Allied Vision

This firmware release note is applicable to:

- Prosilica GT, GC, GB, GE, GS, GX
- Manta
- Mako G

PvAPI

PvAPI: given only where naming varies in **PvAPI SampleViewer** versus **Vimba Viewer** and third-party software.

User sets

If new firmware contains a new feature or control, saved camera `UserSets` [**PvAPI**: `ConfigFiles`] will be invalidated and erased. Before loading new firmware, backup any used camera `UserSets` [**PvAPI**: see disk icon in SampleViewer to export current settings to file].

Firmware update instructions

For more information on updating the firmware on your GigE camera, see the camera technical manual or the GigE Firmware Update application note at www.alliedvision.com/en/support/technical-papers-knowledge-base.html

Camera feature reference

A complete listing of camera features including definitions can be found online.

- **Vimba** and third-party software users: GigE Features Reference
- **PvAPI** users: GigE Camera and Driver Attributes document

www.alliedvision.com/en/support/technical-documentation.html

Supported models

Listed camera models include monochrome, color, NIR, and version variants (including hardware revisions). See the firmware loader executable for full list of variants.

Prosilica GS

Prosilica GS models use Prosilica GB firmware. See table 2 for the latest Prosilica GB firmware releases.

Firmware releases at a glance

Firmware loader 21764

Camera family	Model series	Firmware version	Release date
Mako G	G-508B POL	01.54.21000	2019-Mar-11
Manta	G-040, G-158, G-235, G-319, G-507, G-895, G-1236	01.54.20343	2019-Mar-11
Mako G	G-040, G-158, G-234, G-319, G-507	01.54.21000	2019-Jan-31
Mako G	G-131, G-192, G-503	01.54.20700	2019-Jan-31
Prosilica GT	GT4090, GT4096, GT5120	01.54.20443	2019-Jan-31
Prosilica GT	GT1930, GT1930L, GT2460	01.54.20343	2019-Jan-31
Prosilica GC	GC2450	01.54.19678	2017-Dec-15
Prosilica GC	GC660, GC1290, GC1380H, GC1600H	01.54.19654	2017-Dec-15
Mako G	G-030, G-223, G-419	01.54.18391	2017-Mar-13
Manta	G-223, G-419	01.54.18163	2017-Jan-27
Prosilica GT	GT2000, GT2050	01.54.18163	2017-Jan-27
Mako G	G-032, G-125	01.54.17933	2016-Oct-23
Manta	G-282, G-283, G-505, G-917	01.54.17624	2016-Aug-12
Prosilica GT	GT1290, GT1380, GT1600, GT1660, GT1910, GT1920, GT2300, GT2450, GT2750, GT3300, GT3400, GT4905, GT4907, GT6600	01.54.17562	2016-Aug-12
Mako G	G-050, G-095	01.54.11233	2014-Oct-06
Prosilica GC	GC650, GC655, GC660, GC780, GC1020, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.50.01	2013-Jan-04
Manta	G-031, G-032, G-033, G-046, G-125, G-145, G-146, G-201, G-504	01.44.18241	2016-Dec-16
Manta	G-046, G-146	01.44.18241	2016-Dec-02
Manta	G-095	01.44.7913	2013-Jul-22
Prosilica GX	GX1050, GX1660, GX1910, GX1920, GX2300, GX2750, GX3300	01.42.05	2011-Dec-12

Table 1: Firmware releases at a glance (firmware loader 21764)

Firmware version: 01.54.21000

Release date: 2019-Mar-11

Supported models

Camera family	Model	Firmware version
Mako G	G-508B POL	01.54.21000

New model

Initial commercial release of the Mako G-508B POL polarized sensor model

Firmware version: 01.54.20343

Release date: 2019-Mar-11

Supported models

Camera family	Model series	Firmware version
Manta	G-040, G-158, G-235, G-319, G-507, G-895, G-1236	01.54.20343

New features and enhancements

- Improved FPGA timing for improved camera reliability
- Improved frame rate

Model series	Frame rate at full resolution Firmware version 01.54.19767	Frame rate at full resolution Firmware version 01.54.20343
Manta G-040	286.0 fps 295.7 fps (burst mode)	286.3 fps 313.1 fps (burst mode)

Model series	Frame rate at full resolution Firmware version 01.54.19767	Frame rate at full resolution Firmware version 01.54.20343
Manta G-158	75.3 fps 83.09 fps (burst mode)	75.2 fps 89.1 fps (burst mode)

Model series	Frame rate at full resolution Firmware version 01.54.17562	Frame rate at full resolution Firmware version 01.54.20343
Manta G-235	50.7 fps 57.5 fps (burst mode)	50.8 fps 59.2 fps (burst mode)

Model series	Frame rate at full resolution Firmware version 01.54.17562	Frame rate at full resolution Firmware version 01.54.20343
Manta G-319	37.6 fps 43.3 fps (burst mode)	37.6 fps (no change) 45.0 fps (burst mode)

Model series	Frame rate at full resolution Firmware version 01.54.17562	Frame rate at full resolution Firmware version 01.54.20343
Manta G-507	23.7 fps 27.6 fps (burst mode)	23.7 fps (no change) 28.7 fps (burst mode)

Model series	Frame rate at full resolution Firmware version 01.54.18110	Frame rate at full resolution Firmware version 01.54.20343
Manta G-895	13.4 fps 15.69 fps (burst mode)	13.4 fps (no change) 16.2 fps (burst mode)

- Exposure minimum values and increments have changed since the last firmware release.

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.19767	Exposure range and increment Firmware version 01.54.20343
Manta G-040	8-bit, 12-bit	25 µs to 85.9 s; 5.76 µs increments	19 µs to 85.9 s; 5.44 µs increments
	16-bit	29 µs to 85.9 s; 7.68 µs increments	21 µs to 85.9 s; 7.28 µs increments
	24-bit	36 µs to 85.9 s; 11.52 µs increments	24 µs to 85.9 s; 10.88 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.19767	Exposure range and increment Firmware version 01.54.20343
Manta G-158	8-bit, 12-bit	35 µs to 85.9 s; 10.64 µs increments	23 µs to 85.9 s; 9.92 µs increments
	16-bit	42 µs to 85.9 s; 14.16 µs increments	26 µs to 85.9 s; 13.2 µs increments
	24-bit	56 µs to 85.9 s; 21.28 µs increments	33 µs to 85.9 s; 19.84 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.17562	Exposure range and increment Firmware version 01.54.20343
Manta G-235	8-bit, 12-bit	41 µs to 86 s; 14 µs increments	27 µs to 85.9 s; 13.44 µs increments
	16-bit	50 µs to 86 s; 18 µs increments	31 µs to 85.9 s; 17.92 µs increments
	24-bit	69 µs to 86 s; 28 µs increments	40 µs to 85.9 s; 26.88 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.17562	Exposure range and increment Firmware version 01.54.20343
Manta G-319	8-bit, 12-bit	43 µs to 79.4 s; 14.6 µs increments	27 µs to 85.89 s; 14.08 µs increments
	16-bit	52 µs to 79.4 s; 19.5 µs increments	32 µs to 85.89 s; 18.72 µs increments
	24-bit	72 µs to 79.4 s; 29.3 µs increments	41 µs to 85.89 s; 28.16 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.17562	Exposure range and increment Firmware version 01.54.20343
Manta G-507	8-bit, 12-bit	48 µs to 85.9 s; 17.4 µs increments	30 µs to 85.9 s; 16.64 µs increments
	16-bit	59 µs to 85.9 s; 23.1 µs increments	35 µs to 85.9 s; 22.16 µs increments
	24-bit	83 µs to 85.9 s; 34.7 µs increments	47 µs to 85.9 s; 33.28 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.18110	Exposure range and increment Firmware version 01.54.20343
Manta G-895	8-bit, 12-bit	71 µs to 85.9 s; 28.8 µs increments	42 µs to 85.89 s; 27.84 µs increments
	16-bit	90 µs to 85.9 s; 38.3 µs increments	51 µs to 85.89 s; 37.04 µs increments
	24-bit	129 µs to 85.9 s; 57.6 µs increments	69 µs to 85.89 s; 55.68 µs increments

- Trigger latency values have changed since the last firmware release.

Model series	Pixel formats	Trigger latency Firmware version 01.54.19767	Trigger latency Firmware version 01.54.20343
Manta G-040	8-bit, 12-bit	17.28 µs	16.32 µs
	16-bit	23.04 µs	21.84 µs
	24-bit	34.56 µs	32.64 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.19767	Trigger latency Firmware version 01.54.20343
Manta G-158	8-bit, 12-bit	31.92 µs	29.76 µs
	16-bit	42.48 µs	39.6 µs
	24-bit	63.84 µs	59.52 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.17562	Trigger latency Firmware version 01.54.20343
Manta G-235	8-bit, 12-bit	42 µs	40.32 µs
	16-bit	55.14 µs	53.76 µs
	24-bit	84 µs	80.64 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.17562	Trigger latency Firmware version 01.54.20343
Manta G-319	8-bit, 12-bit	44.21 µs	42.24 µs
	16-bit	58.65 µs	56.16 µs
	24-bit	88.06 µs	84.48 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.17562	Trigger latency Firmware version 01.54.20343
Manta G-507	8-bit, 12-bit	52.3 µs	49.92 µs
	16-bit	69.6 µs	66.48 µs
	24-bit	104.6 µs	99.84 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.18110	Trigger latency Firmware version 01.54.20343
Manta G-895	8-bit, 12-bit	86.34 µs	83.52 µs
	16-bit	114.96 µs	111.12 µs
	24-bit	172.68 µs	167.04 µs

- Trigger jitter values have changed since the last firmware release.

Model series	Pixel formats	Trigger jitter Firmware version 01.54.19767	Trigger jitter Firmware version 01.54.20343
Manta G-040	8-bit, 12-bit	±2.88 µs	±2.72 µs
	16-bit	±3.84 µs	±3.64 µs
	24-bit	±5.76 µs	±5.44 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.19767	Trigger jitter Firmware version 01.54.20343
Manta G-158	8-bit, 12-bit	±5.32 µs	±4.96 µs
	16-bit	±7.08 µs	±6.6 µs
	24-bit	±10.64 µs	±9.92 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.17562	Trigger jitter Firmware version 01.54.20343
Manta G-235	8-bit, 12-bit	±7 µs	±6.72 µs
	16-bit	±9.2 µs	± 8.96 µs
	24-bit	±14 µs	±13.44 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.17562	Trigger jitter Firmware version 01.54.20343
Manta G-319	8-bit, 12-bit	±7.3 µs	±7.04 µs
	16-bit	±9.75 µs	±9.36 µs
	24-bit	±14.65 µs	±14.08 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.17562	Trigger jitter Firmware version 01.54.20343
Manta G-507	8-bit, 12-bit	±8.7 µs	±8.32 µs
	16-bit	±11.55 µs	±11.08 µs
	24-bit	±17.35 µs	±16.64 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.18110	Trigger jitter Firmware version 01.54.20343
Manta G-895	8-bit, 12-bit	±14.4 μs	±13.92 μs
	16-bit	±19.16 μs	±18.52 μs
	24-bit	±28.8 μs	±27.84 μs

- Changes to Region of Interest (ROI) frame rates.

Model series	ROI	ROI frame rate Firmware version 01.54.19767	ROI frame rate Firmware version 01.54.20343
Manta G-040	544 × 728	286.0 fps	286.3 fps
	480 × 728	331.9 fps	328.3 fps
	360 × 728	430.7 fps	420.6 fps
	180 × 728	778.5 fps	792.3 fps
	120 × 728	1065.0 fps	1120.8 fps
	80 × 728	1411.4 fps	1494.3 fps
	60 × 728	1684.4 fps	1784.4 fps
	40 × 728	2091.6 fps	2214.3 fps
	20 × 728	2744.5 fps	2918.0 fps
	12 × 728	3156.5 fps	3342.2 fps
	4 × 728	3692.7 fps	3910.8 fps

Model series	ROI	ROI frame rate Firmware version 01.54.19767	ROI frame rate Firmware version 01.54.20343
Manta G-158	1088 × 1456	75.3 fps	75.2 fps
	1080 × 1456	75.7 fps	75.6 fps
	1024 × 1456	79.8 fps	79.6 fps
	960 × 1456	84.9 fps	85.2 fps
	768 × 1456	105.8 fps	106.0 fps
	600 × 1456	135.2 fps	134.6 fps
	480 × 1456	167.8 fps	168.3 fps
	360 × 1456	221.1 fps	220.6 fps
	180 × 1456	421.4 fps	420.0 fps
	120 × 1456	576.4 fps	610.9 fps
	60 × 1456	912.4 fps	978.7 fps
	20 × 1456	1491.6 fps	1600.0 fps
	4 × 1456	1999.6 fps	2144.5 fps

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Model series	ROI	ROI frame rate Firmware version 01.54.17562	ROI frame rate Firmware version 01.54.20343
Manta G-235	1216 × 1936	50.7 fps	50.8 fps
	1080 × 1936	57.1 fps	57.0 fps
	1024 × 1936	60.1 fps	60.1 fps (no change)
	960 × 1936	64.1 fps	64.2 fps
	768 × 1936	80.2 fps	79.8 fps
	600 × 1936	101.9 fps	102.0 fps
	480 × 1936	127.2 fps	126.5 fps
	360 × 1936	168.4 fps	166.4 fps
	180 × 1936	328.4 fps	320.7 fps
	120 × 1936	454.4 fps	467.9 fps
	60 × 1936	729.9 fps	751.5 fps
	20 × 1936	1224.6 fps	1261.0 fps
	12 × 1936	-	1458.8 fps
	4 × 1936	-	1730.1 fps
	2 × 1936	1762.1 fps	1814.5 fps

Model series	ROI	ROI frame rate Firmware version 01.54.17562	ROI frame rate Firmware version 01.54.20343
Manta G-319	1544 × 2064	37.6 fps	37.6 fps (no change)
	1324 × 2064	43.9 fps	43.8 fps
	1280 × 2064	45.3 fps	45.3 fps (no change)
	1024 × 2064	56.6 fps	56.6 fps (no change)
	960 × 2064	60.1 fps	60.0 fps
	768 × 2064	75.2 fps	75.1 fps
	600 × 2064	95.5 fps	95.4 fps
	480 × 2064	119.2 fps	118.9 fps
	360 × 2064	158.5 fps	158.1 fps
	240 × 2064	232.3 fps	232.1 fps
	160 × 2064	346.7 fps	344.7 fps
	80 × 2064	604.5 fps	628.4 fps
	36 × 2064	990.0 fps	1029.3 fps
	12 × 2064	1517 fps	1578.2 fps
	4 × 2064	1517 fps	1919.3 fps

Model series	ROI	ROI frame rate Firmware version 01.54.17562	ROI frame rate Firmware version 01.54.20343
Manta G-507	2056 × 2464	23.7 fps	23.7 fps (no change)
	1544 × 2464	31.5 fps	31.5 fps (no change)
	1324 × 2464	36.8 fps	36.7 fps
	1280 × 2464	38.0 fps	37.9 fps
	1024 × 2464	47.4 fps	47.3 fps
	960 × 2464	50.6 fps	50.4 fps
	768 × 2464	62.9 fps	63.0 fps
	600 × 2464	80.7 fps	80.3 fps
	480 × 2464	100.5 fps	99.8 fps
	360 × 2464	133.3 fps	132.9 fps
	240 × 2464	197.9 fps	196.4 fps
	180 × 2464	259.5 fps	257.9 fps
	80 × 2464	509.8 fps	531.8 fps
	40 × 2464	789.1 fps	823.2 fps
	20 × 2464	1280.1 fps	1133.8 fps
	4 × 2464	-	1624.2 fps
	2 × 2464	1280.1 fps	-

Model series	ROI	ROI frame rate Firmware version 01.54.18110	ROI frame rate Firmware version 01.54.20343
Manta G-895	2176 × 4112	13.4 fps	13.4 fps (no change)
	2048 × 4112	14.3 fps	14.3 fps (no change)
	2000 × 4112	14.6 fps	14.6 fps (no change)
	1600 × 4112	18.3 fps	18.3 fps (no change)
	1280 × 4112	22.8 fps	22.8 fps (no change)
	1200 × 4112	24.4 fps	24.4 fps (no change)
	1024 × 4112	28.5 fps	28.5 fps (no change)
	960 × 4112	30.4 fps	30.4 fps (no change)
	800 × 4112	36.4 fps	36.4 fps (no change)
	768 × 4112	37.9 fps	37.9 fps (no change)
	640 × 4112	45.5 fps	45.5 fps (no change)
	600 × 4112	48.4 fps	48.4 fps (no change)
	480 × 4112	60.4 fps	60.4 fps (no change)
	400 × 4112	72.3 fps	72.3 fps (no change)
	320 × 4112	90.2 fps	90.3 fps
	300 × 4112	96.2 fps	96.0 fps
	240 × 4112	119.7 fps	119.0 fps
	120 × 4112	224.0 fps	231.7 fps
	60 × 4112	365.5 fps	378.1 fps
	32 × 4112	518.2 fps	536.1 fps
	23 × 4112	738.8 fps	764.2 fps
	4 × 4112	890.3 fps	921.0 fps

Resolved issues

- Auto-exposure does not work when gain is not zero
- Gain will stay within `GainAutoMin` and `GainAutoMax` in auto modes

Known issues

`Gain` feature should be set to zero when using `ExposureAuto` and `GainAuto` features together. Otherwise exposure value could remain constant.

Firmware version: 01.54.21000

Release date: 2019-Jan-31

Supported models

Camera family	Model series	Firmware version
Mako G	G-040, G-158, G-234, G-319, G-507	01.54.21000

New features and enhancements

- Added IEEE 1588-2008 Precision Time Protocol
- Added Trigger over Ethernet Action Commands
- Improved FPGA timing for improved camera reliability
- Improved frame rate

Model series	Frame rate at full resolution Firmware version 01.54.18318		Frame rate at full resolution Firmware version 01.54.21000	
	12-bit readout	10-bit readout	12-bit readout	10-bit readout
Mako G-234	31.8 fps	41.2 fps	32.3 fps	41.5 fps

Model series	Frame rate at full resolution Firmware version 01.54.18914	Frame rate at full resolution Firmware version 01.54.21000
Mako G-319	37.5 fps -	37.6 fps 39.5 fps (burst mode)

Model series	Frame rate at full resolution Firmware version 01.54.18914	Frame rate at full resolution Firmware version 01.54.21000
Mako G-507	23.7 fps -	23.7 fps (no change) 25.3 fps (burst mode)

- Exposure minimum values and increments have changed since the last firmware release.

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.18318		Exposure range and increment Firmware version 01.54.21000	
		12-bit readout	10-bit readout	12-bit readout	10-bit readout
Mako G-234	8-bit, 12-bit, 16-bit	63 µs to 71 s; 25 µs increments	52 µs to 71 s; 19.3 µs increments	38 µs to 85.9 s; 24.64 µs increments	32 µs to 71.6 s; 19.2 µs increments
	24-bit	113 µs to 71 s; 50 µs increments	91 µs to 71 s; 38.6 µs increments	63 µs to 85.9 s; 49.28 µs increments	52 µs to 71.6 s; 38.4 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.18914	Exposure range and increment Firmware version 01.54.21000
Mako G-319	8-bit, 12-bit	46 µs to 85.9 s; 16.5 µs increments	29 µs to 85.9 s; 16 µs increments
	16-bit	57 µs to 85.9 s; 21.9 µs increments	35 µs to 85.9 s; 21.28 µs increments
	24-bit	79 µs to 85.9 s; 32.9 µs increments	45 µs to 85.9 s; 32 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.18914	Exposure range and increment Firmware version 01.54.21000
Mako G-507	8-bit, 12-bit	52 µs to 85.9 s; 19.5 µs increments	32 µs to 85.9 s; 18.88 µs increments
	16-bit	65 µs to 85.9 s; 26 µs increments	38 µs to 85.9 s; 25.12 µs increments
	24-bit	91 µs to 85.9 s; 39.0 µs increments	51 µs to 85.9 s; 37.76 µs increments

- Trigger latency values have changed since the last firmware release.

Model series	Pixel formats	Trigger latency Firmware version 01.54.18318		Trigger latency Firmware version 01.54.21000	
		12-bit readout	10-bit readout	12-bit readout	10-bit readout
Mako G-234	8-bit, 12-bit, 16-bit	75.6 µs	58.2 µs	73.92 µs	57.6 µs
	24-bit	151.2 µs	116.4 µs	147.84 µs	115.2 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.18914	Trigger latency Firmware version 01.54.21000
Mako G-319	8-bit, 12-bit	49.4 µs	48 µs
	16-bit	65.8 µs	63.84 µs
	24-bit	98.9 µs	96 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.18914	Trigger latency Firmware version 01.54.21000
Mako G-507	8-bit, 12-bit	58.6 µs	56.64 µs
	16-bit	78 µs	75.36 µs
	24-bit	117.1 µs	113.28 µs

- Trigger jitter values have changed since the last firmware release.

Model series	Pixel formats	Trigger jitter Firmware version 01.54.18318		Trigger jitter Firmware version 01.54.21000	
		12-bit readout	10-bit readout	12-bit readout	10-bit readout
Mako G-234	8-bit, 12-bit, 16-bit	±12.5 µs	±9.6 µs	±12.32 µs	±9.6 µs
	24-bit	±25.0 µs	±19.3 µs	±24.64 µs	±19.2 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.18914	Trigger jitter Firmware version 01.54.21000
Mako G-319	8-bit, 12-bit	±8.1 µs	±8 µs
	16-bit	±10.9 µs	±10.64 µs
	24-bit	±16.5 µs	±16 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.18914	Trigger jitter Firmware version 01.54.21000
Mako G-507	8-bit, 12-bit	±9.8 µs	±9.44 µs
	16-bit	±13 µs	±12.56 µs
	24-bit	±19.5 µs	±18.88 µs

- Changes to Region of Interest (ROI) frame rates.

Model series	ROI	ROI frame rate Firmware version 01.54.18318		ROI frame rate Firmware version 01.54.21000	
		12-bit readout	10-bit readout	12-bit readout	10-bit readout
Mako G-234	1216 × 1936	31.8 fps	41.2 fps	32.3 fps	41.5 fps
	1080 × 1936	35.7 fps	46.2 fps	36.3 fps	46.5 fps
	1024 × 1936	37.6 fps	48.6 fps	38.2 fps	49.0 fps
	960 × 1936	40.0 fps	51.7 fps	40.6 fps	52.1 fps
	768 × 1936	49.5 fps	64.0 fps	50.3 fps	64.5 fps
	600 × 1936	62.5 fps	80.9 fps	63.5 fps	81.5 fps
	480 × 1936	77.0 fps	99.6 fps	78.2 fps	100.3 fps
	200 × 1936	167.3 fps	216.4 fps	169.8 fps	217.9 fps
	100 × 1936	287.7 fps	372.1 fps	292.0 fps	374.7 fps
	50 × 1936	449.4 fps	581.1 fps	456.0 fps	585.2 fps
	20 × 1936	677.9 fps	876.6 fps	687.8 fps	882.8 fps
	12 × 1936	-	-	795.7 fps	1021.2 fps
	10 × 1930	813.3 fps	1055.6 fps	-	-
	4 × 1936	-	-	943.7 fps	1211.2 fps
	2 × 1936	-	-	989.8 fps	1270.3 fps

Model series	ROI	ROI frame rate Firmware version 01.54.18914	ROI frame rate Firmware version 01.54.21000
Mako G-319	1544 × 2064	37.5 fps	37.6 fps
	1280 × 2064	45.3 fps	45.2 fps
	1024 × 2064	56.5 fps	56.5 fps (no change)
	800 × 2064	71.9 fps	71.9 fps (no change)
	600 × 2064	95.4 fps	95.4 fps (no change)
	400 × 2064	140.1 fps	141.4 fps
	300 × 2064	182.2 fps	187.7 fps
	120 × 2064	396.5 fps	408.5 fps
	60 × 2064	652.4 fps	672.0 fps
	20 × 2064	1144.8 fps	1179.2 fps
	12 × 2064	-	1388.9 fps
	10 × 2064	1348.4 fps	-
	4 × 2064	-	1889.2 fps

Model series	ROI	ROI frame rate Firmware version 01.54.18914	ROI frame rate Firmware version 01.54.21000
Mako G-507	2056 × 2464	23.7 fps	23.7 fps (no change)
	1544 × 2464	31.5 fps	31.5 fps (no change)
	1324 × 2464	36.8 fps	36.8 fps (no change)
	1280 × 2464	38.0 fps	38.0 fps (no change)
	1024 × 2464	47.4 fps	47.4 fps (no change)
	960 × 2464	50.6 fps	50.6 fps (no change)
	768 × 2464	62.9 fps	62.9 fps (no change)
	600 × 2464	80.5 fps	80.6 fps
	480 × 2464	99.9 fps	100.3 fps
	360 × 2464	130.4 fps	133.0 fps
	240 × 2464	187.7 fps	194.0 fps
	180 × 2464	240.5 fps	248.7 fps
	80 × 2464	453.4 fps	468.7 fps
	40 × 2464	701.8 fps	725.5 fps
	20 × 2464	996.6 fps	999.3 fps
	4 × 2464	1384.5 fps	1431.4 fps

Resolved issues

- Mako G restrain Heartbeat Acknowledge
- Auto-exposure does not work when gain is not zero
- Gain will stay within `GainAutoMin` and `GainAutoMax` in auto modes

Firmware version: 01.54.20700

Release date: 2019-Jan-31

Supported models

Camera family	Model series	Firmware version
Mako G	G-131, G-192, G-503	01.54.20700

Resolved issues

- Host/camera connection timeout issue

Firmware version: 01.54.20443

Release date: 2019-Jan-31

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT4090, GT4096, GT5120	01.54.20443

New features and enhancements

- Improved exposure time control

	Exposure range and increment Firmware version 01.54.19199	Exposure range and increment Firmware version 01.54.20443
Exposure Time Control	100 µs to 1 s, 1 µs increments	1 µs to 1 s, 1 µs increments

Firmware version: 01.54.20343

Release date: 2019-Jan-31

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1930, GT1930L, GT2460	01.54.20343

New features and enhancements

- Improved FPGA timing for improved camera reliability
- Improved frame rate

Model series	Frame rate at full resolution Firmware version 01.54.17562	Frame rate at full resolution Firmware version 01.54.20343
Prosilica GT1930, GT1930L	50.7 fps 55.8 fps (burst mode)	50.8 fps 59.2 fps (burst mode)

Model series	Frame rate at full resolution Firmware version 01.54.17562	Frame rate at full resolution Firmware version 01.54.20343
Prosilica GT2460	23.7 fps 27.4 fps (burst mode)	23.7 fps (no change) 28.7 fps (burst mode)

- Exposure minimum values and increments have changed since the last firmware release.

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.17562	Exposure range and increment Firmware version 01.54.20343
Prosilica GT1930, GT1930L	8-bit, 12-bit	42 µs to 88 s	27 µs to 85.9 s; 13.44 µs increments
	16-bit	28 µs to 88 s; 14 µs increments	31 µs to 85.9 s; 17.92 µs increments
	24-bit	56 µs to 88 s; 28 µs increments	40 µs to 85.9 s; 26.88 µs increments

Model series	Pixel formats	Exposure range and increment Firmware version 01.54.19214	Exposure range and increment Firmware version 01.54.20343
Prosilica GT2460	8-bit, 12-bit	48 µs to 85.9 s, 17.44 µs increments	30 µs to 85.9 s; 16.64 µs increments
	16-bit	60 µs to 85.9 s, 23.2 µs increments	35 µs to 85.9 s; 22.16 µs increments
	24-bit	83 µs to 85.9 s, 34.88 µs increments	47 µs to 85.9 s; 33.28 µs increments

- Trigger latency values have changed since the last firmware release.

Model series	Pixel formats	Trigger latency Firmware version 01.54.17562	Trigger latency Firmware version 01.54.20343
Prosilica GT1930, GT1930L	8-bit, 12-bit	50.1 µs	40.32 µs
	16-bit	-	53.76 µs
	24-bit	-	80.64 µs

Model series	Pixel formats	Trigger latency Firmware version 01.54.19214	Trigger latency Firmware version 01.54.20343
Prosilica GT2460	8-bit, 12-bit	52.3 µs	49.92 µs
	16-bit	69.6 µs	66.48 µs
	24-bit	104.6 µs	99.84 µs

- Trigger jitter values have changed since the last firmware release.

Model series	Pixel formats	Trigger jitter Firmware version 01.54.17562	Trigger jitter Firmware version 01.54.20343
Prosilica GT1930, GT1930L	8-bit, 12-bit	±7.2 µs	±6.72 µs
	16-bit	-	±8.96 µs
	24-bit	-	±13.44 µs

Model series	Pixel formats	Trigger jitter Firmware version 01.54.19214	Trigger jitter Firmware version 01.54.20343
Prosilica GT2460	8-bit, 12-bit	±8.72 µs	±8.32 µs
	16-bit	±11.6 µs	±11.08 µs
	24-bit	±17.44 µs	±16.64 µs

- Changes to Region of Interest (ROI) frame rates.

Model series	ROI	ROI frame rate Firmware version 01.54.17562	ROI frame rate Firmware version 01.54.20343
Prosilica GT1930, GT1930L	1216 × 1936	50.7 fps	50.8 fps
	1200 × 1936	51.4 fps	-
	1080 × 1936	57.0 fps	57.0 fps (no change)
	1024 × 1936	60.0 fps	60.1 fps
	960 × 1936	64.0 fps	64.2 fps
	768 × 1936	80.1 fps	79.8 fps
	600 × 1936	102.0 fps	102.0 fps (no change)
	480 × 1936	126.9 fps	126.5 fps
	360 × 1936	-	166.4 fps
	180 × 1936	-	320.7 fps
	120 × 1936	-	467.9 fps
	100 × 1936	503.6 fps	-
	60 × 1936	-	751.5 fps
	50 × 1936	787.0 fps	-
	20 × 1936	1187.2 fps	1261.0 fps
	12 × 1936	-	1458.8 fps
	10 × 1936	1429.4 fps	-
	4 × 1936	-	1730.1 fps
	2 × 1936	-	1814.5 fps

Model series	ROI	ROI frame rate Firmware version 01.54.19214	ROI frame rate Firmware version 01.54.20343
Prosilica GT2460	2056 × 2464	23.7 fps	23.7 fps (no change)
	1544 × 2464	31.5 fps	31.5 fps (no change)
	1324 × 2464	36.7 fps	36.7 fps (no change)
	1280 × 2464	37.9 fps	37.9 fps (no change)
	1024 × 2464	47.4 fps	47.3 fps
	960 × 2464	50.5 fps	50.4 fps
	768 × 2464	63.0 fps	63.0 fps (no change)
	600 × 2464	80.3 fps	80.3 fps (no change)
	480 × 2464	99.7 fps	99.8 fps
	360 × 2464	133.3 fps	132.9 fps
	240 × 2464	196.3 fps	196.4 fps
	180 × 2464	258.3 fps	257.9 fps
	80 × 2464	507.4 fps	531.8 fps
	40 × 2464	785.4 fps	823.2 fps
	20 × 2464	1081.9 fps	1133.8 fps
	4 × 2464	1549.7 fps	1624.2 fps

Firmware version: 01.54.20339

Release date: 2018-Jul-11

Supported models

Camera family	Model series	Firmware version
Mako G	G-040, G-158	01.54.20339

New models

Initial commercial release of Mako G-040B, G-040C,G-158B, and G-158C models

Firmware version: 01.54.19214

Release date: 2018-May-01

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT2460	01.54.19214

New models

Initial commercial release of Prosilica GT2460, GT2460C (order code 02-xxxx and 06-xxxx)

Firmware version: 01.54.20072

Release date: 2018-Mar-07

Supported models

Camera family	Model series	Firmware version
Manta	G-1236	01.54.20072

New features and enhancements

- Improved FPGA timing for improved camera reliability
- Improved burst mode frame rate.

	Burst mode frame rate Firmware version 01.54.18183	Burst mode frame rate Firmware version 01.54.20072
Burst mode frame rate	11.4 fps	11.8 fps

- Exposure minimum values and increments have changed since the last firmware release.

Pixel formats	Exposure range and increment Firmware version 01.54.18183	Exposure range and increment Firmware version 01.54.20072
8-bit and 12-bit formats 16-bit formats 24-bit formats	71 µs to 85.89 s; 28.8 µs increments 90 µs to 85.89 s; 38.32 µs increments 129 µs to 85.89 s; 57.6 µs increments	42 µs to 85.89 s; 27.84 µs increments 51 µs to 85.89 s; 37.04 µs increments 69 µs to 85.89 s; 55.68 µs increments

- Trigger latency values have changed since the last firmware release.

Pixel formats	Trigger latency Firmware version 01.54.18183	Trigger latency Firmware version 01.54.20072
8-bit and 12-bit formats 16-bit formats 24-bit formats	86.4 µs 114.95 µs 172.8 µs	83.52 µs 111.12 µs 167.04 µs

- Trigger jitter values have changed since the last firmware release.

Pixel formats	Trigger jitter Firmware version 01.54.18183	Trigger jitter Firmware version 01.54.20072
8-bit and 12-bit formats 16-bit formats 24-bit formats	±14.4 µs ±19.16 µs ±28.8 µs	±13.92 µs ±18.52 µs ±27.84 µs

- Changes to Region of Interest (ROI) frame rates.

ROI	ROI frame rate Firmware version 01.54.18183	ROI frame rate Firmware version 01.54.20072
3008 × 4112	9.73 fps	9.73 fps (no change)
3000 × 4112	9.76 fps	9.76 fps (no change)
2800 × 4112	10.46 fps	10.46 fps (no change)
2560 × 4112	11.43 fps	11.43 fps (no change)
2400 × 4112	12.2 fps	12.2 fps (no change)
2048 × 4112	14.3 fps	14.3 fps (no change)
2000 × 4112	14.6 fps	14.6 fps (no change)
1600 × 4112	18.3 fps	18.3 fps (no change)
1280 × 4112	22.8 fps	22.8 fps (no change)
1200 × 4112	24.4 fps	24.3
1024 × 4112	28.5 fps	28.5 fps (no change)
960 × 4112	30.4 fps	30.4 fps (no change)
800 × 4112	36.4 fps	36.4 fps (no change)
768 × 4112	37.9 fps	37.9 fps (no change)
640 × 4112	45.5 fps	45.5 fps (no change)
600 × 4112	48.4 fps	48.4 fps (no change)
480 × 4112	60.4 fps	60.4 fps (no change)
400 × 4112	72.3 fps	72.3 fps (no change)
320 × 4112	90.2 fps	90.2 fps (no change)
300 × 4112	96.2 fps	96.0
240 × 4112	119.7 fps	118.9
120 × 4112	224.0 fps	231.7
60 × 4112	365.5 fps	378.1
32 × 4112	518.2 fps	536.1
12 × 4112	738.8 fps	764.2
4 × 4112	890.3 fps	921.0

Known issues

`Gain` feature should be set to zero when using `ExposureAuto` and `GainAuto` features together. Otherwise exposure value could remain constant.

Firmware version: 01.54.19767

Release date: 2018-Jan-31

Supported models

Camera family	Model series	Firmware version
Manta	G-040, G-158	01.54.19767

New models

Initial commercial release of Manta G-040B, G-040C, G-158B, G-158C (order code E00xxxx and E06xxxx)

Firmware version: 01.54.19654

Release date: 2017-Dec-15

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC660, GC1290, GC1380H, GC1600H	01.54.19654

New models

Initial commercial release of Prosilica GC660, GC660C, GC1290, GC1290C, GC1380H, GC1380CH, GC1600H, GC1600CH (order code 06-xxxx)

New features and enhancements

Improved FPGA timing for improved camera reliability (order code 02-xxxx only)

Changes

• Exposure minimum and exposure maximum values have changed since the last firmware release (order code 02-xxxx only).

Model series	Exposure range and increment Firmware version 01.54.16528	Exposure range and increment Firmware version 01.54.19654
GC660	10 µs to 72.4 s; 1 µs increments	10 µs to 72.9 s; 1 µs increments
GC1290	12 µs to 72.9 s; 1 µs increments	12 µs to 72.4 s; 1 µs increments
GC1380H	10 µs to 72.4 s; 1 µs increments	10 µs to 72.9 s; 1 µs increments

• Gain maximum values have changed since the last firmware release (order code 02-xxxx only).

Model series	Gain range and increments Firmware version 01.54.16528	Gain range and increments Firmware version 01.54.19654
GC1600H	0 to 32 dB; 1 dB increments	10 to 30 dB; 1 dB increments

Firmware version: 01.54.19678

Release date: 2017-Dec-15

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC2450	01.54.19678

New models

Initial commercial release of Prosilica GC2450 and GC2450C (order code 06-xxxx)

New features and enhancements

Improved FPGA timing for improved camera reliability (order code 02-xxxx only)

Changes

- Exposure minimum and exposure maximum values have changed since the last firmware release (order code 02-xxxx only).

Model series	Exposure range and increment Firmware version 01.54.16528	Exposure range and increment Firmware version 01.54.19678
GC2450	49 µs to 38.0 s; 1 µs increments	10 µs to 48.0 s; 1 µs increments

- Gain maximum values have changed since the last firmware release (order code 02-xxxx only).

Model series	Gain range and increment Firmware version 01.54.16528	Gain range and increment Firmware version 01.54.19678
GC2450	0 to 32 dB; 1 dB increments	10 to 24 dB; 1 dB increments

Firmware version: 01.54.18914

Release date: 2017-Aug-18

Supported models

Camera family	Model series	Firmware version
Mako G	G-319, G-507	01.54.18914

New features and enhancements

Improved FPGA timing for improved camera reliability

Firmware version: 01.54.19199

Release date: 2017-Aug-04

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT4090, GT4096, GT5120	01.54.19199

New models

Initial commercial release of Prosilica GT4090, GT4090NIR, GT4096, GT4096NIR, GT5120, GT5120NIR (order code 02-xxxx and 06-xxxx)

New features and enhancements

- Fixed Pattern Noise Correction (FPNC)
- Enhanced Defect Pixel Correction (DPC) feature with a new **Defective Pixel List Management** tool

Firmware version: 01.54.18836

Release date: 2017-May-02

Supported models

Camera family	Model series	Firmware version
Mako G	G-131, G-192	01.54.18836

Resolved issues

Mako G-131B, G-131C, G-192B, G-192C loses connection after setting the `TriggerSource` to *Line1* and then stopping acquisition.

Firmware version: 01.54.18318

Release date: 2017-May-02

Supported models

Camera family	Model series	Firmware version
Mako G	G-234	01.54.18318

New features and enhancements

Improved FPGA timing for improved camera reliability

Firmware version: 01.54.18391

Release date: 2017-Mar-13

Supported models

Camera family	Model series	Firmware version
Mako G	G-030, G-223, G-419	01.54.18391

New models

Initial commercial release of Mako G-030B, G-030C, G-223B, G-223B NIR, G-223C (order code E06xxxxx)

New features and enhancements

- Improved registry
- `DeviceUserID` is now accessible via the **Vimba** user interface
- Piecewise Linear (HDR) mode

Resolved issues

- GVCP command drop (no Ack)
- Camera no longer ignores ARP message responses sent to IP Address 0.0.0.0 if that is the camera's current IP address (which it is on power-up)

Firmware version: 01.54.18110

Release date: 2017-Feb-10

Supported models

Camera family	Model series	Firmware version
Mako G	G-131, G-192, G-503	01.54.18110

New features and enhancements

- Improved registry
- `DeviceUserID` is now accessible via the **Vimba** user interface

Resolved issues

- GVCP command drop (no Ack)
- Camera no longer ignores ARP message responses sent to IP Address 0.0.0.0 if that is the camera's current IP address (which it is on power-up)
- Black stripe on top of the image in Mako G-503B

Limitations

- Mako G-503B, G-503C catches two frames with one software trigger
- Mako G-131B, G-131C, G-192B, G-192C loses connection after setting the `TriggerSource` to *line1* and then stopping acquisition

Firmware version: 01.54.18163

Release date: 2017-Jan-27

Supported models

Camera family	Model series	Firmware version
Manta	G-223, G-419	01.54.18163
Prosilica GT	GT2000, GT2050	01.54.18163

New features and enhancements

- ToE Action Commands feature
- Piecewise Linear (HDR) mode
- Improved registry
- `DecimationHorizontal` and `DecimationVertical`
- `ReverseX` and `ReverseY`
- `DeviceUserID` is now accessible via the **Vimba** user interface
- IEEE 1588-2008 Precision Time Protocol enhancements
  - `PtpStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Initializing(0), Faulty(1), Disabled(2), Listening(3), PreMaster(4), Master(5), Passive(6), Uncalibrated(7), Slave(8)*
  - `GevTimestampValue` is no longer reset by turning off PTP

- Acquisition is no longer stopped when changing `PtpMode`
- `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *Off*
- `EventPtpSyncLost` now sent when `PtpMode` changed
- `PtpMode` is no longer set to *Off* when PTP synchronization is lost
- `PtpMode Auto` now correctly finds best master clock
- PTP synchronization drift lessened
- New event added: `ExposureStart` (ID 40019)

Firmware version: 01.54.18184

Release date: 2016-Dec-16

Supported models

Camera family	Model series	Firmware version
Manta	G-1236	01.54.18184

New models

Initial commercial release of Manta G-1236B, G-1236C (order code E00xxxx and E06xxxxx)

Firmware version: 01.44.18241

Release date: 2016-Dec-16

Supported models

Camera family	Model series	Firmware version
Manta	G-031, G-032, G-033, G-046, G-125, G-145, G-145-30fps, G-146, G-201, G-201-30fps, G-504	01.44.18241

New models

Initial commercial release of Manta G-031B, G-031C, G-032B, G-032C, G-033B, G-033C, G-125B, G-125C, G-145B, G-145B-30fps, G-145B NIR, G-145C, G-145C-30fps, G-201B, G-201B-30fps, G-201C, G-201C-30fps, G-504B, G-504C (order code E06xxxxx only)

New features and enhancements

Added `ReverseX` to monochrome models (Manta G-031B, G-033B, G-046, G-125B, G-146B, G-201B, G-201B-30fps, G-504B). Previously only Manta G-145B, G-145B-30fps, and G-145B NIR had this feature.

Resolved issues

- BayerGR12Packed pixel format changed to BayerRG12Packed
- Chunk data displayed is from the previous frame.
- `AutoExposureOnce` does not work if `ExposureTimeAbs` is set to a value less than 100 μs before imaging.
- When `BinningVertical` > *8* using a packed pixel format, the camera stops responding and requires a power cycle to continue streaming (Manta G-504C).

Limitations

- Manta G-032B: `ReverseX` is not supported
- Manta G-145: Enabling `Binning` with `OffsetY` > 0 stops camera streaming
- Manta G-201-30fps: When selecting an Region of Interest, only even `OffsetX` or `OffsetY` numbers are supported.

Firmware version: 01.44.18241

Release date: 2016-Dec-02

Supported models

Camera family	Model series	Firmware version
Manta	G-046, G-146	01.44.18241

New models

Initial commercial release of Manta G-046B, G-046C, G-146B, G-146C (order code E06xxxxx only)

Firmware version: 01.44.18182, 01.52.18193, 01.54.18110

Release date: 2016-Nov-25

Supported models

Camera family	Model series	Firmware version
Manta	G-895	01.54.18110
Manta	G-223, G-419	01.52.18193
Prosilica GT	GT2000, GT2050	01.52.18193
Manta	G-031, G-033, G-145	01.44.18182

New models

- Initial commercial release of Manta G-895B, G-895C (order code E00xxxx and E06xxxxx)
- Initial commercial release of Manta G-223B, G-223B NIR, G-223C, G-419B, G-419B NIR, G-419C (order code E06xxxxx only)
- Initial commercial release of Prosilica GT2000, GT2000NIR, GT2000C, GT2050, GT2050NIR, GT2050C (order code 06-xxxx only)
- Initial commercial release of Manta G-031B, G-031C, G-033B, G-033C, G-145B, G-145C (order code E06xxxxx only)

Firmware version: 01.44.18182

Release date: 2016-Nov-17

Supported models

Camera family	Model series	Firmware version
Manta	G-032, G-125, G-201, G-504	01.44.18182

New models

Initial commercial release of Manta G-032B, G-032C, G-201B, G-201C, G-125B, G-125C, G-504B, G-504C (order code E06xxxxx only)

Firmware version: 01.54.18110

Release date: 2016-Nov-02

Supported models

Camera family	Model series	Firmware version
Mako G	G-319	01.54.18110

New models

Initial commercial release of Mako G-319B, G-319C (order code xxxx and xxxx-06)

Limitations

The Mako G-319C does not support `BinningY`

Firmware version: 01.54.17933

Release date: 2016-Oct-21

Supported models

Camera family	Model series	Firmware version
Mako G	G-032, G-125	01.54.17933

New models

Initial commercial release of Mako G-032B, G-032C, G-125B, G-125C (order code xxxx-06 only)

New features and enhancements

Improved registry

Firmware version: 01.54.18032

Release date: 2016-Oct-07

Supported models

Camera family	Model series	Firmware version
Mako G	G-234, G-507	01.54.18032

New models

- Initial commercial release of Mako G-507B, G-507C (order code xxxx and xxxx-06)
- Initial commercial release of Mako G-234B, G-234C (order code xxxx-06 only)

New features and enhancements

- Improved registry
- `DeviceUserID` is now accessible via the **Vimba** user interface
- Exposure related enhancements
  - When `ExposureMode` = *Timed*: Improved accuracy in exposure calculation with deviation < 1 µs, exposure calculation takes into account exposure time error (`tOFFSET`)
  - Partial Fix: When `ExposureMode` = *TriggerWidth*, you will see improved accuracy in exposure calculation with deviation ≤ one `ExposureTimeIncrement`, For a given trigger pulse width, effective exposure duration will be trigger pulse width plus exposure time error (`tOFFSET`)

  > Exposure time error (`tOFFSET`) = 13.73 µs from Sony IMX249, IMX264, and IMX265 data sheets.

- Added support for sensor readout mode in Mako G-234B and G-234C models
  - This allows you to choose between 10-bit and 12-bit (default) sensor readout. 10-bit sensor readout can achieve relatively higher frame rates, especially 8-bit pixel formats and also in a small Region of Interest.

Changes

- Frame rates, exposure minimum, exposure maximum values, `ExposureTimeIncrement`, trigger jitter and trigger latency values are updated for Mako G-234B and G-234C.

Specification	Firmware version 01.54.15954	Firmware version 01.54.18032
Maximum frame rate	40 fps	41.2 fps
Exposure control	53 µs to 73 s; 19.86 µs increments	52 µs to 71 s; 19.3 µs increments
Trigger latency	69.6 µs	58.2 µs
Trigger Jitter	±9.8 µs	±9.6 µs

Values previously listed reflect 8-bit pixel formats (Mono8 and BayerRG8) and 10-bit sensor readout mode at full resolution.

Resolved issues

- GVCP command drop (no Ack)
- In auto gain and auto exposure, current value will stay within the range in accordance to minimum and maximum value changes
- Camera no longer ignores ARP message responses sent to IP Address 0.0.0.0 if that is the camera's current IP address (which it is on power-up).
- White flicker at minimum exposure and maximum gain no longer occurs.
- When `ReverseX` is enabled, changing the pixel format to YUV format will keep `Width` less than `WidthMax`.

Limitations

- Pixel format, binning, and decimation are changeable only when the camera is not streaming.
- The Mako G-507C does not support `BinningY`

Firmware version: 01.52.17702

Release date: 2016-Aug-12

Supported models

Camera family	Model series	Firmware version
Mako G	G-419	01.52.17702

New models

Initial commercial release of Mako G-419B, G-419B NIR, G-419C (order code xxxx-06 only)

Firmware version: 01.54.17624

Release date: 2016-Aug-12

Supported models

Camera family	Model series	Firmware version
Manta	G-282, G-283, G-505, G-917	01.54.17624

New models

Initial commercial release of Manta G-282B, G-282C, G-283B, G-283C, G-505B, G-505C, G-917B, G-917C standard and board level models (order code E06xxxxx only)

New features and enhancements

- Consolidated firmware update for Manta dual-tap cameras
- Improved registry
- `DeviceUserID` is now accessible via the **Vimba** user interface
- Selectable mode of sensor digitization taps (one-tap or two-tap mode), except Manta G-505B, G505C
- ToE Action Commands feature

Allied Vision

- Binning
  - Changed the maximum `BinningX` and `BinningY` value to `4` for Manta G-505B, G-505C
- Added `ReverseX` to all color models
- Temperature readout for sensor board (see Limitations)
- IEEE 1588-2008 Precision Time Protocol enhancements
  - `PtpStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Initializing(0), Faulty(1), Disabled(2), Listening(3), PreMaster(4), Master(5), Passive(6), Uncalibrated(7), Slave(8)*
  - `GevTimestampValue` is no longer reset by turning off PTP
  - Acquisition is no longer stopped when changing `PtpMode`
  - `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *Off*
  - `EventPtpSyncLost` now sent when `PtpMode` changed
  - `PtpMode` is no longer set to *Off* when PTP synchronization is lost
  - `PtpMode Auto` now correctly finds best master clock
  - PTP synchronization drift lessened
- New event added: `ExposureStart` (ID 40019)

Resolved issues

- GVCP command drop (no Ack)
- In auto gain and auto exposure, current value will stay within the range in accordance to minimum and maximum value changes
- When `ReverseX` is enabled, changing the pixel format to YUV format will keep `Width` less than `WidthMax`.

Limitations

- Pixel format, binning, and decimation are changeable only when the camera is not streaming
- IEEE 1588-2008 Precision Time Protocol related limitations
  - PTP in this firmware version has many improvements, some of which cause PTP incompatibility issues with cameras running older firmware versions.
  - When using PTP in a network with cameras running a mix of older and newer PTP firmware, `PtpMode` = *Auto* can not be used, and the master camera (camera with `PtpMode` = *Master*) must be a camera running the newer firmware version.
  - To take full advantage of the latest PTP resolved issues and improvements, it is recommended to upgrade the firmware of the listed supported models.
- The temperature readout for the sensor board does not work as expected. When selected, the temperature is the main board temperature.

Firmware version: 01.54.17562

Release date: 2016-Aug-12

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1290, GT1380, GT1600, GT1660, GT1910, GT1920, GT2300, GT2450, GT2750, GT3300,GT3400, GT4905, GT4907, GT6600	01.54.17562

New models

Initial commercial release of Prosilica GT1290, GT1290C, GT1380, GT1380C, GT1600, GT1600C, GT1660, GT1660C, GT1910, GT1910C, GT1920, GT1920C, GT2300, GT2300C, GT2450, GT2450C, GT2750, GT2750C, GT3300, GT3300C, GT3400, GT3400C, GT4905, GT4905C, GT4907, GT4907C, GT6600, GT6600C (order code 06-xxxxx only)

New features and enhancements

- Trigger over Ethernet (ToE) Action Commands feature
- Prosilica GT2450 and GT2450C
    - Aligned features with Firmware version: 01.54.16845

Limitations

- Black level control is not available for all Prosilica GT CCD cameras
- The following features are not implemented in Prosilica GT quad-tap CCD cameras in single-tap mode:
    - `DecimationHorizontal`
    - `DecimationVertical`
    - `ReverseX`
    - `ReverseY`
- Look-up Tables may have different behaviors for different cameras
- No iris, exposure, gain selectable auto priority
- Dual-tap and single-tap cameras do not support column defect masking
- Tap mode switchability is not supported for Prosilica GT2450, GT2450C
- The following feature is not implemented in dual-tap CCD cameras due to sensor limitations:
    - `ReverseY` (Prosilica GT2450, GT2450C)
- The following features are not implemented in single-tap CCD cameras due to sensor limitations:
    - `ReverseX`, `ReverseY` (Prosilica GT1290, GT1290C, GT1380, GT1380C, GT1600, GT1600C)

Firmware version: 01.54.17562

Release date: 2016-Jul-06

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1930, GT1930L	01.54.17562
Manta	G-235, G-319, G-507	01.54.17562

New models

- Initial commercial release of Prosilica GT1930, GT1930C, GT1930L, GT1930LC (order code 06-xxxxx only)
- Initial commercial release of Manta G-319B, G-319C, G-507B, and G-507C standard and board level models (order code E00xxxxx and E06xxxxx)

New features and enhancements

- Improved registry
- `DeviceUserID` is now accessible via the **Vimba** user interface

- Update for Manta G-235B and G-235C standard and board level models
- BayerRG12Packed pixel format is supported for color cameras (Manta G-235C)
- ToE Action Commands feature
- IEEE 1588-2008 Precision Time Protocol enhancements
  - `PtpStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Initializing(0), Faulty(1), Disabled(2), Listening(3), PreMaster(4), Master(5), Passive(6), Uncalibrated(7), Slave(8)*
  - `GevTimestampValue` is no longer reset by turning off PTP
  - Acquisition is no longer stopped when changing `PtpMode`
  - `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *Off*
  - `EventPtpSyncLost` now sent when `PtpMode` changed
  - `PtpMode` is no longer set to *Off* when PTP synchronization is lost
  - `PtpMode` 'Auto' now correctly finds best master clock
  - PTP synchronization drift lessened
- Exposure related enhancements
  - When `ExposureMode` = *Timed*: Improved accuracy in exposure calculation with deviation < 1 μs, exposure calculation takes into account exposure time error (`tOFFSET`)
  - Partial fix: When `ExposureMode` = *TriggerWidth*: Improved accuracy in exposure calculation with deviation ≤ one `ExposureTimeIncrement`. For a given trigger pulse width, effective exposure duration will be trigger pulse width plus exposure time error (`tOFFSET`).
  - `ExposureTimeIncrement` value now shows decimal values
  - Exposure minimum, exposure maximum values, `ExposureTimeIncrement`, trigger jitter, and trigger latencies are updated

> Exposure time error (`tOFFSET`) = 13.73 μs from Sony IMX174, IMX264, and IMX265 data sheets.

Resolved issues

- GVCP command drop (no Ack)
- In auto gain and auto exposure, the current value will stay within the range in accordance to minimum and maximum value changes
- Camera no longer ignores ARP message responses sent to IP Address 0.0.0.0 if that is the camera's current IP address (which it is on power-up).
- Manta G-235 board level model with 200 mm flex cable is now stable
- `ReverseX`, `ReverseY` will first flip the image and then applies the Region of Interest
- White flicker at minimum exposure and maximum gain no longer occurs.
- When `ReverseX` is enabled, changing the pixel format to YUV format will keep `Width` less than `WidthMax`.

Limitations

- Pixel format, binning, and decimation are changeable only when the camera is not streaming
- IEEE 1588-2008 Precision Time Protocol related limitations
  - PTP in this firmware version has many improvements, some of which cause PTP incompatibility issues with cameras running older firmware versions.

- When using PTP in a network with cameras running a mix of older and newer PTP firmware, `PtpMode` = *Auto* can not be used, and the master camera (camera with `PtpMode` = *Master*) must be a camera running the newer firmware version.
- To take full advantage of the latest PTP resolved issues and improvements, it is recommended to upgrade the firmware of the listed supported models.

Firmware version: 01.54.17455

Release date: 2016-Jul-07

Supported models

Camera family	Model series	Firmware version
Mako G	G-131, G-192, G-503	01.54.17455

New models

Initial commercial release of Mako G-131B, G-131C, G-192B, G-192C, G-503B, G-503C models (order code E06xxxx only)

Firmware version: 01.54.16845

Release date: 2016-May-12

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1290, GT1380, GT1600, GT1660, GT1910, GT1920, GT2300, GT2750, GT3300, GT3400, GT4905, GT4907, GT6600	01.54.16845

New features and enhancements

- Consolidated firmware update for Prosilica GT CCD single-tap and quad-tap cameras
- `DeviceUserID` is now accessible via the **Vimba** user interface
- Selectable mode of sensor digitization taps (one-tap or four-tap mode)
- Added `ReverseX` and `ReverseY` to all multi-tap CCD models
- Added Look-up Tables and binning to all models
- Added `DecimationHorizontal`, `DecimationVertical` for single-tap and quad-tap models
- Temperature readout for sensor board
- Added column defect masking support for all Prosilica GT quad-tap models running in single-tap mode
- IEEE 1588-2008 Precision Time Protocol enhancements
  - `PtpStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Initializing(0), Faulty(1), Disabled(2), Listening(3), PreMaster(4), Master(5), Passive(6), Uncalibrated(7), Slave(8)*
  - `GevTimestampValue` is no longer reset by turning off PTP
  - Acquisition is no longer stopped when changing `PtpMode`
  - `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *Off*
  - `EventPtpSyncLost` now sent when `PtpMode` changed
  - `PtpMode` is no longer set to *Off* when PTP synchronization is lost

- `PtpMode` = *Auto* now correctly finds best master clock
- PTP synchronization drift lessened

Features removed

- Cleaned up lens controls
    - Removed P-Iris and DC-Iris controls from Prosilica GT large format models
    - Removed EF controls from Prosilica GT standard format models

Resolved issues

- GVCP command drop (no Ack)
- Issue where changing the auto gain or auto exposure maximum or minimum value when the current value is within the target range does not change the current value.
- When `ReverseX` is enabled, changing the pixel format to YUV format will keep `Width` less than `WidthMax`.

Limitations

- IEEE 1588-2008 Precision Time Protocol related limitations
    - PTP in this firmware version has many improvements, some of which cause PTP incompatibility issues with models running older firmware versions.
    - When using PTP in a network with models running a mix of older and newer PTP firmware, `PtpMode` = *Auto* can not be used, and the master camera (`PtpMode` = *Master*) must be a camera running the newer firmware version.
    - To take full advantage of the latest PTP resolved issues and improvements, it is recommended to upgrade the firmware of the listed supported models.

Firmware version: 01.54.16528

Release date: 2016-June-30

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC660, GC1290, GC1380H, GC1600H, GC2450	01.54.16528

	This firmware is not backwards compatible with Prosilica GC hardware revision A models.

New models

Initial commercial release of Prosilica GC hardware revision D models.

New features and enhancements

- Gamma correction
- Look-up Tables
- Hue, saturation, color transformation control (color models only)
- Device temperature readout (sensor is located on mainboard)

- New event added: `ExposureStart` (ID 40019)
- IEEE 1588-2008 Precision Time Protocol enhancements
    - `PtpStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Initializing(0), Faulty(1), Disabled(2), Listening(3), PreMaster(4), Master(5), Passive(6), Uncalibrated(7), Slave(8)*
    - `GevTimestampValue` is no longer reset by turning off PTP
    - Acquisition is no longer stopped when changing `PtpMode`
    - `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *Off*
    - `EventPtpSyncLost` now sent when `PtpMode` changed
    - `PtpMode` is no longer set to *Off* when PTP synchronization is lost
    - `PtpMode` = *Auto* now correctly finds best master clock
    - PTP synchronization drift lessened

Features removed

- Black level control
- Non-functional events
- The Prosilica GC has only two inputs. Therefore the following events have been removed in the new Prosilica GC hardware revision D models:
    - `EventLine3FallingEdgeFrameID`
    - `EventLine3FallingEdgeTimestamp`
    - `EventLine3RisingEdgeFrameID`
    - `EventLine3RisingEdgeTimestamp`
    - `EventLine4FallingEdgeFrameID`
    - `EventLine4FallingEdgeTimestamp`
    - `EventLine4RisingEdgeFrameID`
    - `EventLine4RisingEdgeTimestamp`
- The corresponding events in the `EventSelector` were also removed: `Line3RisingEdge`, `Line3FallingEdge`, `Line4RisingEdge`, and `Line4FallingEdge`

Changes

- Differences in frame rates: Some of the new Prosilica GC hardware revision D models require to use different imager frequencies. Therefore it is difficult to apply the same frame rates as Prosilica GC hardware revision A models. As a side effect higher frame rates can be achieved.

Model series	Frame rate for Prosilica GC hardware revision A models	Frame rate for Prosilica GC hardware revision D models
Prosilica GC660	119.30 fps	121.20 fps
Prosilica GC1290	32.79 fps	33.31 fps
Prosilica GC1380H	30.01 fps	30.49 fps

All other Prosilica GC hardware revision D models support the same frame rates as the previous Prosilica GC models.

- Features renamed: On Prosilica GC hardware revision A models, `Gain` is called `GainRaw`; on the new Prosilica GC hardware revision D models it is referred to as `Gain`. This is just a name change to be GenICam SFNC compliant; the functionality remains the same. `GainRaw` is still available, but now it is an invisible attribute that can still be applied by programmers (**PvAPI** users for example).

- Due to the increased memory the new models have an extended `StreamHoldCapacity`. The changes are as follows:

Model series	StreamHoldCapacity for Prosilica GC hardware revision A models	StreamHoldCapacity for Prosilica GC hardware revision D models
Prosilica GC660	46 frames	194 frames
Prosilica GC1290	12 frames	52 frames
Prosilica GC1380H	11 frames	46 frames
Prosilica GC1600H	7 frames	33 frames
Prosilica GC2450	3 frames	12 frames

- Prosilica GC hardware revision A models support five user sets, the new Prosilica GC hardware revision D models support three user sets.

Limitations

- IEEE 1588-2008 Precision Time Protocol related limitations
  - PTP in this firmware version has many improvements, some of which cause PTP incompatibility issues with cameras running older firmware versions.
  - When using PTP in a network with cameras running a mix of older and newer PTP firmware, `PtpMode` = *Auto* can not be used, and the master camera (`PtpMode` = *Master*) must be a camera running the newer firmware version.
  - To take full advantage of the latest PTP resolved issues and improvements, it is recommended to upgrade the firmware of the listed supported models.

Firmware version: 01.54.16414

Release date: 2016-Mar-07

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1930, GT1930L	01.54.16414

New models

Initial commercial release of Prosilica GT1930 and GT1930C models

New features and enhancements

- Prosilica GT1930L and GT1930LC only
  - Added editing capability to `DeviceUserID` (users can now edit `DeviceUserID`)
  - All EF-Lens features are now disabled if no EF-Lens is attached to camera
  - Increased minimum exposure from 28 to 42

Other

- Prosilica GT1930L and GT1930LC only

- Removed P-Iris and DC-Iris controls
- Removed Event Control ID for `SyncIn3` and `SyncIn4`

Resolved issues

- Prosilica GT1930L and GT1930LC only
  - `ExposureTimeIncrement` value now shows decimal values

Firmware version: 01.54.15954

Release date: 2015-Nov-20

Supported models

Camera family	Model series	Firmware version
Mako G	G-234	01.54.15954

New models

Initial commercial release of Mako G-234B and G-235C models

New features and enhancements

- 10-bit, 12-bit switchability based on pixel format
- `ExposureValue` now rounds up or down to the nearest valid exposure value instead of always rounding down.

Firmware version: 01.54.14865

Release date: 2015-Oct-22

Supported models

Camera family	Model series	Firmware version
Manta	G-282, G-283, G-505, G-609, G-917	01.54.14865

New features and enhancements

- IEEE 1588-2008 Precision Time Protocol enhancements
  - `PtpStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Initializing(0), Faulty(1), Disabled(2), Listening(3), PreMaster(4), Master(5), Passive(6), Uncalibrated(7), Slave(8)*
  - `GevTimestampValue` is no longer reset by turning off PTP
  - Acquisition is no longer stopped when changing `PtpMode`
  - `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *Off*
  - `EventPtpSyncLost` now sent when `PtpMode` changed
  - `PtpMode` is no longer set to *Off* when PTP synchronization is lost
  - `PtpMode` = *Auto* now correctly finds best master clock
  - PTP synchronization drift lessened

Changes

- Adjusted the following parameter(s):
  - `/Controls/Exposure; ExposureAuto; RW;  Off(1) Once(3) Continuous(2)`
  - `/Controls/Exposure; ExposureMode; RW;  Timed(0) TriggerWidth(1)`

Limitations

- IEEE 1588-2008 Precision Time Protocol related limitations
  - PTP in this firmware version has many improvements, some of which cause PTP incompatibility issues with models running older firmware versions.
  - When using PTP in a network with cameras running a mix of older and newer PTP firmware, `PtpMode` = *Auto* can not be used, and the master camera (`PtpMode` = *Master*) must be a camera running the newer firmware version.
  - To take full advantage of the latest PTP resolved issues and improvements, it is recommended to upgrade the firmware of the listed supported models.

Firmware version: 01.54.12720

Release date: 2014-Feb-20

Supported models

Camera family	Model series	Firmware version
Mako G	G-503	01.54.12720

New models

Initial commercial release of Mako G-503B and G-503C models

New features and enhancements

`DefectMaskEnable`
Up to 200 pixel defects may be masked

Limitations

`DefectMaskEnable` is not possible if binning and/or decimation is enabled.

Firmware version: 01.54.12239

Release date: 2014-Dec-19

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1930L	01.54.12239

New models

Initial commercial release of Prosilica GT1930L and GT1930LC models

New features and enhancements

Canon EF iris and focus lens control

Resolved issues

- As gain is reported in 1/10 dB steps and gain in chunk data is an integer, gain value is reported as ten times the actual value (gain of 23.7 is reported as 237 for example).
- Mirroring applied before the Region of Interest for `ReverseY`

Firmware version: 01.54.11712

Release date: 2014-Dec-19

Supported models

Camera family	Model series	Firmware version
Mako G	G-131, G-192	01.54.11712

New models

Initial commercial release of Mako G-131B, G-131C, G-192B, and G-192C models

New features and enhancements

`DefectMaskEnable`
Up to 200 pixel defects may be masked

Limitations

Mako G-192B and G-192C: With exposure auto and gain auto both active, the priority mechanism does not work as expected.

Firmware version: 01.54.11488

Release date: 2014-Dec-16

Supported models

Camera family	Model series	Firmware version
Mako G	G-030	01.54.11488

New models

Initial commercial release of Mako G-030B and G-030C models

New features and enhancements

- `DefectMaskEnable`
  Up to 200 pixel defects may be masked
- Piecewise Linear (HDR) mode

Firmware version: 01.54.11233

Release date: 2014-Oct-06

Supported models

Camera family	Model series	Firmware version
Mako G	G-050, G-095	01.54.11233

New models

Initial commercial release of Mako G-050B, G-050C, G-095B, and G-095C models

New features and enhancements

`DefectMaskEnable`
Up to 200 pixel defects may be masked

Firmware version: 01.54.11232

Release date: 2014-Oct-06

Supported models

Camera family	Model series	Firmware version
Manta	G-505	01.54.11232

New models

Initial commercial release of Manta G-505B and G-505C models

New features and enhancements

- IEEE 1588-2008 Precision Time Protocol enhancements:
  - `PTPStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Disabled*, *Initializing*, *Listening*, *Master*, *Passive*, *Uncalibrated*, *Slave*.
  - `GevTimestampValue` is no longer reset by turning off PTP
  - Acquisition is no longer stopped when changing `PtpMode`
  - `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *OFF*
  - `EventPtpSyncLost` now sent when `PtpMode` changed
  - PTP synchronization drift lessened

Firmware version: 01.54.11026

Release date: 2014-Sep-24

Supported models

Camera family	Model series	Firmware version
Manta	G-235	01.54.11026

New models

Initial commercial release of Manta G-235B and G-235C models

New features and enhancements

- `ReverseX` and `ReverseY`

- `ExposureTimeIncrement`: read only, constant. Granularity of `ExposureTimeAbs`
  [**PvAPI**: `ExposureValue`]

- `ExposureTimeAbs` [**PvAPI**: `ExposureValue`]: Values written to control are rounded to nearest multiple of `ExposureIncrement`. Reading this control returns the used, rounded value.

- `Gain` [**PvAPI**: `GainValue`]: increment is 0.1, units are dB.
  [**PvAPI**: `GainValue` increment is 1, units are 0.1 dB]

- `GainAuto` [**PvAPI**: `GainMode`]: auto algorithm adjusts using 1 dB gain increments. `GainAutoMin` and `GainAutoMax` may be set to using 0.1 dB increments.

- IEEE 1588-2008 Precision Time Protocol enhancements:
  - `PTPStatus` enumerations updated to IEEE 1588-2008 Precision Time Protocol standard: *Disabled*, *Initializing*, *Listening*, *Master*, *Passive*, *Uncalibrated*, *Slave*
  - `GevTimestampValue` is no longer reset by turning off PTP
  - Acquisition is no longer stopped when changing `PtpMode`
  - `PtpAcquisitionGateTime` now reset to zero when `PtpMode` is set to *OFF*
  - `EventPtpSyncLost` now sent when `PtpMode` changed
  - PTP synchronization drift lessened

Limitations

`ReverseY` applies any Region of Interest first, then flips image. This not the correct order. Image flip should be applied first, then the Region of Interest.

Firmware version: 01.52.11715

Release date: 2014-Dec-04

Supported models

Camera family	Model series	Firmware version
Mako G	G-032, G-125	01.52.11715

Resolved issues

Removed a possible issue that prevents saving a permanent IP address in some cases.

Firmware version: 01.52.7068

Release date: 2013-Sep-20

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1290, GT1380	01.52.7068

New features and enhancements

- Added Look-up Tables to Prosilica GT1290, GT1290C, GT1380, and GT1380C

Firmware version: 01.44.8549

Release date: 2013-Sep-20

Supported models

Camera family	Model series	Firmware version
Manta	G-145, G-145B-NIR, G-145B-30	01.44.8549

New features and enhancements

- Added X-Mirror feature to Manta G-145B, G-145B-30, and G-145B-NIR

Resolved issues

- Reduced blooming effect (Manta G-145B and G-145C including 30 fps variants)
- Minimum exposure time increased from 38 μs to 43 μs (Manta G-145B and G-145C)
- Minimum exposure time increased from 37 μs to 38 μs (Manta G-145B and G-145C 30fps variants only)
- Sensor Y-size changed from 1390 to 1388 (Manta G-145B and G-145C including 30 fps variants)
- BayerGR12Packed pixel format changed to BayerRG12Packed (Manta G-145C and G-145C-30)

Firmware version: 01.52.8151

Release date: 2013-Aug-23

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT2000, GT2050	01.52.8151
Manta	G-223, G-419	01.52.8151
Mako G	G-032, G-125, G-223, G-419	01.52.8151

New models

- Initial commercial release Mako G-032B, G-032C, G-125B, G-125C, G-223B, G-223C, G-419B, G-419B-NIR, and G-419C models
- Initial commercial release for Manta G-419B, G-419B NIR, and G-419C models

New features and enhancements

- Enhanced factory sensor calibration of the Prosilica GT2000, GT2050, and Manta G-223
- New maximum gain of 26 dB for Prosilica GT2000, GT2050, and Manta G-223

Limitations

Camera firmware shows the minimum exposure values without frame overhead time for Prosilica GT2000 and GT2050 series models, that is, 1 µs. See sensor data sheet for details on frame overhead time.

Firmware version: 01.52.7114

Release date: 2013-May-23

Supported models

Camera family	Model series	Firmware version
Manta	G-917	01.52.7114

Resolved issues

Optimized tap balance

Firmware version: 01.52.7068

Release date: 2013-May-21

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT2000, GT2050, GT3400, GT4905, GT4907, GT6600	01.52.7068

New models

Initial commercial release for supported models

New features and enhancements

Added three Look-up Tables

Firmware version: 01.52.00

Release date: 2013-Mar-27

Supported models

Camera family	Model series	Firmware version
Manta	G-223, G-282, G-283, G-609, G-917	01.52.00

New models

Initial commercial release for supported models

New Manta platform

- New hardware to support larger multi-tap sensors. Differences from previously released Manta models:
  - Larger 128 MB image buffer
  - Different LED behavior. See the Manta Technical Manual: www.alliedvision.com/en/support/technical-documentation/manta-documentation.html
  - IEEE 1588-2008 Precision Time Protocol
  - `DeviceTemperatureSelector` = *Sensor*
  - Gamma correction enhanced to support values [0.25 to 4]
  - Reduced the number of `UserSets` to 3

Limitations

- Look-up Tables on Manta G-223B and G-223C are currently limited to 10-bit. Future maintenance release will bring this to 12-bit.
- `EdgeFilter` is not currently supported
- Manta G-223B and G-223C do not support binning (this is not a sensor feature).

Firmware version: 01.50.02

Release date: 2013-Jan-28

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1660, GT1910, GT2300, GT3300	01.50.02

Resolved issues

Prosilica GT cameras with ON Semiconductor CCD sensors dropping packets on multiple camera systems.

Firmware version: 01.50.01

Release date: 2013-Jan-04

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC650, GC655, GC660, GC780, GC1020, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.50.01
Prosilica GT	GT1290, GT1380, GT1600, GT1660, GT1910, GT1920, GT2300, GT2450, GT2750, GT3300	01.50.01

New features and enhancements

- `FrameTriggerReady` event
- `DeviceTemperatureSelector` = *Sensor* [**PvAPI**: `DeviceTemperatureSensor`] added for Prosilica GT series, except Prosilica GT2450 and GT2450C.

Resolved issues

- Camera maximum `ExposureTimeAbs` [**PvAPI**: `ExposureValue`] are now accurate. Previously, all cameras were listed as 60 seconds, but all cameras did not achieve this. See the camera Technical Manual for new maximum values.
- `FrameTrigger` signal removed from `SyncOutSource` [**PvAPI**: `SyncOutMode`]. Signal was too short to be seen on camera outputs
- `DSPSubregionBottom`, `DSPSubregionTop` upper limit changed from 4294967295 to sensor maximum height
- `DSPSubregionLeft`, `DSPSubregionRight` upper limit changed from 4294967295 to sensor maximum width
- Gamma correction is now properly saved or loaded in `SavedUserSets` [**PvAPI**: `ConfigFile`]

Limitations

- `EdgeFilter` does not work, feature removed
- RGB48 `PixelFormat` does not work, feature removed

Firmware version: 01.50.00

Release date: 2012-Jun-01

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC650, GC655, GC660, GC780, GC1020, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.50.00
Prosilica GT	GT1290, GT1380, GT1600, GT1660, GT1910, GT1920, GT2300, GT2450, GT2750, GT3300	01.50.00

New models

Initial commercial release of Prosilica GT1660 and GT1660C models

New features and enhancements

IEEE 1588-2008 Precision Time Protocol synchronization added to Prosilica GC models

Firmware version: 01.48.02

Release date: 2012-Apr-04

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1290, GT1380, GT1600, GT1910, GT1920, GT2300, GT2450, GT2750, GT3300	01.48.02

Resolved issues

`LensDCIris` was not driving some DC-lenses properly

Firmware version: 01.48.01

Release date: 2012-Feb-20

Supported models

Camera family	Model series	Firmware version
Prosilica GT	GT1290, GT1380, GT1600, GT1910, GT1920, GT2300, GT2450, GT2750, GT3300	01.48.01

New models

Initial commercial release of Prosilica GT series

New features and enhancements

- IEEE 1588-2008 Precision Time Protocol synchronization
- `LensDCIris` control
- `LensPIris` control
- `DeviceTemperature` [**PvAPI**: `DeviceTemperatureMainboard`] monitoring

Firmware version: 01.44.7913

Release date: 2013-Jul-22

Supported models

Camera family	Model series	Firmware version
Manta	G-095	01.44.7913

Resolved issues

Imaging artifact on Manta G-095B and G-095C observed at-20 °Celsius to +5 °Celsius ambient.

Firmware end of life

This is the last official firmware release for the Manta G-095B and G-095C models.

Firmware version: 01.44.09

Release date: 2013-Jan-18

Supported models

Camera family	Model series	Firmware version
Manta	G-031, G-032, G-033, G-046, G-095, G-125, G-145, G-145-30, G-146, G-201, G-201-30, G-504	01.44.09

Resolved issues

- `StreamBytesPerSecond` calculation issues for all Manta models

- LUTControl parameters (LUTEnable, LUTMode for example) are not saved in ConfigFile for all Manta models
- Gain or Offset affecting maximum gray level on Manta G-032B and G-032C

Firmware version: 01.44.08

Release date: 2012-Oct-26

Supported models

Camera family	Model series	Firmware version
Manta	G-032, G-095	01.44.08

Resolved issues

Improved production yield for Manta G-032B, G-032C, and G-095C

Firmware version: 01.44.04

Release date: 2012-Feb-13

Supported models

Camera family	Model series	Firmware version
Manta	G-031, G-032, G-033, G-046, G-095, G-125, G-145, G-145-30, G-146, G-201, G-201-30, G-504	01.44.04

Resolved issues

- TimestampValue between first and second frame was not correct
- Delay between first and second image in external triggered acquisition
- Influence of ExposureValue in ExposureMode = *External*

Other

- Feature renamed: BlackLevelValue to BlackLevel according to GenICam SFNC version 1.5
- Feature renamed: GainRaw to Gain according to GenICam SFNC version 1.5

Firmware version: 01.44.00

Release date: 2011-Jul-11

Supported models

Camera family	Model series	Firmware version
Manta	G-031, G-032, G-033, G-046, G-095, G-125, G-145, G-145-30, G-146, G-201, G-201-30, G-504	01.44.00

New models

Initial commercial release of Manta G-145B, G-145C, G-201B, and G-201C (including 30 fps variants)

New features and enhancements

- Added three 12-bit Look-up Tables
- Gamma correction default values: 0.45, 0.5, and 0.7
- `DecimationHorizontal` and `DecimationVertical` (sub-sampling) excluding Manta G-032B and G-032C
- Mono12Packed and Bayer12Packed
- `ChunkData`
- Event channel
- `SyncInGlitchFilter`
- Auto Iris (Video Type) support

Resolved issues

- Baud rate of serial port now configurable
- Manta G-032B, G-032C, G-125B, and G-125C first image defective
- Manta G-201B and G-201C picture optimization
- Manta G-032B and G-032C trigger error in external level trigger mode
- Varying image brightness in level and edge mode
- Exposure signal jitter in external trigger mode
- Manta G-145B and G-145C stop grabbing in free-run at exposure time 320 μs

Firmware releases at a glance

Firmware loader 01.42.05

Camera family	Model series	Firmware version	Release date
Prosilica GB	GB650, GB660, GB1380, GB2450	01.42.04	2011-Jun-01
Prosilica GC	GC650, GC655, GC660, GC780, GC1020, GC1290, GC1350, GC1350H, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.42.04	2011-Jun-01
Prosilica GE	GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.42.04	2011-Jun-01
Prosilica GX	GX1050, GX1660, GX1910, GX2300, GX3300	01.42.02	2011-Jan-17
Prosilica GX	GX1920, GX2750	01.42.05	2011-Dec-12
Prosilica GC	GC640, GC1280	01.36.00	2009-Mar-13
Prosilica GE	GE640	01.36.00	2009-Mar-13
Prosilica GC	GC750	01.30.00	2007-Dec-17
Note: Prosilica GS models use the Prosilica GB firmware version			

Table 2: Firmware releases at a glance (firmware loader 01.42.05)

Firmware version: 01.42.05

Release date: 2011-Dec-12

Supported models

Camera family	Model series	Firmware version
Prosilica GX	GX1920, GX2750	01.42.05

New models

Initial commercial release of Prosilica GX2750 models

Resolved issues

Prosilica GX1920 connection issue with National Instruments LabView

Firmware version: 01.42.04

Release date: 2011-Jun-01

Supported models

Camera family	Model series	Firmware version
Prosilica GB	GB650, GB660, GB1380, GB2450	01.42.04

Camera family	Model series	Firmware version
Prosilica GC	GC650, GC655,GC660, GC780, GC1020, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.42.04
Prosilica GE	GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.42.04

Firmware version: 01.42.03

Release date: 2011-Apr-19

Supported models

Camera family	Model series	Firmware version
Prosilica GB	GB650, GB660, GB1380, GB2450	01.42.03
Prosilica GC	GC650, GC655, GC660, GC780, GC1020, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.42.03
Prosilica GE	GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.42.03
Prosilica GX	GX1050, GX1660, GX1910, GX1920, GX2300, GX3300	01.42.03

New models

Initial commercial release of Prosilica GX1920 models

Firmware version: 01.42.02

Release date: 2011-Jan-17

Supported models

Camera family	Model series	Firmware version
Prosilica GB	GB650, GB660, GB1380, GB2450	01.42.02
Prosilica GC	GC650, GC655, GC660, GC780, GC1020, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.42.02
Prosilica GE	GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.42.02
Prosilica GX	GX1050, GX1660, GX1910, GX1920, GX2300, GX3300	01.42.02

Resolved issues

- `ChunkModeActive` added to Prosilica GB models
- Issue where firmware update from version 01.36 to 01.42.00 or 01.42.01 corrupts `SavedUserSets` if `UserSetDefaultSelector` = *Default* [**PvAPI**: `ConfigFilePowerUp` = *Factory*].
- `SyncIn1GlitchFilter` now defaults to 2000 on startup

Firmware version: 01.42.01

Release date: 2011-Jan-06

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.42.01

Resolved issues

Issue on Prosilica GE models where `BinningVertical` [**PvAPI**: `BinningY`] > 1 caused tap imbalance.

Firmware version: 01.42.00

Release date: 2010-Nov-10

Supported models

Camera family	Model series	Firmware version
Manta	G-031, G-032, G-033, G-046, G-095, G-125, G-145, G-146, G-201, G-504	01.42.00

Resolved issues

- Intermittent gaps within histogram
- Corrected minimum `ExposureValues`
- `SyncOut1` delay issue at short exposure times. Applicable to Manta G-032B and G-032C only

Firmware version: 01.42.00

Release date: 2010-Nov-02

Supported models

Camera family	Model series	Firmware version
Prosilica GB	GB650, GB660, GB1380, GB2450	01.42.00
Prosilica GC	GC650, GC655, GC660, GC780, GC1020, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.42.00
Prosilica GE	GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.42.00
Prosilica GX	GX1050, GX1660, GX1910, GX2300, GX3300	01.42.00

New features and enhancements

- `ChunkModeActive` added to Prosilica GC and GE models
- `EventControls` added to all camera models
- `StreamFrameRateConstrain`

- `TriggerOverlap`
  [**PvAPI**: `FrameStartTriggerOverlap`]
- `SyncInGlitchFilter`
- If using `ExposureMode` = *Auto*, and `GainMode` = *Auto* simultaneously, priority is given to changes in exposure until `ExposureAutoMax` is reached, at which point priority is given to changes in gain.
- RGB and YUV color modes added to Prosilica GC2450C, GB2450C, and GC1600CH

Firmware version: 01.40.00

Release date: 2010-Jun-15

Supported models

Camera family	Model series	Firmware version
Manta	G-031, G-032, G-033, G-046, G-095, G-125, G-145, G-146, G-201, G-504	01.40.00

Change log

Update of pre-series models from firmware version 01.38 to version 01.40

Firmware version: 01.40.00

Release date: 2010-Feb-23

Supported models

Camera family	Model series	Firmware version
Prosilica GX	GX1050, GX1660, GX1910, GX2300, GX3300	01.40.00

New features and enhancements

- `LensDrive` controls for 1, 2, 3 axis (iris, focus, zoom) lenses
- `DefectMaskColumnEnable`
- `ChunkModeActive`

Firmware version: 01.38.00

Release date: 2010-Feb-10

Supported models

Camera family	Model series	Firmware version
Prosilica GX	GX1050, GX1660, GX1910, GX2300, GX3300	01.38.00

New models

Initial commercial release of Prosilica GX series

New features and enhancements

`EventControls`

Firmware version: 01.36.00

Release date: 2009-Mar-13

Supported models

Camera family	Model series	Firmware version
Prosilica GB	GB650, GB660, GB1380, GB2450	01.36.00
Prosilica GC	GC640, GC650, GC655, GC660, GC780, GC1020, GC1280, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.36.00
Prosilica GE	GE640, GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.36.00

New models

Initial commercial release of Prosilica GC780 models

Resolved issues

- XML register `RegMemoryFileCmdExecute` changed from Read Only to Read/Write for Cognex compatibility.
- Issue where Prosilica GC1290 first exposure after `AcquisitionStart` was slightly darker than rest.

Firmware end of life

This is the last official firmware release for the Prosilica GC640, GC1280, and GE640 models.

Firmware version: 01.34.00

Release date: 2009-Jan-12

Supported models

Camera family	Model series	Firmware version
Prosilica GB	GB650, GB660, GB1380, GB2450	01.34.00
Prosilica GC	GC640, GC650, GC655, GC660, GC1020, GC1280, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.34.00
Prosilica GE	GE650, GE655, GE680, GE1050, GE1350, GE1380, GE1600, GE1650, GE1660, GE1900, GE1910, GE2040, GE4000, GE4900	01.34.00

New models

- Initial commercial release of Prosilica GB series
- Initial commercial release of Prosilica GE1660 and GE1910 models

Resolved issues

- DHCP now works when multiple DHCP servers are active

- **AcquisitonStart** now allowed while **AcquisitionStop** is in progress
- RGBA32 and BGRA32 work on all cameras

Firmware version: 01.32.00

Release date: 2008-Mar-28

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE680, GE1650, GE1900, GE2040	01.32.00

Resolved issues

Mono16 and Bayer16 image pixel format issue

Firmware version: 01.30.00

Release date: 2007-Dec-17

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC640, GC650, GC655, GC660, GC750, GC1020, GC1280, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.30.00
Prosilica GE	GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040, GE4000, GE4900	01.30.00

Resolved issues

Firmware version 01.28.00 flash erase issue

Firmware end of life

This is the last official firmware release for the Prosilica GC750 models.

Firmware version: 01.28.00

Release date: 2007-Dec-04

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC640, GC650, GC655, GC660, GC750, GC1020, GC1280, GC1290, GC1350, GC1380, GC1380H, GC1600, GC1600H, GC2450	01.28.00
Prosilica GE	GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040, GE4000, GE4900	01.28.00

New models

Initial commercial release of Prosilica GC660, GC1290, GC1600H, GC2450, and GC1280 models

New features and enhancements

- `SavedUserSets`
  [**PvAPI**: `ConfileFiles`]
- User Read/Write non-volatile `CameraName` (**PvAPI** only)

Resolved issues

- `StreamBytesPerSecond` now works at very low values
- `StreamHoldCapacity` correctly calculated

Firmware version: 01.26.00

Release date: 2007-May-30

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC640, GC650, GC655, GC750, GC1020, GC1350, GC1380, GC1380H, GC1600	01.26.00
Prosilica GE	GE640, GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040, GE4000, GE4900	01.26.00

New models

Initial commercial release of Prosilica GC750, GC1380H, GE4000, and GE4900 models

New features and enhancements

- Prosilica GC Iris controls added (auto iris for video-type iris lenses)
- `AcquisitionMode` = *SingleFrame*, *Multiframe*, *Recorder*
- `StreamBytesPerSecond BandwidthCtrlMode` added. Allows limiting camera bandwidth
- `StreamHoldCapacity`

Firmware end of life

This is the last official firmware release for the Prosilica GE640 models.

Firmware version: 01.24.00

Release date: 2006-Nov-30

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC640, GC650, GC655, GC1020, GC1350, GC1380, GC1600	01.24.00
Prosilica GE	GE640, GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040	01.24.00

New models

Initial commercial release of Prosilica GC655, GC1020, and GE655 models

Firmware version: 01.22.00

Release date: 2006-Sep-08

Supported models

Camera family	Model series	Firmware version
Prosilica GC	GC640, GC650, GC655, GC1020, GC1350, GC1380, GC1600	01.22.00
Prosilica GE	GE640, GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040	01.22.00

New models

Initial commercial release of Prosilica GC series

New features and enhancements

- `StreamHold`
- `SyncOutSource` = *GPO* with `SyncOutLevels`
  [**PvAPI**: `SyncOutGPOLevels`]

Firmware version: 01.20.00

Boot code update only

Firmware version: 01.18.00

Release date: 2006-Aug-02

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE640, GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040	01.18.00

New features and enhancements

- `DHCP`, `Auto-IP`, `Persistent-IP` addressing modes
- `PixelFormat` = *YUV411Packed*, *YUV422Packed*, *YUV444Packed*
  [**PvAPI**: *YUV411*, *YUV422*, *YUV444*]

Firmware version: 01.16.00

Release date: 2006-Jun-28

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE640, GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040	01.16.00

New models

Initial commercial release of Prosilica GE640 models

Firmware version: 01.14.00

Release date: 2006-Apr-12

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE650, GE655, GE680, GE1350, GE1380, GE1600, GE1650, GE1900, GE2040	01.14.00

New models

Initial commercial release of Prosilica GE655, GE680, GE1650, GE1900, and GE2040 models

New features and enhancements

- `ExposureAuto` = *Once*, *Continuous*
  [**PvAPI**: `ExposureMode` = *Auto*, *AutoOnce*]
- `BalanceWhiteAuto` = *Once*, *Continuous*
  [**PvAPI**: `WhitebalMode` = *Auto*, *AutoOnce*]

Firmware version: 01.08.00 to 01.12.00

Boot code update only

Firmware version: 01.06.00

Release date: 2006-Mar-08

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE650, GE1350, GE1380, GE1600	01.06.00

New models

Initial commercial release of Prosilica GE650C, GE1350C, GE1380C, and GE1600C color models

New features and enhancements

`PixelFormat` = *BayerRG8*, *BayerRG12*, *RGB8Packed*, *BGR8Packed*
[**PvAPI**: *Bayer8*, *Bayer16*, *RGB24*, *BGR24*]

Firmware version: 01.04.00

Release date: 2006-Feb-24

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE650, GE1350, GE1380, GE1600	01.04.00

New models

Initial commercial release of Prosilica GE1350 and GE1600 monochrome models

Firmware version: 01.02.00

Release date: 2006-Feb-13

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE650, GE1380	01.02.00

New features and enhancements

Serial RS232 communication

Firmware version: 01.00.00

Release date: 2006-Feb-03

Supported models

Camera family	Model series	Firmware version
Prosilica GE	GE650, GE1380	01.00.00

New models

Initial commercial release of Prosilica GE650 and GE1380 monochrome models

Acronyms and abbreviations

The following table provides a list of abbreviations used in this document.

Acronym or abbreviation	Description
CCD	Charge-coupled device
DHCP	Dynamic Host Control Protocol
FPGA	Field-programmable gate array
GVCP	GigE Vision Control Protocol
HDR	High-dynamic range
MB	Megabyte
NIR	Near-Infrared
PTP	Precision Time Protocol
SFNC	Standard Feature Naming Convention
ToE	Trigger over Ethernet

Additional references

Technical manuals and GigE Features Reference
www.alliedvision.com/en/support/technical-documentation

For technical support, please contact support@alliedvision.com.
For comments or suggestions regarding this document, please contact info@alliedvision.com

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