Allied Vision

Checklist

Manta to Alvium G1 Hardware Transition

V1.3.0
2025-Jul-21

Firmware

Manta G: Firmware loaders 40190 | 40111
Alvium G1: Firmware V00.14.01.d83c7207

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

This document at a glance

Scope of this document

Our Sales and Support teams at Allied Vision and its partners want to make it easy for you to evaluate transitioning your application from Manta to Alvium G1. Therefore, this document compares data for Manta on the left to Alvium G1 on the right side of each page.

Additional notes explain differences in general and give valuable hints.

NOTICE

Damage to the camera and connected peripherals

Before you start to install and operate an Alvium G1 camera in an environment previously used with a Manta camera:

- Read the Alvium G1 Cameras User Guide.
- Observe the instructions and safety notes.

What else do you need?

Documentation for Manta cameras

For the Manta manual, model data sheets, and application notes, see www.alliedvision.com/en/support/technical-documentation/manta-documentation.

For Alvium G1 camera documentation...

- Alvium G1 User Guide
- **Feature availability** between Mako G-507 and Alvium G1-507
- Additional documentation, such as feature descriptions
- Firmware downloads
- 3D CAD files (STEP)
- Accessories,

see www.alliedvision.com/en/support/technical-documentation/alvium-g1-documentation.

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Contents

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Document history

Version	Date	Related firmware versions	Document updates
V1.3.0	2025-Jul-21	Manta G: Firmware loaders 40190 | 40111 Alvium G1: Firmware V00.14.01.d83c7207	Added contents for Liability, trademarks, and copyright on page 22.
V1.2.0	2025-Feb-13	Manta G: Firmware loaders 40190 | 40111 Alvium G1: Firmware V00.14.01.d83c7207	Updated the reference firmware version: Several bugs were fixed, but no features or specifications were changed.
V1.1.0	2024-Nov-04	Manta G: Firmware loaders 40190 | 40111 Alvium G1: Firmware V00.14.00.baba1e3c	• Updated the firmware version for Alvium G1: Specifications in this document remain unchanged. • Updated link location for Alvium G1 downloads.
V1.0.1	2024-Aug-29	Manta G: Firmware loaders 40190 | 40111 Alvium G1: Firmware V00.13.01.794391f9	• Added a note in the footer to **read the instructions and safety notes** in the Alvium G1 User Guide **before operating Alvium G1 cameras**. • Added **Manta's maximum RS232 voltage (15 VDC)** which is much higher than **Alvium G1's maximum GPIO voltage (5.5 VDC)** in I/O connector pin assignment on page 16.
V1.0.0	2024-Aug-19	Manta G: Firmware loaders 40190 | 40111 Alvium G1: Firmware V00.13.01.794391f9	Initial document version

Table 1: Document history

Document conventions

Typographical styles

To give this manual an easily understood layout and to emphasize important information, the following typographical styles and symbols are used.

Style	Function
Emphasis	Highlighting important things
`Feature names`	GigE features names are displayed as monospaced text.
Web addresses and references	Links to webpages and internal cross references

Table 2: Typographical styles

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Symbols and notes

NOTICE

Material damage

Precautions are described.

Practical tip

Additional information helps to understand the information.

Additional information

Web link or reference to an external source with more information is shown.

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Specifications

Separating between Manta camera models:

Manta cameras are grouped in **Manta A** models or **Manta B** models. Cameras in these groups partly share the same technical data.

Contents in this document refer to these groups.

Group	Sensor technology	Supported models
Manta A	CCD 1-tap	Manta G-031,-032,-033,-046,-125,-145,-146,-201,-504
Manta B	CMOS	Manta G-040, G-158, G-223, G-235, G-282, G-283, G-319, G-419, G-505, G-507, G-895, G-917, G-1236, G-1620, G-2040, G-2460

Table 3: Manta A and Manta B models

Applied standards

Standard	Manta A	Manta B	Alvium G1
GigE Vision			Supported
GenICam			Supported
IP class		IP30 class (according to IEC 60529)	
Shock and vibration			
Random vibration testing	Not applicable	DIN ISO 9022-3-37-01-1	IEC 60068-2-64 (higher stress level than Manta)
Shock testing	IEC 60068-2-27	DIN ISO 9022-3-30-03-1	IEC 60068-2-27 (20g/11ms)
Bump testing	Not applicable	DIN ISO 9022-3-31-01-1	Not applicable
Sinusoidal vibration testing	IEC 60068-2-6	Not applicable	IEC 60068-2-6 (10-500Hz, 1.5mm/20g)
Lens load (non-static applications)	Not applicable		Lens < 140 grams, length < 38 mm, center of gravity = 20 mm

Table 4: Applied standards | Manta versus Alvium G1

Specifications excluded from this comparison

Please see the corresponding camera manual for:

- Curves for quantum efficiency and spectral response
- ROI frame rates and formulas for calculation (Manta only)
- Camera feature availability.

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Manta specifications not supported by Alvium G1

The following specifications stated for Manta cameras do not apply to Alvium G1 cameras:

- Auto iris, Decimation, HDR mode
- `StreamHoldCapacity`: This read-only firmware feature does not comply with the SFNC and is not supported by Alvium G1. Based on the image buffer size, you can calculate the number of images that can be stored on the camera for the corresponding pixel format and image resolution.
- Tap mode applies to 3 Manta CCD sensors only that are not available as Alvium G1.
- Trigger related parameters: Trigger latency, Trigger jitter, Time between exposures

Specifications common to all models

Feature	Manta: Specification	Alvium G1: Specification
Pixel formats[1]		
Monochrome pixel formats	Mono8, Mono12Packed, Mono12	Mono8, Mono10, Mono10p, Mono12, Mono12p
YUV color pixel formats	YUV411Packed, YUV422Packed, YUV444Packed	YCbCr411_8_CbYYCrYY, YCbCr422_8_CbYCrY, YCbCr8_CbYCr
RGB color pixel formats	RGB8Packed, BGR8Packed	BGR8, RGB8
RAW pixel formats	BayerRG8, BayerRG12, BayerRG12Packed	BayerRG8, BayerRG10, BayerRG10p, BayerRG12, BayerRG12p
Image buffer		
Image buffer (RAM)	32 or 128 MByte (model depenedent)	32 MByte
Lens mount and filter		
Default lens mount	C-Mount, CS-Mount	C-Mount, CS-Mount[2], S-Mount[2]
Default optical filter	Monochrome and NIR models: No filter Color models: Type Hoya C-5000 IR cut filter	S-Mount models, monochrome and NIR models: No filter Color models: Type Hoya C-5000 IR cut filter

[1] Only models with a sensor bit depth (ADC) of 12-bit support 12-bit pixel formats.

[2] Depending on the sensor size, these options are available on demand.

[3] **To avoid damaging the camera, use with external power only, not with PoE.**

Table 5: Common model specifications | Manta versus Alvium G1 (Sheet 1 of 2)

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Feature	Manta: Specification	Alvium G1: Specification
I/Os and power requirements		
I/Os (opto-isolated)	2 inputs, 2 outputs	1 input, 1 output
GPIOs (non-isolated)	Not applicable	2 GPIOs[3]
RS232	1 TxD, 1 RxD	1 UART Tx, 1 UART Rx
Power requirements	8 to 30 VDC AUX or IEEE 802.3af	10.8 to 26.4 VDC AUX or IEEE 802.3af
Conditions for operation and storage		
Operating temperature	+5 °C to +45 °C (ambient, without condensation)	-20 °C to +65 °C (housing) | -20 °C to +85 °C (mainboard)
Storage temperature	-10°C to +70 °C (ambient, without condensation)	-20 °C to +85 °C (ambient)
Operating humidity	20% to 80% (non-condensing)	0% to 80% humidity (non-condensing)
Temperature monitoring	Mainboard	
Camera dimensions (L × W × H)		
C-Mount	62 mm × 44 mm × 29 mm	41 mm × 29 mm × 29 mm
CS-Mount	57 mm × 44 mm × 29 mm	36 mm × 29 mm × 29 mm
S-Mount	Not applicable	36 mm × 29 mm × 29 mm
Mass (typical)		
C-Mount	190 to 210 g (depending on model and PoE)	65 g
CS-Mount	On request	
S-Mount	Not applicable	
Interface and camera control standard		
Interface standard	IEEE 802.3 1000BASE-T (Gigabit Ethernet) and IEEE 802.3af (PoE) GigE Vision Standard Version 1.2	
Camera control standard	GenICam SFNC Version 1.2.1	GenICam SFNC Version 2.7

[1] Only models with a sensor bit depth (ADC) of 12-bit support 12-bit pixel formats.

[2] Depending on the sensor size, these options are available on demand.

[3] To avoid damaging the camera, use with external power only, not with PoE.

Table 5: Common model specifications | Manta versus Alvium G1 (Sheet 2 of 2)

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Specifications for individual models

The following table compares Manta models with Alvium models using the same or a similar sensor.

Manta				Alvium G1			
Model	**Sensor**	**Feature**	**Specification**	**Model**	**Sensor**	**Feature**	**Specification**
040	Sony IMX287	Max. frame rate	286 fps (313 fps)[1]	040	Sony IMX287	Max. frame rate	298 fps
		Exposure time range	16 µs to 85.89 s; 1 µs increments			Exposure time range	21 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	2.77 W at 12 VDC; 3.23 W PoE			Power consumption	3.1 W at 12 VDC; 3.4 W PoE
158	Sony IMX273	Max. frame rate	75 fps (89 fps)[1]	158	Sony IMX273	Max. frame rate	74 fps
		Exposure time range	16 µs to 85.89 s; 1 µs increments			Exposure time range	27 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	2.79 W at 12 VDC; 3.26 W PoE			Power consumption	3.6 W at 12 VDC; 3.9 W PoE
319	Sony IMX265	Max. frame rate	37 fps (45 fps)[1]	319	Sony IMX265	Max. frame rate	37 fps
		Exposure time range	16 µs to 85.89 s; 1 µs increments			Exposure time range	31 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	2.7 W at 12 VDC; 3.1W PoE			Power consumption	3.0 W at 12 VDC; 3.3 W PoE
507	Sony IMX264	Max. frame rate	23 fps (28 fps)[1]	507	Sony IMX264	Max. frame rate	23 fps
		Exposure time range	16 µs to 85.89 s; 1 µs increments			Exposure time range	34 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	2.8 W at 12 VDC; 3.0 W PoE			Power consumption	3.1 W at 12 VDC; 3.4 W PoE

General: Frame rates above 20 fps are displayed without decimal places | [1] Frame rate using Burst mode

Table 6: Specifications for individual models (Sheet 1 of 3)

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Manta				Alvium G1			
Model	**Sensor**	**Feature**	**Specification**	**Model**	**Sensor**	**Feature**	**Specification**
895	Sony IMX267	Max. frame rate	13.4 fps (16.2 fps)[1]	895	Sony IMX267	Max. frame rate	13.2 fps
		Exposure time range	16 µs to 85.89 s; 1 µs increments			Exposure time range	48 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	3.0 W at 12 VDC; 3.3 W PoE			Power consumption	3.5 W at 12 VDC; 3.9 W PoE
1236	Sony IMX304	Max. frame rate	9.7 fps (11.8 fps)[1]	1236	Sony IMX304	Max. frame rate	9.6 fps
		Exposure time range	16 µs to 85.89 s; 1 µs increments			Exposure time range	48 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	3.0 W at 12 VDC; 3.3 W PoE			Power consumption	3.8 W at 12 VDC; 4.0 W PoE
1620	Sony IMX542	Max. frame rate	7.4 fps (8.4 fps)[1]	1620	Sony IMX542	Max. frame rate	7.3 fps
		Exposure time range	4 µs to 171.8 s; 1 µs incr.			Exposure time range	47 µs to 10s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	3.3 W at 12 VDC; 3.9 W PoE			Power consumption	3.7 W at 12 VDC; 4.1 W PoE
2040	Sony IMX541	Max. frame rate	5.9 fps (6.7 fps)[1]	2040	Sony IMX541	Max. frame rate	5.8 fps
		Exposure time range	44 µs to 171.8 s; 1 µs incr.			Exposure time range	40 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	3.3 W at 12 VDC; 3.9 W PoE			Power consumption	3.8 W at 12 VDC; 4.2 W PoE

General: Frame rates above 20 fps are displayed without decimal places | [1] Frame rate using Burst mode

Table 6: Specifications for individual models (Sheet 2 of 3)

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Manta				Alvium G1			
Model	**Sensor**	**Feature**	**Specification**	**Model**	**Sensor**	**Feature**	**Specification**
2460	Sony IMX540	Max. frame rate	4.9 fps (5.6 fps)[1]	2460	Sony IMX540	Max. frame rate	4.8 fps
		Exposure time range	4 µs to 171.8 s; 1 µs increments			Exposure time range	47 µs to 10 s
		Gain	0 to 40 dB; 0.1 dB increments			Gain	0 to 48 dB; 0.1 dB increment
		Binning	H: 1 to 4 pixels; V: 1 to 4 rows			Binning	H: 1 to 8 pixels; V: 1 to 8 rows
		Power consumption	3.2 W at 12 VDC; 3.9 W PoE			Power consumption	4.0 W at 12 VDC; 4.4W PoE

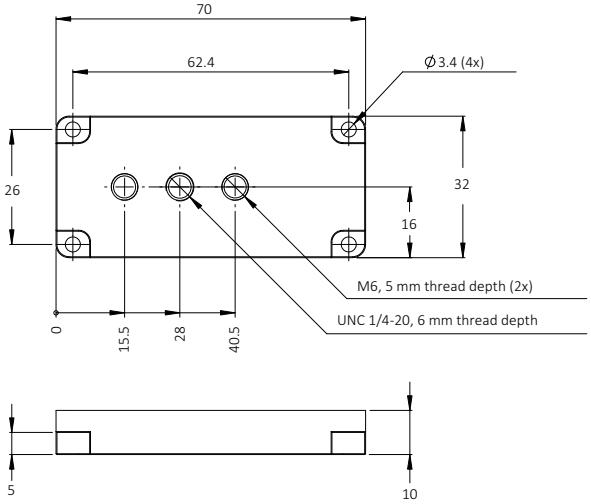
General: Frame rates above 20 fps are displayed without decimal places | [1] Frame rate using Burst mode

Table 6: Specifications for individual models (Sheet 3 of 3)

Technical drawings: Mounting adapters

The Alvium G1 mounting adapter provides the bottom mounting holes of Manta camera to make the replacement easy.

Manta tripod adapter



Alvium G1 tripod adapter

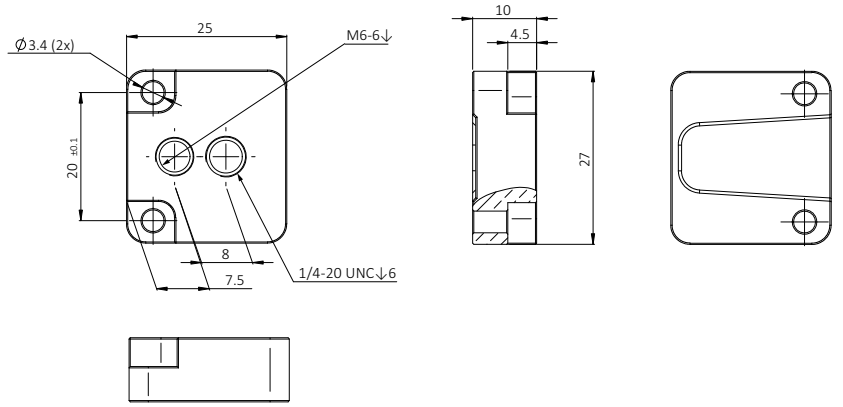


Figure 1: Technical drawings mounting adapters | Manta versus Alvium G1

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Technical drawings: Cameras

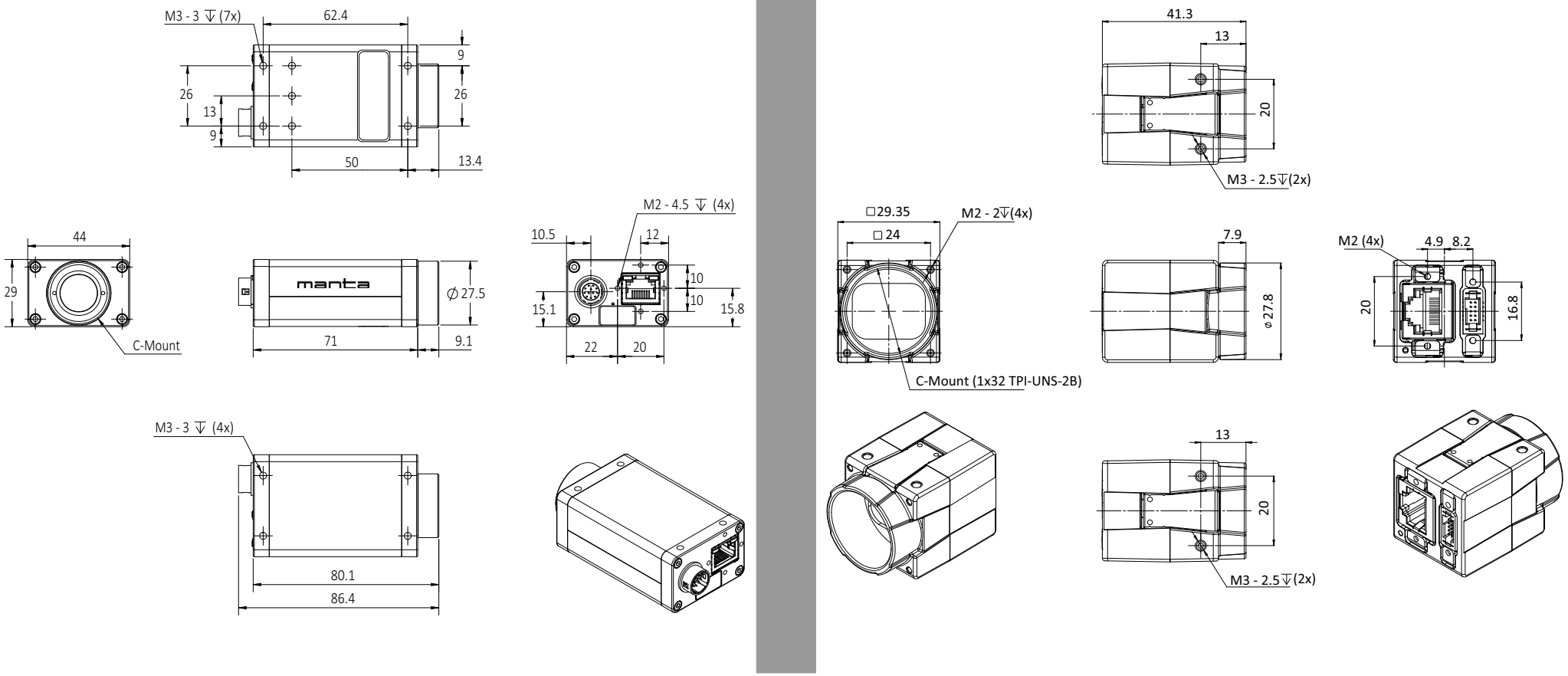


Figure 2: Technical drawings | Manta versus Alvium G1

Reusing mounting holes for Manta with Alvium G1 cameras

Depending on the mounting options you currently use, you might be able to mount an Alvium G1 camera using the existing mounting holes. In some cases it may be necessary to use one of the adapter plates shown in Lens mounts and maximum protrusion on page 13.

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Lens mounts and maximum protrusion

The maximum protrusion for Alvium G1 is greater than for Manta. Typically, lenses can be reused.

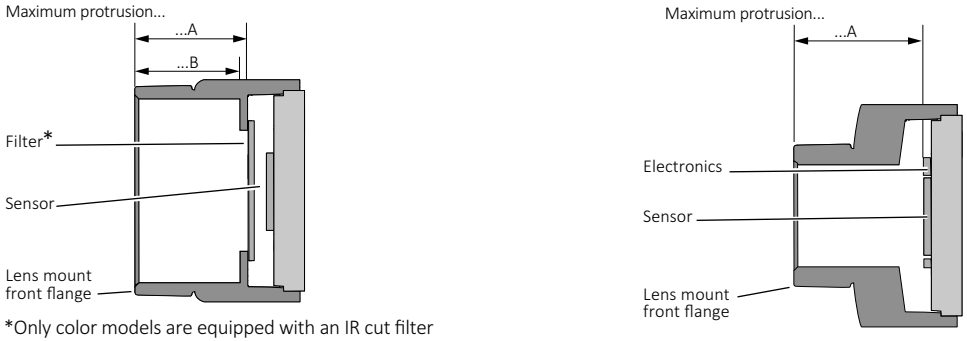


Figure 3: Maximum protrusion parameters — C-Mount and CS-Mount (left); S-Mount (right)

Figure 3 shows schematics for maximum protrusion of lenses, Table 7 shows values for maximum protrusion.

NOTICE

Damage to lenses and filters

If you install individual screw-in filters in Alvium G1 cameras, the value for maximum protrusion is reduced.

Mount		Manta A		Manta B		Alvium G1		
	Filter diameter	Max. protrusion A	Max. protrusion B	Max. protrusion A	Max. protrusion B	Filter diameter	Max. protrusion A	Max. protrusion B
C-Mount	16 mm	9.7 mm	N.a.	9.7 mm (1)	N.a.	Does not affect maximum protrusion.	Greater than for Manta	13.6 mm
	22 mm	N.a.	N.a.	10.7 mm (2)	N.a.			
CS-Mount	16 mm	6.7 mm	N.a.	6.7 mm (1)	N.a.			8.6 mm
	22 mm	N.a.	N.a.	5.7 mm (2)	N.a.			
S-Mount	16 mm	Contact Allied Vision Support.					11.0 mm	Not applicable
	22 mm							

[1] Manta G-040, G-158, G-319, G-507 | [2] Manta G-895, G-1236, G-1620, G-2040, G-2460

Table 7: Maximum protrusion values | Manta versus Alvium G1

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Optical filters

Manta and Alvium G1 color cameras (except for Alvium G1 S-Mount) are equipped with the same type of IR cut filter. The Modular Concept offers additional filter options for Manta. Please ask Allied Vision Support for options with Alvium G1.

	Manta: Filter availability				Alvium G1: Filter availability		
Color or monochrome model	**C-Mount**	**CS-Mount**	**S-Mount**		**C-Mount**	**CS-Mount**	**S-Mount**
Color	Type Hoya C5000 IR cut filter		Contact Allied Vision Support.		Type Hoya C5000 IR cut filter		No filter
Monochrome	No filter				No filter		

Table 8: Optical filter availability | Manta versus Alvium G1

The following plot shows the filter transmission response for the type C-5000 IR cut filter. Values may vary slightly by filter lot.

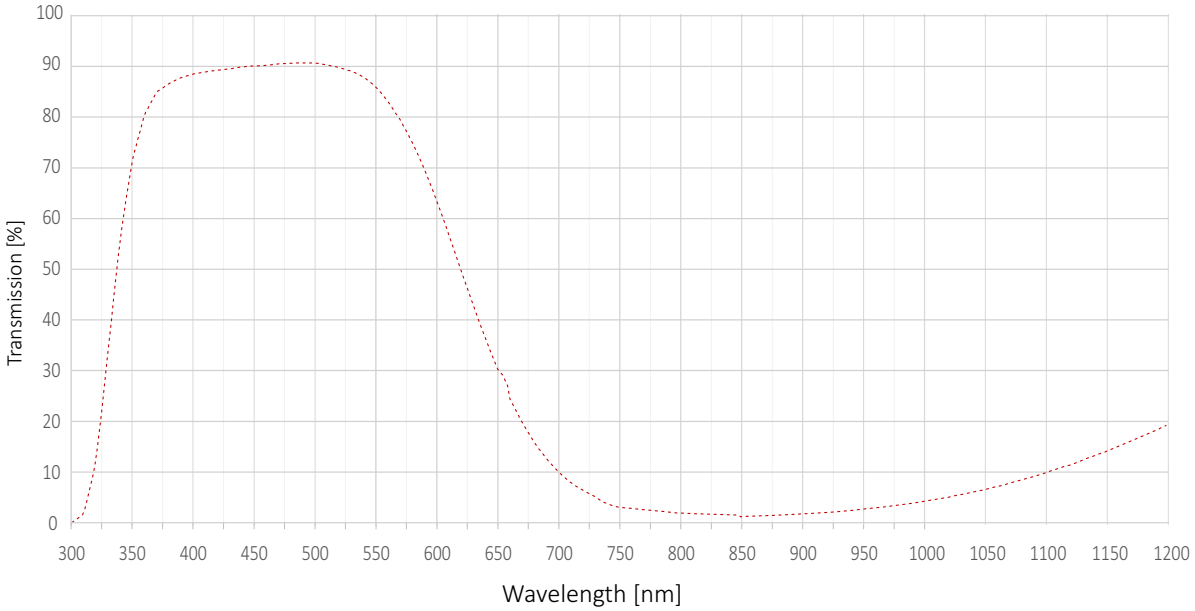


Figure 4: Optical filter spectral transmission (exemplary curve) | Common for Manta and Alvium G1

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Camera interfaces

Back panel and LEDs

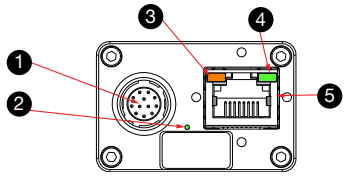
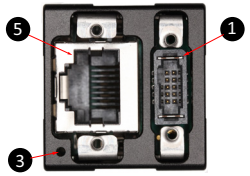
Manta	Alvium G1
	

Figure 5: Back panel overview | Manta versus Alvium G1

Number	Manta A	Manta B	Alvium G1
1	12-pin Hirose I/O port		10-pin TFM I/O port
2	LED 3 (Manta A models with PoE only)	Not applicable	
3	LED 1 (orange)		Multi-color LED (green, yellow, red)
4	LED 2 (green)		Not applicable
5	Gigabit Ethernet port		

Table 9: Back panel elements legend | Manta versus Alvium G1

Status	Manta A	Manta B	Alvium G1
Camera powered	Solid LED 3/green (off when not powered)	Not applicable	Not applicable
Booting routine	**Slow** flashing LED 2/green		Solid yellow
1 GBit/s Ethernet link established	Solid LED 1/orange		Slow flashing green
100 MBit/s Ethernet link established	Solid LED 2/green		Not applicable
1 GBit/s Network traffic	Flashing LED 1/orange		Not applicable
100 MBit/s Network traffic	Flashing LED 2/green		Not applicable
Transmission error	Four rapid flashes per second by LED 2/green		Solid red

Table 10: LED status codes | Manta versus Alvium G1

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

I/O connector pin assignment

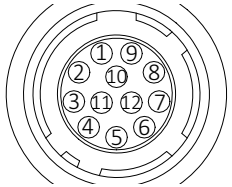
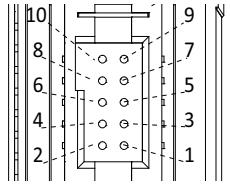
Manta: Hirose HR10- 10R-12PA(73)							Alvium G1: TFM-105-02-L-D-WT-K-TR					
												
Pin	**Signal**	**<>**	**Level**	**Description**	**I/O cable**		**Pin**	**Signal**	**<>**	**Level**	**Description**	**I/O cable**
1	Camera GND	In	0 VDC	Ground for camera power supply and RS232	Blue	✓	1	PWR-GND	In	See Manta	Ground for camera power supply	Black
2	Camera Power	In	8 to 30 VDC	Camera power supply	Red	✓	2	PWR-IN	In	10.8 to 26.4 VDC	Camera power supply	Red
3	Auto iris	Out	Not applicable	Auto iris (Video Type)	Violet	—	Not applicable					
4	In 1	In	U_{in}(high) = 3.0 to 24.0 V up to 36 VDC with 3.3 kΩ ext. resistor in series U_{in}(low) = 0 to 1.0 V	Opto-isolated input	Gray	✓	5	GPI3	In	See Manta		Yellow
5	Reserved				Yellow		9	Reserved				Gray
6	Out 1	Out	Open emitter, max. 10 mA	Opto-isolated output	Green	✓	6	GPO2	Out	Open emitter, max. 20 mA	See Manta	Green
7	Isolated In GND	In/Out	0 VDC	Isolated input ground	Brown	✓	3	OPTO-IN-GND	In	See Manta		Brown
8	RxD RS232	In	RS232 **(max. 15 VDC)**	Terminal receive data	White	(✓)	8	GPIO1/UART Rx	In/Out	U_{in} (low) = -0.3 to 0.8 VDC U_{in} (high) = 2.0 to **5.5 VDC** U_{out} (low) = 0 to 0.4 VDC U_{out} (high) = 2.4 to **3.3 VDC** at max. 20 mA	Non-isolated I/O (LVTTL)	Violet
9	TxD RS232	Out	RS232 **(max. 15 VDC)**	Terminal transmit data	Black	(✓)	7	GPIO0/UART Tx	In/Out			Blue
10	Isolated Out Power	In	max. 30 VDC	Power input for opto-isolated outputs	Orange	✓	4	OPTO-OUT-PWR	In	See Manta		Orange
11	In 2	In	$U_{in(high)}$ = 3 to 24 VDC $U_{in(low)}$ = 0 to 1.0 VDC	Opto-isolated input 2 (SyncIn2)	White/Black	(✓)	(See Pin 7 GPIO0 and Pin8 GPIO1)					
12	Out 2	Out	Open emitter, max. 10 mA	Opto-isolated output 2 (SyncOut2)	White/Brown	(✓)	(See Pin 7 GPIO0 and Pin8 GPIO1)					
*	C-GND	Power	0 VDC	Chassis ground and shielding	Transparent	✓	10	C-GND	Power	See Manta		Transparent
* Connector metal shell (Hirose term)												

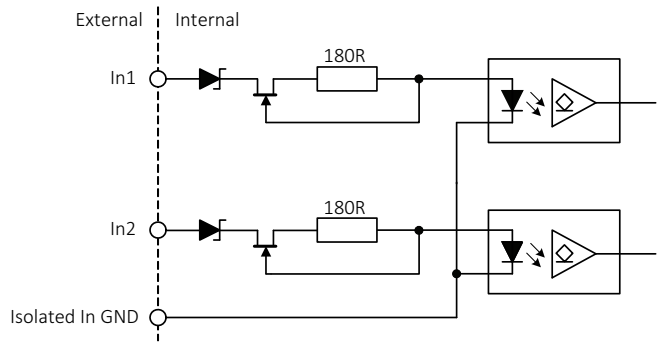
Table 11: I/O connector pin assignment | Manta versus Alvium G1

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Opto-isolated input description

For Alvium G1's non-isolated GPIOs, see Alvium G1: Non-isolated GPIOs description on page 20.

Manta: Opto-isolated input block diagram



Alvium G1: Opto-isolated input block diagram

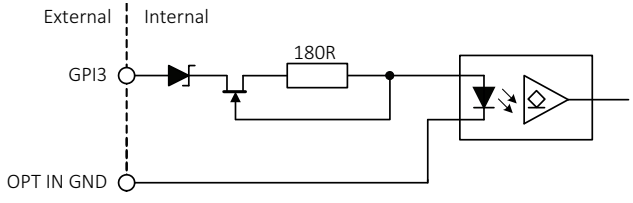


Figure 6: Opto-isolated input block diagram | Manta versus Alvium G1

Parameter	Manta = Alvium G1: Opto-isolated input levels
U_{in} (low)	0 to 1.0 V
U_{in} (high)	3 to 24 V
Current (constant-current source)	3 to 4 mA

Table 12: Opto-isolated iput levels | Common for Manta and Alvium G1

Manta = Alvium G1: Minimum pulse width

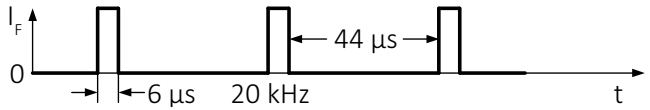


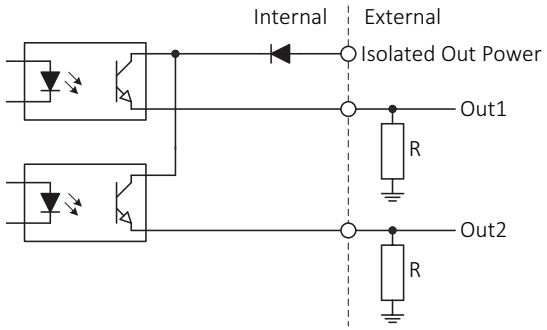
Figure 7: Minimum pulse width | Common for Manta and Alvium G1

Common test conditions for Manta and Alvium G1: The input signal was driven with 3.3 V and no external additional series resistor.

Opto-isolated output description

For Alvium G1's non-isolated GPIOs, see Alvium G1: Non-isolated GPIOs description on page 20.

Manta: Opto-isolated output block diagram



Alvium G1: Opto-isolated output block diagram

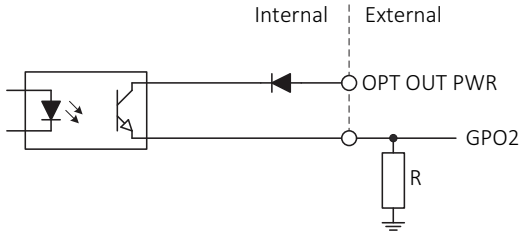


Figure 8: Opto-isolated output block diagram | Manta versus Alvium G1

Opto-isolated output levels

Manta = Alvium G1: Opto-isolated output levels
5 V at 1.0 kΩ
12 V at 2.4 kΩ
24 V at 4.7kΩ
At ~ 5 mA minimum required current draw. **Manta**: A resistor is required if **Out1**, **Out2** is connected to a device with < 5 mA draw, that is, high impedance. **Alvium G1**: A resistor is required if **GPO2** is connected to a device with < 5 mA draw, that is, high impedance.

Table 13: Opto-isolated output levels | Common for Manta and Alvium G1

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Opto-isolated output switching times

The opto-isolated output switching times are **common for Manta and Alvium G1**.

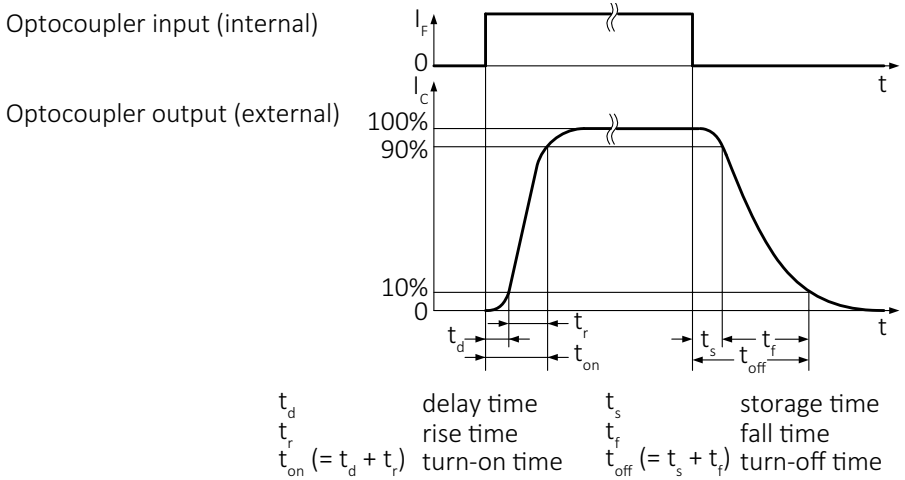


Figure 9: Opto-isolated output switching times parameters

Manta = Alvium G1: Parameter and value	
$t_d \approx 1$ µs	$t_s \approx 26$ µs
$t_r \approx 1$ µs	$t_f \approx 21$ µs
$t_{on} = t_d + t_r \approx 2$ µs	$t_{off} = t_s + t_f \approx 47$ µs (t_{off} can deviate by ± 5 µs)

Table 14: Parameter values | Common for Manta and Alvium G1

Test conditions for the output: external 2.4 kΩ resistor to ground, Isolated Out Power set to 12 Volts.

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Alvium G1: Non-isolated GPIOs description

The camera has two non-isolated GPIOs that can be configured by software to act as inputs or outputs.

Alvium G1 GPIOs use the push-pull technology to switch the signal level between low and high.
For low levels, the signal is "pulled" down towards ground level. For high levels, the signal is "pushed" up towards VCC level.

Alvium G1 GPIOs feature the CMOS push-pull output drivers and Schmitt trigger inputs with an internal pull-up resistor and a filter circuit, shown in Figure 10. The push-pull GPIOs are able to source or sink current from an external pin.

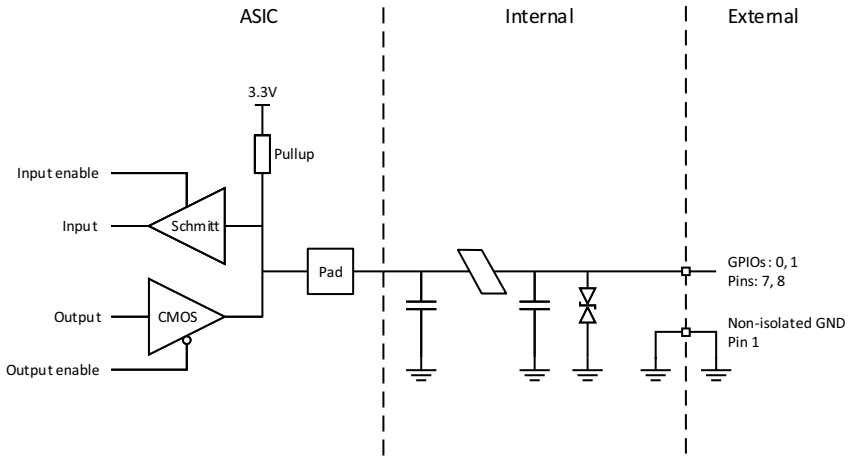


Figure 10: Non-isolated GPIOs block diagram | Alvium G1

Non-isolated input levels

The GPIOs can be connected directly to the system controlling the camera for voltages up to 5.5 VDC.
An external resistor is not necessary.

NOTICE

Damage to the camera by high input voltage

Exceeding the maximum input voltage can damage the camera.

Keep maximum input voltage below 5.5 VDC.

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

Parameter	Value
U_{in} (low)	-0.3 to 0.8 VDC
U_{in} (high)	2.0 to 5.5 VDC
Undefined levels	0.8 to 2.0 VDC

Table 15: Non-isolated GPIOs as input, voltage levels | Alvium G1

Non-isolated output levels

NOTICE

Damage to the camera by high output current

The camera can be damaged when connected to a device that exceeds the specified maximum current or voltage. Keep the maximum current below 12 mA per output.

Parameter	Value
External output voltage U_{out} (low, Off state)	0 to 0.4 VDC
External output voltage U_{out} (high, On state)	2.4 to 3.3 VDC
Undefined levels	0.4 to 2.4 VDC
Maximum external output voltage	3.3 VDC
Maximum output current	12 mA

Table 16: GPIOs as output, current and voltage levels | Alvium G1

Output voltage for U_{Out} (high) = On state

The voltage level in the On state depends on the load current. Higher currents yield lower voltage.

Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.

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Avoid camera damage! Before operating Alvium G1 cameras, read the instructions and the chapter Product Safety in the Alvium G1 User Guide.