

## mvGAMMA-G

### Discontinued



- Versatile, low cost, multistandard gray scale frame grabber
- Large local memory for safe image transfer on heavy load systems
- Local image processor for flexible acquisition control

The low cost mvGAMMA-G grabber uses also the proven processor and PCI interface technology of the mvTITAN family. In combination with highly integrated analog front end it shows an excellent price to performance ration. For low to mid gray scale acquisition the mvGAMMA-G delivers an unequaled solution. Due to the large local memory you'll never again lose data caused by temporary PCI bus overloads, even when using multiple boards in one system. It's suitable for all areas of gray scale vision applications working with analog image sources.

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- Hardware
- Software
- Comparison mvTITAN / mvGAMMA

- Downloads

## Analog acquisition

- Acquisition rate up to 28 MHz
- Pixel depth 8 or 10 bit
- Analog gain and offset
- Internal or external pixel clock
- Switchable low pass filters
- 10 → 8 bit LUT

## Camera interface

- 4 analog inputs, 1 clock input
- Video signal termination can be switched off
- External trigger input
- Restart / reset modes
- Video timing generator to VD / HD outputs
- Versatile GPIOs: 3x Out, 1x In
- 1x Hirose connector
- Camera supply ( 12 V, 700 mA / 1.5 A) on both connectors

## Image processor

- Flexible acquisition control
- Pixel processing with 4.5 GOPS
- 8 MB local memory for images, programs and data

## Host interface

- Color space conversion, scaling and overlay for direct display output
- PCI DMA transfer as 8 or 16 bit raw data or RGB / YC pixels

## Environs information

- Permissible ambient temperature 0..50 °C

- Drivers for Windows® and Linux®

- Free [mvIMPACT Base](#) image processing library

## Signal input

Family	mvTITA							mvGAM	
	N							MA	
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Inputs	CVBS	16 / 8	16	-	-	8	-	-	-
	YC	8 / 4	8	-	-	4	-	-	-
	Gray/VB	16 / 8	16	4	2x3	2x4	-	4	-
S	RGB	4 / 2	4	-	2	2	-	-	-
	Digital	-	-	-	-	-	1	2	1
Parallel acquisition inputs	Number	1	2	1	3	4	1	1	1
	RGB/ m	1	2	-	1	1	-	1	1

	Synchron- / asynchronous	- / -	yes / yes	- / -	pixel-synch. / -	pixel-synch. / -	- / -	- / -	- / -	- / -
Bits depth (max.)	9 bit	9 bit	10 bit	10 bit	10 bit	10 bit	16 bit	48 bit	10 bit	24 bit
Standards	CCIR-601, RS-170	yes	yes	yes	yes	yes	-	-	yes	-
	Variable-slow scan	-	yes	yes	yes	yes	yes	yes	yes	yes
	PAL, NTSC, SECAM	yes	yes	-	-	yes	-	-	-	-
Low pass filter (analog) switchable	1x	1x	1x	1x	1x	1x	-	-	4x	-
Restart / Reset	-	-	yes	yes	yes	yes	yes	yes	yes	yes
Sensor geometry	Area	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Line	-	-	yes	yes	yes	yes	yes	yes	yes
Resolution	Pixel H x V	720 x 576	720 x 576	4K x unlimited	4K x unlimited	4K x unlimited	limited by max. memory	64K x unlimited	2K x unlimited	64K x unlimited
Termination	Ohm / switchable	75 / yes	75 / yes	75 / yes	75 / yes	75 / yes	100 / yes	100 / yes	75 / yes	100 / yes
Coupling / Level	AC	AC	AC / DC switch.	AC / DC switch.	AC / DC switch.	Digital differential / RS-644 / LVDS	Digital differential / RS-644 / LVDS	AC	Digital differential / LVDS	Digital differential / LVDS
Offset	-	-	+/- 1 V	+/- 1 V	+/- 1 V	-	-	+/- 0.3 V	-	-
Analog Gain	Manual / AGC	-3dB .. +6dB / ja	-3dB .. +6dB / yes	-6dB .. +8dB / no	-6dB .. +8dB / no	-6dB .. +8dB / no	-	-	-2.5dB .. +12dB / no	-
Plug connector		2x D-Sub 26	2x D-Sub 26	1x D-Sub 26 a. 1x D-Sub	2x D-Sub 26	2x D-Sub 26	1x D-Sub 26 MD68 (AIA) / (2x	2x MDR26	1x D-Sub 26 a. 1x Hirose	2x MDR26 (1x

BASE)  
 1x  
 Binder  
 8p

Pixel clock

Family	mvTITAN							mvGAMMA		
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL	
Frequency	Internal	13.5 MHz	13.5 MHz	0.01 .. 400 MHz	0.01 .. 400 MHz	0.01 .. 40 MHz	-	0.01 .. 28 MHz		
	External	-	-	0.01 .. 400 MHz	0.01 .. 400 MHz	0.01 .. 40 MHz	max. 80 MHz	max. 66 MHz	10 .. 28 MHz	max. 66 MHz
Clock delay programmable	-	-	yes	yes	yes	-	-	-	-	
PLL	Analog	yes	yes	12 .. 40 MHz, 1ns Jitter	12 .. 40 MHz, 1ns Jitter	12 .. 40 MHz, 1ns Jitter	-	-	-	-
		Digital	-	-	0 .. 40 MHz, < 12ns Jitter	0 .. 40 MHz, < 12ns Jitter	0 .. 40 MHz, < 12ns Jitter	-	-	0 .. 28 MHz, < 12ns Jitter

Digital ports

Family		mvTITA N							mvGAM MA	
Product		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Inputs	Ext.	-	-	1	2	2	1	2	1	1
	pixel clock									
	HD, VD	-	-	1	2	2	1	2	1	1
	Trigger	-	-	1	2	2	1	1	1	1
Outputs	Threshold programmable	-	-	yes	-	yes	-	-	-	-
	General inputs	16 / 8	16	1	2	2	3	1	1	1
	General outputs	-	-	3	6	6	3	2x4	3	4
	Relay	8 / 4	8	-	-	-	-	-	-	-

#### Image processing processor

Family		mvTITA N							mvGAM MA	
Product Name		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
		PNX	2x PNX	PNX	PNX	PNX	PNX	PNX	PNX	PNX
		1300	1311	1300	1300	1300	1300	1311	1311	1300
Clock		143 MHz	2x 166 MHz	143 MHz	143 MHz	143 MHz	143 MHz	166 MHz	166 MHz	143 MHz
Type		-	-	-	-	-	-	-	-	-
Performance (max.)	GOPS	3.9	2x 4.5	3.9	3.9	3.9	3.9	4.5	4.5	3.9
	MIPS	715	2x 830	715	715	715	715	830	830	715
	MFLOPS	458	2x 531	458	458	458	458	531	531	458

Local Memory

Family	mvTITA N							mvGAM MA	
Product SDRAM	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
	16 MB	2x 8 MB	8 / 32 MB	16 MB	16 / 32 MB	8 / 32 MB	8 / 32 MB	8 MB	8 MB
Transfer rate	572 MB/s	2x 533 MB/s	572 MB/s	572 MB/s	572 MB/s	572 MB/s	533 MB/s	533 MB/s	572 MB/s

Bus

Family	mvTITA N							mvGAM MA	
Product System	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.	PCI 32 bit / 33 MHz rev.
Signal level	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Transfer	3.3V or 5V	3.3V or 5V	3.3V or 5V	3.3V or 5V	3.3V or 5V	3.3V or 5V	3.3V or 5V	3.3V or 5V	3.3V or 5V
	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.	DMA, 0-wait bursts, 132 MB/s max.
CPCI version	on request	on request	on request	on request	on request	on request	on request	on request	on request

## Input processing

Family	mvTITAN							mvGAMMA	
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Input LUT	Hardware (bit)	-	-	10 → 8	10 → 8	-	10 → 8	10 → 8	10 → 8
	Software (bit)	-	10 → 8 / 10 → 16	-	-	16 → 8 / 16 → 16	-	10 → 16	-

## Output processing

Family	mvTITAN							mvGAMMA	
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Scaling	separate HW unit, no load on VLIW / CPU	yes	yes	yes	yes	yes	yes	yes	yes
Filtering	separate HW unit, no load on VLIW / CPU	yes	yes	yes	yes	yes	yes	yes	yes
Interpolation	separate HW unit, no load on VLIW / CPU	yes	yes	yes	yes	yes	yes	yes	yes
Color space conversion	separate HW unit, no load	yes	yes	yes	yes	yes	yes	yes	yes



	on VLIW / CPU									
Display	separate HW unit, no load on VLIW / CPU	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pixel formats	RGB (8 / 15 / 16 / 24 / 32 bit) YC (4:2:2, any other formats in SW)	yes	yes	yes	yes	yes	yes	yes	yes	yes

#### Video output

Family		mvTITA N						mvGAM MA		
Product Signal		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
	RGB	-	-	yes	-	-	-	-	-	-
	VBS	yes	-	yes	-	-	-	-	-	-
	CVBS, YC; PAL, NTSC	yes	-	-	-	-	-	-	-	-
Clock		13.5 MHz	-	max. 40 MHz	-	-	max. 40 MHz	-	-	-
Synchronization	Internal	yes	-	yes	-	-	-	-	-	-
	Genlock on video input	-	-	-	-	-	-	-	-	-
Plug con		D-Sub	-	D-Sub	-	-	-	-	-	-

## Sync output

Family	mvTITA							mvGAM	
Product	N							MA	
Signal	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
HS, VS as TTL signal	-	-	yes	yes	yes	yes	-	yes	-
CSYNC, VBS	via video output		via video	-	-	-	-	-	-

## Camera power supply

Family	mvTITA							mvGAM	
Product	N							MA	
Via PCI 12V	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Via addit ional power plug	-	-	max. 2A, fused	max. 2A, fused	max. 2A, fused	-	max. 2A, fused on Binder 8p Bu.	max. 2A, fused on Binder 8p Bu.	max. 2A, fused on Binder 8p Bu.

## Power requirements

Family		mvTITA						mvGAM		
		N						MA		
Product		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
PCI	5V	max.	max. 3A	max.	max.	max.	max.	max.	max.	max.
		2.2A		1.5A	1.5A	1.5A	1.5A	1.5A	1.5A	1.5A
	+ 12V	max.	max.	max.	max.	max.	-	-	-	-
	(without camera)	0.1A	0.2A	0.2A	0.5A	0.5A				
	- 12V	-	-	max.	max.	max.	-	-	-	-
				0.1A	0.1A	0.1A				

## Dimensions

Family		mvTITA						mvGAM		
		N						MA		
Product		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Board	Length (mm)	128	186	171	171	171	128	147	123	147
	Height (mm)	106	106	106	106	106	106	95	75	95

## Ambient conditions

Family		mvTITA						mvGAM		
		N						MA		

Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Permissible ambient temperature	0 .. 45 °C	0 .. 50 °C	0 .. 45 °C	0 .. 40 °C	0 .. 40 °C	0 .. 45 °C	0 .. 50 °C	0 .. 50 °C	0 .. 45 °C
Permissible storage temperature	-20 .. 70 °C	-20 .. 70 °C	-20 .. 70 °C	-20 .. 70 °C	-20 .. 70 °C	-20 .. 70 °C	-20 .. 70 °C	-20 .. 70 °C	-20 .. 70 °C
Relative humidity	10-90%, non-condensing	10-90%, non-condensing	10-90%, non-condensing	10-90%, non-condensing	10-90%, non-condensing	10-90%, non-condensing	10-90%, non-condensing	10-90%, non-condensing	10-90%, non-condensing

## Software

Family	mvTITAN						mvGAMMA		
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Drivers	Windows XP / Vista / 7 (32 bit) ®	XP / Vista / 7 (32 bit)	XP / Vista / 7 (32 bit)	XP / Vista / 7 (32 bit)	XP / Vista / 7 (32 bit)	XP / Vista / 7 (32 bit)	XP / Vista / 7 (32 bit)	XP / Vista / 7 (32 bit)	XP / Vista / 7 (32 bit)
	Linux®	yes	yes	yes	yes	yes	yes	yes	yes
	Twain	yes	yes	yes	yes	yes	yes	yes	yes
Development tools for host	Compilers (Visual Studio®, C++ Builder®, Delphi™, Visual Basic®)	yes	yes	yes	ja	yes	yes	yes	yes
	Libraries (MV driver,	yes	yes	yes	yes	yes	yes	yes	yes

	acquire, display, camera controls)									
IP functions	Compression (M- JPEG, run length, others planned)	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Filters	div.	div.	div.	div.	div.	div.	div.	div.	div.
	Pixel operations (a ccumulat ion, aver aging, other arit hmetical)	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Image operations (scaling, rotating, mirroring , histogram m)	yes	yes	yes	yes	yes	yes	yes	yes	yes
Develop ment tools for IP	Compilers	C, C++	C, C++	C, C++, C#, VB.NET	C, C++, C#, VB.NET	C, C++, C#, VB.NET	C, C++, C#, VB.NET	C, C++, C#, VB.NET	C, C++, C#, VB.NET	C, C++, C#, VB.NET
	Libraries (compon ents, base func tions)	yes	yes	yes	yes	yes	yes	yes	yes	yes

All data refer to the current revision.

Drivers and applications for Windows 7, 8.1 (mvIMPACT Acquire)

Since version 2.10.1 of mvIMPACT Acquire the "Merge Modules for mvIMPACT Acquire" are available as a separate download.

For this reason the installation packages are smaller now. The Merge Modules are needed for private setup routines, which shall include mvIMPACT Acquire drivers. More details are available in the [mvIMPACT Acquire manuals](#).

## Older driver versions

To be able to watch or download the drivers, you have to be [registered](#) or [logged in](#).

Additional packages for LabVIEW, DirectShow, VisionPro and Halcon

Since version 1.10.69, the **DirectShow®** driver is part of the mvIMPACT Acquire installation package.

Since version 1.10.85, an interface to **VisionPro®** (Cognex) will be installed automatically when installing an MSI based mvIMPACT Acquire driver package.

mvIMPACT Acquire bindings for **HALCON** are available on MVTec's website:  
<http://www.halcon.de/download/>

mvSDK for Windows (deprecated)

Release versions are extensively tested on several platforms, components and operating systems. You should prefer to use the Release versions. MATRIX VISION transfers Beta versions to Release versions regularly.

Beta driver versions are functionally complete and tested on selected platforms. We publish them in order to allow expert users the use of the newest products with the latest features. Due to the multitude of possible combinations of components and operating systems, the user acts at his or her own risk.

mvSDK for Linux (deprecated)

Release versions are extensively tested on several platforms, components and operating systems. You should prefer to use the Release versions. MATRIX VISION transfers Beta versions to Release versions regularly.

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Application Notes

Manuals

 [mvTITAN/mvGAMMA technical manual \(html\)](#)

mvTITAN/mvGAMMA Technisches Handbuch / Technical Manual

Datasheets



Subject to change without notice, Date 09/2006