Engbedded Atmel AVR® Fuse Calculator

Device selection

Select the AVR device type you want to configure. When changing this setting, default fuse settings will automatically be applied. Presets (hexadecimal representation of the fuse settings) can be reviewed and even be set in the last form at the bottom of this page.

AVR part name: ATmega328P ▼ Select (141 parts currently listed)

Feature configuration

This allows easy configuration of your AVR device. All changes will be applied instantly.

Features

Ext. Crystal Osc.; Frequency 8.0- MHz; Start-up time PWRDWN/RESET: 16K CK/14 C

- [ ] Clock output on PORTB0; [CKOUT=0]
- [ ] Divide clock by 8 internally; [CKDIV8=0]
- [x] Boot Reset vector Enabled (default address=$0000); [BOOTRST=0]

Boot Flash section size=1024 words Boot start address=$3C00; [BOOTSZ=01]

- [ ] Preserve EEPROM memory through the Chip Erase cycle; [EESAVE=0]
- [ ] Watch-dog Timer always on; [WDTON=0]
- [x] Serial program downloading (SPI) enabled; [SPIEN=0]
- [ ] Debug Wire enable; [DWEN=0]
- [ ] Reset Disabled (Enable PC6 as i/o pin); [RSTDISBL=0]

Brown-out detection level at VCC=2.7 V; [BODLEVEL=101] ▼

Apply feature settings

Manual fuse bits configuration

This table allows reviewing and direct editing of the AVR fuse bits. All changes will be applied instantly.

Note: ☐ means unprogrammed (1); ☑ means programmed (0).

Bit	*Low*	*High*	*Extended*
7	☐ **CKDIV8** Divide clock by 8	☐ **RSTDISBL** External reset disable	
6	☐ **CKOUT** Clock output	☐ **DWEN** debugWIRE Enable	
5	☐ **SUT1** Select start-up time	☑ **SPIEN** Enable Serial programming and Data Downloading	
4	☐ **SUT0** Select start-up time	☐ **WDTON** Watchdog Timer Always On	
3	☐ **CKSEL3** Select Clock Source	☐ **EESAVE** EEPROM memory is preserved through chip erase	
2	☐ **CKSEL2** Select Clock Source	☑ **BOOTSZ1** Select boot size	☐ **BODLEVEL2** Brown-out Detector trigger level
1	☐ **CKSEL1** Select Clock Source	☐ **BOOTSZ0** Select boot size	☑ **BODLEVEL1** Brown-out Detector trigger level
0	☐ **CKSEL0** Select Clock Source	☑ **BOOTRST** Select reset vector	☐ **BODLEVEL0** Brown-out Detector trigger level

Apply manual fuse bit settings

Current settings

These fields show the actual hexadecimal representation of the fuse settings from above. These are the values you have to program into your AVR device. Optionally, you may fill in the numerical values yourself

to preset the configuration to these values. Changes in the value fields are applied instantly (taking away the focus)!

Low	*High*	*Extended*	*Action*	*AVRDUDE arguments*
0x FF	0x DA	0x FD *	Apply values Defaults Apply manual changes to the values on the left side, or load factory default values for the selected device.	-U lfuse:w:0xff:m -U hfuse:w:0xda:m -U efuse:w:0xfd:m Select (try triple-click) and copy-and-paste this option string into your avrdude command line. You may specify multiple -U arguments within one call of avrdude. * Note that some numerical values refer to fuses containing undefined bits (set to '1' here). Depending on the target device these fuse bits will be read either as '0' or '1'. Verification errors will occur if the values are read back with undefined bits set to '0'. Everything is fine if the values read from the device are either the same as programmed, or the following values (undefined set to '0'): **Extended: 0x05**.

References

All information based on database **ATmega328P.xml** build **1**.
Unreviewed original XML backend database from Atmel. Probably buggy! Please report.