

## What has changed from MARLIN to STINGRAY?

This document describes the major differences between the AVT MARLIN and the AVT STINGRAY family.

The major differences between the MARLIN and STINGRAY cameras are listed in the following tables:

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- [Accessories](#) on page 4
- [Hardware](#) on page 5
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- [Software](#) on page 10
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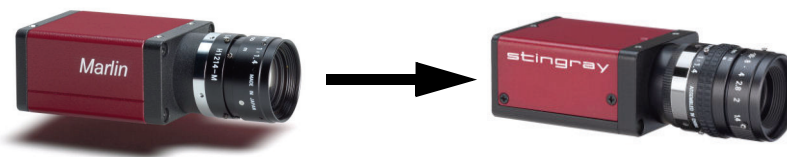
Besides these standard differences, see **Modular Camera Concept** on AVT website for optional modifications.

## Technical and ordering information

### Info



- **Technical information:**  
[support@alliedvisiontec.com](mailto:support@alliedvisiontec.com)  
phone (for Germany): +49 (0)36428 677-270  
phone (for USA): +1 978-225-2030  
outside Germany/USA: Please check the link for your local dealer.  
<http://www.alliedvisiontec.com/partner.html>
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phone (for USA): +1 978-225-2030  
outside Germany/USA: Please check the link for your local dealer.  
<http://www.alliedvisiontec.com/partner.html>



# Mechanics

Item	Identical?	MARLIN	STINGRAY
<b>Dimensions</b>	Nearly	72 mm x 44 mm x 29 mm (L x W x H) incl. connectors and C-Mount, without tripod and lens	72.8 mm x 44 mm x 29 mm (L x W x H) incl. connectors and C-Mount, without tripod and lens
<b>Optical filter</b>	No	Monochrome and color cameras: IR cut filter (Jenofilt 217) Exception: F-131BNIR only: ASG (protection glass)	Monochrome cameras: ASG (protection glass) Color cameras: IR cut filter (Hoya C5000)
<b>Mass</b>	No	< 120 g (without lens)	92 g (without lens)
<b>Case material</b>	Yes	Aluminum	
<b>Tripod mounting bracket</b>	Yes	Same tripod adapter, but different number of screws:	
		4 x M3 x 3 mm screws	3 x M3 x 3 mm screws
<b>Mounting holes</b>	No	Front flange: 4 x M3 x 3 mm same positions Back plane: 3 x M3 x 3 mm different positions	Front flange: 4 x M3 x 3 mm same positions Back plane: 2 x M3 x 3 mm different positions
<b>Remove optical filter</b>	Yes (tool)	For removing the filter you need a special tool with the following AVT ordering number: E9020001	
<b>Angled head</b>	Yes	<ul style="list-style-type: none"> <li>• F-... W90</li> <li>• F-... W90 S90</li> <li>• F-... W270</li> <li>• F-... W270 S90</li> </ul>	

Table 1: Mechanics



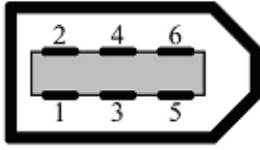
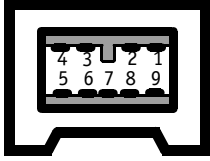
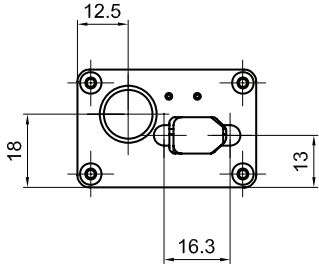
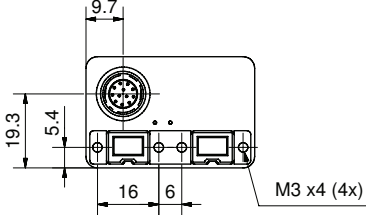
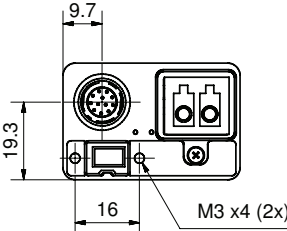
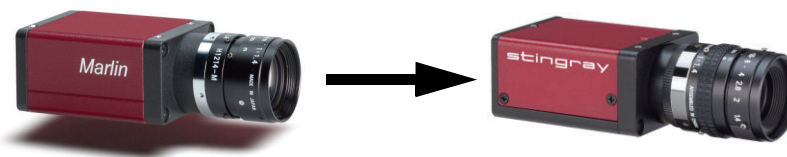
Item	Identical?	MARLIN	STINGRAY																																		
<b>Connectors</b>	No	<ul style="list-style-type: none"> <li>1 x 6-pin IEEE 1394a copper</li> </ul>  <table border="1" data-bbox="994 304 1256 563"> <thead> <tr> <th>Pin</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Cable power</td> </tr> <tr> <td>2</td> <td>Cable GND</td> </tr> <tr> <td>3</td> <td>TPB-</td> </tr> <tr> <td>4</td> <td>TPB+</td> </tr> <tr> <td>5</td> <td>TPA-</td> </tr> <tr> <td>6</td> <td>TPA+</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>1 x 12-pin HIROSE</li> </ul>	Pin	Signal	1	Cable power	2	Cable GND	3	TPB-	4	TPB+	5	TPA-	6	TPA+	<ul style="list-style-type: none"> <li>2 x 9-pin IEEE 1394b copper</li> </ul>  <table border="1" data-bbox="1711 312 2085 676"> <thead> <tr> <th>Pin</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TPB-</td> </tr> <tr> <td>2</td> <td>TPB+</td> </tr> <tr> <td>3</td> <td>TPA-</td> </tr> <tr> <td>4</td> <td>TPA+</td> </tr> <tr> <td>5</td> <td>TPA (Reference ground)</td> </tr> <tr> <td>6</td> <td>VG (GND)</td> </tr> <tr> <td>7</td> <td>N.C.</td> </tr> <tr> <td>8</td> <td>VP (Power, VCC)</td> </tr> <tr> <td>9</td> <td>TPB (Reference ground)</td> </tr> </tbody> </table> <p>or 1 x 9-pin IEEE 1394b copper and 1 x GOF</p> <ul style="list-style-type: none"> <li>1 x 12-pin HIROSE</li> </ul>	Pin	Signal	1	TPB-	2	TPB+	3	TPA-	4	TPA+	5	TPA (Reference ground)	6	VG (GND)	7	N.C.	8	VP (Power, VCC)	9	TPB (Reference ground)
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<b>CAD drawings: dimensions</b>	No	 <p>Marlin: HIROSE (left) and 6-pin 1394a copper (right)</p>	 <p>Stingray: HIROSE (above left) 2 x 9-pin 1394b copper (down)</p>  <p>Stingray: HIROSE (above left) 1 x 9-pin 1394b copper (down) 1 x GOF (above right)</p>																																		

Table 1: Mechanics



# Accessories

Item	Standard	MARLIN	STINGRAY
Lateral cable	Rear connects	optional: cable exit to the left	No options

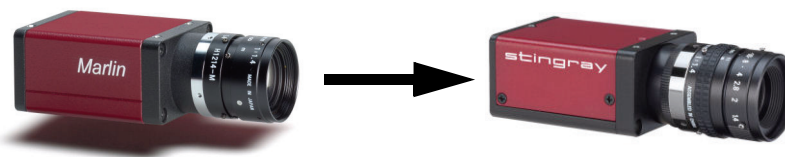
Table 2: Accessories: cables

Lateral cable exit	IEEE 1394 connector		Input/output connector		Illustration
<p>MARLIN (exit to the left)</p>	<p>standard</p>	<p>latching</p>	<p>I/O HIROSE 12 pin</p>	<p>I/O HDSUB 15 pin</p>	<p>MARLIN with cable exit to the left</p>

Table 3: MARLIN: Lateral cable options

Interface	MARLIN	STINGRAY
PCI	2x or 4x 1394 connector with one or two 1394a chipsets	2 x 1394b connector Only one 1394 chipset due to PCI bandwidth restriction (bottleneck of PCI bus)
PCI Express	X times 1394a connector with one or two 1394a chipsets	2 x 1394b connector with one or two 1394a chipsets

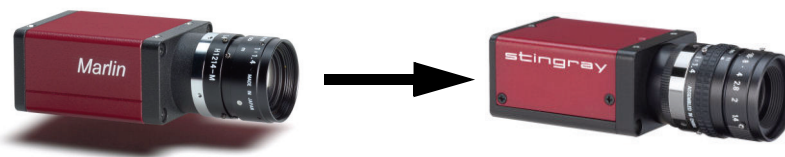
Table 4: PCI interface boards available from AVT



# Hardware

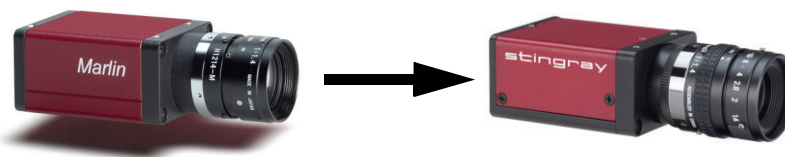
Item	Identical?	MARLIN	STINGRAY
<b>Digital interface</b>	No	<ul style="list-style-type: none"> <li>• FireWire IEEE 1394a</li> <li>• IIDC V1.3</li> <li>• 400 Mbit/s</li> </ul>	<ul style="list-style-type: none"> <li>• FireWire IEEE 1394b</li> <li>• IIDC V1.31</li> <li>• 800 Mbit/s, daisy chain</li> </ul>
<b>Image sensors</b>	No	<ul style="list-style-type: none"> <li>• 656 x 492 (SONY ICX414)</li> <li>• 780 x 582 (SONY ICX415)</li> <li>• 1032 x 778 (SONY ICX204)</li> </ul>	
		<ul style="list-style-type: none"> <li>• 1280 x 1024 (FillFactory IBIS5B/IBIS5B NIR)</li> <li>• 1392 x 1040 (Sony ICX 205)</li> </ul>	
			<ul style="list-style-type: none"> <li>• 1388 x 1038 (Sony ICX285)</li> </ul>
		<ul style="list-style-type: none"> <li>• 1388 x 1038 (Sony ICX267)</li> <li>• 1624 x 1234 (Sony ICX274)</li> </ul>	
<b>Power consumption</b>	No	typical <3 watt (@ 12 V DC)  (full resolution and maximal frame rates)	<b>copper:</b> typical <3.5 watt (@ 12 V DC) <b>fiber:</b> typical <4 watt (@ 12 V DC)  (full resolution and maximal frame rates)
<b>Camera IO connector pin assignment</b>	No	1 External GND 2 External Power (CCD models only) 3 4 Camera In 1 5 6 Camera Out 1 7 Camera In GND 8 RxD RS232 9 TxD RS232 10 Camera Out Power 11 Camera In 2 12 Camera Out 2	1 External GND 2 External Power 3 Camera Out 4 4 Camera In 1 5 Camera Out 3 6 Camera Out 1 7 Camera In GND 8 RxD RS232 9 TxD RS232 10 Camera Out Power 11 Camera In 2 12 Camera Out 2
<b>ADC</b>	No	<ul style="list-style-type: none"> <li>• CCD: 12 bit</li> <li>• CMOS: 10 bit</li> </ul>	<ul style="list-style-type: none"> <li>• CCD: 14 bit</li> </ul>
<b>Image memory</b>	No	8 MB	32 MB

Table 5: Hardware



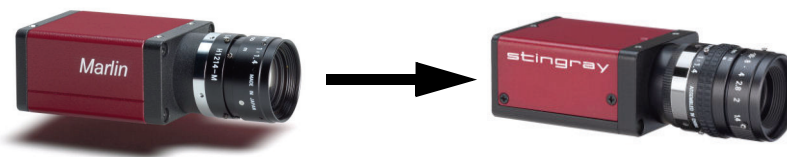
Item	Identical?	MARLIN	STINGRAY
I/Os	No	<ul style="list-style-type: none"><li>• 2 programmable opto-isolated inputs</li><li>• 2 programmable opto-isolated outputs</li></ul>	<ul style="list-style-type: none"><li>• 2 programmable opto-isolated inputs</li><li>• 4 programmable opto-isolated outputs</li></ul>

Table 5: Hardware



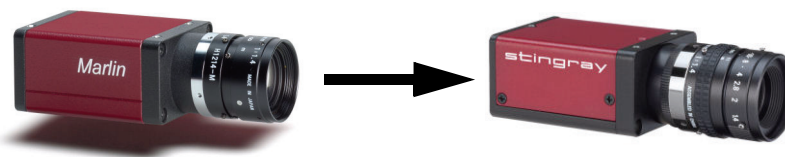
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<b>Input voltage</b>	No	The inputs can be connected directly to +5 V. If you want to use a higher voltage, an external resistor must be placed in series.	The inputs can be connected directly up to max. +24 V. If you want to use voltages from +24 V...+36 V you have to place an external resistor of 1.5 k $\Omega$ (1/10 Watt) in series with your voltage source.																				
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Table 5: Hardware



Item	Identical?	MARLIN	STINGRAY
Camera register	No		<p>Compared to MARLIN the following advanced registers have changed:</p> <ul style="list-style-type: none"> <li>• <b>FrameCounter</b> (0xFFFF1000270) changed name to <b>FrameInfo</b>.</li> <li>• No <b>IODecoder</b> (0xFFFF1000350)</li> <li>• No <b>HistogramCtrl</b> (0xFFFF1000420)</li> <li>• No <b>Timestamp</b> (0xFFFF1000540)</li> <li>• No <b>TimestampNew</b> (0xFFFF1000600)</li> <li>• <b>FrameCounterNew</b> (0xFFFF1000610) changed name to <b>FrameInfoNew</b>.</li> <li>• No <b>MiscFeatures</b> (0xFFFF1000410), partly moved to <b>ImageMirror</b> (0xFFFF1000410).</li> <li>• <b>VersionInfo</b> (0xFFFF1000010): new structure.</li> <li>• <b>AutoFunctionAOI</b> (0xFFFF1000390): new structure.</li> <li>• Sequencing: change in building and new functions.</li> </ul>

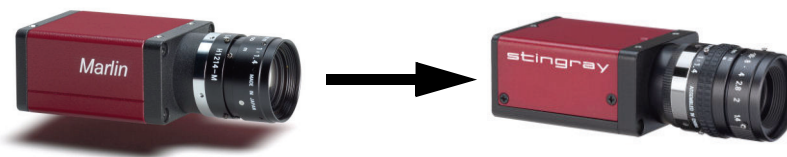
Table 5: Hardware



# Firmware

Item	Identical?	MARLIN	STINGRAY
<b>Output format</b>	No	Monochrome: <ul style="list-style-type: none"> <li>• Mono8</li> <li>• Mono16</li> </ul> Color: <ul style="list-style-type: none"> <li>• YUV422</li> <li>• YUV411</li> <li>• RGB8</li> <li>• Raw8</li> </ul>	Monochrome: <ul style="list-style-type: none"> <li>• Mono8</li> <li>• Mono12</li> <li>• Mono16</li> </ul> Color: <ul style="list-style-type: none"> <li>• YUV422</li> <li>• YUV411</li> <li>• RGB8</li> <li>• Mono8</li> <li>• Raw8</li> <li>• Raw12</li> </ul>
<b>Look-up table</b>	No	One user-programmable: 10 bit to 8 bit	One user-programmable: 12 bit to 10 bit

Table 6: Firmware

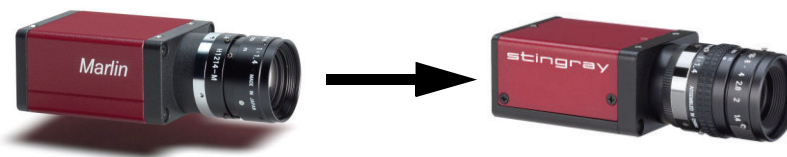


# Software

Item	Identical?	MARLIN	STINGRAY
AVT FirePackage	Yes	<ul style="list-style-type: none"> <li>If using <b>AVT FirePackage</b> and <b>S800 Intek driver</b>: no changes required due to the upgrade to IEEE 1394b.</li> <li>For <b>single</b>-camera applications developed in AVT FirePackage, where the application simply looks for a single IIDC/DCAM camera, and <i>standard</i> functions are used: no software changes required.</li> <li>For <b>multi</b>-camera FirePackage applications, where the code may address a specific camera by e.g. name or serial number: small code changes necessary (but that would be true for a pair of new Marlins anyway)</li> </ul>	
AVT Direct FirePackage	No	AVT Direct FirePackage <b>does support IEEE 1394a</b> devices.	AVT Direct FirePackage currently does <b>not support IEEE 1394b</b> devices.
AVT Active FirePackage	Yes	<p>Active FirePackage can be used with all AVT cameras <sup>(1)</sup>.</p> <p>Property Pages: ISO speed <b>800</b> must be enabled in <b>Source</b> tab.</p> <p>ActiveX Control: Use methods GetIsoSpeed() and SetIsoSpeed to ensure that the camera is running at 800 Mbit/s.</p> <p>DirectShow Video Capture Device: Functions from ActiveX control are available via the AVTActiveCam interface.</p>	
Other packages/drivers	Yes	<ul style="list-style-type: none"> <li>The CMU driver can be used with all AVT cameras <sup>(1)</sup> Use the methods GetMaxSpeed(), Has1394B(), Status1394B()and Set1394B() of the C1394Camera object to operate the camera with full speed.</li> <li>Cognex can be used with all AVT cameras <sup>(1)</sup></li> <li>The libdc1394_1.x can be used with all AVT cameras Use function dc1394_set_operation_mode(handle, node, OPERATION_MODE_1394B) and dc1394_set_iso_channel_and_speed(handle, node, channel,SPEED_800) to operate the camera with full speed</li> <li>The libdc1394_2.x can be used with all AVT cameras Use function dc1394_set_operation_mode(*camera,DC1394_OPERATION_MODE_1394B) and dc1394_video_set_iso_speed(*camera, DC1394_ISO_SPEED_800) to operate the camera with full speed</li> <li>Fire4Linux can be used with all AVT cameras - except the test application</li> <li><b>avtext</b> will not recognize the new camera model</li> <li>Solaris is reported to have sometimes problems when using 1394b devices.</li> </ul>	

Table 7: Software

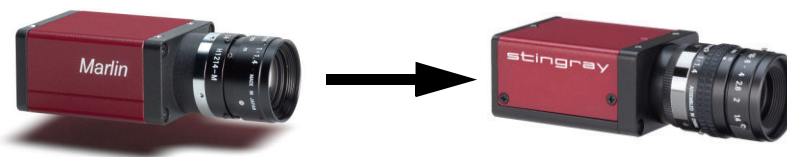
<sup>1</sup> Microsoft 1394b driver needed: problems when using Windows XP SP3 or Windows Vista



# Features

Item	Identical?	MARLIN	STINGRAY
New features	No		<p>The following features are newly introduced with STINGRAY cameras:</p> <ul style="list-style-type: none"> <li>• Fiber models (1394b GOF connector)</li> <li>• 4 x - 8 x binning (2 x binning)</li> <li>• Sub-sampling 2 out of 8 (MARLIN: only H+V sub-sampling)</li> <li>• Four-step sharpness control (MARLIN: two-step sharpness control)</li> <li>• Color binning: only STINGRAY F-201C</li> <li>• Temperature control at the sensor (measured in °C)</li> <li>• Pulse-width modulation output</li> <li>• One-push gain</li> <li>• One-push shutter</li> <li>• Additionally to the sequence mode known from MARLIN cameras, the STINGRAY cameras have:                             <ul style="list-style-type: none"> <li>- Repeat counter per sequence item</li> <li>- Incrementing list pointer on input status (on/off)</li> <li>- Pointer reset (software command; on input pin)</li> </ul> </li> <li>• Enhanced SIS</li> </ul>

Table 8: Features



# Optics

Item	Identical?	MARLIN	STINGRAY
IR cut filter and color correction matrix	No	<ul style="list-style-type: none"> <li>Jenofilt 217</li> </ul>	<ul style="list-style-type: none"> <li>Hoya C5000</li> <li>Due to different IR cut filter also different color correction matrix compared to MARLIN</li> </ul> <p>Each of this two factors results in a <b>changed color reproduction</b>. Furthermore the spectral characteristic is changed: so there are <b>differences in the spectral response</b> of the camera.</p>
IR cut filter / protection glass position	No		IR cut filter and protection glass are not exactly at the same mechanical position: therefore lenses with large protrusion may cause problems.
C-Mount: surfaces and materials	No		There are different surfaces and materials inside the C-Mounts. This results in different camera internal reflection characteristics, and different mechanical friction of the lens mount.
Design: mechanical filter and C-Mount	No		<p>Different mechanical filter and C-Mount design compared to MARLIN. Therefore the filters are not interchangeable between MARLIN and STINGRAY.</p> <p>The STINGRAY filter cannot be dismounted without dismounting the C-Mount.</p>

Table 9: Optics