

# Geeetech GT2560 Version 3.1 Bootloader Repair How-to (A10, A10M, A20, A20M)

By Folke Ashberg [folke@ashberg.de](mailto:folke@ashberg.de) | Version 1, January 2020

THIS MANUAL COMES WITHOUT ANY WARRANTY! EVERYTHING ON YOUR OWN RISK.  
I'M JUST SHARING MY EXPERIENCE AND WHAT I HAVE DONE FIXING MY BROKEN BOOTLOADER!

## Problem:

- Booting A10M the display shows two black lines:



- The Printers Serial Port shows up in Devices-Manger (as COM-Port)
- But Uploading new Firmware does not works. You'll get timeouts.
  - You can try cura, Arduino IDE. No chance. Printer is broken

## Cause:

You have probably a broken printer's bootloader.

You must reflash it. But this is not possible with the built-in USB-Port! You need an Arduino-ISP Adapter! I've used an USBasp <https://www.amazon.de/gp/product/B07Y3B8H91>

## Version 3.0?

If you have a version 3 of printer Mainboard, you can see such an 40 Pin FCC cable between printer and display/control-unit:



Then it's more complicated to attach all required PINs to an AVR Programme. See this adapter in the geeetech forum by User \_kaktus\_ at <http://www.geeetech.com/forum/viewtopic.php?f=98&t=61850>

More information also available here: <https://www.thingiverse.com/thing:3596842>

## Version 3.1?

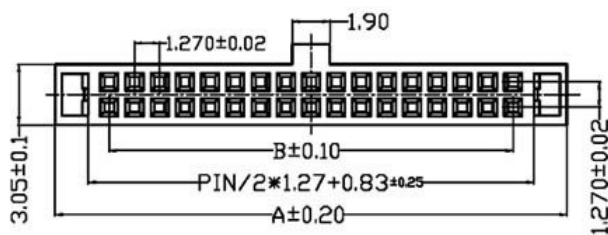
You have the right manual!

Geetech changed with Version 3.1 to a 20 pin IDC Connector. Great, because it's now much easier. So you don't need an adapter, just the ISP Programmer (see above) and some cables (male to female).

I could not find any document describing the PINs, so I've reverse engineered it.



Here are the required PINs:



|                     |   |   |   |       |      |      |    |    |    |
|---------------------|---|---|---|-------|------|------|----|----|----|
| 5V (Do NOT CONNECT) |   |   |   |       |      | MISO |    |    |    |
| 1                   | 3 | 5 | 7 | 9     | 11   | 13   | 15 | 17 | 19 |
| 2                   | 4 | 6 | 8 | 10    | 12   | 14   | 16 | 18 | 20 |
| GND                 |   |   |   | Reset | MOSI | SCK  |    |    |    |

Looking to the front of the connector. Red Cable is PIN 1 on the left.

Do not connect 5VCC PIN 1! Just Connect GND, Reset, MOSI, MISO and SCK to the Ports of your ISP

I've got timeouts with printer powered off. So connect the PINs (again, not 5 Volt PIN) to ISP-Programmer and power on the printer while programming.

## Bootloader programming

Install Arduino IDE <https://www.arduino.cc/en/main/software>

Open Command line and change to Arduino Path. Probably change the path as required to the version you are using. Mine is from Arduino Version 1.8.11

```
C:\> cd %APPDATA%\..\Local\Arduino15\packages\arduino\tools\avrdude\6.3.0-arduino17
```

Check first:

```
C:\> bin\avrdude -Cetc\avrdude.conf -patmega2560 -cusbasp -Push
```

You should see something like:

```
avrdude: warning: cannot set sck period. please check for usbasp firmware update.
avrdude: AVR device initialized and ready to accept instructions
Reading | ##### | 100% 0.02s
avrdude: Device signature = 0x1e9801 (probably m2560)
avrdude: safemode: Fuses OK (E:FD, H:D8, L:FF)
avrdude done. Thank you.
```

Now Programm the bootloader:

```
C:\> bin\avrdude -Cetc\avrdude.conf -patmega2560 -cusbasp -Push
-Uflash:w:..\..\..\hardware\avr\1.8.2\bootloaders\stk500v2\stk500boot_v2_mega2560.he
x:i
-Ulock:w:0x03F:m -v
```

See last pages for example output on successful programming.

Then flash firmware (probably necessary).

```
C:\> bin\avrdude -C etc\avrdude.conf -patmega2560 -cusbasp -PUSB -D -v
-Uflash:w:C:\Users\..RIGHT_PATH_TO...\Marlin.ino.mega.hex:i
```

Power of the printer, Remove ISP, Connect Cable to Display-Unit, Power on and pray!

## Lock bits

I've flashed bootloader with Arduino IDE and everything seemed to work.

But I was not able to flash firmware later using the standard way through printer's integrated USB-Port!

Why? Arduino IDE sets the so called lockbits wrong (-Ulock:w:0x0F:m).

See <https://forum.arduino.cc/index.php?topic=436209.0> -> Lock bits a 0x3F is totally unlocked.

□ So i've changed to test "-Ulock:w:0x03F:m" and then later on flashing worked as expected.

More on this: <https://www.microchip.com/wwwproducts/en/ATmega2560> -> Complete datasheet -> Chapter 29.4 Boot Loader Lock Bits

## Flashing the Standard way

Use just this command to easily flash a new firmware to your printer the standard way (connected just with USB cable). Change COM-Port-Number!

```
C:\> cd %APPDATA%\..\Local\Arduino15\packages\arduino\tools\avrdude\6.3.0-arduino17
C:\> bin\avrdude -C etc\avrdude.conf -patmega2560 -cwiring -PCOM3 -b115200 -D -v
-Uflash:w:C:\Users\..RIGHT_PATH_TO...\Marlin.ino.mega.hex:i
```

## Example output on flashing the bootloader

```
C:\Users\folke>C:\Users\folke\AppData\Local\Arduino15\packages\arduino\tools\avrdude\6.3.0-arduino17\bin\avrdude
-CC:\Users\folke\AppData\Local\Arduino15\packages\arduino\tools\avrdude\6.3.0-arduino17/etc/avrdude.conf -patmega2560
-cusbasp -Push
-Uflash:w:C:\Users\folke\AppData\Local\Arduino15\packages\arduino\hardware\avr\1.8.2/bootloaders/stk500v2/stk500boot_v2_mega2
560.hex:i -Ulock:w:0x03F:m -v
```

Avr avrdude: Version 6.3-20190619

Copyright (c) 2000-2005 Brian Dean, <http://www.bdmicro.com/>  
Copyright (c) 2007-2014 Joerg Wunsch

System wide configuration file is

"C:\Users\folke\AppData\Local\Arduino15\packages\arduino\tools\avrdude\6.3.0-arduino17/etc/avrdude.conf"

```
Using Port          : usb
Using Programmer    : usbasp
AVR Part            : ATmega2560
Chip Erase delay    : 9000 us
PAGEL               : PD7
BS2                 : PA0
RESET disposition   : dedicated
RETRY pulse         : SCK
serial program mode : yes
parallel program mode : yes
Timeout             : 200
StabDelay           : 100
CmdexeDelay         : 25
SyncLoops           : 32
ByteDelay           : 0
PollIndex           : 3
PollValue           : 0x53
Memory Detail       :
```

| Memory      | Type | Mode | Delay | Block Size | Poll Indx | Paged | Size   | Page Size | #Pages | MinW | MaxW | Polled ReadBack |
|-------------|------|------|-------|------------|-----------|-------|--------|-----------|--------|------|------|-----------------|
| EEPROM      |      | 65   | 10    | 8          | 0         | no    | 4096   | 8         | 0      | 9000 | 9000 | 0x00 0x00       |
| flash       |      | 65   | 10    | 256        | 0         | yes   | 262144 | 256       | 1024   | 4500 | 4500 | 0x00 0x00       |
| lfuse       |      | 0    | 0     | 0          | 0         | no    | 1      | 0         | 0      | 9000 | 9000 | 0x00 0x00       |
| hfuse       |      | 0    | 0     | 0          | 0         | no    | 1      | 0         | 0      | 9000 | 9000 | 0x00 0x00       |
| efuse       |      | 0    | 0     | 0          | 0         | no    | 1      | 0         | 0      | 9000 | 9000 | 0x00 0x00       |
| lock        |      | 0    | 0     | 0          | 0         | no    | 1      | 0         | 0      | 9000 | 9000 | 0x00 0x00       |
| calibration |      | 0    | 0     | 0          | 0         | no    | 1      | 0         | 0      | 0    | 0    | 0x00 0x00       |
| signature   |      | 0    | 0     | 0          | 0         | no    | 3      | 0         | 0      | 0    | 0    | 0x00 0x00       |

```
Programmer Type : usbasp
Description      : USBasp, http://www.fischl.de/usbasp/
```

```
avrdude: auto set sck period (because given equals null)
avrdude: warning: cannot set sck period. please check for usbasp firmware update.
avrdude: AVR device initialized and ready to accept instructions
```

Reading | ##### | 100% 0.06s

```
avrdude: Device signature = 0x1e9801 (probably m2560)
avrdude: safemode: lfuse reads as FF
avrdude: safemode: hfuse reads as D8
avrdude: safemode: efuse reads as FD
avrdude: NOTE: "flash" memory has been specified, an erase cycle will be performed
To disable this feature, specify the -D option.
avrdude: erasing chip
avrdude: auto set sck period (because given equals null)
avrdude: warning: cannot set sck period. please check for usbasp firmware update.
avrdude: reading input file
"C:\Users\folke\AppData\Local\Arduino15\packages\arduino\hardware\avr\1.8.2/bootloaders/stk500v2/stk500boot_v2_mega2560.hex"
avrdude: writing flash (261406 bytes):
```

Writing | ##### | 100% 0.21s

```
avrdude: 261406 bytes of flash written
avrdude: verifying flash memory against
C:\Users\folke\AppData\Local\Arduino15\packages\arduino\hardware\avr\1.8.2/bootloaders/stk500v2/stk500boot_v2_mega2560.hex:
avrdude: load data flash data from input file
C:\Users\folke\AppData\Local\Arduino15\packages\arduino\hardware\avr\1.8.2/bootloaders/stk500v2/stk500boot_v2_mega2560.hex:
avrdude: input file
C:\Users\folke\AppData\Local\Arduino15\packages\arduino\hardware\avr\1.8.2/bootloaders/stk500v2/stk500boot_v2_mega2560.hex
contains 261406 bytes
avrdude: reading on-chip flash data:
```

Reading | ##### | 100% 0.19s

```
avrdude: verifying ...
avrdude: 261406 bytes of flash verified
avrdude: reading input file "0x03F"
avrdude: writing lock (1 bytes):
```

Writing | ##### | 100% 0.03s

```
avrdude: 1 bytes of lock written
avrdude: verifying lock memory against 0x03F:
avrdude: load data lock data from input file 0x03F:
avrdude: input file 0x03F contains 1 bytes
```

```
avrdude: reading on-chip lock data:

Reading | ##### | 100% 0.03s

avrdude: verifying ...
avrdude: 1 bytes of lock verified

avrdude: safemode: lfuse reads as FF
avrdude: safemode: hfuse reads as D8
avrdude: safemode: efuse reads as FD
avrdude: safemode: Fuses OK (E:FD, H:D8, L:FF)

avrdude done. Thank you.
```