Rufus - Making the Electric Panel Part 1.

Introduction:
The electrical panel is just a posh name for the method I use to keep the misc. electrical items in one place. It acts as a 'Nerve Centre' receiving electricity from the battery (via the master switch) then sending it out to the various switches and instruments. In general the other side of these switches and instruments then send a return feed back to the electric panel. The electric panel then sends electrical power out to the various consumers; i.e. engine and lights etc.

I have built several of these electric panels now and I have to be honest and say it is probably cheaper to buy a standard electrical 'Module' but I like to be in charge of my own destiny. When building it I can tailor it to my requirements. A big advantage being that if you build it from scratch you know exactly how it goes together, how it comes apart and most importantly how to modify your electrical system and if the worse comes to the worse repair it.

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Earth return:
Having built five kit cars from scratch and restored a few more I always opt for an earth return system and do not rely on a chassis earth: although I do earth the chassis and engine to the main battery earth in order to ensure the engine turns over and that the plugs actually spark.

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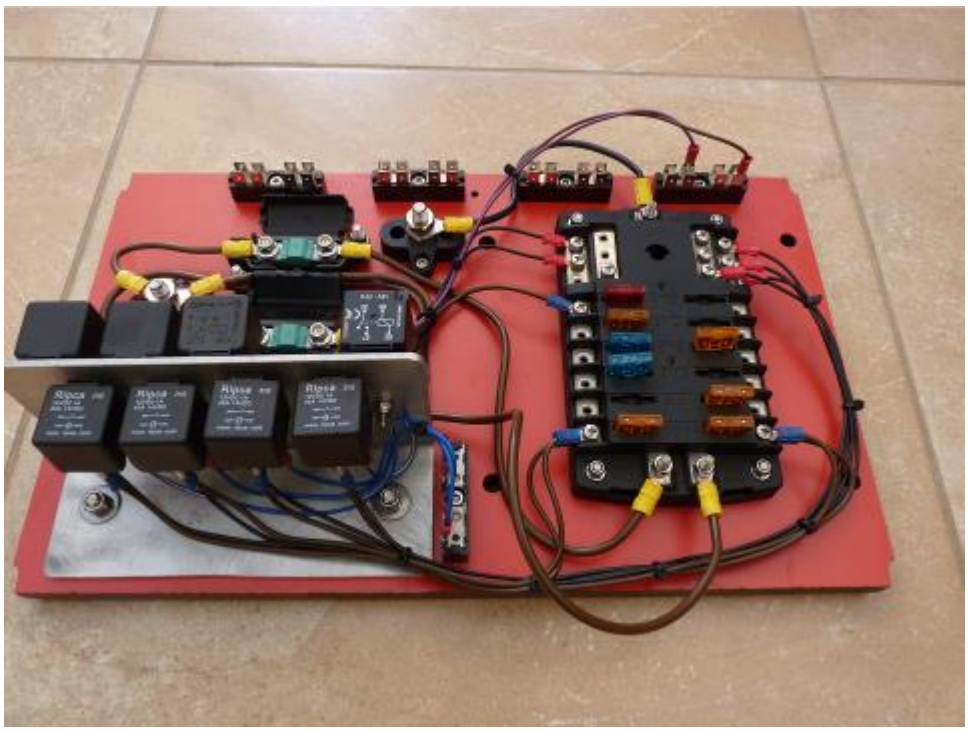
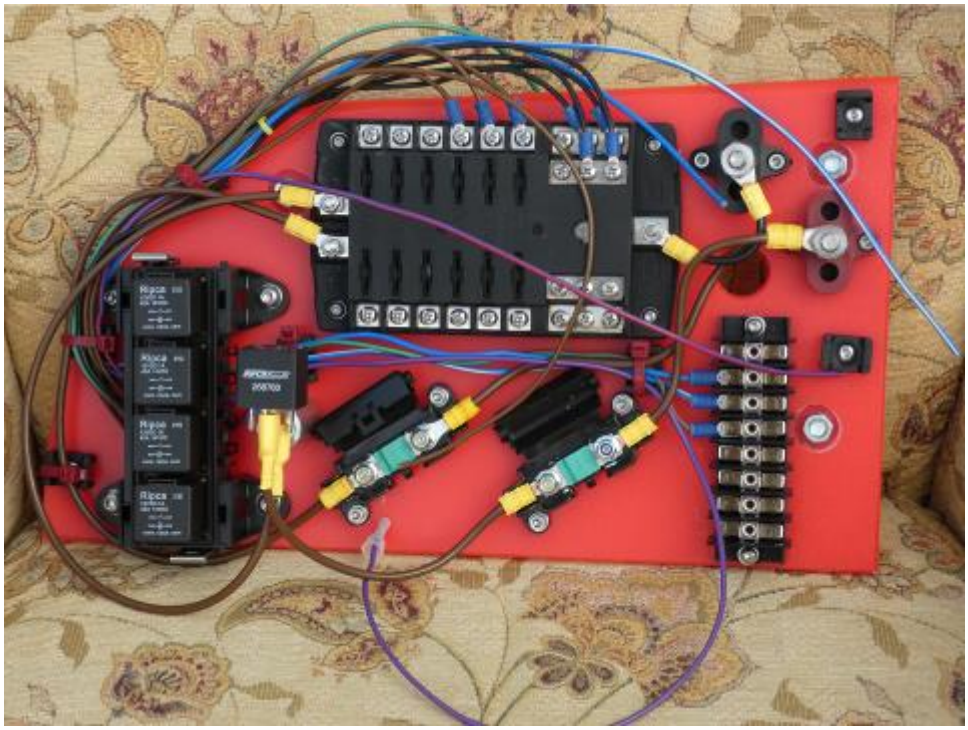
The panel:
In the early days I used plywood to make the panels until one day my son donated the remains of a sheet of laminated industrial plastic which he had been using to make wood working jigs. I subsequently made the electric panel for 'Kermit' my Aero Merlin Cyclecar out of a piece but although it was perfect for the job it was rather heavy. 'Mungo' my Lomax 224 followed Kermit and I had a Eureka moment and made the panel out of a red polyethylene chopping board. For Rufus's panel I decided on another chopping board and chose a brown coloured one that started off 450mm x 300mm x 10mm thick.



The panel for Kermit my Aero Merlin.



The panel for Mungo my Lomax 224.

The first task was to trim the panel to fit the location and I chose to locate it on the vertical bulkhead section above the passenger's legs. After cutting out the shape I ended up with a working area of approximately 340mm x 250mm.

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Fixing the panel:
On Mungo I elected to use exhaust mounting bobbins thinking it would help reduce vibration, only one problem, the threaded studs poking out either side of the centre rubber section only extended 4mm through the combined thickness of the fibreglass and aluminium bulkhead. The fixings on the bulkhead side were therefore stainless steel dome nuts secured with Loctite 243. For Rufus's I decided to use M6 stainless steel fastening with short rubber bushes (spacers) between the internal bulkhead and the rear side of the trim panel. The panel needs to stand off from the bulkhead slightly to enable clearance for the stainless steel fastenings that secure the electrical components to the board.

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Board mounted electrical components:
1. **Positive stud: -** This receives power from the battery master switch and sends it to two fusible links.
2. **Negative stud: -** This is the return circuit and is connected directly to the battery negative post.
3. **Midi fuse number one: -** Power flows from the battery positive post, through this fuse and on to the 'Permanently Live' side of the fuse box. (Ii is permanently on when the battery master switch is on).
4. **Midi fuse number two: -** Power flows from the battery positive post, through this fuse, through the 70 amp relay and on to the 'Ignition Live' side of the fuse box.
5. **Fusebox 12-Way: -** The fusebox consists of two banks of six fuses which are electrically separated. One side is permanently live when the battery master switch is on. The other side is only live when both the battery master switch and the ignition switch are switched on.
6. **70 amp relay: -** This is powered by the ignition key and when activated connects the power from fuse number two to the Ignition live side of the fuse box.
7. **Relay box 4-way: -** This receives power from various sources and sends power to the terminal distribution box and from there to the headlamps, dip beam, horn and fuel pump.
8. **Terminal distribution box 8-way: -** This receives power from the relay box and misc. switches and sends power on to the lights and other end users. Each of the 8-ways has six Lucar terminals. As an example power from the side and tail part of the lighting switch feed one terminal; of the other five

terminals two feed the side lights and two feed the tail lights leaving one spare. (If required this spare terminal could be used to illuminate a ‘Lights On’ warning light).

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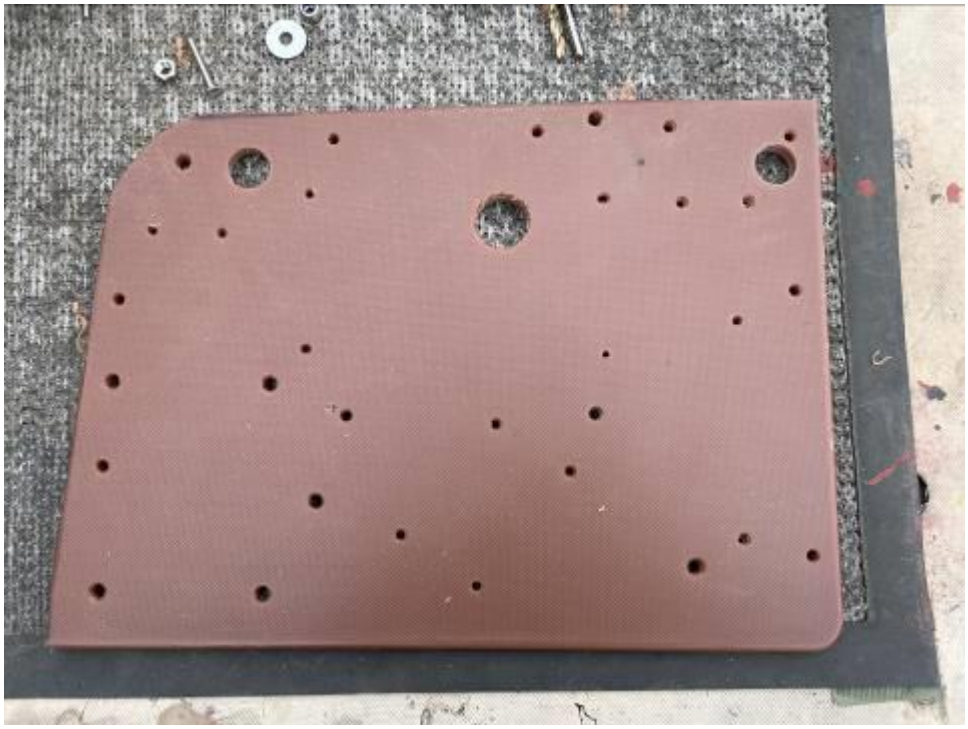
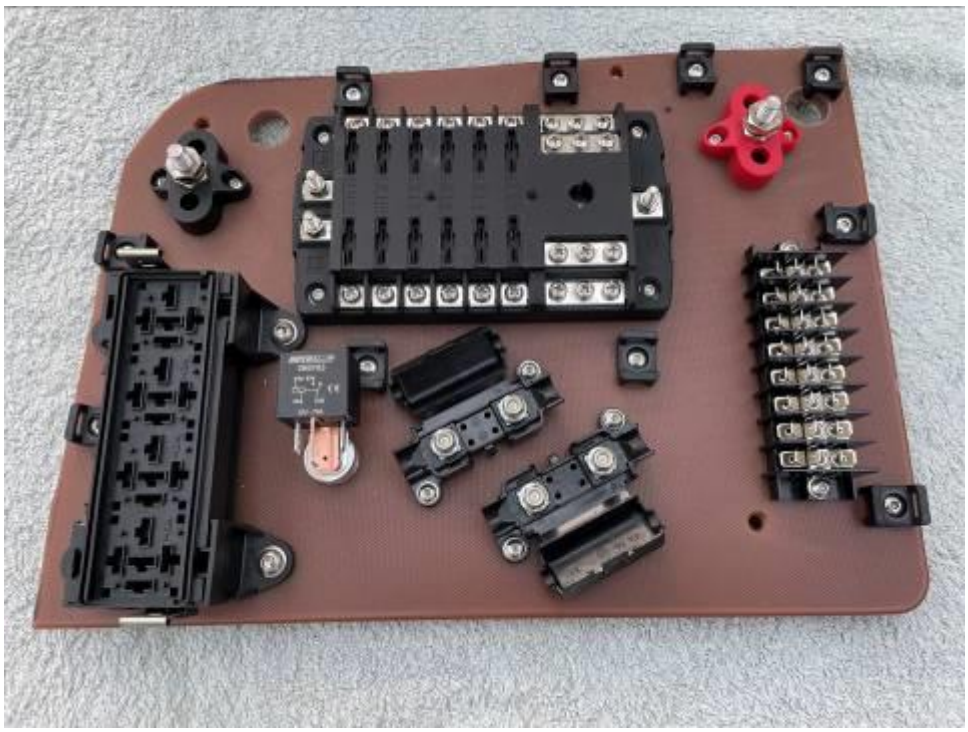
Fixing the components to the electric board:
The components are secured individually by stainless steel fixings using Ny-Loc nuts.



Component mounting holes drilled.



Components fastened in place.

Ditto.

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Trial fitted in position.

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Costings:
At 2023 prices the costings were.

Polyethylene chopping board at £7.98
Positive stud at £5.76
Negative stud at £5.76
Two midi fuse holders at £5.96
Fusebox 12-way at £33.60
70 amp relay £7
Relay box 4-way at £20.55
Four 30 amp relays at £29

Two midi fusible links at £5.96
Ten cable tie mountings at £1.92
Misc. stainless steel fitting at approximately £4.

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Summary:
Of course you don't have to have an electric panel and could simply screw the various components to blank spaces on the bulkhead etc. Personally I like to see all the main electrical components grouped together and on the weatherproof side of the bulkhead.

The total cost was £127.49 which doesn't include the wire cable, terminal connectors, fuses or cable ties

Ready to use wiring modules are available and CBS (Car Builder Solutions) sell a wiring module for £112.80, how good it is I don't know. Many retailers (including CBS and VWP - Vehicle Wiring Products) sell all the parts to make up your own modules but I've never priced one up.

To be continued.