

Firmware Release Notes

Marlin F-033B/C

Marlin F-046B/C

Marlin F-080B/C

Marlin F-145B/C

Marlin F-146B/C

Marlin F-201B/C

Marlin F-131B/C

V2.2.0

Date:

09 October 2008

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Summary

This release note details the new features and bug fixes of the firmware of the AVT Marlin series of cameras in relation to the earlier firmware versions listed above. It is intended to provide an indication of new features available with this release and the progress since the last major release.

The firmware of a Marlin consists of three integral parts, which are merged together into one XML file.

Please see the **appendix** if you want to learn how to program a new firmware into the camera.

(Don't worry it's easy and you don't need to open the camera!)

Important Marlin version information:

CCD- models were subject of a hardware change, recognizable from the serial numbering.

All cameras with serial numbers, beginning with 6xxxxxxx have a revised hardware together with new firmware versions.



Any mixing of hardware and firmware other than listed may result in a non-functional or even defective camera which is explicitly excluded from the guarantee.

*Therefore the release notes show both version cameras separated for better readability.
CMOS models use different hardware, which was NOT subject to a change.*

Marlin F-033B/C with serial numbers 1xxxxxxx
Marlin F-046B/C with serial numbers 1xxxxxxx
Marlin F-080B/C with serial numbers 1xxxxxxx
Marlin F-145B/C with serial numbers 1xxxxxxx

Microcontroller Firmware: No change

Release history:

Current Release: arm-2.06 (2004-09-24) CCD and CMOS-Models

Predecessor Release: arm-2.05 (2004-06-09) CCD and CMOS-Models

Initial Release: arm-0.90 (2003-11-13) CCD-Models

Initial Release: arm-2.00 (2004-02-11) CMOS-Model

New features:

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Bug fixes

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Known problems

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Marlin F-033B with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16

Predecessor Release: 0v10

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-033C with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16

Predecessor Release: 0v10

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-046B with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16
Predecessor Release: 0v10
Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-046C with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16

Predecessor Release: 0v10

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-080B with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16

Predecessor Release: 0v10

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-080C with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16

Predecessor Release: 0v10

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-145B2 with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16

Predecessor Release: 0v10

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-145B2-15fps with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v21

Predecessor Release: 0v15

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-145C2 with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v16
Predecessor Release: 0v10
Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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Marlin F-145C2-15fps with serial numbers 1xxxxxxx

FPGA Firmware: No change

Release history:

Current Release: 0v21

Predecessor Release: 0v15

Initial Release: 0v05

Release notes:

New features:

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Bug fixes

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Known problems

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**Marlin F-033B/C, Marlin F-046B/C, Marlin F-080B/C(-30fps),
Marlin F-145B/C(-15fps) with serial numbers 6xxxxxxx
Marlin F-146B/C, Marlin F-201B/C, Marlin F-131B/C**

Microcontroller firmware:

Release history:

Release	Marlin F-033B/C with serial numbers 6xxxxxxx	Marlin F-046B/C with serial numbers 6xxxxxxx	Marlin F-080B/C(-30fps) with serial numbers 6xxxxxxx	Marlin F-145B/C(-15fps) with serial numbers 6xxxxxxx	Marlin F-146B/C	Marlin F-201B/C	Marlin F-131B/C
Current	3.10 2006-10-27	3.10 2006-10-27	3.03 2006-02-13	3.03 2006-02-13	3.35 2007-10-15	3.03 2006-02-13	3.45 2008-01-22
Predecessor	3.03 2006-02-13	3.03 2006-02-13	B: 2.92 2005-02-22 C: 2.94 2005-03-21	B: 2.92 2005-02-22 C: 2.94 2005-03-21	3.30 2007-05-11	--	2.92 2004-09-24
Initial	2.92 2005-02-22	2.92 2005_02_22	2.92 2005-02-22	2.92 2005-02-22	3.02 2005-08-01	3.03 2006-02-13	2.00 2004-02-11

New features (firmware 3.10: only MARLIN F-033/046)

1.	Adjusted AFE settings: MARLIN F-033B/C and MARLIN F-046B/C	Firmware 3.10 2006-10-27
2.	Changed version numbering scheme of microcontroller releases: The increment is now 0.5. Example: Firmware 3.10 → Firmware 3.15	Firmware 3.10 2006-10-27
3.	Added secure image signature (SIS) containing bus cycle timer, frame counter stamp and trigger counter stamp. This information is inserted into a selectable line within the image. Frame counter and trigger counter are available also as advanced register. SIS can be switched on and off as a whole.	
4.	(also Marlin F-131B/C): Added memory channels (aka user sets). Three different user sets (beside the factory default set) can be stored in the camera. One can be selected for camera start up configuration. User sets comprise of: all standard registers and all advanced registers. (see Marlin TM for further reference)) Note: The latest written LUT data will be saved as part of a user set. Note: Gamma is also a LUT. Therefore you can save either Gamma or a LUT, but not both.	

5.	Because Gamma is LUT note the following change in LUT-handling : Switch Gamma on => LUT will be switched on also Switch Gamma off => LUT will be switched off also Switch LUT off => Gamma will be switched off also	
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Bug fixes (firmware 3.45: only MARLIN F-131BC)

1.	#194: Corrected: Sub-sampling modes functionality was incorrect.	Firmware 3.45 2008-01-22
2.	#205: Corrected: After HDR on-off the brightness was too dark.	Firmware 3.45 2008-01-22
3.	#225: Corrected: AutoGain set led to alternating brightness.	Firmware 3.45 2008-01-22

Bug fixes (firmware 3.10: only MARLIN F-033/046)

1.	The timeout of one-push operations (white balance) was fixed at 1000 ms. There was a timeout with higher frame rates.	Firmware 3.10 2006-10-27
2.	Bugs in sequence mode corrected.	
3.	High SNR mode couldn't be switched off, when GrabCount was set to 0. This error was corrected.	
4.	Adjusted default extended shutter value to the default IIDC shutter value. During a user set load operation the IIDC shutter value is computed from the extended shutter value.	
5.	If a profile load operation failed or the factory profile was loaded, not all settings became active. This error is corrected.	
6.	Format 7 modes for cameras with interlaced video modes reported different BytesPerPacket values just after startup and if a format 7 mode was the active video mode. This error is corrected.	

Known problems

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Marlin F-033B/C with serial numbers 6xxxxxxx

FPGA firmware:

Release history:

Current release: MF033B/C-1.10 (2006-02-21)

Predecessor release: MF033B/C-1.05 (2005-04-28)

Initial release: MF033B/C-1.00

New features

1.	Added secure image signature (SIS) containing bus cycle timer, frame counter stamp and trigger counter stamp (deleted old cycle timer).
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Bug fixes

1.	Latched diverse registers (AOI, LUT on/off, binning, sub-sampling)
2.	Corrected bug in sequence, now sequencing is fully functional.
3.	Optimized CCD sampling to improve linearity in sensor.

Known problems

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Marlin F-046B/C with serial numbers 6xxxxxxx

FPGA Firmware:

Release history:

Current Release: MF046B/C-1.10 (2006-02-21)

Predecessor Release: MF046B/C-1.01 (2005-03-21)

Initial Release: MF046B/C-1.00

New features

1.	Added secure image signature (SIS) containing bus cycle timer, frame counter stamp and trigger counter stamp (deleted old cycle timer).
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Bug fixes

1.	Latched diverse registers (AOI, LUT on/off, binning, sub-sampling)
2.	Corrected bug in sequence, now sequencing is fully functional.
3.	Optimized CCD sampling to improve linearity in sensor.

Known problems

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Marlin F-080B/C(-30fps) with serial numbers 6xxxxxxx

FPGA Firmware:

Release history:

Current Release: MF080B/C-1.11 (2008-01-31)

Predecessor Release: MF080B/C-1.10 (2006-02-21)

Initial Release: MF080B/C-1.00

New features

1.	Added secure image signature (SIS) containing bus cycle timer, frame counter stamp and trigger counter stamp (deleted old cycle timer).
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Bug fixes

1.	Random IntEna dropouts (#297)	Firmware 1.11 2008-01-31
2.	Latched diverse registers (AOI, LUT on/off, binning, sub-sampling)	
3.	Corrected bug in sequence, now sequencing is fully functional.	
4.	Optimized CCD sampling to improve linearity in sensor.	

Known problems

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Marlin F-145B/C(-15fps) with serial numbers 6xxxxxxx

FPGA Firmware:

Release history:

Current Release: MF145B/C-1.10 (2006-02-21)

Predecessor Release: MF145B-1.00 (2005-02-22)
MF145C-1.05

Initial Release: MF145B/C-1.00

New features:

1.	Added secure image signature (SIS) containing bus cycle timer, frame counter stamp and trigger counter stamp (deleted old cycle timer).
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Bug fixes

1.	Latched diverse registers (AOI, LUT on/off, binning, sub-sampling)
2.	Corrected bug in sequence, now sequencing is fully functional.
3.	Optimized CCD sampling to improve linearity in sensor.

Known problems

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Marlin F-146B/C

FPGA Firmware:

Release history:

Current Release: MF146B -1.13 (2007-10-15)
MF146C -1.11 (2007-10-15)

Predecessor Release: MF146B-1.10 (2006-02-21)
MF146C-1.10 (2006-02-21)

Initial Release: MF146B/C-1.00

New features

1.	Added secure image signature (SIS) containing bus cycle timer, frame counter stamp and trigger counter stamp (deleted old cycle timer).
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Bug fixes

4.	Loss of Int_Ena
1.	Latched diverse registers (AOI, LUT on/off, binning, sub-sampling)
2.	Corrected bug in sequence, now sequencing is fully functional.
3.	Optimized CCD sampling to improve linearity in sensor.

Known problems

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Marlin F-201B/C

FPGA Firmware:

Release history:

Current Release: MF201B/C-1.10 (2006-02-21)

Predecessor Release: MF201B/C-1.00

Initial Release: MF201B/C-1.00

New features

1.	Added secure image signature (SIS) containing bus cycle timer, frame counter stamp and trigger counter stamp (deleted old cycle timer).
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Bug fixes

1.	Latched diverse registers (AOI, LUT on/off, binning, sub-sampling)
2.	Corrected bug in sequence, now sequencing is fully functional.
3.	Optimized CCD sampling to improve linearity in sensor.

Known problems

1.	F201B in F_7_M3 limits maximum frame rate to 12.54 instead of possible 22.35 fps.
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Marlin F-131B/C

FPGA Firmware: MF-131B/C

Release history:

Current Release: 1.00 (2008-01-22)
Predecessor Release: 0v22
Initial Release for B: 0v05
Initial Release for C: 0v15

Release notes:

New features:

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Bug fixes

1.	#173: Corrected: DSNU/Blemish correction didn't work properly
2.	#265: Corrected: Blemish correction instability
3.	#351: Corrected: When Blemish data were stored to flash, SmartView crashed
4.	#373: Corrected: HDR mode image flickering
5.	#381: Corrected: Format_7 Mode_1 image crash

Known problems

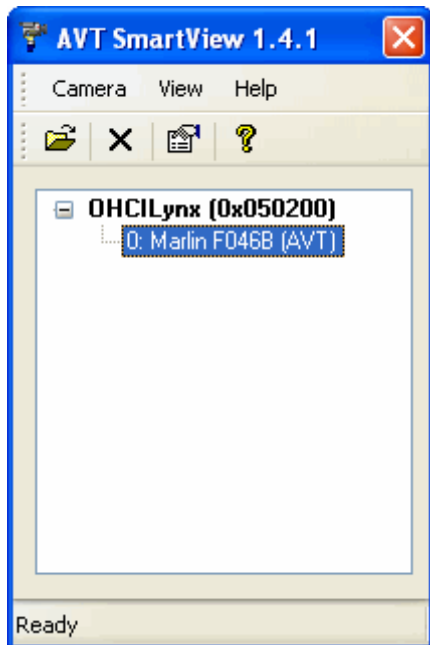
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Appendix

How to find out, what Firmware versions your cameras has:

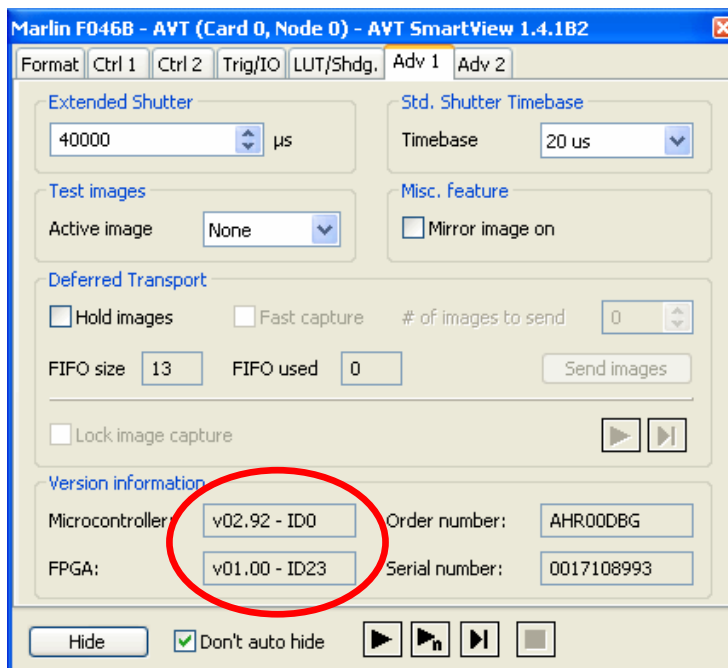
First way

1. Use the tool **AVT SmartView** (ask your local dealer for a copy of it). Doubleclick on the desired camera (e.g. Marlin F046B).



2. In SmartView window click on **Edit settings** button .
3. Click on **Adv1** tab.

Here you find the **Version Information** (Microcontroller and FPGA).



Second way

Read out the version information on register level directly as follows:

Register	Name	Field	Bit	Description
F1000010	VERSION_INFO1	µC type ID	[0..15]	Reserved
		µC version	[16..31]	Bcd-coded vers.#
F1000014			[0..31]	Reserved
F1000018	VERSION_INFO3	FPGA type ID	[0..15]	See below
		FPGA version	[16..31]	Bcd-coded vers.#
F100001C			[0..31]	Reserved

This register holds information about the node_hw_version, the node_sw_version and the node_spec_ID (camera type). µC version and FPGA version are bcd-coded, which means that e.g. firmware version 0.85 is read as 0x0085.

The FPGA type ID identifies the camera type with the help of the following list:

ID	Camera type
1	DOLPHIN F-145B
2	DOLPHIN F-145C
3	DOLPHIN F-201B
4	DOLPHIN F-201C
5	DOLPHIN F-145B-1
6	DOLPHIN F-145C-1
7	DOLPHIN F-201B-1
8	DOLPHIN F-201C-1
9	MARLIN F-033B
10	MARLIN F-033C
11	MARLIN F-046B
12	MARLIN F-046C
13	MARLIN F-080B
14	MARLIN F-080C
15	MARLIN F-145B2
16	MARLIN F-145C2
17	MARLIN F-131B
18	MARLIN F-131C
19	MARLIN F-145B2-15fps
20	MARLIN F-145C2-15fps

ID	Camera type
21	MARLIN2 F-033B
22	MARLIN2 F-033C
23	MARLIN2 F-046B
24	MARLIN2 F-046C
25	MARLIN2 F-080B
26	MARLIN2 F-080C
27	MARLIN2 F-145B2
28	MARLIN2 F-145C2
29	-
30	-
31	MARLIN2 F-145B2-15fps
32	MARLIN2 F-145C2-15fps
38	OSCAR F-320C
39	-
40	OSCAR F-510C
41	-
42	OSCAR F-810C
43	MARLIN2 F-080B-30fps
44	MARLIN2 F-080C-30pfs
45	MARLIN2 F-145B2-ASM
46	MARLIN2 F-145C2-ASM
47	MARLIN2 F-201B
48	MARLIN2 F-201C
49	MARLIN2 F-146B
50	MARLIN2 F-146C
101	PIKE F-032B
102	PIKE F-032C
103	PIKE F-100B
104	PIKE F-100C
105	PIKE F-145B
106	PIKE F-145C

ID	Camera type
107	PIKE F-210B
108	PIKE F-210C
109	-
110	-
111	PIKE F-421B
112	PIKE F-421C
113	-
114	-
115	PIKE F-145B-15fps
116	PIKE F-145C-15fps
117	PIKE F-505B
118	PIKE F-505C
201	GUPPY F-033B
202	GUPPY F-033C
203	GUPPY F-036B
204	GUPPY F-036C
205	GUPPY F-046B
206	GUPPY F-046C
207	GUPPY F-080B
208	GUPPY F-080C
209	GUPPY F-146B
210	GUPPY F-146C
211	-
212	-
213	GUPPY F-033B BL (board level)
214	GUPPY F-033C BL (board level)
215	GUPPY F-025B
216	GUPPY F-025C
217	GUPPY F-029B
218	GUPPY F-029C
219	GUPPY F-038B
220	GUPPY F-038C
221	GUPPY F-038B NIR

ID	Camera type
222	GUPPY F-038C NIR
223	GUPPY F-044B NIR
224	GUPPY F-044C NIR
225	GUPPY F-080B BL (board level)
226	GUPPY F-080C BL (board level)
227	GUPPY F-044B
228	GUPPY F-044C
401	STINGRAY F-033B (BL)
402	STINGRAY F-033C (BL)
403	-
404	-
405	STINGRAY F-046B (BL)
406	STINGRAY F-046C (BL)
407	STINGRAY F-080B (BL)
408	STINGRAY F-080C (BL)
409	STINGRAY F-125B (BL)
410	STINGRAY F-125C (BL)
411	-
412	-
413	STINGRAY F-145B (BL)
414	STINGRAY F-145C (BL)
415	STINGRAY F-146B (BL)
416	STINGRAY F-146C (BL)
417	STINGRAY F-201B (BL)
418	STINGRAY F-201C (BL)

How to update the firmware

The following items will be needed:

Hardware:

- A computer with W2000 or XP and a free serial interface
- The programming cable (AVT#: E1000666)

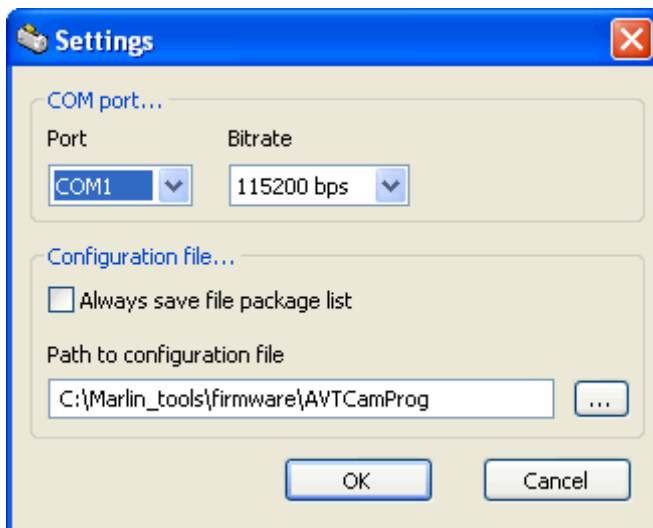
Software:

- The programming software AVTCamprog.exe
- This user's guide
- The programming *.xml file.

1. Start the software AVTCamprog by double-clicking **AVTCamProg-x.yz.exe**.
2. First Time: To set the Com-Port according to your computer click **Settings**.

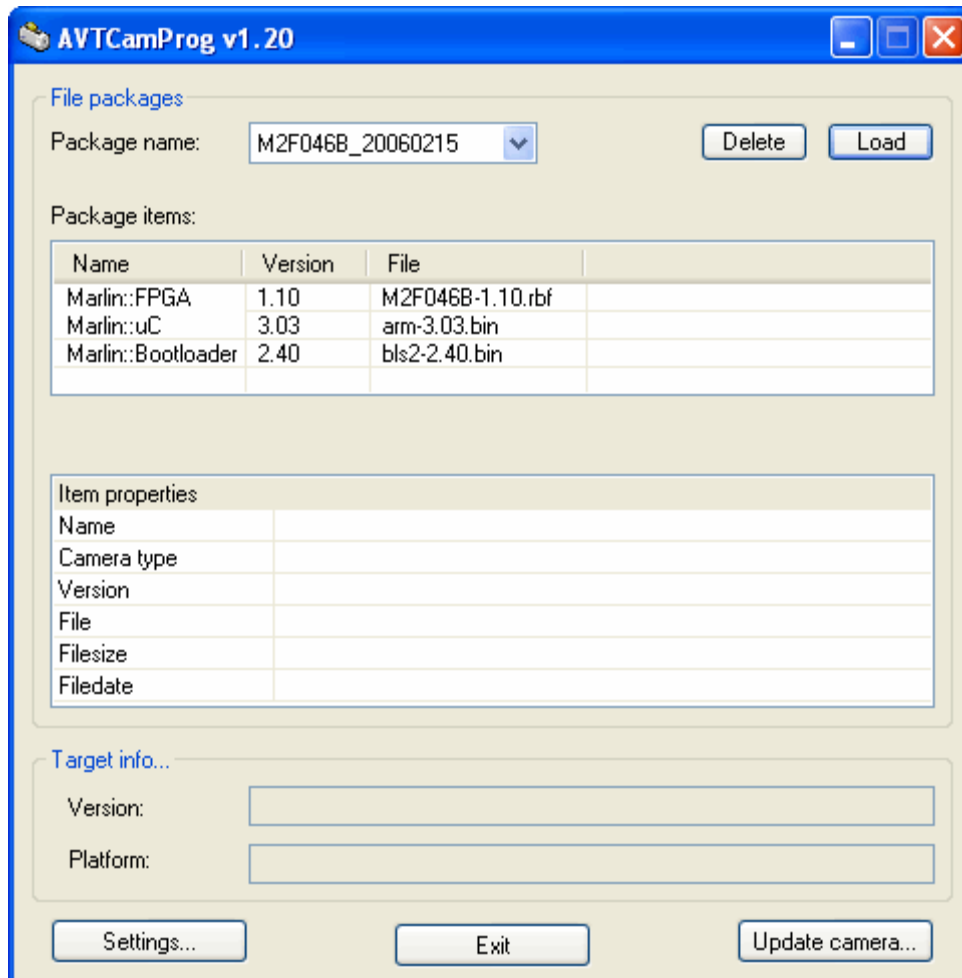
The Settings window appears.

3. In the **Port** combo box choose the appropriate port (e.g. COM1). In the **Bitrate** combo box choose **115200 bps**. In the **Path to configuration file** field enter a path for the configuration file to be stored.



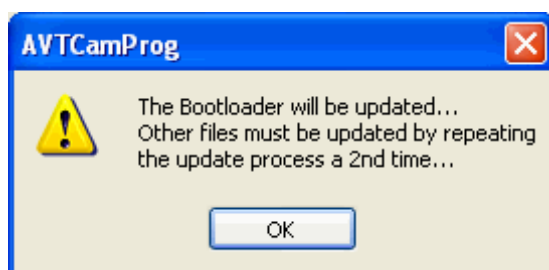
4. Click **OK**.
5. Connect the programming cable to the camera's HiRose connector and the computer's serial port.
6. Disconnect the camera from power by disconnecting the IEEE-1394 connector.
7. In the **AVTCamProg** window click on **Load** and enter the xml-file, which contains the three different firmware sections, to be programmed into the camera. Its name will then appear in the **Package items** listbox.

Package items details the three different firmwares (i.e. FPGA, Microcontroller and Bootloader) with their respective versions.



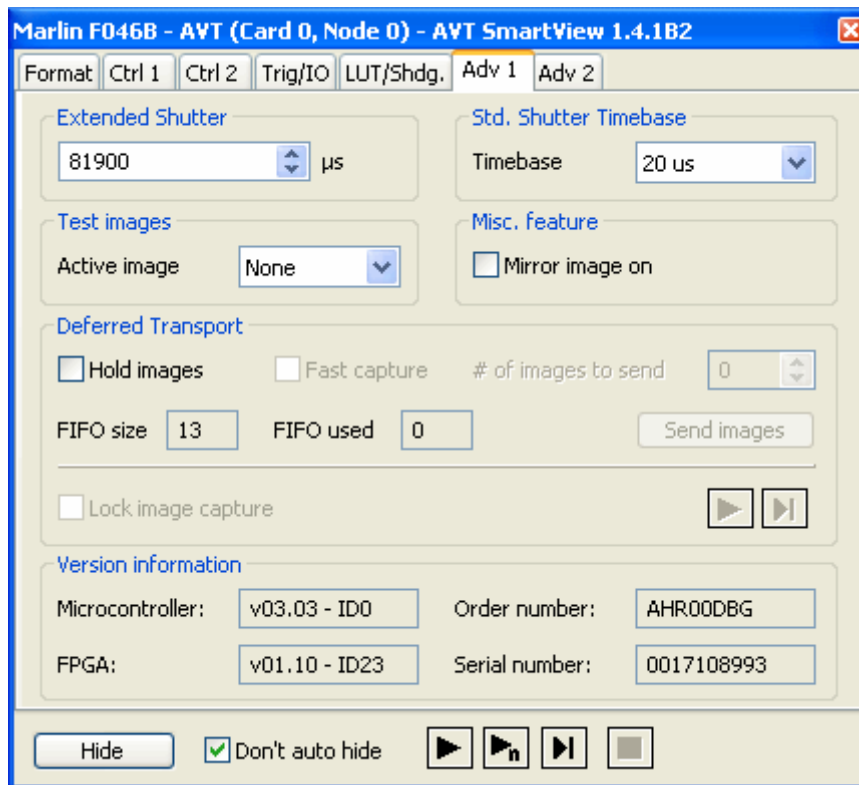
8. In the **AVTCamProg** window click **Update camera...** and reconnect the IEEE-1394 connector within 20 seconds.

This will boot the camera in a mode where it accepts downloading the new firmware. When a new bootloader is required, which is automatically detected by the program, it will be necessary to perform step 8 and 9 **twice**, one time for the bootloader and the second time for the rest of the new firmware. You will see the following message:



9. In the **AVTCamProg** window click **Exit** to bring the camera back to normal mode or disconnect and reconnect the IEEE-1394 connector. The camera's power LED should turn green, no morse code on the two LED's: You are done!

10. Check the microcontroller and FPGA version with AVT SmartView:



Camera Compatibility with IEEE-1394 software, supplied by AVT and third party software

All AVT cameras are tested for compatibility with the most recent versions of AVT software packages (AVT FirePackage, AVT DirectFirePackage, AVT Fire4Linux) as well as third party software packages.

It is highly recommended to always use newest versions, available from the website www.alliedvisiontec.com or the product support CD which comes with every camera.