RP6 ROBOT SYSTEM

RP6-BASE BOOTLOADER

DEFAULT FUSE BIT SETTINGS

!!! WARNING !!!

Incorrect Fuse Bit settings can cause serious problems!

We created a Bootloader for user program upload for GOOD REASONS! This makes it easier for you and you will not run into trouble as you can not mess up the Fuse Bits.

If you do not have VERY GOOD REASONS to erase the Bootloader, do not do it!

YOU WILL LOOSE WARRANTY IF YOU SOLDER[1] THE ISP CONNECTOR TO THE MAINBOARD!

Nevertheless, if you are sure that you want to erase the Bootloader and use ISP Programming, you can still contact our Support for assistance.

You should use only official ATMEL Tools to program the AVR via ISP. We recommend STK500/AVRISP along with AVRStudio.

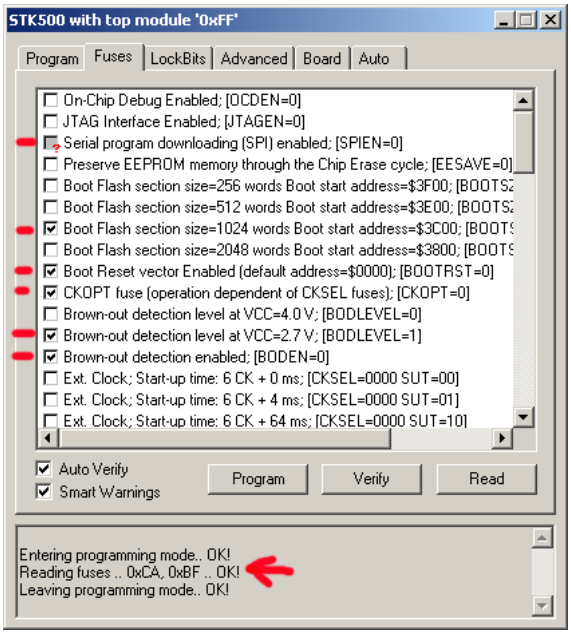
Better do not use Ponyprog or similar tools if you have no prior experience with it! The settings are very very often misunderstood in these tools!

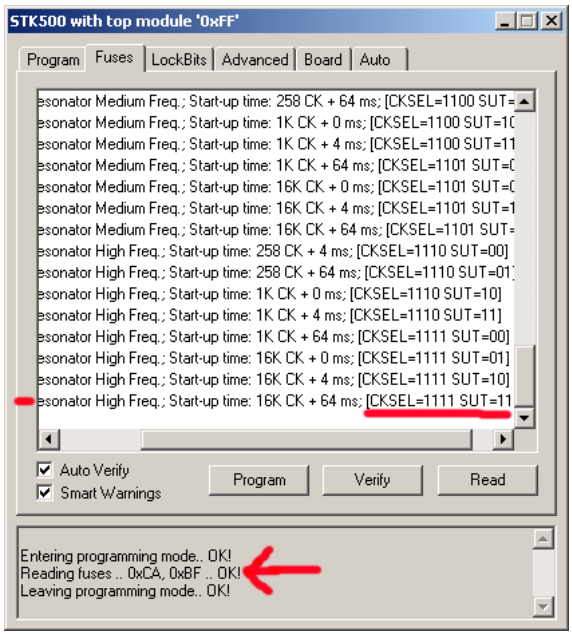
1 Of course you can also try to connect an ISP Connetor without soldering it to the Mainboard. This may work if you only want to switch to another bootloader and back to the original one later! The Warranty will be lost if you set the Fusebits incorrectly or damage the AVR in another way. We can not give any warranties for ISP programming!

Settings for restoring
the ORIGINAL BOOTLOADER

Screenshots of AVR Studio with STK500 Programmer:

1. Fuse Bits



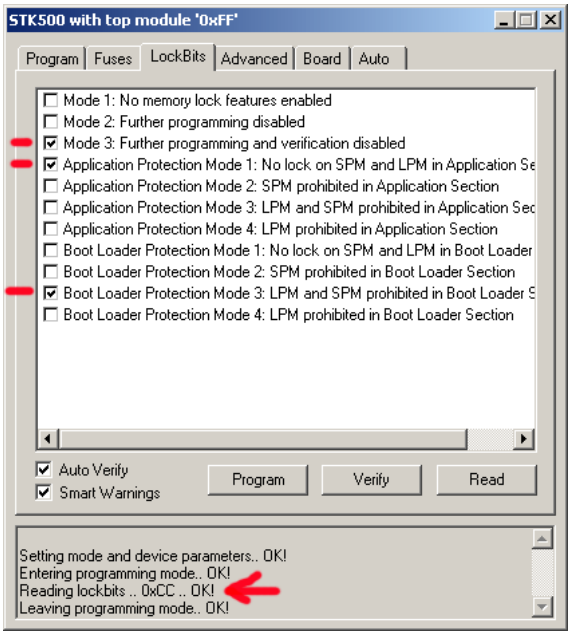


YOU HAVE TO MAKE SURE THAT THE FUSEBIT SETTINGS ARE CORRECTLY AS FOLLOWS:
Fuse Bits *Low* Byte: 0xBF
Fuse Bits *High* Byte: 0xCA
Lock Bit Byte: *(s. next page)*
(All these values are hexadecimal values!)

This means that the following bits are programmed (this means set to 0!!!)
BODEN
SPIEN
CKOPT
BOOTSZ1
BOOTRST

In other words:
- Brown out detection is enabled at 2.7V
- SPI Programming is enabled *(can not be changed when using ISP Interface)*
- CKOPT is enabled
- Bootblock size is 1024 words
- Boot reset vector is enabled
- **External High frequency Crystal/Resonator is enabled with long startup time *(do not change this!)***

2. Lock Bits:



Lock Bit Byte: 0xCC

This means that the following Lock Bits are programmed (set to 0!!!):
BLB12
BLB11
LB2
LB1

All other Lock Bits are unprogrammed.

In other words:
Further programming and verification is disabled
LPM and SPM are allowed in Application section
LPM and SPM are *not* allowed in Bootloader section

If you do not want to use the RP6 Bootloader or want to use no Bootloader at all, you may have to adjust these Settings.
You do not need to set the Lock Bits if you do not use a Bootloader and you also HAVE TO disable the Boot Reset Vector. The rest of the settings can be used as shown above. For other Bootloaders you may have to use different settings!

Always make sure that the Oscillator settings are correct! Otherwise you may not be able to program the AVR anymore and it will stop working!