

## RP6 ROBOT SYSTEM

# RP6 CONTROL M32 BOOTLOADER

## DEFAULT FUSE BIT SETTINGS

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**!!! 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<sup>1</sup> THE  
ISP CONNECTOR TO THE MODULE!**

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!

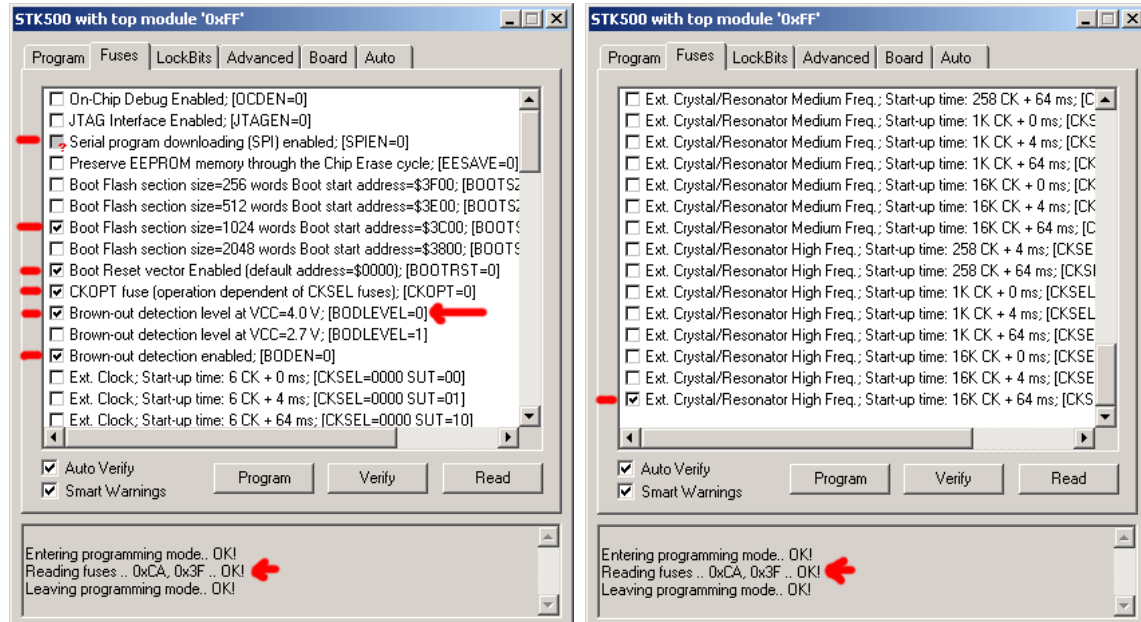
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<sup>1</sup> Of course you can also try to connect an ISP Connector without soldering it to the Module. This may work if you only want to switch to another bootloader and back to the original one later! The Warranty will be lost if you set the Fusebits 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: 0x3F

Fuse Bits High Byte: 0xCA

Lock Bit Byte: (s. next page)

(All these values are hexadecimal values!)

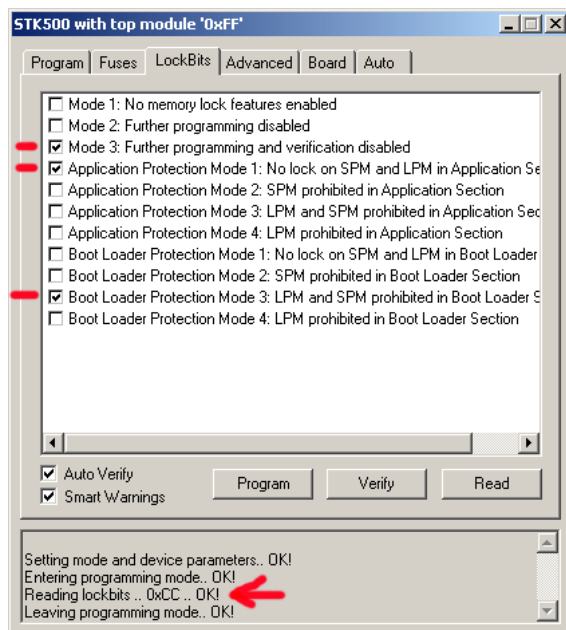
This means that the following bits are programmed (this means set to 0!!!)

BODEN  
BODLEVEL  
SPIEN  
CKOPT  
BOOTSZ1  
BOOTRST

In other words:

- Brown out detection is enabled at 4.0V
- 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

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*If you do not want to use the RP6 M32 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!***