

1 Technical Background

The following listed equipment has been tested successfully with Baumer 10 GigE cameras, including fiber optical versions. The tested PC configurations, PCI Express boards as well as accessories performed within the specification without any limitations in the data transfer of cameras in the PC configuration.

2 Test platforms

2.1 Recommended Standard PC configuration for operation of Baumer 10 GigE cameras




Minimum recommended configuration	
CPU	Intel® Core™ i7-7820X @ 3.6 GHz, Cores: 4
RAM	2x 16 GB RAM (Dual Channel)
OS	Microsoft® Windows 7™ 64 bit systems incl. Service Pack 1 or higher Microsoft® Windows 10™ 64 bit systems incl. V1607 or higher Linux Kernel 4.7.x 32 / 64 bit systems
Network	Intel® Ethernet Converged Network Adapter X550-T2 (10 GigE Copper) DeLock 89475 PCI Express Board > 1 x SFP+ Slot 10 Gigabit LAN (10 GigE Fiber)
Graphic	Recommended resolution at least 1280 x 1024, color depth 32 bit

2.2 Tested Standard PCs



Test Equipment	Manufacturer / Reseller	Description	Function
PCDERAD0777	ASUS ROG STRIX X299-E GAMING	<ul style="list-style-type: none"> - Microsoft® Windows® 10™ Enterprise 64bit - Intel® Core i9-5820X, 3,3 GHz - BIOS American Megatrends Inc., Alaska 1072009, 1704 - RAM 32GB 	performance within specification without limitation

3 10-Gigabit Ethernet interface

3.1 PCI Express boards tested with Baumer 10 GigE cameras (RJ45/Copper)

	Manufacturer / Reseller	Type / Name	Description
	Intel®	X550-T2	<ul style="list-style-type: none"> - 2-port 10 GigE PCIe server adapter - RJ45 connector - Chipset: Intel® Ethernet Controller X550-AT2 - Jumbo Frames supported - Note: 4 lane connector is necessary in the PC - Baumer Art.-no.: 11190893
	IOI	GE10-PCIe4XG202	<ul style="list-style-type: none"> - 1-port 10 GigE PCIe host card - RJ45 connector - Chipset: Intel® Ethernet Controller X550-AT2 - Jumbo Frames supported - Note: 4 lane connector is necessary in the PC
	ASUS	XG-C 100C 10G	<ul style="list-style-type: none"> - 1-port 10 GigE PCIe host card - RJ45 connector - Chipset: Aquantia AQC107 - Jumbo Frames supported - Note: 4 lane connector is necessary in the PC

3.2 PCI Express boards tested with Baumer 10 GigE cameras (SFP+/Fiber)

	Manufacturer / Reseller	Type / Name	Description
	Intel®	X520-DA2	<ul style="list-style-type: none"> - 2-port 10 GigE PCIe server adapter - SFP+ connector - Chipset: Intel® 82599 10 Gigabit Ethernet Controller - Jumbo Frames supported - Note: 8 lane connector is necessary in the PC - Note: Only usable with SFP+ transceivers and direct attached cables with Intel® coding (e.g. Intel XDACBL10M)
	Delock	89475	<ul style="list-style-type: none"> - 1-port 10 GigE PCIe server adapter - SFP+ connector - Chipset: Tehuti TN4010 - 16k Jumbo Frames and Link Aggregation supported - Note: 4 lane connector is necessary in the PC - Baumer Art.-no.: 11700594

3.3 Framegrabber tested with Baumer 10 GigE cameras (SFP+/Fiber)

	Manufacturer / Reseller	Type / Name	Description
	Kaya Instruments	Komodo KY-FGK-10G	<ul style="list-style-type: none"> - 10 GigE Vision Fiber PCIe Board - 4x SFP+ connector, 1x QSFP connector - Typical power consumption 16.8 W (excluding camera and I/O power output) - Up to 144 Gb image buffer - Maximum stream packet size 8,192 bytes - Note: 8-lane connector is necessary in the PC

4 Tested 10 GigE Chip Sets


Note: Under some circumstances it can happen that some NIC's can't be ordered any more. The tests are based on below listed configurations between chip set and network card, other configurations have not been tested.

Manufacturer / Reseller	Type	Used Network Interface Card (NIC)	Interface	Tested Throughput*	Notes
Intel	Intel® X550-AT2	Intel X550-T1	PCIe (x4 Lane)	9,5 Gbit/sec	
		IOI GE10-PCIE4XG202	PCIe (x4 Lane)	9,34 Gbit/sec	
	Intel® 82599	X520-DA2	PCIe (x8 Lane)	9,7 Gbit/sec	Only usable with SFP+ transceivers and direct attached cables with Intel® coding (e.g. Intel XDACBL10M)
Tehuti	TN4010	DeLock 89475	PCIe (x4 Lane)	9,3 Gbit/sec	




*) tested throughput by Baumer, the maximum throughput can be higher

5 10 GigE accessories

5.1 Network Components



	Manufacturer / Reseller	Description
	Netgear ProSafe XS712T	<ul style="list-style-type: none"> - 14 Ports (12 x 10 GigE Copper, 2 x SFP+ Fiber) - Switching capacity: Non-Blocking - Max. supported Jumbo Frames: 9Kbyte - Flow control - Smart managed switch - Buffer memory: 2 MB - Power consumption 98,2 W - Energy Efficient Ethernet (IEEE 802.3az) (deactivated by default)


5.2 SFP+ Modules / Transceiver

	Manufacturer / Reseller	Description
	FS	<ul style="list-style-type: none"> - SFP+ module type: Multi Mode Fiber - SFP-10GSR-85 - max. cable distance 300 m via OM3 multi mode fiber - wavelength 850 nm - Baumer Art.-no.: 11700593
		<ul style="list-style-type: none"> - SFP+ module type: Single Mode Fiber - SFP-10GLR-31 - max. cable distance 10 km - wavelength 1310 nm - Baumer Art.-no.: 11700592
	Hisense	<ul style="list-style-type: none"> - SFP+ module type: Single Mode Fiber - LTF1305-BH+ - max. cable distance 10 km - wavelength 1310 nm

5.3 10 GigE Cables


5.3.1 10 GigE cables for x-coded M12 connector to standard RJ45 connector

	Manufacturer / Reseller	Description	Baumer Article-No.	Cable Length
	Baumer	<ul style="list-style-type: none"> - 10 GigE (Cat6a) - M12/x-coded connector to RJ45 connector - Drag-chain suitable, high flex 	11185139	2 m
			11195760	5 m
			11195761	10 m
			11195762	15 m
			11196995	20 m
			11185190	30 m
	Baumer	<ul style="list-style-type: none"> - 10 GigE (Cat6a) - 90° angled M12/x-coded connector to RJ45 connector - Positively tested up to 60 m 	11195123	5 m
			11195122	10 m
	Baumer	<ul style="list-style-type: none"> - 10 GigE (Cat6a) 	11101979	5 m
			11117630	10 m

		- M12/x-coded connector to RJ45 connector	11117632	15 m
			11117633	20 m
10 GigE requires CAT7 cables. While CAT7 cable material exists, there is not, yet, a CAT7 connector available in the market. For this reason the cables reach CAT6a. The cables mentioned above can be used for 10 GigE interface.				

5.3.2 10 GigE cables for SFP+ slot to SFP+

	Manufacturer / Reseller	Description	Baumer Article-No.	Cable Length
	Alysium-Tech	- 10 GigE fiber cable, direct attached - SFP+ - SFP+ connector - Juniper Coding	11214518	10 m
		- 10 GigE fiber cable, direct attached - SFP+ - SFP+ connector - Suitable for robotic applications - Juniper Coding	11214517	10 m
	Harting	- 10 GigE fiber patch cable - IP67 protection (in combination with Housing Cable Adapter SFP+/IP67 11213914), high robustness crush resistance 2100 N/cm - Tested up to 30 m	11213911	20 m
	FS	- 10 GigE active copper cable, direct attached, Cisco Coding - SFP+ - SFP+ connector - SFPP-AC05	11700591	5 m
		- 10 GigE fiber, direct attached cable, Cisco Coding - SFP+ - SFP+ connector - SFPP-AO03		3 m
		- 10 GigE active copper cable, direct attached, Cisco Coding - SFP+ - SFP+ connector - SFP-10G-DAC		7 m
		- 10 GigE active copper cable, direct attached, Intel Coding - SFP+ - SFP+ connector - Intel XDACBL10M		10 m
		- Single mode patch cable, yellow - SM-FULC-DX-PVC-5M		5 m

	<ul style="list-style-type: none"> - Multi mode patch cable, blue - OM4-FULC-DX-PVC-5M 		5 m
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6 Related Topics

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7 Downloads

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8 Support

In the case of any questions or for troubleshooting please contact our support team.

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