AN-03

NEW FEATURES IN DRIACS-G2

(OE5JFL Antenna Controller)

Since 2009, when the first DRIACS-G2 was deliver with the firmware v1.1 six important new firmware's was deliver by Hannes OE5JFL. In version 6 we agree in not introduce new features due the fact the limited space on the high speed memory bank inside the Microprocessor was almost full.

But 2 new features was already on Hannes mind and he find the way to cleanup some old code on the firmware and make space for two new features.

FEATURE 1:

All controllers with firmware v6.1 and previous report some random instability on the lectures when you use the MAB28 encoders, this behavior was random and not always present, a long research done by Hannes demonstrate some kind of interference generated by the soft-Start and soft-Stop system created by the PWM modulation (pulse width modulation to step down the speed of your electric engines without decrease power) when the controller was running in automatic, now in the new firmware (v7.1) the PWM subsystem is shutdown few milliseconds to allow the controller read the encoders without any kind of interference.

This new feature is totally transparent and nothing need to be configured by the user

FEATURE 2:

The DRIACS-G2 is capable to manage manual offset for AZ and EL. Our antennas are not normally perfect aligned to the moon and/or some extra weight on the feed could de-rate the focal point forcing you to find the properly correction manually. Find the 00.0 degrees EL when you install your antenna is very easy BUT find the 000.0 AZ or "perfect NORTH" to calibrate your Azimuth is always a problem, depending on the aperture of your main lobe in your antenna this inaccuracies could not affect you, especially in the lower bands, but in 23cm and up is really a problem.

Forcing the antenna to the properly AZ and EL was an easy job using the Manual offset calibration until firmware v6.1 but now Hannes introduce and automatic correction called "antenna position".

To explain how it works assuming you listen a very strong station (or your own echoes or the best sun noise level) and move your antenna manually for the best signal, your controller will read:

170.0   45.0 MOON (or SUN if you are reading sun noise)
+0.0   +0.0 COR
168.0   46.5 ANT

You are not using the manual offset but reading the display tell you your antenna is -2.0 degrees off in AZ and +1.5 degrees in EL, in older firmware's version you will add or rest the correct values to your COR line manually to allow you correct this differences.

Now the interface board is deliver to you with and extra cable, this cable is solder direct due the fact my PCB's was not prepared for that option, the pin P3.3 (on the 20pin flat cable connector) activate the new feature when is grounded for 5 seconds.

Because you find your antenna is offset in AZ and EL few degrees you can press now the new push bottom for 5 seconds and after that the display will show:

170.0   45.0 MOON (or SUN if you are reading sun noise)
-------------   COR
170.0   45.0 ANT

That means; activating the "Antenna Position" new feature the controller assume at that antenna position (168.0 AZ and 46.5 EL) you have your best signal means you are really pointing the "hot spot" and he calculate the offset values (in this case: +2.0 AZ and -1.5 EL) and add and store this values for the real ANT (antenna position). The manual correction now is disable (that's why this line show ----------- COR) and now your antenna position is perfectly calibrated.

This feature is extremely useful when you install your antenna for first time, or for Dxpeditions (always a Dxpedition have problems to do a properly AZ EL calibration, or to check and correct periodically your real antenna position without involve yourself in a heavy job of do mechanical corrections on your positioning system. Off course you will align your mechanics to have the less error, especially in AZ but then using your own echoes or any strong signal or even sun noise you could align your antenna perfectly just pressing a bottom in your panel

If you want to have the "old style" manual correction just toggle the push bottom for 2 seconds and the controller will disable the "Antenna position" feature and will back to the manual COR showing the numbers instead of the line "-------- COR"
Be carefully when you manipulate your interface board, I add a cable long enough with a small push bottom but you can cut this push bottom and install the properly to fix in your frontal panel.

One time more Hannes did a fantastic job adding this two new features,
thanks' for that Hannes.

Alex Artieda
HB9DRI