

mvTITAN-DIG

Discontinued



- Flexible digital frame grabber for area cameras
- Acquisition of 8..16 bit with up to 50/25 MHz
- Real-time color space conversion of Bayer mosaic color data to RGB without host CPU load
- Since **rev. 3.24**: transfer rates up to 80 MB/s (8 bit: max. 80 MHz, 10..16 bit: max. 40 MHz)

The mvTITAN-DIG is the appropriate member of the mvTITAN family for the acquisition of parallel digital signals. Due to its AIA standard connector you can use inexpensive SCSI-II cables to connect your image source.

/* */

- Hardware
- Software
- Comparison mvTITAN / mvGAMMA

- Application area
- Downloads

- Direct image transfer with color space conversion to display and overlay buffer
- Local pixel depth max. 16 bit
- Since **rev. 3.22**: Pixel clock output
- Permissible ambient temperature 0..45 °C
- Simultaneous display and capturing in independent pixel formats
- E2PROM usable for user data
- Since **rev. 3.22**: Extended line scan camera support

Image processor

- Image processor PNX1300 with 3.9 GOPS
- Real-time color space conversion of Bayer mosaic color data to RGB without host CPU load
- Local memory 8 MB, opt. 32 MB for code, programm and image data
- Drivers for Windows® and Linux®
- Free [mvIMPACT Base](#) image processing library

Signal input

Family	mvTITAN							mvGAMMA	
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/VBS	16 / 8	16	4	2x3	2x4	-	4	-
	RGB	4 / 2	4	-	2	2	-	-	-
	Digital	-	-	-	-	1	2	-	1
Parallel acquisition inputs	Number	1	2	1	3	4	1	1	1
	RGB/multispectral	1	2	-	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
Standards	CCIR-601, RS-170	yes	yes	yes	yes	yes	-	-	yes
	Variable-slow scan	-	-	yes	yes	yes	yes	yes	yes
	PAL, NTSC, SECAM	yes	yes	-	-	yes	-	-	-
Low pass filter		1x	1x	1x	1x	1x	-	-	4x

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

Pixel clock

Family	mvTITA							mvGAM		
Product	N	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 .. 400 MHz	-	-	0.01 .. 28 MHz
	External	-	-	0.01 .. 400 MHz	0.01 .. 400 MHz	0.01 .. 400 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/G3	RGB/G4	DIG	CL	G	CL
Inputs	Ext. pixel clock	-	-	1	2	2	1	2	1	1
	HD, VD	-	-	1	2	2	1	2	1	1
	Trigger	-	-	1	2	2	1	1	1	1
	Threshold programmable	-	-	yes	-	yes	-	-	-	-
Outputs	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	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
	143 MHz	2x 166 MHz	143 MHz	143 MHz	143 MHz	143 MHz	166 MHz	166 MHz	143 MHz
Type	-	-	-	-	-	-	-	-	-
Performance (max.)	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	mvTITAN							mvGAMMA	
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	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	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
CPCI version	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request	DMA, 0-wait bursts, 132 MB/s max. on request

Input processing

Family	mvTITA N							mvGAM MA	
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 on VLIW / CPU	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
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

Video output

Family		mvTITA N						mvGAM MA		
Product		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Signal	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 connector		D-Sub 26 / int.	-	D-Sub 15 VGA	-	-	-	-	-	-

Sync output

Family		mvTITA N						mvGAM MA		
Product		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Signal	HS, VS as TTL signal	-	-	yes	yes	yes	yes	-	yes	-
	CSYNC, VBS	via video output	-	via 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, fused	-	max. 0.75A, on Binder 8p Bu.	max. 0.75A, fused on Binder 8p Bu.	max. 0.75A, on Binder 8p Bu.
Via addit 12V ional power plug	-	-	max. 2A, fused	max. 2A, fused	max. 2A, fused	max. 2A, fused	-	max. 2A, on Binder 8p Bu.	max. 2A, fused on Binder 8p Bu.	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 N						mvGAM 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 N						mvGAM MA		
Product		C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
Permissible ambient temperature	Permissible	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
	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	mvTITA							mvGAM	
Product	N							MA	
Drivers	C16/C8	2C16	G1	RGB/G3	RGB/G4	DIG	CL	G	CL
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	yes
Twain	yes	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, acquire, display, camera controls)	yes	yes	yes	yes	yes	yes	yes	yes	yes
IP functions (Motion 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 (accumulation, averaging, other arithmetical)	yes	yes	yes	yes	yes	yes	yes	yes	yes
Image operations	yes	yes	yes	yes	yes	yes	yes	yes	yes

Development tools for IP	Compiler	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	C, C++, C#, VB.NET
Libraries (components, base functions)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

All data refer to the current revision.

Area/Application	C16/2C16	G1	RGB/G3	DIG	CL
	RGB/G4				
Industrial Image Processing					
▶ 2D/3D measurement	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ OCR, Pattern recognition	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Control, Robotics	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Visualisation	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Line camera applications	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Security					
▶ Object surveillance	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Traffic surveillance	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Compressed recording	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Video sensoric	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Microscopy/Diagnostic					
▶ Light microscopy	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Laser scan systems	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Electron microscopy	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Medicine					
▶ Visual dignostic	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ Laboratory systems	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Image Capture/ Archiving					
▶ Document line scanner	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
▶ High res area cameras	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■

■ ■ ■ optimum usage due to special features
 ■ ■ very suitable
 ■ suitable

mvTITAN Application areas

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 06/2005