

# **Firmware Release Notes**

**Pike F-032B (fiber)**  
**Pike F-032C (fiber)**  
**Pike F-100B (fiber)**  
**Pike F-100C (fiber)**  
**Pike F-145B (fiber)**  
**Pike F-145C (fiber)**  
**Pike F-145B (fiber)- 15fps**  
**Pike F-145C (fiber)- 15fps**  
**Pike F-210B (fiber)**  
**Pike F-210C (fiber)**  
**Pike F-421B (fiber)**  
**Pike F-421C (fiber)**  
**Pike F-505B (fiber)**  
**Pike F-505C (fiber)**

*V4.1.0*

*Date:*  
*28 April 2009*

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## Summary

This release note details the new features and bug fixes of the firmware of the **AVT Pike series** of cameras in relation to the earlier firmware versions listed above. This 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 Pike camera consists of three integral parts, which are merged together into one .xml file.

# Pike F-032/100/145/210/421/505 B/C (fiber)

## Microcontroller firmware

### Release history

Release	Pike F-032B/C (fiber)	Pike F-100B/C (fiber)	Pike F-145B/C (fiber)	Pike F-210B/C (fiber)	Pike F-421B/C (fiber)	Pike F-505B/C (fiber)
Current	3.01.00 2008-08-19	3.01.00 2008-08-19	3.01.00 2008-08-19	0.3.5.2 2009-04-23	3.01.00 2008-08-19	0.3.5.1 2009-03-30
Pre-decessor	3.00.01 2007-09-07	3.00.01 2007-09-07	00.03.00.01 2007-11-15	3.01.00 2008-08-19	3.00.01 2007-09-07	0.3.3.1 2008-08-29
Initial	1.10 2006-06-23	1.15 2006-10-04	1.15 2006-10-04	1.11 2006-07-28	1.10 2006-06-23	0.3.2.0 2008-01-28

### Firmware 0.3.5.2 (only Pike F-210)

1.	New features: <ul style="list-style-type: none"><li>● Channel matcher added</li><li>● Gain reference adjustable</li><li>● Low noise binning mode added</li></ul>
2.	Improved: <ul style="list-style-type: none"><li>● Corrected: I/O output pin state error</li></ul>
3.	Bug fixes: <ul style="list-style-type: none"><li>● #412: Corrected re-read problem: stack upgrade due to bugs</li><li>● #413: Corrected conflict error</li></ul>

## Firmware 0.3.5.1 (only Pike F-505)

1.	Bug fixes: <ul style="list-style-type: none"><li>● #603: Corrected: 8x8 binning returned 304x25 instead of 304x254</li></ul>
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## Firmware 3.03.00 – 3.03.01 (only Pike F-505)

1.	Improved: <ul style="list-style-type: none"><li>● Sensor timing</li><li>● Gain references</li></ul>
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## Firmware 3.00.01 – 3.03.00 (all Pikes)

1.	New features: <ul style="list-style-type: none"><li>● User adjustable gain references (#483)</li><li>● SNR increasing binning mode (#490)</li></ul>
2.	Improved: <ul style="list-style-type: none"><li>● Minimum exposure time</li><li>● Sensor timing for<ul style="list-style-type: none"><li>- Pike F-505B/CC</li><li>- Pike F-145B/C</li><li>- Pike F-145B/C -15fps</li></ul></li></ul>
3.	Bug fixes: <ul style="list-style-type: none"><li>● #353: Corrected: Output pins state could not be read</li><li>● Corrected: LED functionality</li><li>● #477: Corrected: While turning on RS232, Pike wrote random data into transmit buffer</li></ul>

## Firmware 3.00.01 (all Pikes)

1.	Bug fixes: <ul style="list-style-type: none"><li>● #357: Incompatibility with Microsoft camera drivers</li><li>● #355: Max GPDataBuffer corrected to 2048</li><li>● #339: Corrected shading build function</li></ul>
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	<ul style="list-style-type: none"> <li>● #338: First packet after bus reset was faulty</li> <li>● #232: Improved FPN at certain exposure settings</li> </ul>
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## Firmware 1.25 – 3.00 (all Pikes)

1.	<p>New features:</p> <ul style="list-style-type: none"> <li>● Sequence mode</li> <li>● 4 x / 8 x binning and sub-sampling</li> <li>● Format_7 mode mapping</li> <li>● Secure image signature (SIS)</li> <li>● Trigger counter</li> <li>● Frame info</li> <li>● Quick Format Change Mode (QFCM)</li> <li>● Extended Firmware version registers</li> <li>● Packed 12-Bit Mode</li> <li>● Smear reduction</li> </ul>
2.	<p>Bug fixes:</p> <ul style="list-style-type: none"> <li>● #325: Mirror and sub-sampling repeats deferred mode</li> <li>● #334: High SNR mode and grab count = 2 does not work</li> <li>● #339: Faulty shading image with image count &gt; 12</li> <li>● #327: Corrected customer key register</li> <li>● #329,#330: Recall of user set does not set trigger mode</li> <li>● #322: Initialize command never restored the factory defaults.</li> </ul>

## Firmware 1.15 – 1.25 (all Pikes)

1.	Improved update via 1394
2.	Improved general code
3.	Corrected minimum shutter (Pike F-100)
4.	Corrected Format 7 modes color filter IDs

## **Firmware 1.11 – 1.15 (all Pikes)**

1.	Improved auto features
2.	Corrected operations of one-push functions
3.	Added camera status register
4.	Enabled serial COM
5.	Improved exposure / shutter behavior
6.	Improved LUT / storing / loading behavior
7.	Implemented Format 7 color ID filter

## **Firmware 1.10 – 1.11 (all Pikes)**

1.	New features: hue, saturation, color correction, image mirror
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# Pike F-032/100/145/210/421 B/C (fiber)

## FPGA firmware

### Release history

Release	Pike F-032B/C (fiber)	Pike F-100B/C (fiber)	Pike F-145B/C (fiber) Pike F-145B/C-15fps (fiber)	Pike F-210B/C (fiber)	Pike F-421B/C (fiber)	Pike F-505B/C (fiber)
Current	3.01.00 2008-08-19	3.01.00 2008-08-19	3.01.00 2008-08-19	0.3.2.0 2009-04-23	3.01.00 2008-08-19	00.03.01.00 2008-08-19
Pre-decessor	3.00 2007-08-20	3.00 2007-08-20	00.03.00.02 2008-03-11	3.01.00 2008-08-19	3.00 2007-08-20	00.03.01.00 2008-08-19
Initial	1.00 2006-06-23	1.00 2006-10-04	1.00 2006-10-04	1.00 2006-07-28	1.00 2006-06-23	00.03.00.01 2008-01-28

### FPGA firmware 0.3.2.0 (only Pike F-210)

1.	New features: <ul style="list-style-type: none"><li>● Offset balance module added</li><li>● Updated channel matcher ⇒ offset balance is available</li></ul>
2.	Bug fixes: <ul style="list-style-type: none"><li>● Corrected: low-pass filter counter</li><li>● #572: Revised sub-sampling mode (no speed increase available)</li></ul>

## **FPGA firmware 00.03.00.02 – 00.03.01.00 (all Pikes)**

1.	New features: <ul style="list-style-type: none"><li>● User adjustable gain references (#483)</li><li>● SNR increasing binning mode (#490)</li></ul>
2.	Bug fixes: <ul style="list-style-type: none"><li>● #491: Corrected: Anti-smear vertical stripes</li><li>● #348: Corrected: Turning off trigger delay caused image trigger</li><li>● #365: Corrected: Pike stopped working in level mode after closing / opening</li></ul>

## **FPGA firmware 00.03.00.02 (only Pike F-145B/C and Pike F-145B/C-15fps)**

1.	Bug fixes: <ul style="list-style-type: none"><li>● #395: Optimizations related to IntEna delay and trigger delay</li></ul>
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## **FPGA firmware 00.03.00.01 (only Pike F-145B/C and F-505B/C)**

1.	New camera: Pike F-505B/C
2.	Bug fixes: <ul style="list-style-type: none"><li>● #370: Sequencing (gain and offset)</li></ul>

## **FPGA firmware 1.10 – 3.00 (Pike F-032/100/145/210)**

1.	New features: <ul style="list-style-type: none"><li>● Smear reduction</li><li>● Sequence mode</li><li>● SIS (secure image signature)</li><li>● Quick Format Change Mode</li><li>● 4 x/ 8 x binning and sub-sampling</li><li>● Packed 12-Bit Mode</li><li>● Support of new family member: Pike F-145-15fps</li></ul>
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2.	Changes: <ul style="list-style-type: none"> <li>● Improved standard parameter update timing</li> <li>● New firmware version registers</li> </ul>
3.	Bug fixes: <ul style="list-style-type: none"> <li>● #323: Higher FPN at certain exposure time settings</li> <li>● #341: HighSNR + Trigger requires 2 triggers to make image</li> <li>● #342, #345: White balance does not work with mirror</li> </ul>

## FPGA firmware 1.15 – 3.00 (Pike F-421)

1.	New features: <ul style="list-style-type: none"> <li>● Smear reduction</li> <li>● Sequence mode</li> <li>● SIS (secure image signature)</li> <li>● Quick Format Change Modes</li> <li>● 4 x/ 8 x binning and sub-sampling</li> <li>● Packed 12-Bit Mode</li> <li>● Improved standard parameter update timing</li> <li>● New firmware version registers</li> </ul>
2.	Bug fixes: <ul style="list-style-type: none"> <li>● #323: Higher FPN at certain exposure time settings</li> <li>● #341: HighSNR + Trigger requires 2 triggers to make image</li> <li>● #342, #345: White balance does not work with mirror</li> </ul>

## FPGA firmware 1.00 – 1.15 (Pike F-421)

1.	Improved image quality in Mono8 (#283)
2.	Corrected change from level mode to free-run during Iso-Ena (#292)
3.	Corrected LUT behavior (#304)

## FPGA firmware 1.00 -1.10 (Pike F-032/100/145/210)

1.	Improved image quality in Mono8 (#283)
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2.	Corrected change from level mode to free-run during Iso-Ena (#292)
3.	Corrected LUT behavior (#304)

# Appendix

How to find out, which **firmware versions** your camera has:

## First way

1. Start **AVT SmartView** (ask your local dealer for a copy of it). Double-click on the desired camera (e.g. Pike F-032B).
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 as follows:

Register	Name	Field	Bit	Description
0xF1000010	VERSION_INF01	μC type ID	[0..15]	Always 0
		μC version	[16..31]	Bcd-coded version number
0xF1000014			[0..31]	Reserved
0xF1000018	VERSION_INF03	Camera type ID	[0..15]	See table below
		FPGA version	[16..31]	Bcd-coded version number
0xF100001C			[0..31]	Reserved
0xF1000020		---	[0..31]	Reserved
0xF1000024		---	[0..31]	Reserved
0xF1000028		---	[0..31]	Reserved
0xF100002C		---	[0..31]	Reserved
0xF1000030		OrderIDHigh	[0..31]	8 Byte ASCII Order ID
0xF1000034		OrderIDLow	[0..31]	

The µC version and FPGA firmware version numbers are bcd-coded, which means that e.g. firmware version 0.85 is read as 0x0085 and version 1.10 is read as 0x0110.

The FPGA type ID (= camera 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
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

ID	Camera type
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-30fps
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
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

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ID	Camera type
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	-
210	-
211	-
212	-
213	GUPPY F-033B board level
214	GUPPY F-033C 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
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