Macgregor Codamac coder for the S/C Emulation Encoder & DigiSpark board = Phil_G

I had a couple of 'Codamac' queries recently so decided to revisit the PIC coder project.
The result is a new version with similar but improved function, at lower cost, that anyone can DIY.
This time I've used a Digispark as my original PIC circuit boards became too expensive.

Its an add-on which connects in line between the S/C tone button harness and the encoder button input.
In other words, you could unplug the harness of any S/C set (that uses my encoder) plug the coder in instead, then plug the harness into the coder.
S/C 'tone' button becomes the quick-blip throttle control, and wires are provided for left, right and optionally kick-up elevator.

It works just like the original Codamac in that you have a toggle for left and right, and the old 'tone' button becomes the new throttle button, which gives perfect 'quick blips'.
Its also has an optional input for kick-up elevator - Shaun added a 'kick-up' button to his Codamac, but the purist will only need the rudder toggle and throttle button.

It has some significant benefits over the original and over the PIC coder:

The original Macgregor Codamac was actually a horrible way to fly, they were awful.
You had to use really deliberate exaggerated stick movements and allow time for the pulser to do its thing, every pulse sequence had to be allowed time to complete, or the control response would be wrong.

The Macgregor stick was awful, it felt like a propo stick which it wasnt, electrically it was more like a reeds toggle but it didnt feel like one, no tactile feeling of having switched, and if you gave blips of control like reeds it would get itself tangled up and throw in a few throttle changes too.
If you used kick-up you had to resort to manual pulsing anyway.

This new version is timed to prevent the accidental mis-operation that the original Macgregor was prone to - if you flicked right for example, the Codamac would misinterpret that as a quick-blip and you would get a throttle change - it was a consequence of the simplistic circuitry they used at the time.

The Digispark coder however will *always* give a blip of right regardless of short momentary flicks of the rudder toggle. Similarly left and kick-up will always give the correct control regardless of the timing of the toggle operation. This makes it easier and much more pleasant to fly than the original Macgregor Codamac.

You could say that it operates just like the original but doesnt mis-operate like the original!

Wiring:

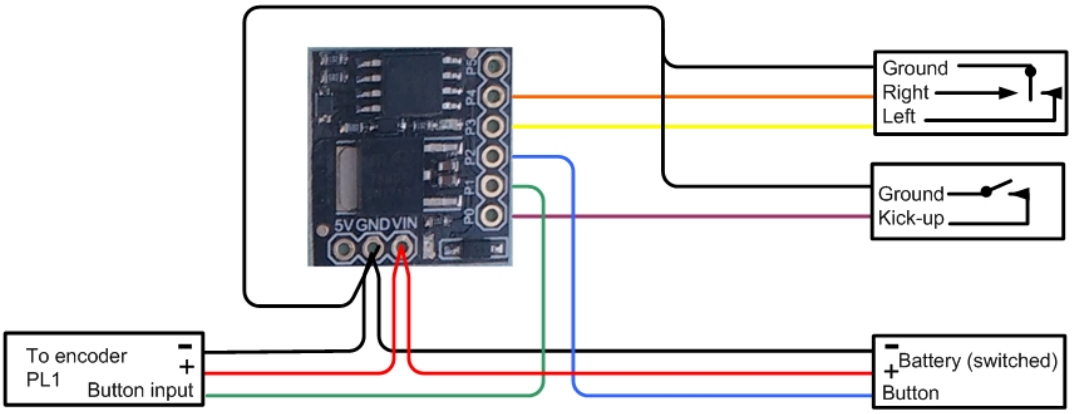
The board is connected as in the following diagram, any that I supply however will be pre-wired with a plug to connect to the S/C encoder, a socket to connect to the button harness, a separate twisted 3-wire cable for the rudder toggle (left/right/ground) and a separate twisted 2-wire cable for the optional kick-up button. The 3-wire lead (left, right & ground,) should be connected to the left/right toggle such that left toggle grounds the 'left' wire and right toggle grounds the 'right' wire.

Thats as 'plug & play' as I can make it – all thats left is to connect the rudder toggle (3 wires) and optionally the elevator button (2 wires).

If you DIY your own coder and program your own DigiSpark, just follow the diagram below.

Cheers !
Phil_G

DigiSpark Coder for Codamacs etc



"Codamac" style coder for the DigiSpark & the Single-Channel Emulation Encoder - Phil_G - 18/03/2019
The coder plugs inline between the existing tone button harness and the S/C encoder input.

Operation:	P2=	-	press for quick-blip throttle
	P4=	———	press&hold for right
	P3=	- ———	press,release,press&hold for left
	P0=	- - ———	press,release,press,release,press&hold for kick-up elevator
	P1=		open-drain keyer output, active low