4_b Tutorial for ASM modification of the Quax program
UFO Doctor, July 31, 2010

Problem:
With the program Roxxy_Fast_PWM_Hex_Dat.hex the motor Turnigy 2204-14T does not start correctly, if the throttle is pushed within 0.5 sec from zero to a medium speed. Quax found out that the initial start-up current is too high and gave us the advice below. Here are the steps for modifying the asm-program.

1. Make two new folders with the names:
    a. QUAX original zip file
    b. QUAX variations
2. Put the zip file "17a_icp_pwm.r01" into the folder "QUAX original zip file"
3. Unzip the folder (into the same folder)
4. Copy the unzipped content into the folder "QUAX variations"
5. Delete in this folder the following two old hex files:
    a. 17a_icp_pwm.r02.hex
    b. 17a_icp_pwm.hex
6. Open AVR Studio, New Project, select: "Cancel"
7. Open the aps file (second line on the top) 17a_icp_pwm
8. Change the following lines in the open asm file:

Comments at the first page:
; fuses must be set on internal oscillator = 8mhz
Write now this new text:
; fuses must be set to ExtXTAL, high frequency = 16 MHz

Change the commands in the program (advice given by QUAX)
##
.equ   PWR_STARTUP   = MIN_DUTY
.equ   PWR_MAX_STARTUP   = MIN_DUTY+20
##
to the new commands, 1st proposal:
##
.equ   PWR_STARTUP   = 10
.equ   PWR_MAX_STARTUP   = PWR_STARTUP + 5
##
or to the commands, 2nd proposal (not tried out up to now):
##
.equ   PWR_STARTUP   = 6
.equ   PWR_MAX_STARTUP   = PWR_STARTUP + 6
##
9. Save the changed asm file
10. Built (F7): Check if there are no errors or warnings
11. Now you see in "QUAX variations" a new hex file with the effective date
12. Rename this file as Roxxy_Fast_PWM_V2Hex_Dat.hex
13. Flash this program to your ESC

In our case the 1st proposal was very good, giving a smooth start of the motor.
If the throttle is pushed from zero to 50 % very fast, the motor starts slowly and after about 0.5 sec it accelerates to the given speed setting.