AVT Guppy IEEE 1394 digital camera

Small - simple - ingenious.
Analog goes *Guppy*

ALLIED
Vision Technologies

AVT Guppy

	Guppy F-033 B/C	*Guppy* F-036 B/C ***+++preliminary+++***	*Guppy* F-046 B/C
Image device	Type 1/3 (diag. 6 mm) progressive scan SONY CCD	Type 1/3 (diag. 5.35 mm) progr.scan MICRON MT9V022	Type 1/2 (diag. 8 mm) progressive scan, SONY CCD
Effective picture elements	658 (H) x 494(V)	752 (H) x 480 (V)	782 (H) x 582 (V)
Picture size	Up to 656 x 494 pixels	752 (H) x 480 (V) (all modes and color formats)	Up to 780 (H) x 582 (V)
Cell size	7.4 µm x 7.4 µm	6 µm x 6 µm	8.3 µm x 8.3 µm
Resolution depth	8 bit (10 bit ADC)	8 bit (10 bit ADC)	8 bit (10 bit ADC)
Lens mount	C-Mount / CS-Mount	C-Mount / CS-Mount	C-Mount / CS-Mount
Digital interface	IEEE 1394 IIDC v. 1.3, single port	IEEE 1394 IIDC v. 1.3, single port	IEEE 1394 IIDC v. 1.3, single port
Transfer rate	100 Mbit/s, 200 Mbit/s, 400 Mbit/s	100 Mbit/s, 200 Mbit/s, 400 Mbit/s	100 Mbit/s, 200 Mbit/s, 400 Mbit/s
Frame rates	Up to 58 fps (full frames)	Up to 60 fps (full frames)	Up to 49.4 fps (full frames)
Gain Control	Manual: 0 - 24 dB, auto gain (select. AOI)	Manual: 0 - 12dB, auto gain (select. AOI)	Manual: 0 - 24 dB, auto gain (select. AOI)
Shutter speed	20µs ... 67s, auto shutter, level mode	20µs ... 67s, auto shutter, level mode	20µs ... 67s, auto shutter, level mode
External trigger shutter	Trigger_Mode_0, Trigger_Mode_1, advanced feature: Trigger_Mode_15 (bulk); trigger delay	Programmable, trigger level controlled, single trigger, bulk trigger, programmable trigger delay	Trigger_Mode_0, Trigger_Mode_1, advanced feature: Trigger_Mode_15 (bulk); trigger delay
Smart features	AGC (Auto Gain Control), AEC (Auto Exposure Control), only color: AWB (Auto White Balance), LUT, 1 config. input, 3 config. outputs, RS-232 Port	AOI with speed increase, AGC, AEC, AWB, multiple gain windowing, HDR Mode, binning, LUT, 1 progr. input, 3 progr. outputs , RS-232 Port	AGC (Auto Gain Control), AEC (Auto Exposure Control), only color: AWB (Auto White Balance), LUT, 1 config. input, 3 config. outputs, RS-232 Port
Power requirements	DC 8 V – 36 V via IEEE 1394 cable or 8-pin HIROSE	DC 8 V – 36 V via IEEE 1394 cable or 8-pin HIROSE	DC 8 V – 36 V via IEEE 1394 cable or 8-pin HIROSE
Power consumption	Less than 2 watt (@ 12V DC)	Less than 2 watt (@ 12V DC)	Less than 2 watt (@ 12V DC)
Dimensions	48.2 mm x 30 mm x 30 mm (L x W x H); w/o tripod and lens	48.2 mm x 30 mm x 30 mm (L x W x H); w/o tripod and lens	48.2 mm x 30 mm x 30 mm (L x W x H); w/o tripod and lens
Mass	<50 g (without lens)	<50 g (without lens)	<50 g (without lens)
Operating temperature	+5 ° C...+45 ° Celsius without condensation	+5 ° C...+45 ° Celsius without condensation	+5 ° C...+45 ° Celsius without condensation
Storage temperature	-10 ° C...+60 ° Celsius without condensation	-10 ° C...+60 ° Celsius without condensation	-10 ° C...+60 ° Celsius without condensation
Regulations	EN 55022, EN 61000, EN 55024, FCC Class B, DIN ISO 9022, ROHS in preparation	EN 55022, EN 61000, EN 55024, FCC Class B, DIN ISO 9022, ROHS in preparation	EN 55022, EN 61000, EN 55024, FCC Class B, DIN ISO 9022, ROHS in preparation
Options	Board level version, Power Out (HIROSE), AVT FirePackage, Direct FirePackage, Fire4Linux	Board level version, Power Out (HIROSE), AVT FirePackage, Direct FirePackage, Fire4Linux	Board level version, Power Out (HIROSE), AVT FirePackage, Direct FirePackage, Fire4Linux

Go digital! Now it's easier than ever!
Getting started with digital image processing has never been so simple or cost-effective as it is now. With the Guppy, Allied Vision Technologies is presenting a whole range of digital cameras in the Firewire category. From the 3rd quarter of '06 onwards there will also be a USB 2.0 version available. Their most striking feature is their outstanding value for money and the way they make the transition from analog to digital image processing even more attractive. Allied Vision Technologies can supply users with a range of products that meet almost all the requirements of a very wide range of image applications, a range that must surely be the most significant pioneer worldwide of Firewire camera technology in industrial and scientific image processing.

Firewire – the new standard for image processing
The digital connection technology presented to the computer industry by Apple as long ago as 1994 is now marching triumphantly forward through industrial image processing. The industry standard designated as IEEE 1394 (FireWire or I-Link) facilitates the simplest computer compatibility and bi-directional data transfer using the plug-and-play process. Further development of the IEEE 1394 standard has already made 800 Mbit/second possible – and the FireWire roadmap is already envisaging 1600 Mbit/second, with 3.2 Gbit/second as the next step. Investment in this standard is therefore secure for the future; each further development takes into account compatibility with the preceding standard, and vice versa, meaning that IEEE 1394b is reverse-compatible with IEEE 1394a. Your applications will grow as technical progress advances.

The *GUPPY* family at a glance
The AVT GUPPY family's distinguishing features are an IEEE 1394 interface, which from the 3rd quarter of '06 onwards will also be available as a USB 2.0 version, and an extremely compact design. It consists of six different camera variants (each in b/w and in color), and represents the ideal solution with its extremely diverse range of sensors and bandwidths for virtually every imaginable application. The GUPPY is available in a choice of a housing and a circuit-board version (on request), and can therefore

Guppy F-080 B/C	*Guppy* F-025 B/C +++preliminary+++	*Guppy* F-029 B/C +++preliminary+++
Type 1/3 (diag. 6 mm) progressive scan, SONY CCD	Type 1/3 (diag. 6 mm) interlaced SONY Super HAD CCD	Type 1/3 (diag. 6 mm) interlaced SONY Super HAD CCD
1034 (H) x 778 (V)	510 (H) x 492 (V)	500 (H) x 582 (V)
Up to 1032 (H) x 778 (V)	510 (H) x 492 (V) (full frame)	500 (H) x 582 (V) (full frames)
4.65 µm x 4.65 µm	9.6 µm x 7.5 µm	9.8 µm x 6.3 µm
8 bit (12 Bbt ADC)	8 bit (12 bit ADC)	8 bit (12 bit ADC)
C-Mount / CS-Mount	C-Mount / CS-Mount	C-Mount / CS-Mount
IEEE 1394 IIDC v. 1.3, single port	IEEE 1394 IIDC v. 1.3, single port	IEEE 1394 IIDC v. 1.3, single port
100 Mbit/s, 200 Mbit/s, 400 Mbit/s	100 Mbit/s, 200 Mbit/s, 400 Mbit/s	100 Mbit/s, 200 Mbit/s, 400 Mbit/s
Up to 30 fps (full frames)	Up to 30 fps (60 fields per second - full frames)	Up to 25 fps (50 fields per second - full frames)
Manual: 0 - 24 dB, auto gain (select. AOI)	Manual: 0 - 24 dB, auto gain (select. AOI)	Manual: 0 - 24 dB, auto gain (select. AOI)
20µs ... 67s, auto shutter, level mode	20µs ... 67s, auto shutter, level mode	20µs ... 67s, auto shutter, level mode
Trigger_Mode_0, Trigger_Mode_1, advanced feature: Trigger_Mode_15 (bulk); trigger delay	Programmable, single trigger, bulk trigger, programmable trigger delay	Programmable, single trigger, bulk trigger, programmable trigger delay
AGC (Auto Gain Control), AEC (Auto Exposure Control), only color: AWB (Auto White Balance), LUT, 1 config. input, 3 config. outputs, RS-232 Port	AOI with speed increase, AGC, AEC, AWB, LUT, 1 progr. input / 3 progr. outputs , RS-232 Port, etc.	AOI with speed increase, AGC, AEC, AWB, LUT, 1 progr. input / 3 progr. outputs , RS-232 Port, etc.
DC 8 V – 36 V via IEEE 1394 cable or 8-pin HIROSE	DC 8 – 36 V via IEEE 1394 port or HIROSE)	DC 8 – 36 V (via IEEE 1394 port or HIROSE)
Less than 2 watt (@ 12V DC)	Less than 2 watt (@ 12V DC)	Less than 2 watt (@ 12V DC)
48.2 mm x 30 mm x 30 mm (L x W x H); w/o tripod and lens	48.2 mm x 30 mm x 30 mm (L x W x H); w/o tripod and lens)	48.2 mm x 30 mm x 30 mm (L x W x H); w/o tripod and lens
<50 g (without lens)	<50 g (without lens)	<50 g (without lens)
+5 ° C...+45° Celsius without condensation	+5 ° C ... +45° C without condensation	+5 ° C ... +45° C without condensation
-10 ° C...+60 ° Celsius without condensation	-10 ° C ... +60 ° C without condensation	-10 ° C ... +60 ° C without condensation
EN 55022, EN 61000, EN 55024, FCC Class B, DIN ISO 9022, ROHS in preparation	EN 55022, EN 61000, EN 55024, FCC Class B, DIN ISO 9022, ROHS in preparation	EN 55022, EN 61000, EN 55024, FCC Class B, DIN ISO 9022, ROHS in preparation
Board level version, Power Out (HIROSE), AVT FirePackage, Direct FirePackage, Fire4Linux	Board level version, Power Out (HIROSE), AVT FirePackage, Direct FirePackage, Fire4Linux	Board level version, Power Out (HIROSE), AVT FirePackage, Direct FirePackage, Fire4Linux

find room for itself even in the smallest space. A choice of high-quality, high-sensitivity sensors (CCD and CMOS) help the GUPPY to achieve outstanding image quality and color faithfulness. Two additional interlaced versions (EIA and CCIR) make it even more attractive to change from analog to digital image processing. Because of its modularity and its remarkable value for money, the GUPPY is the ideal point of entry into digital image processing for many applications.

GUPPY Highlights

- GUPPY F-033B/C
  Type 1/3 Sony progressive scan CCD;
  (VGA) 658 (H) x 494 (V); up to 58 fps *)
- GUPPY F-036B/C
  Type 1/3 Micron CMOS; (Wide VGA)
  752 (H) x 480 (V); up to 60 fps *)
- GUPPY F-046B/C
  Type 1/2 Sony progressive scan CCD;
  (SVGA) 782 (H) x 582 (V); up to 49 fps *)
- GUPPY F-080B/C
  Type 1/3 Sony progressive scan CCD;
  (XGA) 1034 (H) x 778 (V); up to 30 fps *)
- GUPPY F-025B/C
  Type 1/3 Sony interlaced Super HAD CCD;
  (EIA) 510 (H) x 492 (V); up to 30 fps *)
- GUPPY F-029B/C
  Type 1/3 Sony interlaced Super HAD CCD;
  (CCIR) 500 (H) x 582 (V); up to 25 fps *)

*) at full resolution

The architecture of the GUPPY: the maximum range of individual possibilities

The separation from sensor and main boards enables the Guppy series to meet the requirements for a "camera on demand." There are thus virtually no limits to the "design-in" and the scope for adaptation to each application. The highly efficient micro-controller and the FPGA (Field Programmable Gate Array) ensure the swift execution of all camera commands and thus permit an outstanding performance of all functions such as Auto White Balance or LUT.
The Guppy is always up to date. If the application so requires, it can be retrofitted with even larger and more efficient FPGAs, which opens up plenty of scope for additional special functions.

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The sensor
The Guppy camera series can provide six different sensors, all of them highly sensitive. They range from the progressive scan CCD to CMOS and cover virtually all areas of use and individual requirements for an extremely wide range of resolutions and the highest possible image quality. All variants are available in b/w and color versions. As a special feature the Guppy series also includes two digital interlaced Sensor variants; for users with interlaced-based applications they now open up the interesting possibility of carrying out a technology change from analog to digital without any major changeover difficulties.

Asynchronous image trigger
The Guppy is equipped with an asynchronous external trigger that makes an instant lighting start possible without any significant latent time.

Flexible AOI / flexible speed (full Format_7 support)
In addition to a number of different standard formats taken from video technology, the Guppy can also handle "free-style" formats in which the AOI and the frame rate (such as Free-run, software trigger, and hardware trigger) can be set at will and altered online.

Powerful with smart features
Despite its small construction the Guppy is equipped with a large number of interesting "smart" features that give it a huge potential for increasing performance in your system, and at the same time saving system costs.
With the image pre-processing functions such as LUT, white balance, and Auto Exposure the Guppy can optically enhance the camera image and prepare it for later analysis in the PC. This reduces the PC workload and leads to simpler algorithms for the image examination.
With the grabber emulation features the Guppy takes on the tasks of a frame grabber, which not only creates a saving, but actually replaces it.

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The Guppy provides a large number of interesting trigger and IO possibilities that make great sense in industrial installations, and can be used for saving costs as well. The Guppy's serial interface enables it to exchange information and instructions with control units in the installation.

Board level version (optional)
The Guppy is also available as a circuit board version and can therefore find room for itself in even the smallest space.

- Small head (sensor board)
- Flexible neck (cable connection)
- Slim main-board (body)

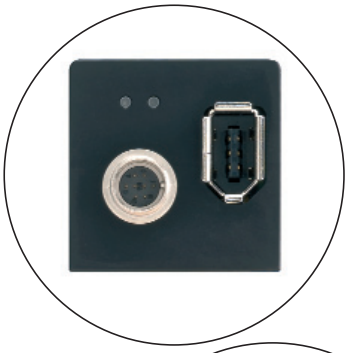
Software
Image processing with the Guppy uses the plug-and-play principle. The software from Allied Vision Technologies supports both still images (WIA/TWAIN) and video stream (video capture and preview), as well as the integration of the camera via its own API. Digital cameras can be used nowadays just as easily for image processing procedures as, by way of comparison, analog cameras and frame grabbers – plus, of course, the images are better and the speed is higher. AVT software creates the right conditions for the simplest possible integration, and is available from AVT as a comfortable download. AVT can also supply a suitable software development kit (SDK) together with a "viewer" that gives you access to all the tools needed for customer-specific applications.
AVT can currently supply three different software packages for a wide variety of requirements. They are available as a free download from the AVT website: www.alliedvisiontec.com

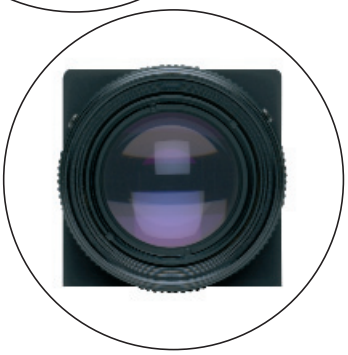
AVT FirePackage
This enables you to gain 100-percent control over your 1394 bus

AVT Direct FirePackage
for full compatibility with WDM and DirectX

AVT Fire4Linux
The package for the Linux word

The Guppy family is compatible with all image-processing systems in general use such as National Instruments Labview, MVTec Halcon, MVTec Active Vision Tools, Stemmer Imaging Common Vision Blox, Neurocheck, Scorpion, and Matrox Inspector, which support the Firewire standard.





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