

mvGAMMA-CL

Discontinued




- Versatile, low cost frame grabber
- Interface for one BASE CameraLink line-scan or matrix camera
- Large local memory for safe image transfer on heavy load systems
- On-board Bayer-Mosaic color conversion

The mvGAMMA-CL grabber uses also the proven processor and PCI interface technology of the mvTITAN family. In combination with a highly integrated digital CameraLink front end it shows an excellent price to performance ratio. 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. For most color and gray scale applications with line-scan or matrix cameras the mvGAMMA-CL delivers an unequaled solution.

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- Summary
- Hardware

- Software
- Comparison mvTITAN / mvGAMMA
- Downloads

Product	mvGAMMA-CL
PCI	PCI 32 bit / 33 MHz rev. 2.1
Interfaces	1x BASE
Continuous data rate	Approx. 95 MB/s
Peak data rate	132 MB/s (DMA, 0-wait bursts)
Max. CL data clock	66 MHz
Digital In/Out	1/4
Permissible ambient temperature	0 .. 45 °C
Permissible storage temperature	-20 .. 70 °C
Supported standards	

- 1 CameraLink BASE input
- Trigger/sync input opto-isolated, 5..24 V
- Camera power supply 12 V, 750 mA / 1.5 A
- Image format not limitede
- Continuous capturing of all types of image sources
- Additional connector for trigger + sync input
flash output and camera power
- Flash output opto-isolated, max. 30 V
- Camera control signals generated by timing generator or by software
- Supports area and line scan cameras
- Input LUT, 3 channels, 10 → 8 bit

- 1 serial port + 4 dig. outputs for camera control

- Other real time transformation by software

Image Processor

- Flexible acquisition control
- Pixel processing with 3.9 GOPS

- 8 MB local memory for images, programs and data
- Real-time color space conversion of Bayer mosaic color data to RGB without host CPU load

Host interface

- Direct image transfer with color space conversion to display and overlay buffer
- Local pixel depth per color component 8 to 16 bit, per pixel 8 to 32 bit

- Parallel display and capturing in independent pixel formats
- E2PROM usable for user data

- Drivers for Windows® and Linux®

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

Signal input

Family	mvTITA							mvGAM			
Product	N		MA								
Inputs	C16/C8	2C16	G1	RGB/G3			RGB/G4	DIG	CL	G	CL
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	1	1	1
RGB/multispectral	1	2	-	1	1	-	1	-	-	-	1
Synchronous/asynchronous	-/-	yes/yes	-/-	pixel-synch./-	pixel-synch./-	-/-	-/-	-/-	-/-	-/-	-/-
Bits depth (max.)	9 bit	9 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	-		
Variable / slow scan	-	-	yes	yes	yes	yes	yes	yes	yes	yes	yes
PAL, NTSC, SECAM	yes	yes	-	-	yes	-	-	-	-	-	-
Low pass	1x	1x	1x	1x	1x	-	-	4x	-		

filter										
(analog)										
switchable										
Restart / Reset	-	-	yes	yes	yes	yes	yes	yes	yes	yes
Sensor geometry	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Line	-	-	yes	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	Digital differential / 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 15	2x D-Sub 26	2x D-Sub 26	1x MD68 (AIA) / SCSI II	2x MDR26 (2x BASE or Hirose MED.) 1x Binder 8p	1x D-Sub 26 a. 1x (EIAJ) Hirose	2x MDR26 (1x BASE) 1x Binder 8p

Pixel clock

Family

mvTITA

mvGAM

Product	C16/C8	2C16	G1	RGB/G3RGB/G4DIG			CL	G	CL
Frequency	Internal	13.5 MHz	13.5 MHz	0.01 .. 40 MHz	0.01 .. 40 MHz	0.01 .. 40 MHz	-	0.01 .. 28 MHz	-
	External	-	-	0.01 .. 40 MHz	0.01 .. 40 MHz	0.01 .. 40 MHz	max. 80 MHz	max. 66 MHz	10 .. 28 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	mvTITAN						mvGAMMA			
Product	C16/C8	2C16	G1	RGB/G3RGB/G4DIG			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
	Threshold programmable	-	-	yes	-	yes	-	-	-	-
	General inputs	16 / 8	16	1	2	2	3	1	1	1
Outputs	General	-	-	3	6	6	3	2x4	3	4
	Relay	8 / 4	8	-	-	-	-	-	-	-

Image processing processor

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

Local Memory

Family	mvTITAN						mvGAMMA		
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
SDRAM	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	2x 533	572	572	572	572	533	533	572
	MB/s	MB/s	MB/s	MB/s	MB/s	MB/s	MB/s	MB/s	MB/s

Bus

Family	mvTITAN						mvGAMMA		
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
System	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1	PCI 32 bit / 33 MHz rev. 2.1
Signal level	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
Transfer	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	mvTITA							mvGAM		
Product	N	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	MA	CL
Scaling	separate HW unit, no load on VLIW / CPU	yes	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	yes
Interpolation	separate HW unit, no load on VLIW / CPU	yes	yes	yes	yes	yes	yes	yes	yes	yes
Color space conversion	separate HW unit, no load on VLIW / CPU	yes	yes	yes	yes	yes	yes	yes	yes	yes
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)	yes	yes	yes	yes	yes	yes	yes	yes	yes

in SW)

Video output

Family	mvTITA						mvGAM		
	N						MA		
Product	C16/C8	2C16	G1	RGB/G3RGB/G4DIG			CL	G	CL
Signal	RGB	-	-	yes	-	-	-	-	-
	VBS	yes	-	yes	-	-	-	-	-
	CVBS, YC; PAL, NTSC	yes	-	-	-	-	-	-	-
Clock	13.5 MHz	-	max. 40 MHz	-	-	max. 40 MHz	-	-	-
Synchro nization	Internal	yes	-	yes	-	-	-	-	-
	Genlock on video input	-	-	-	-	-	-	-	-
Plug con nector	D-Sub 26 / int.	-	D-Sub 15 VGA	-	-	-	-	-	-

Sync output

Family	mvTITA						mvGAM			
	N						MA			
Product	C16/C8	2C16	G1	RGB/G3RGB/G4DIG			CL	G	CL	
Signal	HS, VS as TTL signal	-	-	yes	yes	yes	yes	-	yes	-

CSYNC, via	-	via	-	-	-	-	-	-	-
VBS video output		video output							

Camera power supply

Family	mvTITA N						mvGAM MA		
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Via PCI 12V	max. 0.75A, fused	max. 0.75A, fused	max. 0.75A, fused	max. 0.75A, fused	max. 0.75A, fused	-	max. 0.75A, on Binder 8p Bu.	max. 0.75A, fused	max. 0.75A, on Binder 8p Bu.
Via addi tional power plug	-	-	max. 2A, fused	max. 2A, fused	max. 2A, fused	-	max. 2A, on Binder 8p Bu.	max. 2A, fused	max. 2A, on Binder 8p Bu.

Power requirements

Family	mvTITA N						mvGAM MA		
Product	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
PCI 5V	max. 2.2A	max. 3A	max. 1.5A	max. 1.5A	max. 1.5A	max. 1.5A	max. 1.5A	max. 1.5A	max. 1.5A
+ 12V (without camera)	max. 0.1A	max. 0.2A	max. 0.2A	max. 0.5A	max. 0.5A	-	-	-	-
- 12V	-	-	max. 0.1A	max. 0.1A	max. 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
Board 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	Window s®	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	Compile rs (Visual Studio® , C++ B uilder®, Delphi ™, Visual Basic®)	yes	yes	yes	ja	yes	yes	yes	yes
	Libraries (MV driver, acquire, display, camera controls)	yes	yes	yes	yes	yes	yes	yes	yes
IP functi ons	Compressi on (M- JPEG, run length, others planned)	yes	yes	yes	yes	yes	yes	yes	yes
	Filters	div.	div.	div.	div.	div.	div.	div.	div.
	Pixel op erations (accumu lation, a veraging	yes	yes	yes	yes	yes	yes	yes	yes

	, other ar								
	ithmetic								
	al)								
	Image o	yes	yes	yes	yes	yes	yes	yes	yes
	peration								
	s								
	(scaling,								
	rotating,								
	mirrorin								
	g, histog								
	ram)								
Develop	Compile	C, C++	C, C++	C, C++,	C, C++,	C, C++,	C, C++,	C, C++,	C, C++,
ment	rs			C#,	C#,	C#,	C#,	C#,	C#,
tools for				VB.NET	VB.NET	VB.NET	VB.NET	VB.NET	VB.NET
IP									
	Libraries	yes	yes	yes	yes	yes	yes	yes	yes
	(compon								
	ents,								
	base fun								
	ctions)								

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](#).

 [mvTITAN_mvGAMMA_x86_2.35.0.msi](#) | 46,368.0 kB

mvTITAN / mvGAMMA 32 Bit Windows (7, 8.1, 10)

 [mvTITAN_mvGAMMA_x86_64_2.35.0.msi](#) | 64,356.0 kB

mvTITAN / mvGAMMA 64 Bit Windows (7, 8.1, 10)

 [mvIMPACT_Acquire.history](#) | 875.3 kB

mvIMPACT Acquire History-Datei / mvIMPACT Acquire history file

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/>

 [LabVIEW acquire-x86-1.6.8](#) | 9,028.0 kB

32 Bit mvIMPACT Acquire Binding für LabVIEW ab Version 6.1 / 32 Bit mvIMPACT Acquire binding for LabVIEW 6.1 or greater

 [LabVIEW acquire-x86 64-1.6.8](#) | 10,980.0 kB

64 Bit mvIMPACT Acquire Binding für LabVIEW ab Version 6.1 / 64 Bit mvIMPACT Acquire binding for LabVIEW 6.1 or greater

 [LabVIEW acquire.history](#) | 7.2 kB

32 Bit LabView Binding History-Datei / 32 Bit LabView binding history file

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.

 [beta mvTITAN 1.5.32.9](#) | 3,141.2 kB

mvTITAN / mvGAMMA 32 Bit **Beta** Windows (XP, Vista, 7)

Gerätetreiber (**nicht** mvIMPACT Acquire) / device driver (**not** mvIMPACT Acquire)

 [mvTITAN 1.5.27.98](#) | 3,135.0 kB

mvTITAN / mvGAMMA 32 Bit **Release** Windows (XP, Vista, 7)

Gerätetreiber (**nicht** mvIMPACT Acquire) / device driver (**not** mvIMPACT Acquire)

mvSDK for Linux (deprecated)

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 [README](#) | 5.3 kB

Readme-Datei mit Installationshinweisen des Gerätetreibers (nicht mvIMPACT Acquire) / Readme file with installation guide for device driver (not mvIMPACT Acquire)

 [beta dist_titan-1.5.32.9-4](#) | 4,377.5 kB

mvTITAN / mvGAMMA 32 Bit **Beta** Linux

Gerätetreiber (**nicht** mvIMPACT Acquire) / device driver (**not** mvIMPACT Acquire)

 [dist_titan-1.5.27.78-2](#) | 4,264.0 kB

mvTITAN / mvGAMMA 32 Bit **Release** Linux

Gerätetreiber (**nicht** mvIMPACT Acquire) / device driver (**not** mvIMPACT Acquire)

Manuals

 [mvTITAN / mvGAMMA technical manual](#) | 2,282.6 kB

mvTITAN / mvGAMMA Technisches Handbuch / Technical Manual

[Hinweis / Note](#)

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

mvTITAN/mvGAMMA Technisches Handbuch / Technical Manual

 [mvIMPACT Acquire API C++](#) | 9,482.1 kB

mvIMPACT Acquire API C++ Handbuch / Manual

 [mvIMPACT Acquire API C](#) | 3,547.5 kB

mvIMPACT Acquire API C Handbuch / Manual

 [mvIMPACT Acquire API.NET](#) | 6,816.9 kB

mvIMPACT Acquire API .NET Handbuch / Manual

Datasheets

 [mvGAMMA-CL e 2007-05](#) | 245.1 kB

Datenblatt / Datasheet mvGAMMA-CL

 [mvGAMMA-G e 2006-09](#) | 247.1 kB

Datenblatt / Datasheet mvGAMMA-G

 [mvTITAN-CL e 2006-09 MR](#) | 219.8 kB

Datenblatt / Datasheet mvTITAN-CL

 [mvTITAN-Series e 2007-05 MR](#) | 227.9 kB

Datenblatt / Datasheet mvTITAN-Series

Subject to change without notice, Date 04/2010