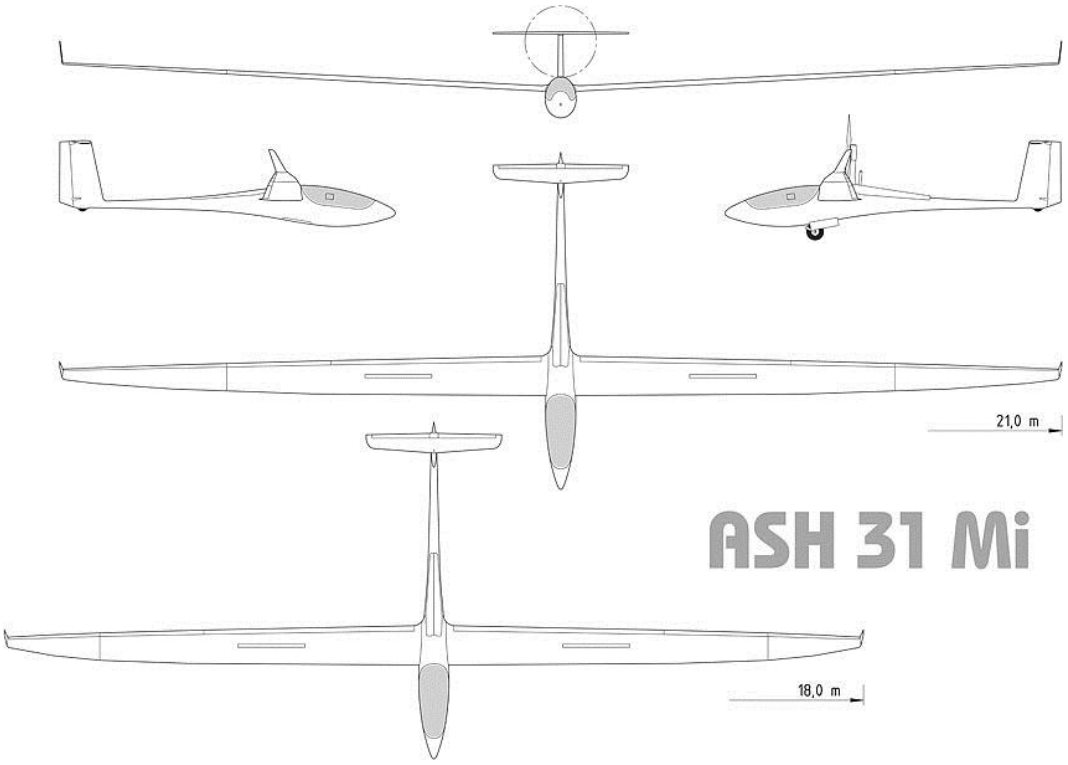
Paritech ASH 31 Mi – Build Log



Contents

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2014-05-30 Placing the order

Today I placed my order for an ASH 31 Mi from Paritech!

http://www.paritech.de/modellbau/ash31.php

The first time I laid my eyes on this model was in July 2012 at the Segelflugmesse in Schwabmünchen after returning from a fantastic glider trip to the Swiss/French Alps with a friend. I was captured not only by the looks of this ship, but also by the maneuverability displayed by the pilots that were showing it off to the audience.

Manufacturer	Paritech	Unit
Wing span	7000	[mm]
Elevator span	1000	[mm]
Length	2350	[mm]
Wing area	160	[dm2]
Weight	19122	[g]
Wing loading	115.4	[g/dm2]
Aerofoil	MH 32 / 14%, 1000 mm from root 11%	
Scale	1:3	[1]

Table 1. Paritech ASH 31 Mi specifications.

My previous experience with Paritech is from purchasing an ASH 26 which I've flown extensively ever since the maiden flight in early spring 2011 (https://www.youtube.com/watch?v=b0FpHu54f18). The build quality of this plane and the in-flight performance has convinced me that Matthias Paul and Uwe Rihm know their stuff.

After a long period of window shopping and planning of this project I finally pulled the trigger and placed an order for a "no expense spared" ASH 31 Mi. Having seen how well Paritech assemble their gliders I could not resist letting them assembling retracts, canopy, cockpit, AFT19XS, spoilers and rudder.

The purpose of this build log is to provide some ideas of how to assemble this glider.

Table 2 below summarize my order from Paritech and contain some of the accessories installed.

Paritech part number	Description
21000	ASH 31 Bausatz /ASH 31 Kit with wing bags Im Bausatz enthalten: -> Alle GfK- Teile, montagefertig, RAL 9003 -> Kabinenhaube u. Beschlagteile -> Anlenkungskleinteile -> Flügelverbinder -> Gfk Cockpit -> Flügelschutztaschen ohne RC u. Antriebskomponenten! Weitere Informationen unter www.paritech.de
799990967	ASH 31 Dekorsatz Dekor in grau,rot, oder blau. Bitte bei der Bestellung Wunschkennung angeben!!!
19800	ASH 31 Kabelsatz Flügel mit Hochstromstecker / cables for wings and High power connector Kompletter Kabelsatz Aus zertifizierter Fertigung, Top Qualität von Powerbox Systems
799990962	ASH 31 Scale Instrumente M 1:3 Set 10tlg. scale instruments from Axel Pfannmüller 1x Panel, 1x Steuerknüppel, 1x Mikrophon, 1x Kartentasche, 1x Fussrastenverstellung, 1x Schleppkupplungshaken, 1x Fahrwerkshebel, 1x Bremsklappenhebel, 1x Wölbklappenhebel, 1x Cockpitsymbolbilder
21078	ASH 31 Schutztasche Rumpf / fuselage protection bag Hochwertige Rumpfschutztasche, alubedampfte Luftpolsterfolie, UV-beständig, genäht, nicht verschweißt Innenseite beflockt, mit Reißverschluss und Tragegriff Farbe silber Qualität aus deutscher Fertigung
19902	ASH 31 Servo Set oh. Fahrwerk Hitec Servoset für flugfertigen Aufbau, ausgenommen Fahrwerk: #113645 HS - 5645 MG 12 kg 2x Wölbk.innen+ 1xSR+ 1xSchlepp #113645 HS - 5245 MG 12 kg 2x Wölb außen #112226 HS - 225 MG 4,8 kg 2x Störkl. #113125 HS - 5125 MG 3,5 kg 4x Quer Außenflügel #113957 HS - 7955 MG 23 kg 1x Höhe Abb.nur Muster- zeigt nicht die modellspezifischen Servos

20473	ASH 31 Servorahmen Set kpl. servo frames complete (Hitec 2 Paar 5645MG/ 2 Paar5245MG)
15993	ASH 31 Sitzkissen Sitzkissen Set 3 tlg. Material: Polstermaterial, innenliegend leichter Stützstoff (Schaumgummi) Farbe: kann variieren Abb. zeigt optionale Artikel, GFK Teile nicht im Preis enthalten
20726	ASH 31 Klapptriebwerk eingebaut - inkl. Triebwerk u. Montageset-AFT 19 XS Turbo Fa. Schambeck Luftsporttechnik, inkl Montageset
20731	ASH 31 Cockpit Ausbau ohne Pfannmüller Intsrumente ready installed scale cockpit
799990961	ASH 31 Fahrwerkseinbau/ready installed gear ASG 29 Fahrwerksmontage inklusive Gasdruckdämpfer, Servo, Spritzschutz /ready installed retract gear gas pushed with servo
20102	ASH 31 GFK Cockpiteinbau Elektroversion mit Zugangsdeckel, magnetisch verriegelt, für Akku GFK Cockpit installed with door for engine batterie
799990939	ASH 31 Kabinenhaubenmontage inklusive Gasdruckdämpfer/ready installed canopy gas pushed incl.Klappmechanik, Lackierung, Verriegelung u. Haubenschutz
799991015	ASH 31 Schiebefenster Eingebaut inklusive Fenster/ready installed canoby window included window
799991016	ASH 31 Schleppkupplung+ Einbau/Tow release included installation
799991272	ASH 31 Seitenruder Montage rudder ready installed
799990940	ASH 31 Störklappenabdeckung montiert/ready installed airbrake cover
	Carbon reinforced version of the ASH31
	PowerBox Champion SRS including Teleconverter for telemetry
	2x Futaba R7003SB FASSTest 2.4 GHz receiver
	Castle Creations Phoenix Edge 120 HV + Castle Link Quick Connect
	2x Motor batteries Thunder Power TP5000-5SPF70
	2x RX batteries A123 6.6V 2500 mAh
	Futaba T18MZ

Table 2. Summary of my order from Paritech and the additional components I've ordered.

2014-09-25 Unpacking

After what seems like an eternity I was finally able to meet my new friend at the post terminal in Årsta, Stockholm. Unpacking was rather nerve wrecking since the prospect of shipping damage would be unbearable after having waited 4 months for delivery.

Figure 1. 15 kg glider and 65 kg packing material.

After unpacking, the plane was transferred to my car and later my apartment, both of which all the sudden seem very small.

Figure 2. A trunk full of happiness!

Figure 3. Inspected for shipping damages and assembled in living room.

Luckily, I could not find any shipping damages and after having assembled the glider in my living room I started to realize the size of this puppy. The images below show what parts of the build that I've let Paritech take care of.

Figure 4. Top view from the left.

Figure 5. Canopy close up.

Figure 6. Close up of sliding window.

Figure 7. Front view of canopy.

Figure 8. Scale cockpit from Axel Pfannmüller.

Figure 9. Seat with harness.

Figure 10. Map pocket and microphone.

Figure 11. Retract mechanism lever.

Figure 12. Joystick and seat detail.

Figure 13. Flap mechanism lever.

Figure 14. Decals inside cockpit.

Figure 15. Fin and stabilizer.

Figure 16. Retract from FEMA.
http://www.fema-modelltechnik.de

Figure 17. Rudder with linkage.

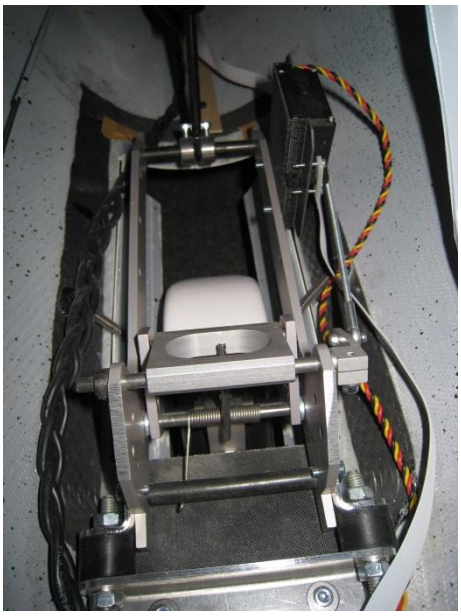

Figure 18. Retract and wheel brake from inside.

Figure 19. AFT19XS Turbo from Florian Schambeck.
http://www.klapptriebwerk.de/

2014-09-27 Servo connectors between inner wings and fuselage

For whatever reason, I started my build by working on the servo connectors for the wing that connect to the fuselage. I prefer when servo connectors are fixed to both wings and fuselage. This avoids fiddling with loose connectors every time it's time to assemble.

Due to the fact that the inner sections of the wings are not orthogonal to the wing joiner the connectors need stand-offs to provide the right angle. I made these out of plywood and later painted them white so that they blend into the wing.

The 9-pin d-sub comes with the wiring harness from PowerBox Systems that Paritech offer. The short connector frames from Lindinger (http://shop.lindinger.at/product_info.php?products_id=54857) do a great job securing the multiplex connectors to the wing and fuselage.

Figure 20. Front view of 9-pin d-sub and short connector frames for multiplex connectors.

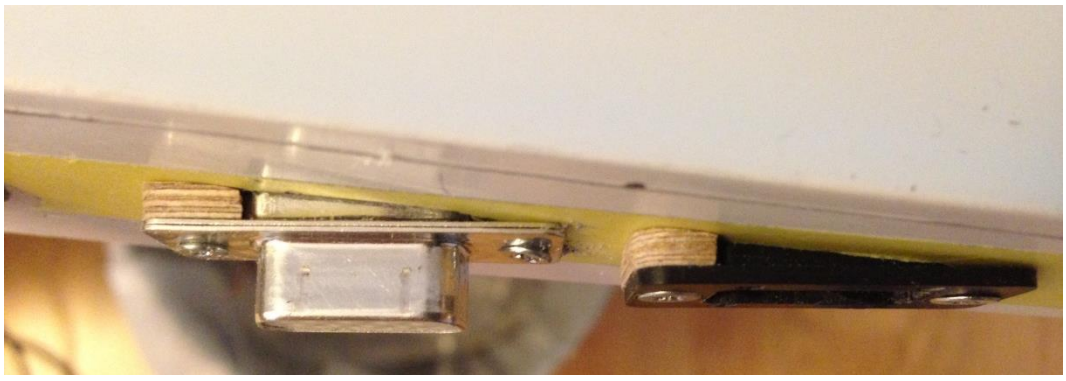

Figure 21. Top view of the angled connectors in the wing root.

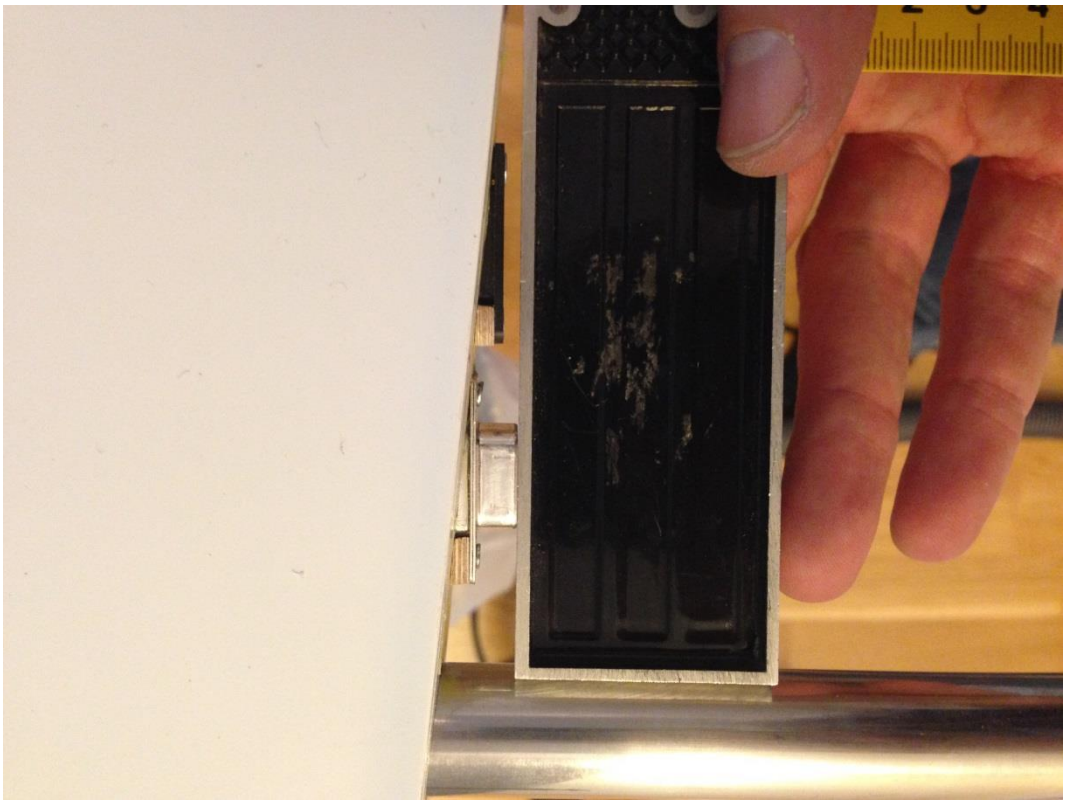

Figure 22. Top view showing the angle with respect to the wing joiner.

In order to accurately transfer the location of the connectors from the wings to the fuselage I created templates from balsa. The wing joiner and together with the positioning pins provide accuracy and repeatability.

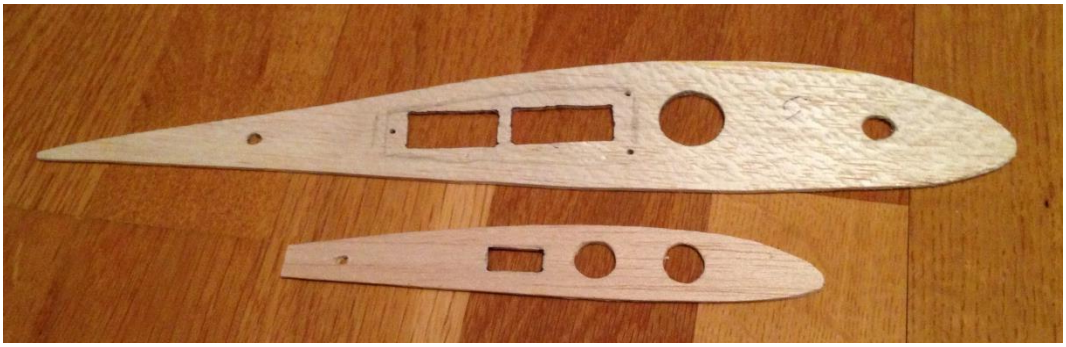

Figure 23. Inner and outer wing profile templates for servo connectors.

Next, the hole pattern was transferred to the fuselage…

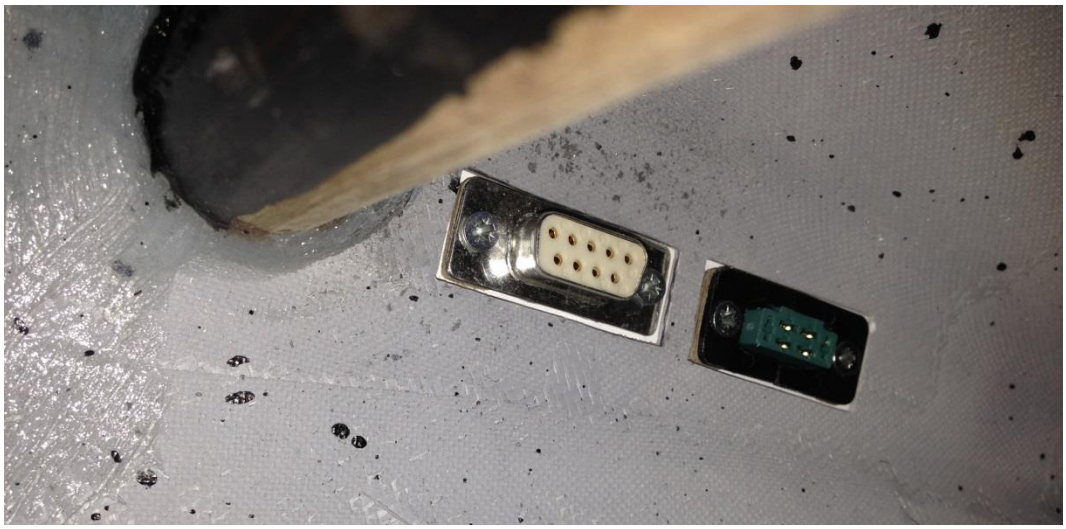

Figure 24. Image taken from the inside of the fuselage with the wing mounted including servo connectors.

and the inside surface was sanded to ensure a good bond with the epoxy.

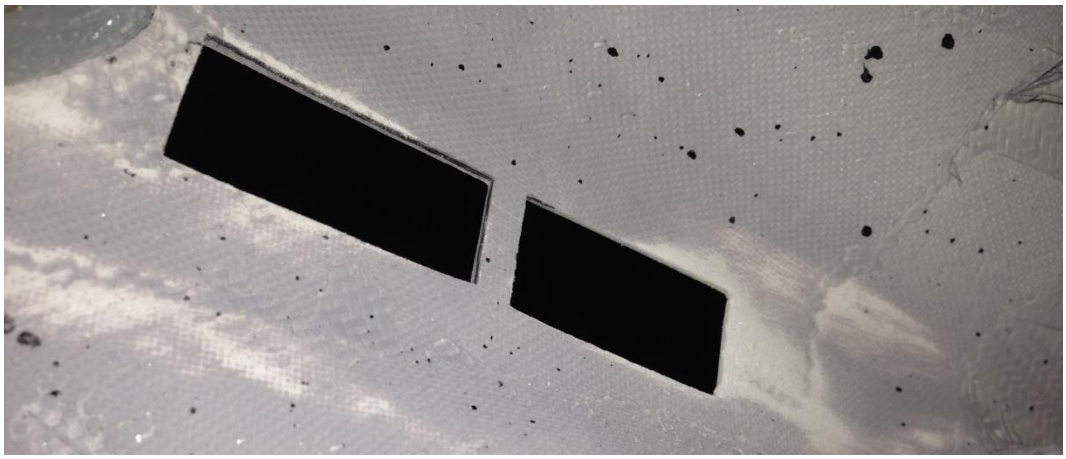

Figure 25. The inside was sanded to provide a better surface for the epoxy.

I made the internal servo-connector support from plywood and adjusted the standoffs to create the correct angle with respect to the fuselage.

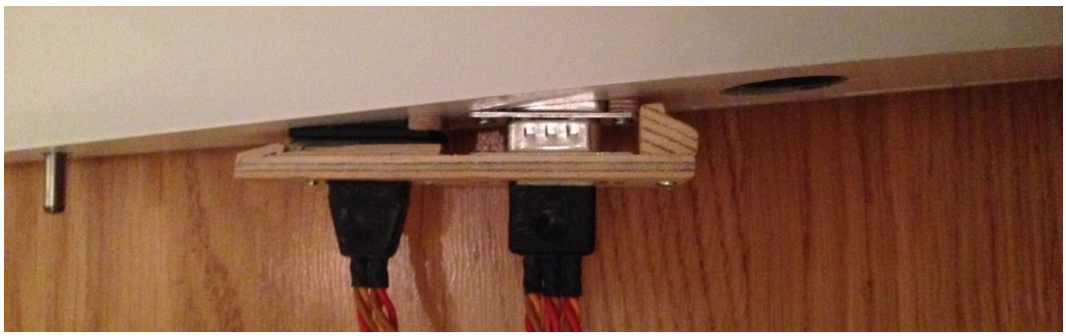

Figure 26. Internal servo-connector support from plywood with standoffs.

The servo-connector support was glued to the inside of the fuselage…

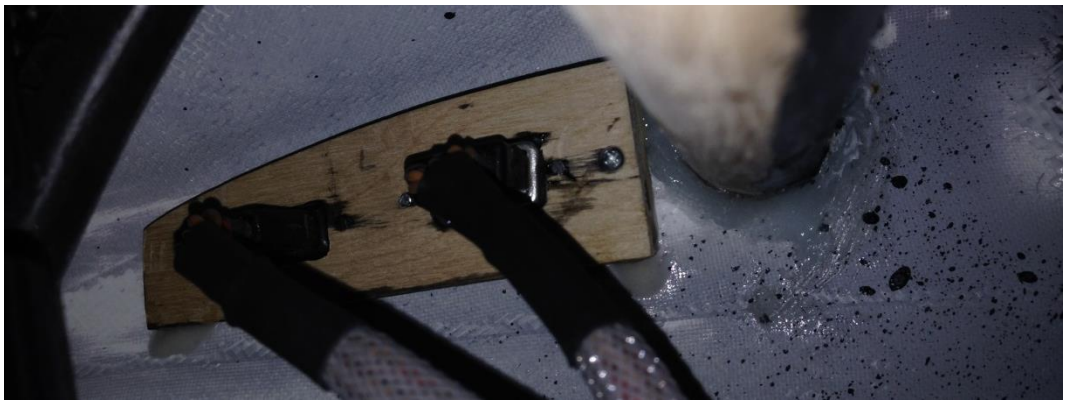

Figure 27. Servo-connector support from inside fuselage.

and epoxy mixed with fiberglass flock was used to strengthen the joint.

Figure 28. Servo-connector support glued into position with epoxy mixed with fiberglass flock to strengthen the joint.

The fuselage servo-connector supports were painted black to allow them to blend into the cutouts. Three countersunk screws were used to fasten it further from the outside.

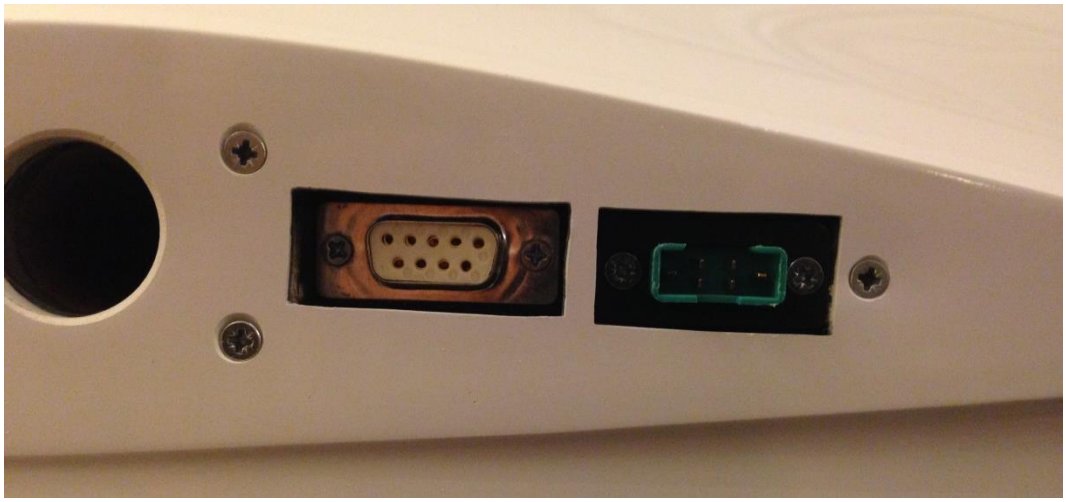

Figure 29. Finished servo-connector support from outside securely fastened using three screws.

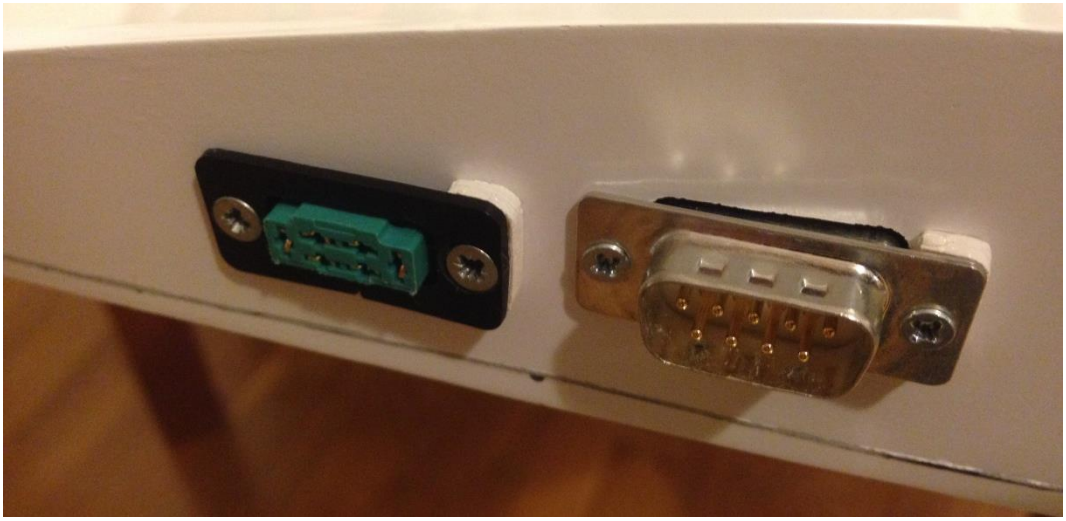

Figure 30. Finished inner-wing section with servo connectors.

The inner wing connectors now fit snuggly together with the fuselage and servo-connector.

2014-10-05 Installation of supports inside fuselage

Today I've been working on the support for the PowerBox Champion SRS system, the rudder servo holder, the Castle Creations ESC and the battery holder for the AFT19XS. The supports were fabricated by using cardboard to create templates that takes the curvature of the fuselage into account.

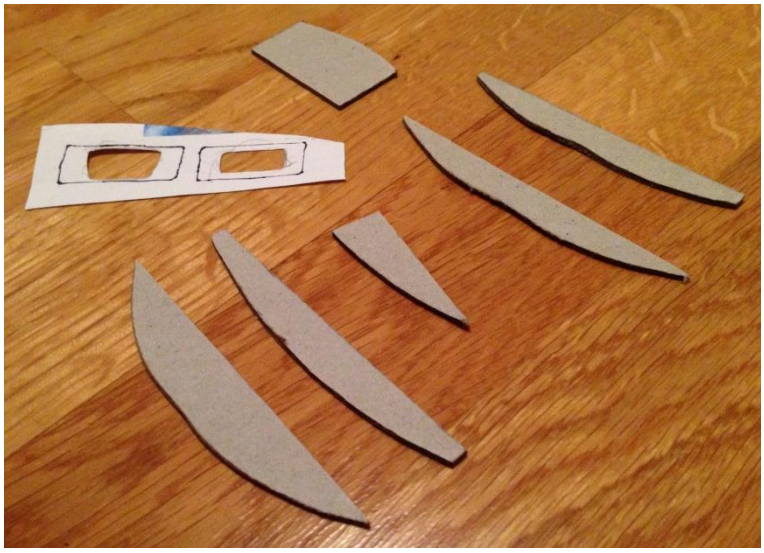

Figure 31. Cardboard templates for servo connectors, tow release servo, battery tray, rudder servo and PowerBox.

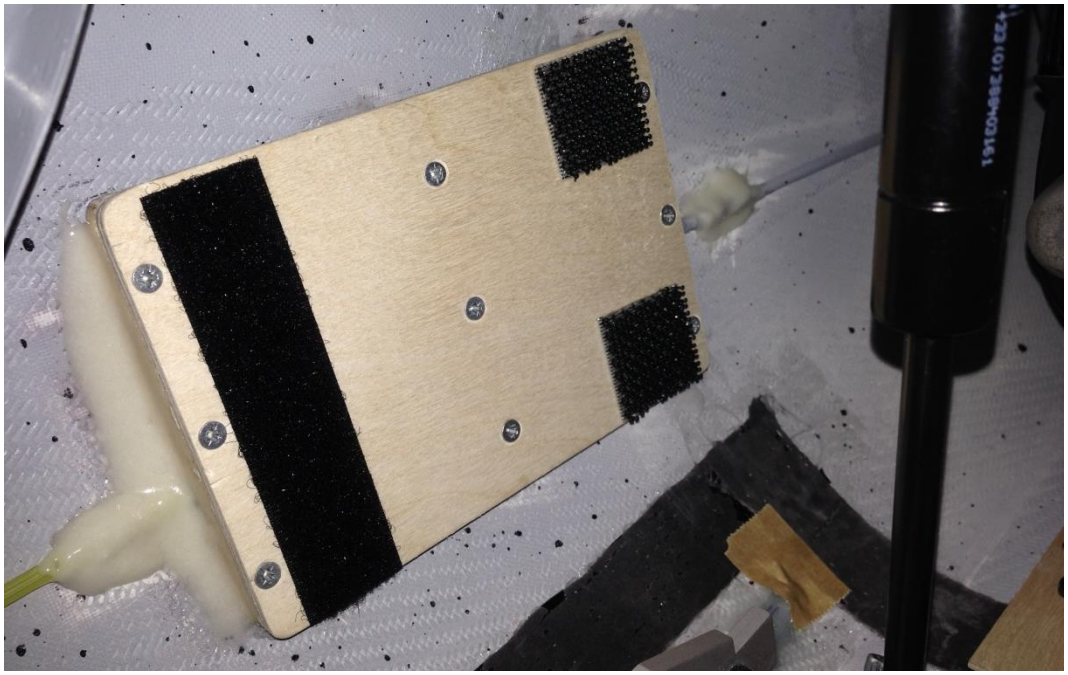

Figure 32. Plywood support for the PowerBox Champion SRS system.

The pushrod for the rudder runs behind the support through a cutout in the ribs that hold the cover plate in position. The right hand Velcro fasteners are the rigid industry type and the left is a regular Velcro fastener. I first tried all industry Velcro, but this made it close to impossible to remove the PowerBox.

The PowerBox Champion SRS (http://www.powerbox-systems.com/produkte/powerbox-systeme/powerbox-champion-srs.html) provide dual receiver inputs using S.Bus, dual receiver batteries and built in servo synchronization, which I will utilize for the dual aileron servos.

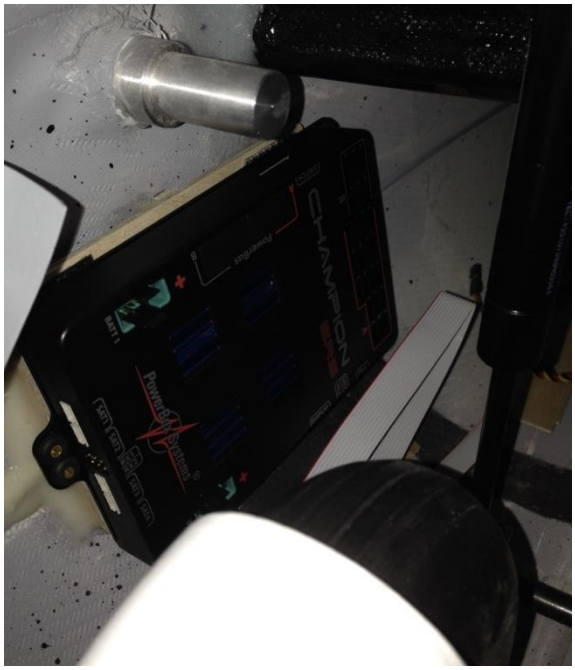

Figure 33. PowerBox Champion SRS mounted on the support.

Table 3 shows the channel assignment for the PowerBox Champion SRS.

TX channel	TX function	# Servos	Regulator	Output	Fail	Servo Type
1	Elevator	1	B	A	Hold	HS-7955TG
2	Rudder	1	A	M	Hold	HS-5645MG
3	Motor	1	A	N	FS	-
4	Aileron	2	A	I,J	Hold	HS-5125MG
5	Aileron2	2	B	B,C	Hold	HS-5125MG
6	Airbrake	1	A	G	Hold	HS-225MG
7	Airbrake	1	A	H	Hold	HS-225MG
8	Flap	1	A	K	Hold	HS-5245MG
9	Flap2	1	B	D	Hold	HS-5245MG
10	Flap3	1	A	L	Hold	HS-5645MG
11	Flap4	1	B	E	Hold	HS-5645MG
12	Brake	1	A	O	Hold	HS-5125MG
13	Gear	1	A	P	Hold	HS-645MG
14	Tow	1	A	Q	Hold	HS-5645MG
15	Vario	1	B	F	Hold	-
16	Camber	-	-	-	-	-
DG1/17	-	-	-	-	-	-
DG2/18	-	-	-	-	-	-
	Total	**17**				

Table 3. PowerBox Champion SRS channel assignment.

Similarly, a support for the motor batteries was fabricated along with a rudder servo holder and ribs for the ESC.

Figure 34. Motor batteries test fitted on top of battery tray, rudder servo (HS-5645MG) in servo frame from Paritech and the Castle Creations Phoenix Edge HV 120 mounted to its support ribs.

For this build I decided to get a servo tester HFP-25 from Hitech. It has proven to be extremely useful both during servo installation but also during the servo synchronization process for the ailerons.

Figure 35. The HFP-25 from Hitech is a valuable tool for easy servo installation.
(http://hitecrcd.com/products/servos/digital-servo-programmers-2/hfp-25-digital-servo-programmer-tester-2/product)

2014-10-11 Wheel brake and tow release servo

Today I've mounted the wheel brake servo as well as the tow release servo.

For the wheel brake servo (HS-5125MG) I've used a servo frame from http://www.servorahmen.de/. The heat shrink around the linkage provide a smooth surface to prevent snags on the aluminum edge.

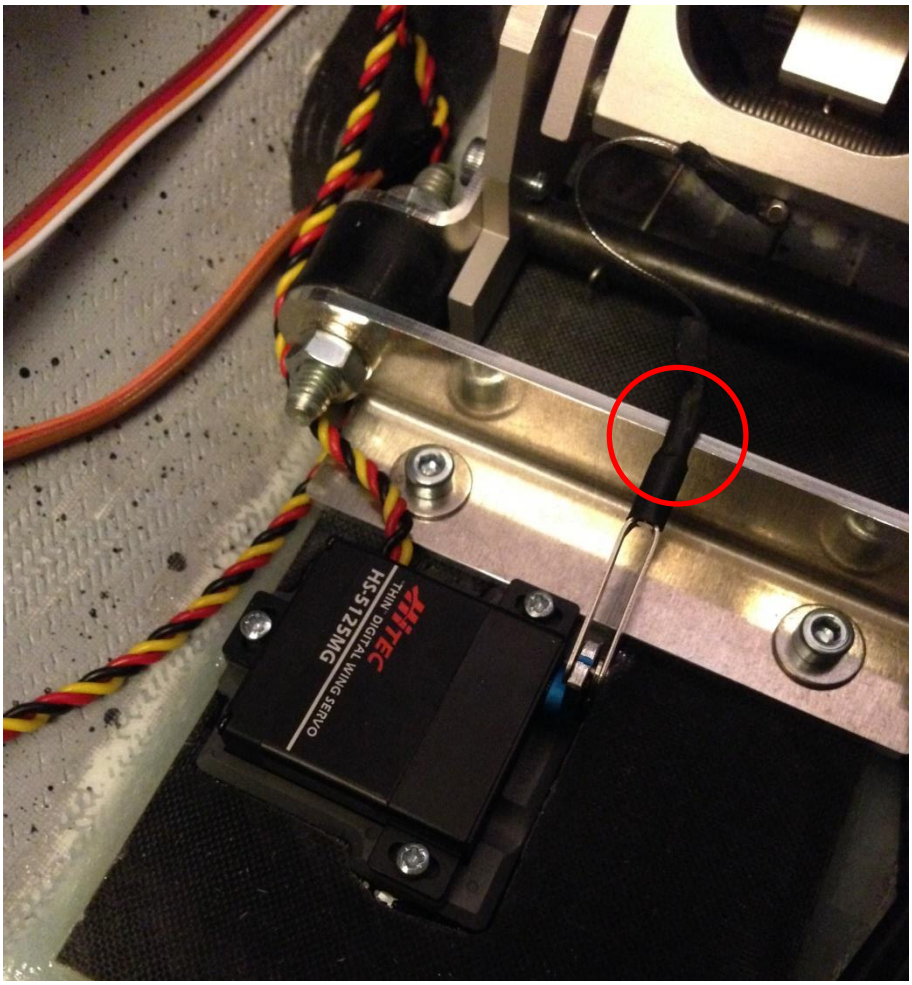

Figure 36. The heat shrink around the linkage prove a smooth surface to avoid snags over the aluminum edge.

The tow release servo (HS-5645MG) is held in place by a servo frame from Paritech. The pushrod is a M3 threaded rod with a 5 mm carbon support to strengthen the pushrod. Although not visible in the image I glued two hull shaped plywood ribs to the servo frame to ensure a good glue joint.

Figure 37. Tow release servo (HS-5645MG) mounted in front of motor battery tray.

2014-10-12 Outer wings servo connectors

Fitting the outer wing panel connectors is a rather tedious job and it is not really practical to use the multiplex connector frames. However, by carefully milling out just enough to allow the connectors to be glued in position accurately it was possible to get a snug fit.

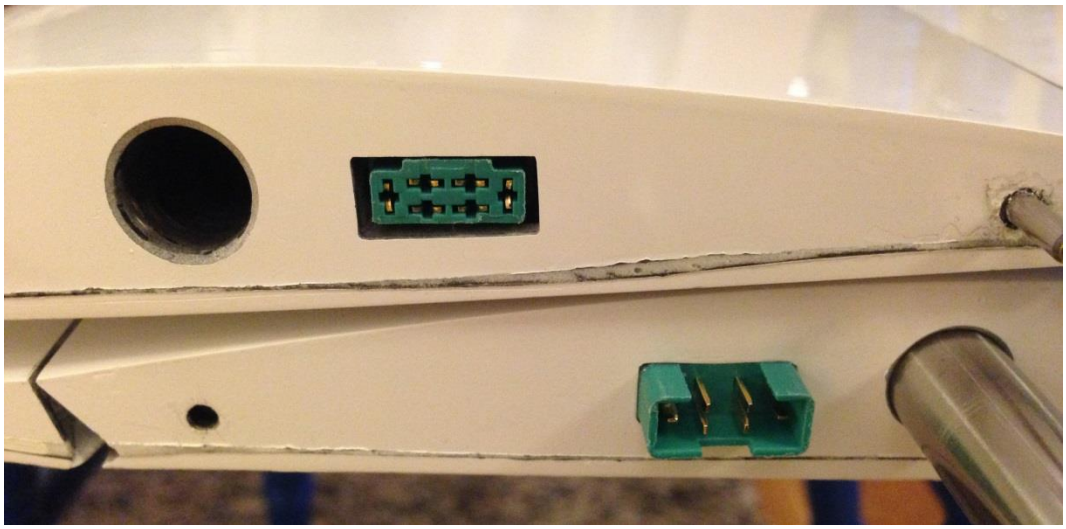

Figure 38. Outer wing panels servo connectors.

This work has to be done while making sure that the connector doesn't interfere with the servo frame since it is mounted very close to the connector.

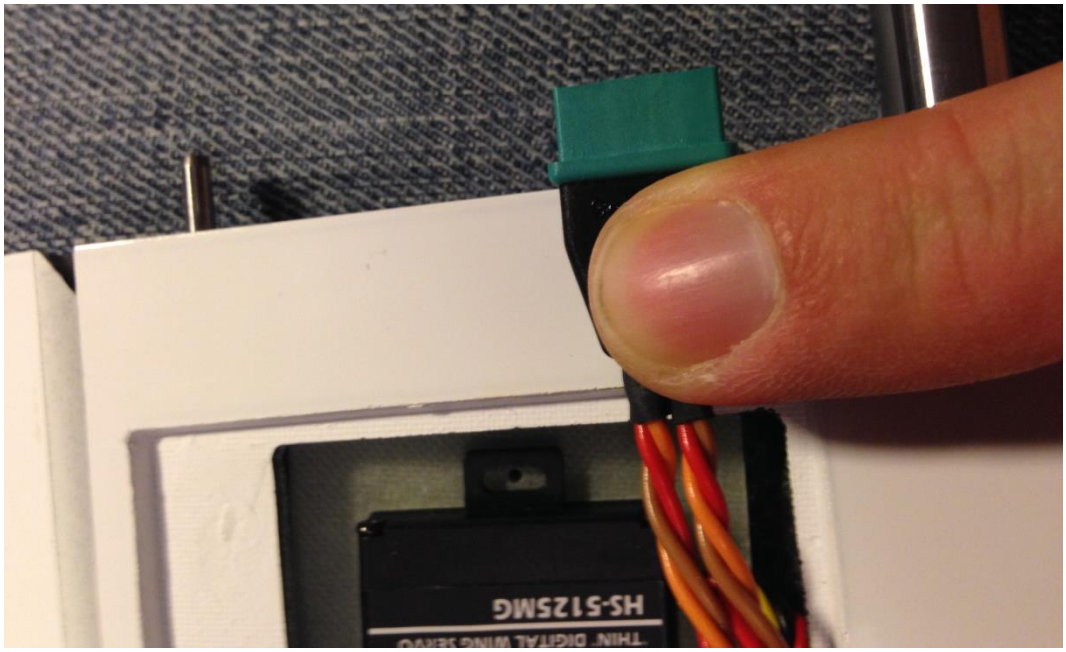

Figure 39. The inner aileron servo is mounted very close to the MPX servo connector.

2014-10-18 Wings servos

Today it was time to mount the servos in the wings. One of the spoilers gave me some headache since it was not operating smooth enough, but after some adjustments it now seems to work well. All wing servos are held in place using the servo frames supplied by Paritech.

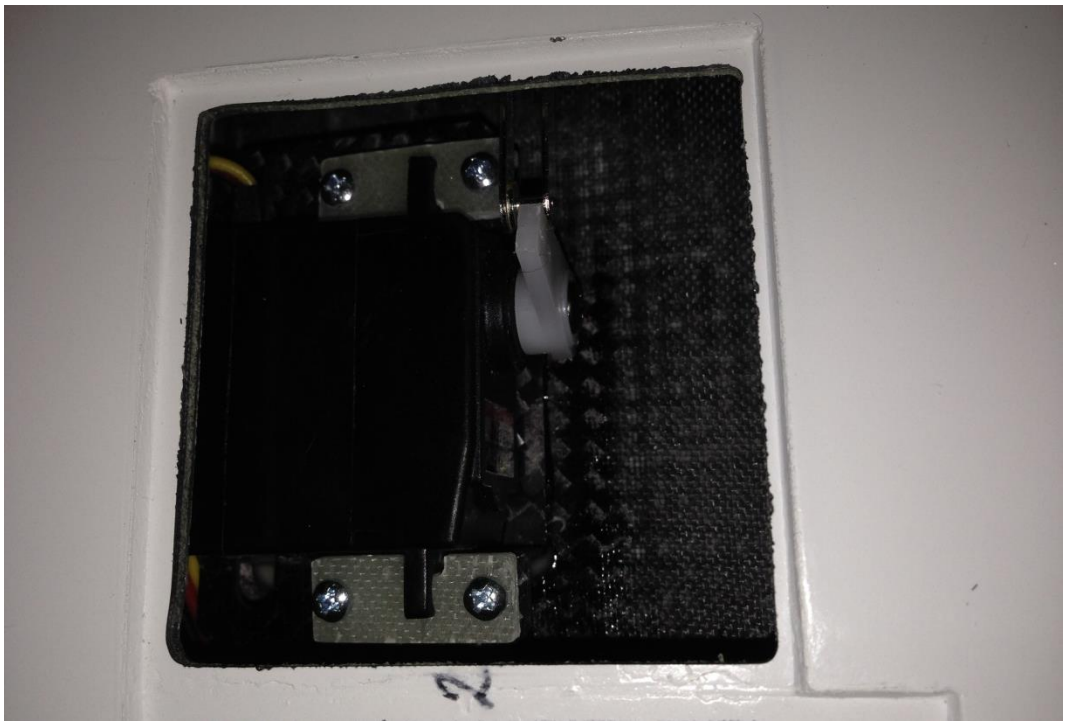

Figure 40. Spoiler servo HS-225MG.

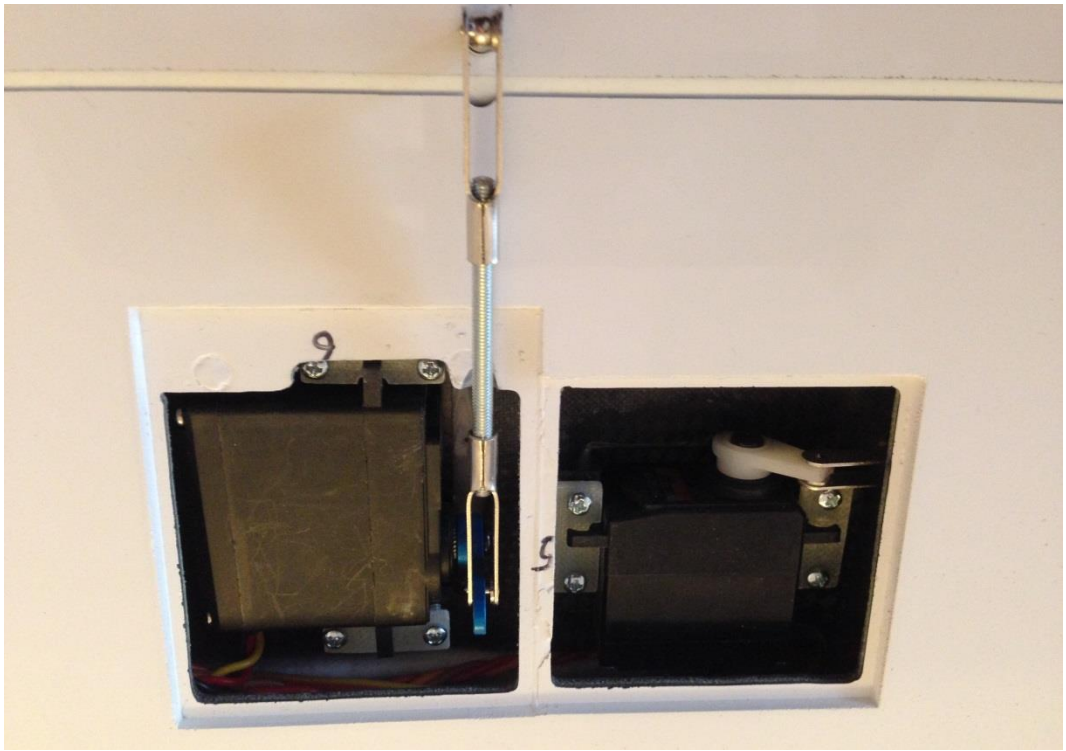

Figure 41. Inner flap servo (HS-5645MG) next to the spoiler servo.

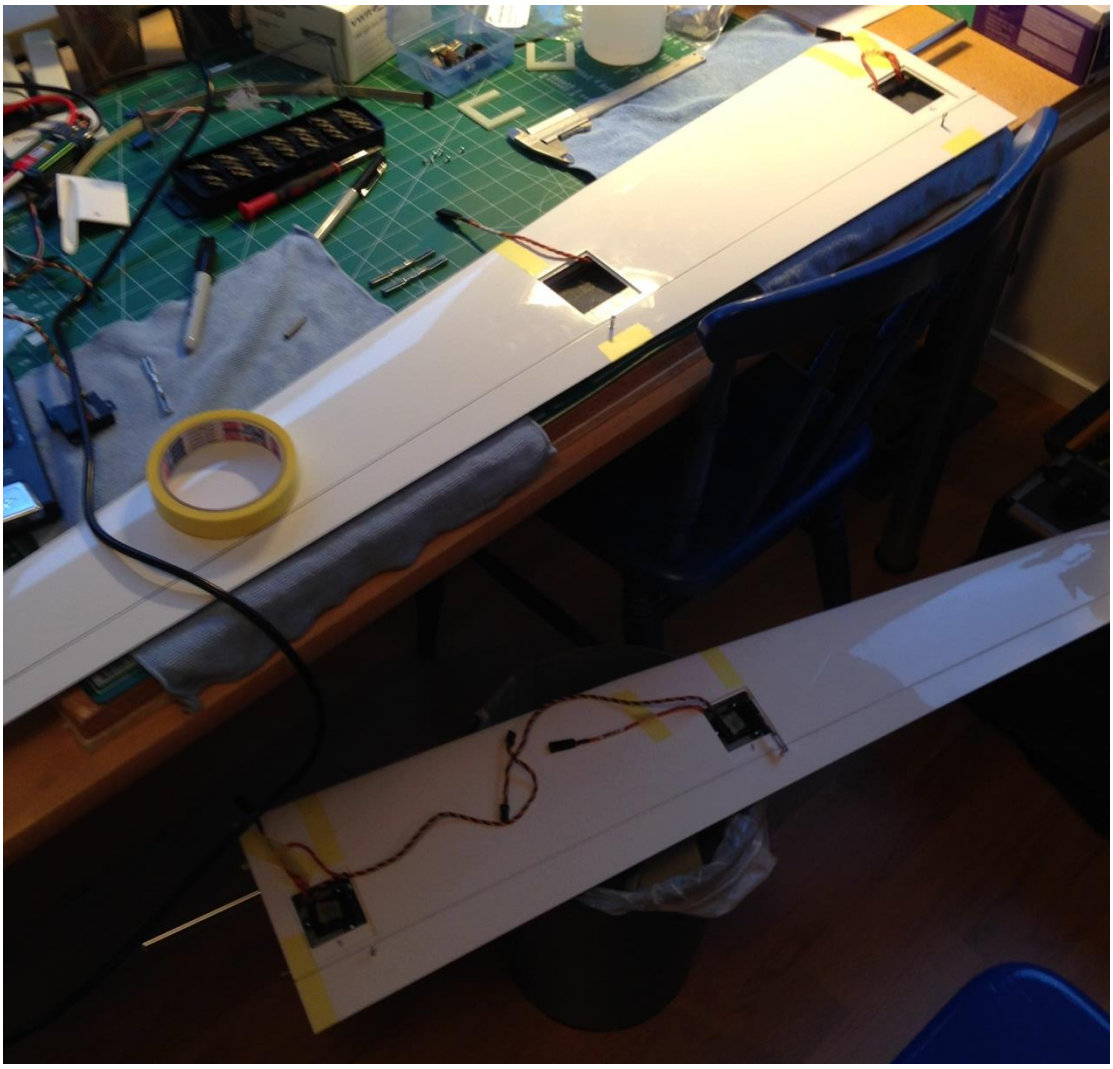

Figure 42. Outer wing panels with HS-5125MG servos. The servos are synchronized using the PowerBox Champion.

Servo synchronization was simple using the servo tester to determine where the center and limits were located in µs. The same servo tester was later used to measure the pulse widths from the PowerBox Champion to ensure the servos were perfectly synchronized.

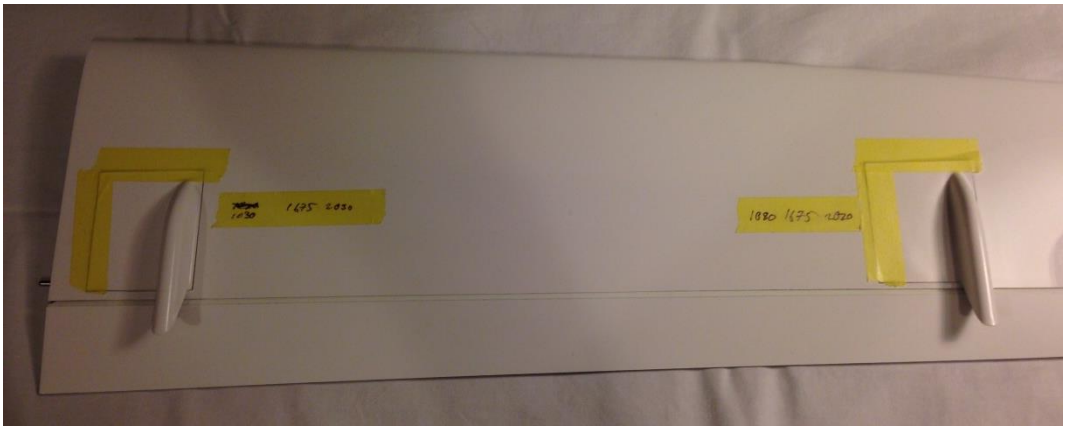

Figure 43. Outer wing section showing servo limits and center in µs.

2014-10-25 Elevator servo and cable routing inside fuselage

Today I've installed the elevator servo (HS-7955TG) and finished the cable routing inside the fuselage. The elevator pushrod is made from a M3 threaded rod with a 5 mm carbon support to strengthen the pushrod. The threaded rod runs through the entire carbon rod to eliminate the risk of delamination. This adds roughly 9 grams to the tail, but I've figured this added protection is worth the extra weight.

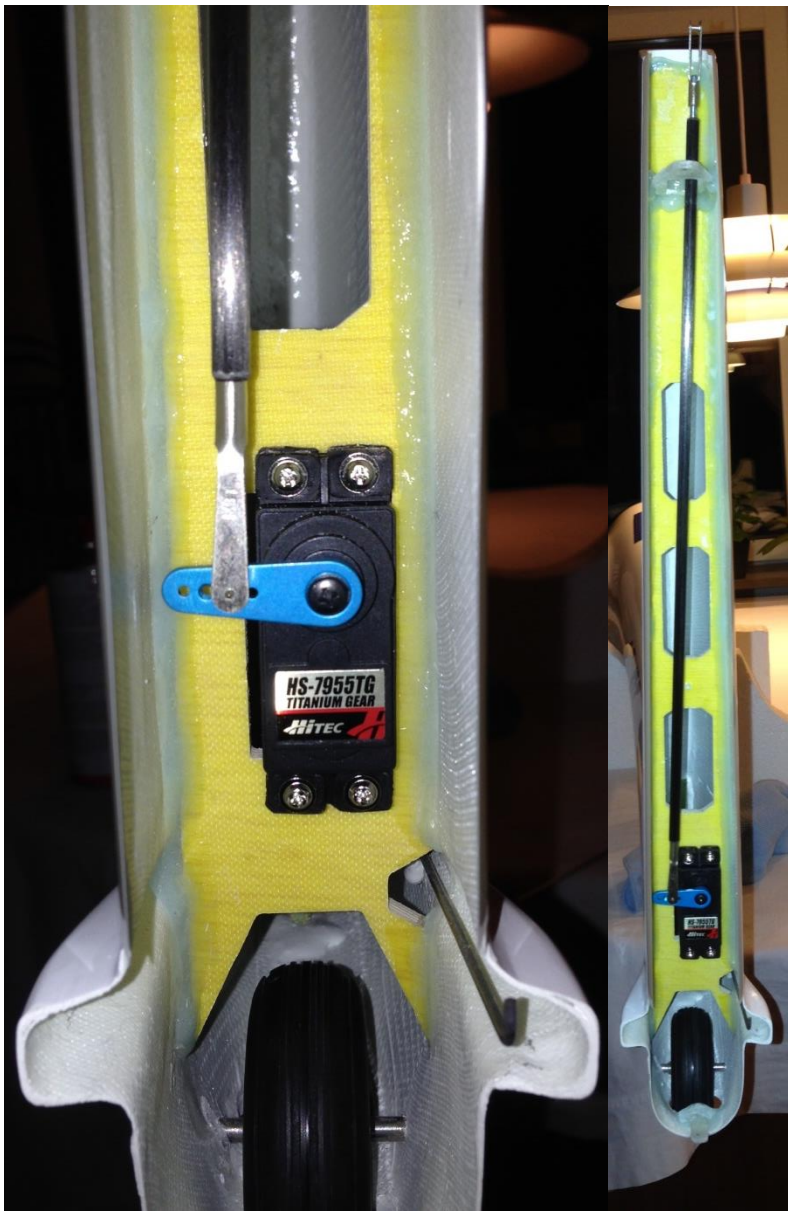

Figure 44. Elevator servo and pushrod installation.

The cables running from the wing connectors have been collected in braided sleeves with heat shrink on the ends. All cables have been strapped to the walls using cable fasteners glued to the fuselage.

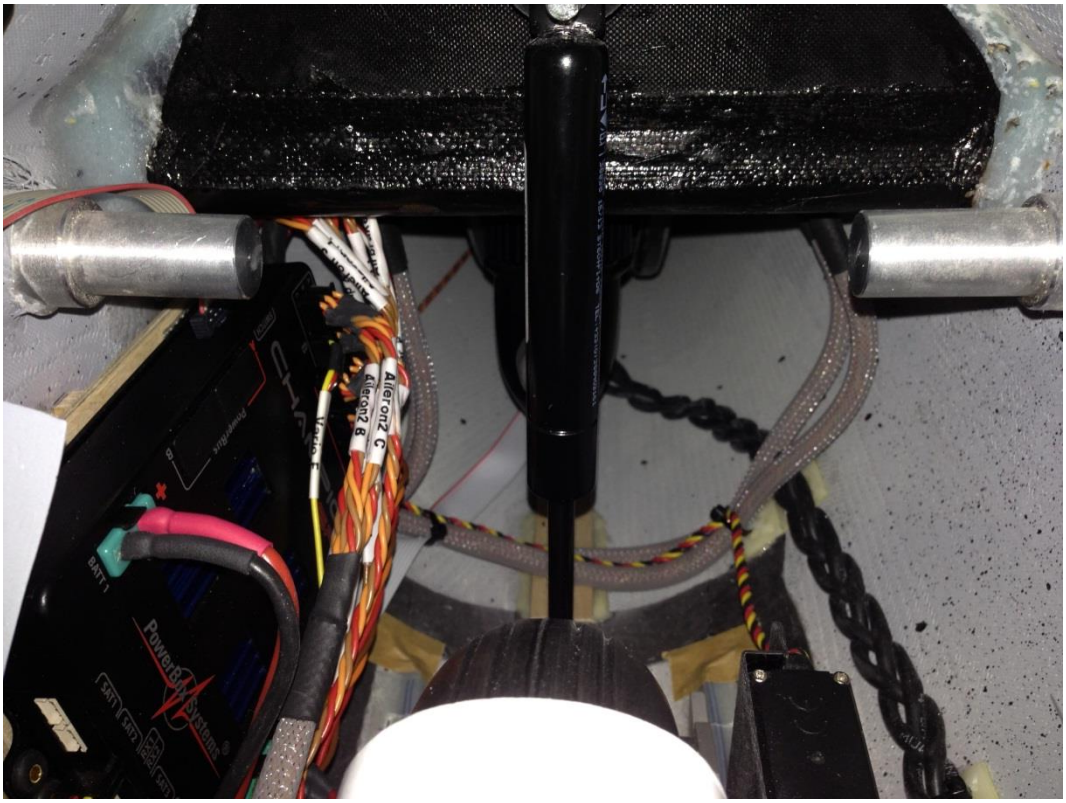

Figure 45. Cable routing for from the wings to the PowerBox Champion SRS.

Figure 46. Powerbox Champion SRS and magnetic On/Off switch.

The sequencer from Florian Schambeck is attached to the fuselage wall using Velcro. The Castle Creations Quick Connect allows for simple connection to the data logger of the Phoenix Edge 120 HV.

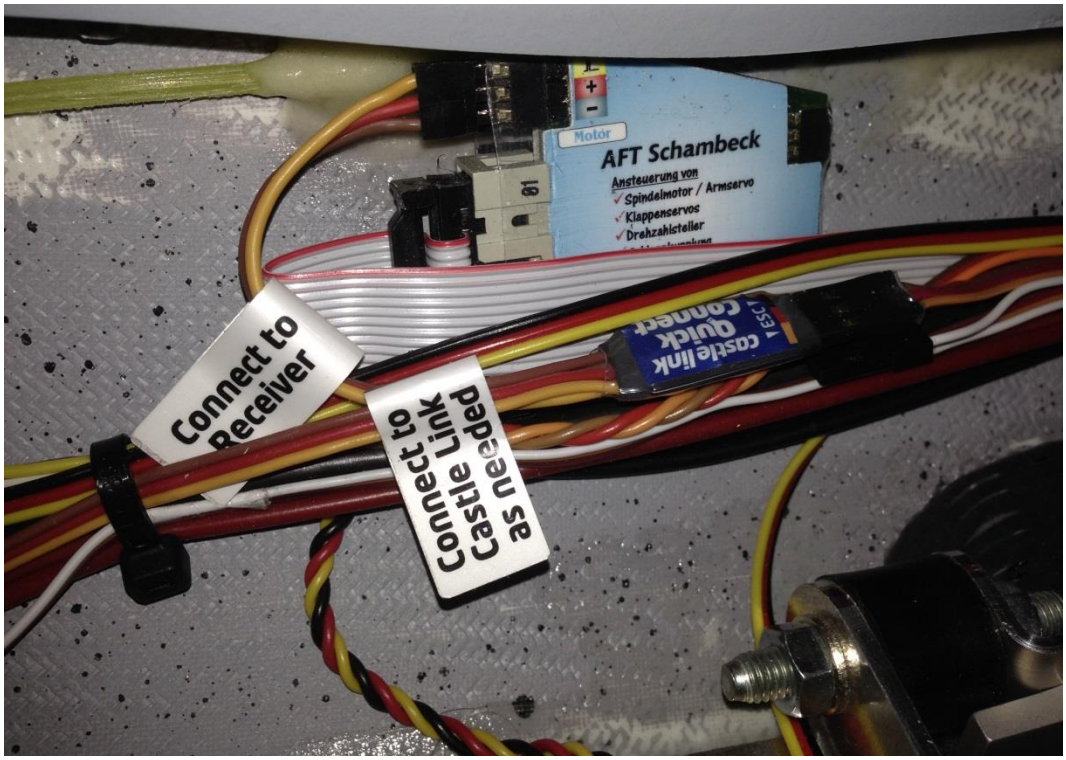

Figure 47. Sequencer for the AFT19XS and Castle Creations Quick Connect.

The motor battery voltage is monitored using the S.Bus2 compatible receiver.

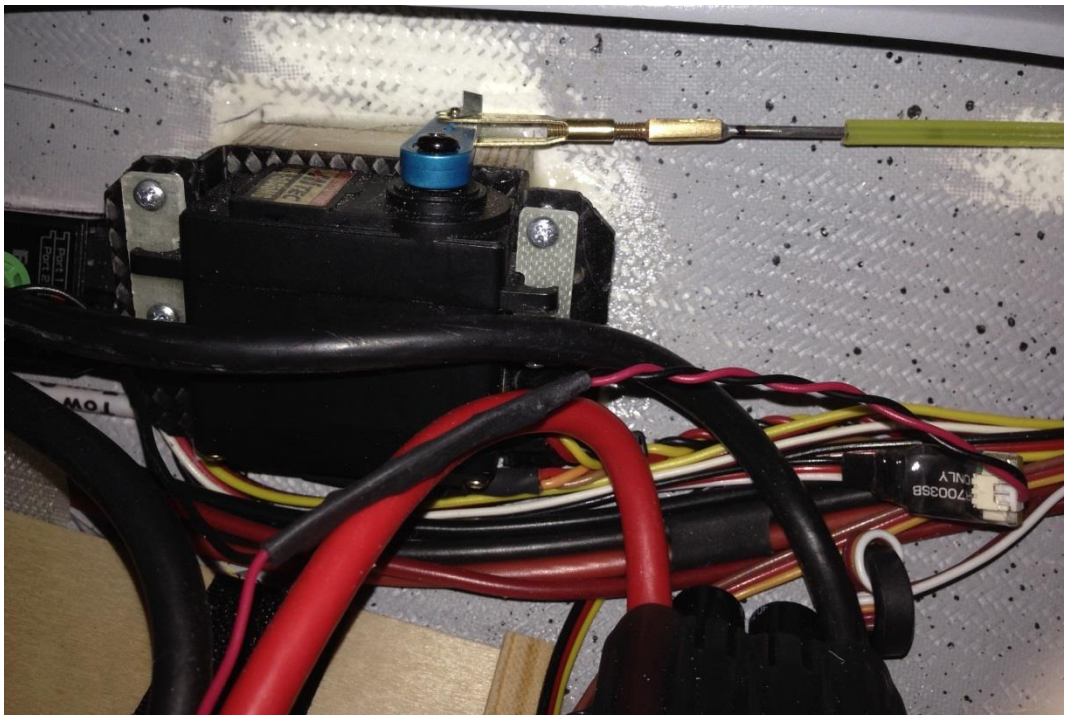

Figure 48. Rudder servo location and battery voltage probe from Futaba.

Figure 49. Primary receiver location with telemetry input from the Powerbox and the voltage sensor.

Figure 50. Secondary receiver location next to the landing gear on the left side of the fuselage.

Figure 51. Mounting location of the Picolario system.

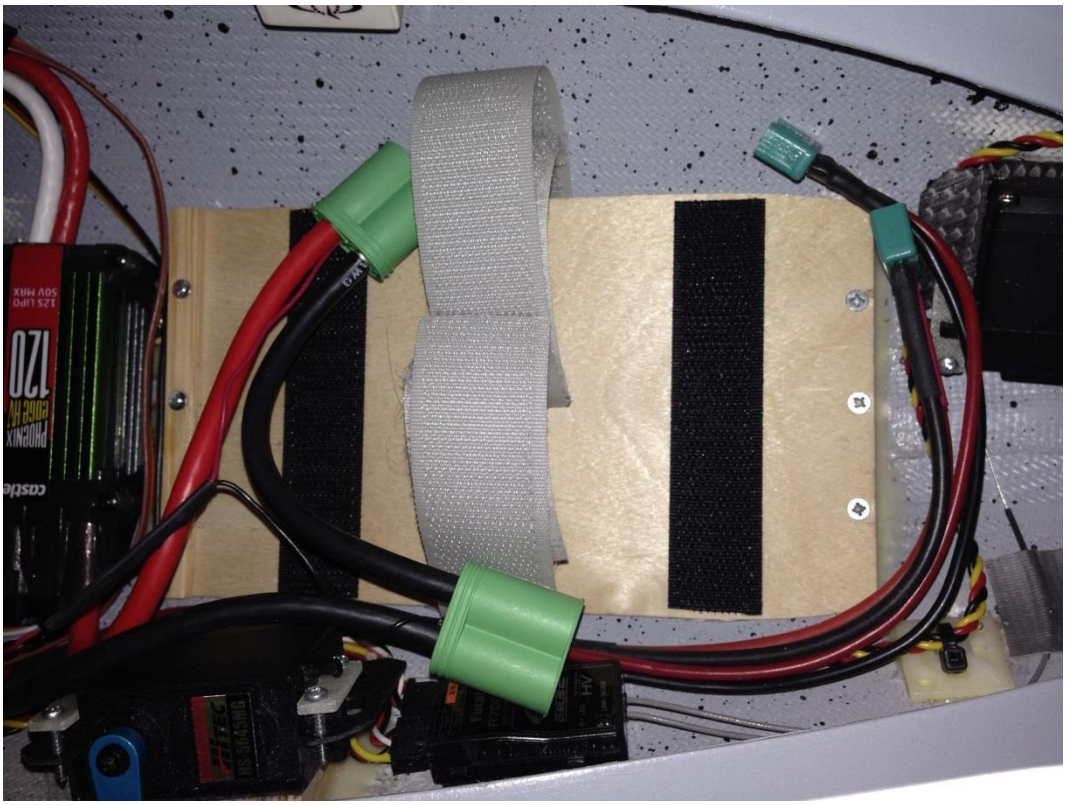

Figure 52. Battery tray with Velcro fasteners to secure the motor batteries.

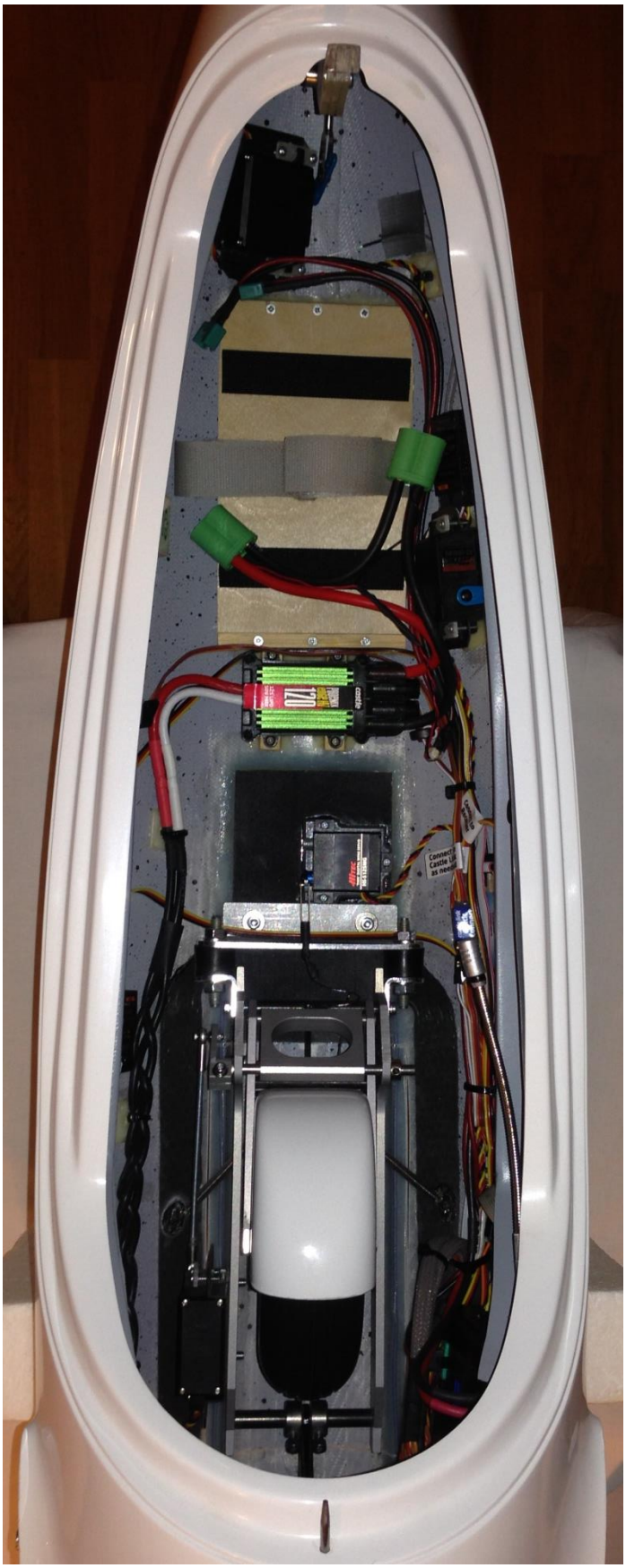

Figure 53. Fuselage electronics layout seen from above.

2014-10-29 Radio setup & servo travel adjustments

Today it was time to setup and adjust the radio for servo limits as well as flight mode deflections. Table 4 outlines the function assignment I use with my Futaba 18MZ. See Figure 54 for layout of Futaba 18MZ controls. This is just an example and may not suit everybody. Consider it one way of doing it.

			Position		
Control	**Type**	**Function**	**Up**	**Center**	**Down**
J1	Stick	Aileron			
J2	Stick	Elevator			
J3	Stick	Air Brake & Wheel Brake			
J4	Stick	Rudder			
T1	Digital Trim	Aileron			
T2	Digital Trim	Elevator			
T4	Digital Trim	Rudder			
T5	Digital Trim	Flight condition elevator offset			
SA	3 position; Alternate; Short lever	Dual Rates (Aileron, Elevator, Rudder)	100%	80%	60%
SB	3 position; Alternate; Long lever	Flight Conditions	Launch	Cruise	Land
SC	3 position; Alternate; Long lever	Aileron-To-Rudder Mixing	Off	Off	On
SD	2 position; Alternate; Short lever	Retract	Up	-	Down
SE	3 position; Alternate; Short lever	Flight Conditions	Speed	Cruise	Thermal
SF	2 position; Alternate; Long lever	Tow Release, Vario & Timer	Closed & Vario Off	-	Open, Vario On, Timer Start
SG	3 position; Alternate; Short lever	AFT19XS & Motor	Full throttle	AFT19 Out	AFT19 In
SH	2 position; Momentary; Long lever	Telemetry Voice & Wheel Brake	-	-	Voice/Vario & Extra Brake
LS	Slider Lever	Camber	Reflex	Neutral	Camber
RS	Slider Lever	Motor throttle when SG = Center	100%	50%	0%
CD-SW	2 position; Momentary; Push Button	Reset Timer	-	-	Reset Timer

Table 4. Summary of function assignment on the Futaba 18MZ.

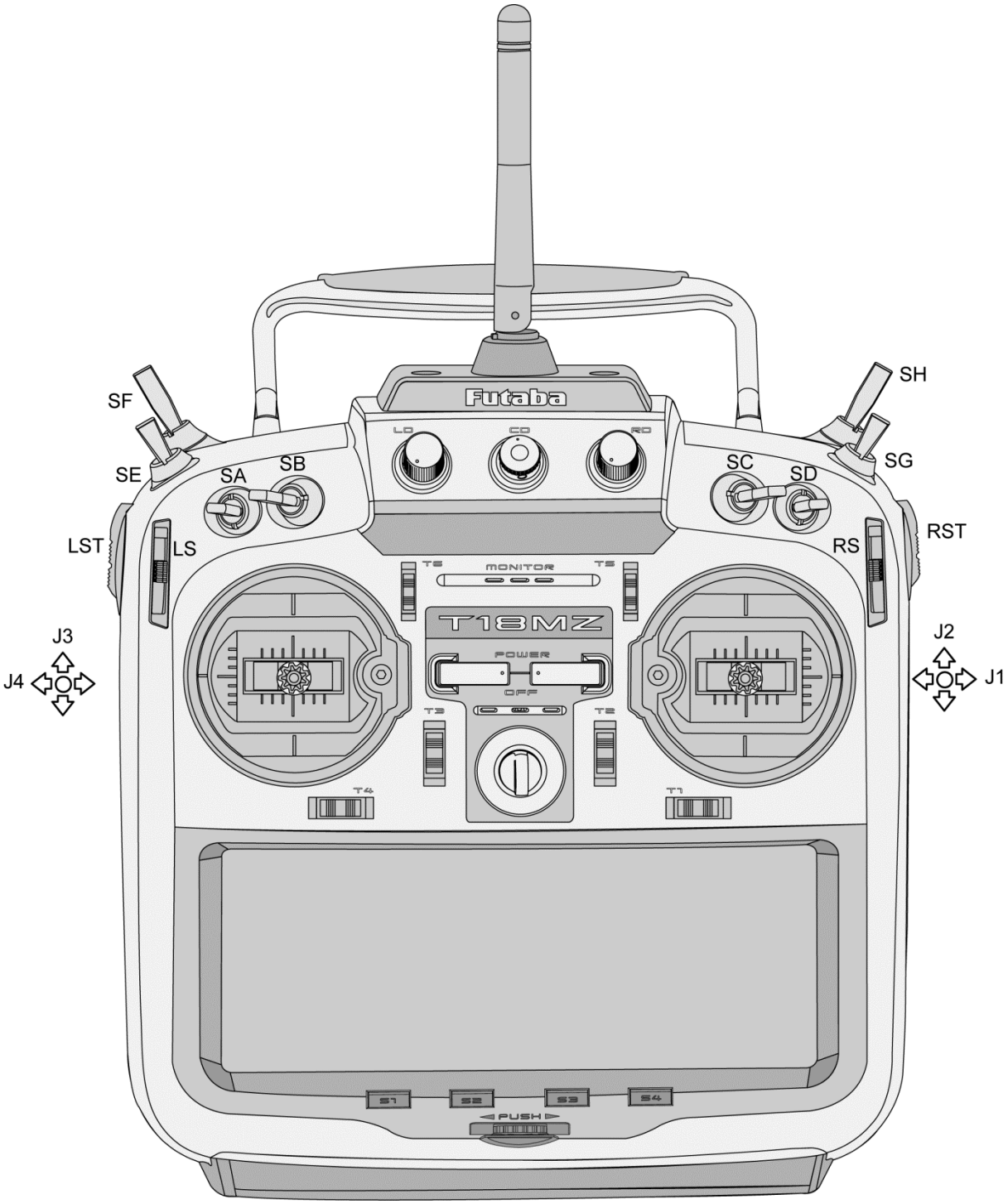

Figure 54. Layout of the Futaba 18MZ controls.

Using straight extension cables to fold the wings allow for easy measurement of the surface deflections from above. Figure 57 show the extension cable for the ailerons which also allow listening using the HFP-25. The display for the PowerBox Champion is necessary during programming, but I've decided not to install it since it does not really add value during flight. In addition, when the Teleconverter is attached to the telemetry system it provides information about voltage and charge level. PowerBox and Futaba are working towards integrating more functionality into this telemetry device, but there is currently no release date for the new firmware.

Figure 55. Wings connected with extension cords significantly reduce the footprint in the apartment.

Figure 56. Close up of extension cables.

The extension cable for the outer wing panels allow both sensing the receiver output and connecting to the aileron servos. This is very useful when synchronizing the dual aileron servos using the HFP-25.

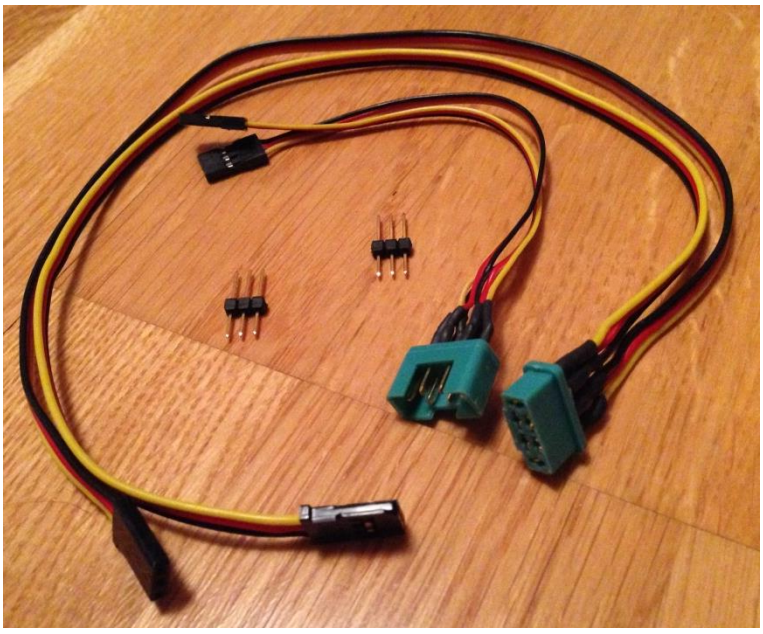

Figure 57. Extension cables for the outer wing panels.

Table 5 show servo travel limits for the different flight conditions. I always use Cruise, Speed, Thermal, Launch & Landing flight conditions. These settings are based on recommendations from Paritech.

Elevator [mm]						Camber	
Up	Down	Thermal	Speed	Launch	Land	Up	Down
14	6	-	-	-	-	-	-

Rudder [mm]	
Left	Right
50	60

Aileron [mm]						Camber	
Up	Down	Thermal	Speed	Launch	Land	Up	Down
22	9.5	-	-	-	-	-	-

Camber Flap [mm]						Camber	
Up	Down	Thermal	Speed	Launch	Land	Up	Down
16	9	8	6	-	-	6	14

Brake Flap [mm]						Camber	
Up	Down	Thermal	Speed	Launch	Land	Up	Down
11	7	10	8	7.5	15+10	8	16

Table 5. Servo deflections for the different flight conditions.

2014-11-13 Receiver and motor battery connectors and installation

I've now received the receiver batteries (A123 pack 6.6v 2500mAh) from Emcotec as well as the 2x Thunder Power G8 Pro 5S1P 5000 mAh batteries for the motor. I've also finished soldering all the battery connectors and extension cables. I've decided to use Castle Creations 6.5mm polarized bullet connectors for the motor batteries.

Figure 58. Now you see them!

Figure 59. Now you don't!

2014-11-15 Attaching decals

After carefully polishing all parts with auto polish (no wax) it was time to attach the custom vinyl decals. Before attaching the decals I used isopropanol locally to assure good adhesion of the decals.

I use a technique where a very small amount of dishwasher detergent is mixed with water. This is then poured into a spray bottle and a thin layer of spray is applied to both the surface of the plane and the decal before laying it down. The detergent reduces the surface tension of the water. This allows for easy adjustment of the decal, but also reduces the risk of introducing air bubbles. After the decal has been carefully adjusted, excess water is removed by using a plastic spatula on top of the support film for the vinyl decal. After it has dried for a while the support film can be removed easily.

Figure 60. Underside of the inner wing sections.

Figure 61. Fuselage boom decal.

Figure 62. Fin decals with the Swedish flag on top.

Figure 63. Fuselage cockpit decal.

Figure 64. Guess the name of the pilot!

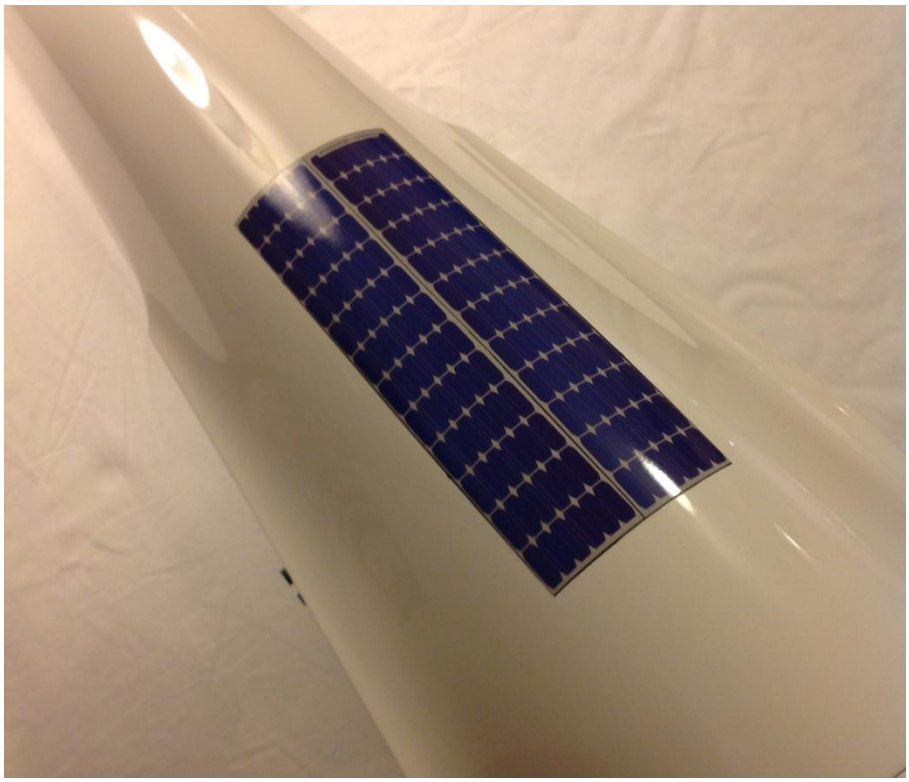

Figure 65. Solar panel for AFT19XS covers.

2014-11-16 Center of gravity and lateral balancing

It is time to bring some balance into the life of this glider. My CG stand from Great Planes did a great job although it was pushed to its limits. Even the guy on our TV could not help himself staring at this beauty!

Figure 66. ASH31 on top of CG stand from Great Planes.

Figure 67. Recommended CG is located 90 mm from leading edge.

By adding 70 g in front of the tow release servo together with 568 below the motor battery compartment the plane was in perfect balance. An additional 21 g in the left wing tip was required to balance the model laterally.

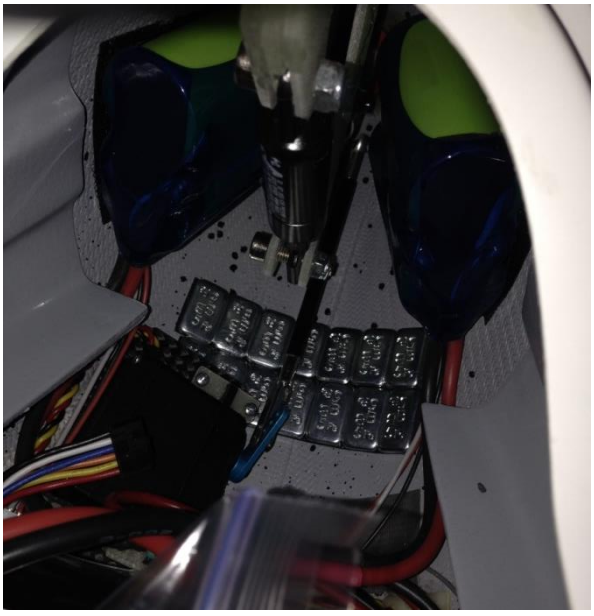

Figure 68. 70+568 g of nose weight was necessary to balance the glider at a 90 mm CG.

Figure 69. The lead shots (568 g) fit perfectly below the motor battery tray.

When extending the AFT19XS the CG shifted 5.5 mm forward, see Table 6 below.

CG from LE [mm]	Nose Weight [g]	AFT 19
90	638	In
84.5	638	Out

Table 6. Center of gravity with AFT19 in and out.

Table 7 summarizes the weight of individual components.

Part	Number	Unit
Left winglet	34	[g]
Right winglet	34	[g]
Left outer wing	912	[g]
Right outer wing	899	[g]
Left inner wing	3200	[g]
Right inner	3300	[g]
Elevator	268	[g]
Fuselage	6700	[g]
Wing joiner	1471	[g]
RX batteries	280	[g]
HS-5125MG	24	[g]
Motor batteries	1332	[g]
OCP	9	[g]
Left wing ballast	21	[g]
Ballast	638	[g]
Total	**19122**	**[g]**

Table 7. Specifications and weight of individual parts.

The decalage of the stabilizer was measured to 2.2°, which was more than expected. I may decide to reduce this after a few flights with dive tests, but Paritech really recommend these factory settings based on extensive testing.

The last step of the build process was to add a protective layer of car wax before the test flight which is scheduled for spring 2015.

2014-12-30 PowerBox Champion SRS telemetry and landing gear OCP

Futaba just released their 2.5.0 update for the T18MZ, which now supports the PowerBox Teleconverter fully. Since I decided not to install the Champion display unit I've been very keen on getting this update, since it allows me to monitor both batteries as well as reception quality from within the T18MZ.

After installing the T18MZ update and upgrading both the Teleconverter and the PowerBox Champion to the latest version I initially thought something was seriously wrong. I did not receive full telemetry information from the Teleconverter to the T18MZ. Also, I was not able to reconnect to the Champion using USB to verify the software update.

After describing these problems to Richard Deutsch on the PowerBox support forum he informed me that I should no longer use the "DATA"-port of the Champion for USB. This port is now reserved for their GPS attachment. From v5.3 the "TELE"-port should be used for USB. This solved the connectivity problem but the reception quality data (antenna fades, lost frames and holds) was still missing.

After some further troubleshooting together with Richard, we learned that the Champion telemetry was somehow set to M-Link although the RX setting was already previously configured S.Bus. This was discovered when looking in the Power/Telemetry menu since the "Telemetry address-assignment" option should not be present when operating the Champion in S.Bus mode.

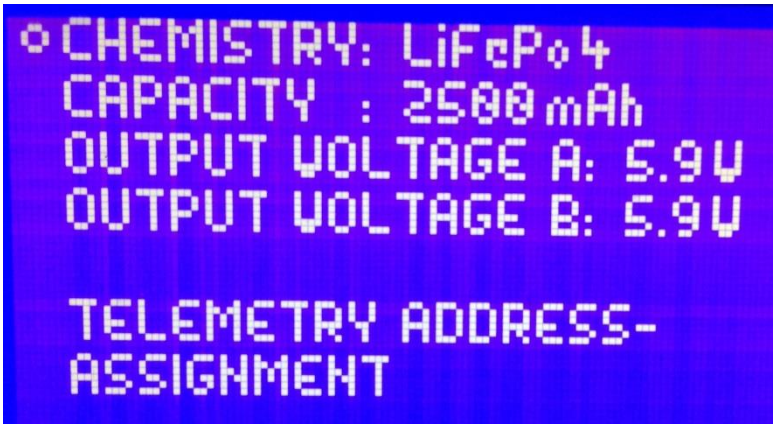

Figure 70. Power/Telemetry menu options after upgrade to v5.3. The "Telemetry address-assignment" option should not be present.

After switching to M-Link and back again to S.Bus in the RX settings menu the menu option above was gone and the full telemetry data from the Champion appeared on the T18MZ.

I also took the opportunity to install an Emcotec OCP between the Champion and the landing gear servo. The installation was simple and the programming of the OCP very easy as well. Hopefully this will protect me from draining the batteries if the landing gear servo draw to much current.

Future plans

I'm planning to install a TEK-probe and a Picolario2 Duo and I may get a pilot doll eventually, but I will probably maiden the glider without these. I'm currently hoping for a very short winter and an early spring.

I'll be back with a test-flight report then!

Warmly,

Per Takman