COOLANT 100%</b>  <b>ANTI-FREEZE</b></p>
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At baggage door:

<p><b>MAX BAGGAGE</b>  <b>25KG TOTAL</b></p>
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- (11) MANDATORY MODIFICATIONS / SERVICE BULLETINS / AIRWORTHINESS DIRECTIVES ETC:

Nil

- (12) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

Rate of Climb: 1200 fpm at 60kt IAS.

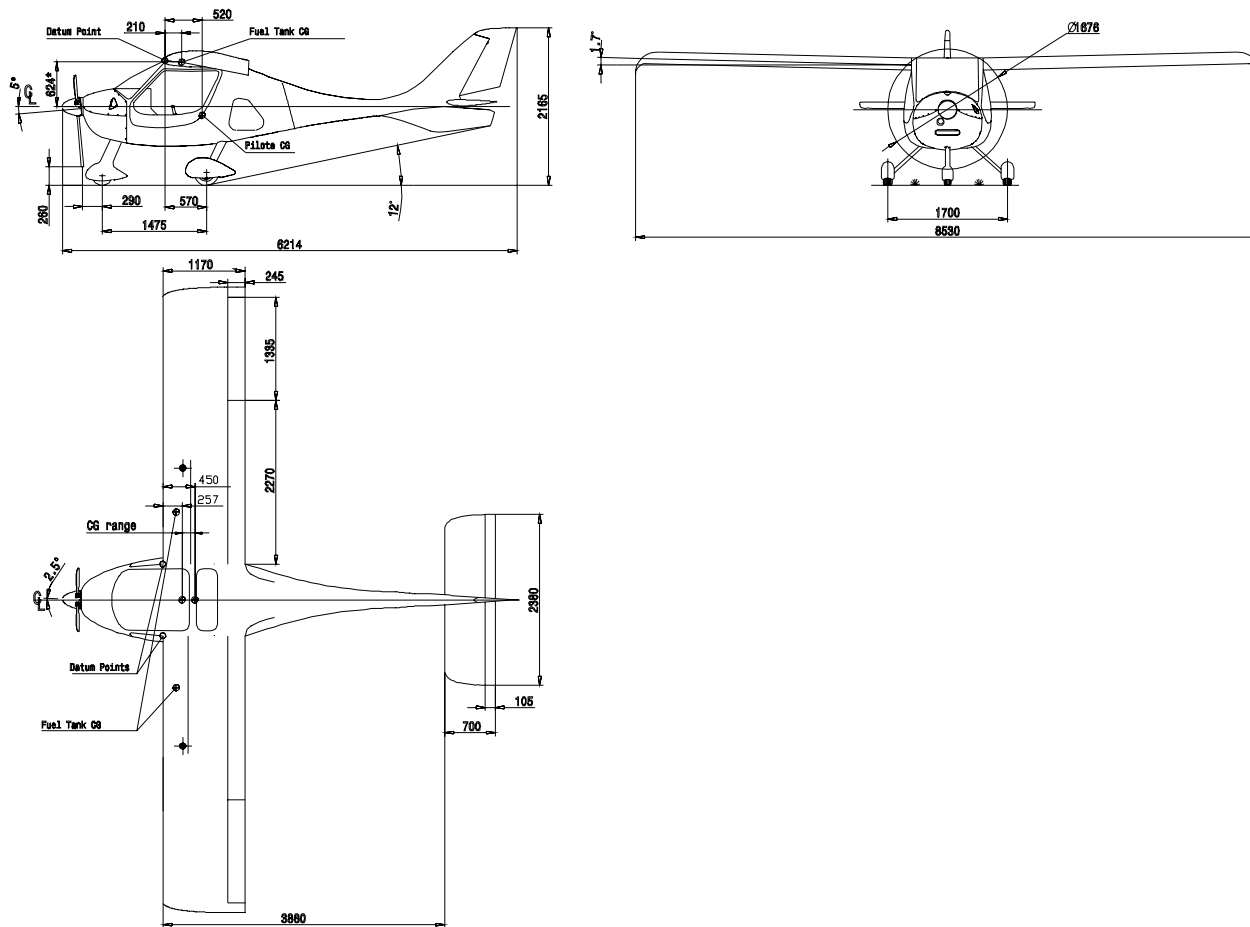
Stall or Minimum Flying Speed: 33kt IAS at MTOW / idle.

Issue History

<b><u>Issue No.</u></b>	<b><u>Reason and signatory</u></b>
1	Initial issue

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ANNEX A – MANDATORY MODIFICATIONS

1. Nil.

ANNEX B - APPROVED OPTIONAL MODIFICATIONS

The installation of all optional modifications is to be inspected by a BMAA inspector and an entry made in the appropriate logbook(s). Note that other approved modifications may exist which are not listed here.

Mod ref	Description	Notes	Issued
M131	Rotax Slipper Clutch	Identical to CT2K	31/03/05

ANNEX C

WEIGHING INFORMATION

1. CG Datum: Leading edge of wing at any point (except stall strips).
2. Weighing attitude: Fuselage cockpit tunnel horizontal
3. Mainwheel moment arm: 570 mm aft of datum
4. Nosewheel moment arm: -905 mm fwd of datum
5. Fuel moment arm: 210 mm aft of datum
6. Crew moment arm: 520 mm aft of datum
7. Baggage moment arm 1200 mm aft of datum (max 25kg)
8. Crew weights: Minimum 55kg / maximum 180kg
9. Aft CG Limit: 450mm aft of datum (38% MAC)
10. Fwd CG Limit: 257mm aft of datum (22% MAC)