# AN02

(Proposed by Alex, HB9DRI)

# Step by Step guide

### How to upload the firmware on DRIACS-G2

## OE5JFL Antenna Control System

#### What do you need?

- Flip program latest version from ATMEL, download from: <u>http://www.atmel.com/dyn/products/tools\_card.asp?tool\_id=3886</u>
- PC running Windows 98/Me/2000/XP/Vista/7 with Serial port (COM) or USB-Serial adapter installed.
- Latest firmware downloaded from: <u>http://www.qsl.net/oe5jfl/ant\_cont.htm</u>
- Serial cable to interconnect your Antenna controller with the PC with 1 connector DB9-male and 1 connector DB9-female)
- Your OE5JFL antenna control system.

**STEP 1**: INSTALL FLIP IN YOUR PC

It's a straight forward setup, just follow the GUI.

**STEP 2**: COPY THE FIRMWARE ON YOUR HARDISK

Create a folder like C:\ACS and copy the firmware there.

**STEP 3**: CONFIGURE YOUR COM PORT IN YOUR PC

By default your Com port is not configure for high speed, for that reason is better to configure your COM port to support high transfer rate:

Go to your device manager and right click on your COM port in this case COM1 and select "properties"



Commun	ications Port (C	OM1)	Propertie	es				×
General	Port Settings	Driver	Details	Reso	urces			
1	Communication	ns Port (	(COM1)					
	Device type:	Po	orts (COM	& LPT	)			
	Manufacturer:	(S	tandard p	ort typ	es)			
	Location:	or Int	n Intel(R) terface Co	828010 ontrolle	GBM ( # - 276	ICH7-M/ 89	(U) LPC	
Devic	ce status							- II
This device is working properly.								
							Ŧ	
						ОК	Car	ncel

General Port Settings Driver Details Resources
Bits per second: 115200   Data bits: 8  Parity: None  Stop bits: 1  Flow control: None
Advanced Restore Defaults

Click on Port settings and adjust parameters like that:

Click OK and close Device manager.

#### **STEP 4**: PRE-CONFIGURE FLIP

Start your Flip program (if you run Flip under Vista or windows 7 you need to "run as Administrator")

🚮 Atmel Flip		
<u>File Buffer D</u> evice <u>S</u> ett	ings <u>H</u> elp	
🤝 😴 🧔	3696	🔄 🏄 🏄
Operations Flow	FLASH Buffer Information	AT89C51ED2
Erase	Size 64 KB	Signature Bytes
	Range 0x0 - 0x0	Device Boot Ids
Blank Check	Checksum 0xFF	Hardware Byte BLJB
	Reset Before Loading	Bootloader Ver.
Program	HEX File:	BSB / SBV
		Security Level
● V ver⊪y	<u>AIMEL</u>	Level 0 Level 1 Level 2
Run	Select EEPROM	Start Application Reset
		Communication OFF

In the upper bar click "Settings" and then select "Preferences" :

Preferences					
R5232 Hex Format Time Out/Logging Connecting/Closing					
ISP Hardware Conditions Controlled by Flip					
RST(DTR) active 🔘 High 💿 Low					
PSEN(RTS) active 🔘 High 🍥 Low					
Scan COM ports up to 20					
OK Clear Restore Defaults					

On **RS232** tab select **"ISP Hardware Conditions Controlled by Flip"** and then select **RST(DTR) active "Low**" :

Preferer	nces		×			
R5232	Hex Format	Time Out/Logging Connecting/Closing				
📝 ISF	☑ ISP Hardware Conditions Controlled by Flip					
RS	5T(DTR) active	e 🔘 High 💿 Low				
PSEN(RTS) active 🔘 High 💿 Low						
Scan COM ports up to 20						
	ОК	Clear Restore Defaults				

Click OK, now your Flip program is ready to be used.

#### **STEP 5** PREPARE YOUR ANTENNA CONTROL SYSTEM

With the Microcontroller board switch off (you don't need to have the interface, splitter and encoders connected) install jumpers JP1 and JP2, connect the serial cable from the PC COM port to the microcontroller COM port. When you turn on the Microcontroller the display will show two lines:



#### STEP 6: CONFIGURE FLIP and CONNECT WITH THE ANTENNA CONTROLLER

Now start Flip and select the appropriate Target device clicking from the list the device **AT89C51ED2** and the click OK.

, select



Now click the "Select a communication medium" icon a **RS232 Setup** window will appears:



and select RS232,



Select the correct port number and Baud rate to 115200 then click

Connect

If you receive the error:



Means the PC is not talking with the microcontroller, verified the cable connection, com port number and settings.

If the connection is established you will see now all the option not dimmed any more:

🚮 Atmel Flip		
<u>File Buffer Device Setti</u>	ngs <u>H</u> elp	
🤝 😴 🧔	i 🐟 <del> N</del>	🐚 🏄 🍲
Operations Flow	FLASH Buffer Information	AT89C51ED2
Frase	Size 64 KB	Signature Bytes 58 D7 EC EF
	Range 0x0 - 0x0	Device Boot Ids 00 00
Blank Check	Checksum 0xFF	Hardware Byte 🖪 🔽 BLJB 🦵 X2
	Reset Before Loading	Bootloader Ver. 1.2.0
🕥 🔽 Program	HEX File:	BSB / SBV 00 FC
🕥 🔽 Verify		Security Level FF
		● Level 0 ○ Level 1 ○ Level 2
Run	Select EEPROM	Start Application Reset
		COM1 - 115200

#### **STEP 7**: SELECT THE FIRMWARE



Now you need to select the appropriate firmware, click **use** "Load HEX file" and select the firmware you save on C:\ACS and then press OK

🚮 Load HEX/A90	) File		<b>—</b> ×-
Suchen in:	\mu ACS	•	
Recent Items	eme_con	ntr_jfl_v31.hex	
Desktop	Datei <u>n</u> ame: Da <u>t</u> eityp:	eme_contr_jfl_v31.hex Intel HEX and AVR A90 Files	OK Abbrechen

Now you are ready to upload the firmware, verified if your FLIP GUI looks like the next picture, otherwise you need to review some missing steps:

🕼ngs\HB9DRI\My Documents\DRIAC_G2\v3.1_firmware\eme_contr_jfl_v31.hex 📃 🗖 🗙						
<u>File Buffer Device S</u>	ettings <u>H</u> elp					
\$\$	🍯 🍲 🍝 🎨 🍝	🔌 🏄 🛃 🔗				
Operations Flow	FLASH Buffer Information	AT89C51ED2				
	Size 64 KB	Signature Bytes 58 D7 EC EF				
	Range 0x0 - 0x69A5	Device Boot Ids 00 00				
	Checksum 0x333760	Hardware Byte 🛛 🔽 🗷 BLJB 🔽 X2				
🕥 🗹 Blank Check	Reset Before Loading	Bootloader Ver. 1.2.0				
🕥 🔽 Program	HEX File: eme_contr_jfl_v31.hex 27033 util bytes	BSB / SBV 00 FC				
Verify	Amer	Security Level FF				
		● Level 0 C Level 1 C Level 2				
Run	Select EEPROM	Start Application				
HEX file parsed.		COM1 - 115200				

#### **STEP 8: UPLOAD THE FIRMWARE**

Now you can press RUN on the lower left and you will see the Erasing FLASH progress:

Erasing FLASH	×

After that you will see the Programming FLASH progress, at that moment the Firmware you select is uploaded in to your ATMEL Microprocessor:

Programming FLASH				
32 %	Stop			

When the upload finishes the Verifying FLASH process will confirm the upload.

Verifying FLASH			×
	76 %	Stop	

At the end you will back to the initial FLIP GUI, switch off your controller, close FLIP, remove the jumpers JP1 and JP2 and remove the COM cable and turn on. You will receive the Welcome page:



Two seconds later (after the booting process) your controller show up running:



NOTE: The antenna in this example show AZ=000.0 and EL=-90.0 because the interface board and the encoders are not connected during the photo.

73 de Alex, HB9DRI