ZEBRA
CAPTURE YOUR EDGE

Zebra **Iris GTX**

Enhanced smart camera for machine vision at the edge

Overview

Machine vision and deep learning edge IoT device

Zebra® Iris GTX is the next evolution of smart cameras from Zebra Technologies. Offering faster, higher-resolution sensors and substantially more processing power than its immediate predecessor, Zebra Iris GTX provides exceptional performance for a compact all-in-one vision system. Paired with flowchart-based Zebra Aurora Design Assistant® software (formerly known as Matrox Design Assistant) allows engineers and technicians can quickly configure and deploy machine vision applications directly to the Zebra Iris GTX smart cameras. Video capture, analysis, classification, location, measurement, reading, verification, communication, and I/O operations—as well as a web-based operator interface—are all set up within the same software. Zebra Iris GTX smart cameras are model edge IoT devices, performing data acquisition and analytics, and providing results nearest to the manufacturing process requiring guidance or inspection, thus ensuring consistent, timely response and action.

An Intel® Atom® x6000 series embedded processor allows the use of faster, higher-resolution image sensors that together deliver new levels of performance to the Zebra Iris GTX. The efficient processor enables the Zebra Iris GTX smart cameras to handle both traditional machine vision workloads as well as deep learning inference. These smart cameras also offer real-time digital I/Os for interfacing directly to automation devices. They provide GigE and USB ports, and a VGA video output to enable full integration within an automation cell or machine.

Compact footprint for harsh industrial spaces

Zebra Iris GTX smart cameras are designed for challenging environments. Boasting the same small footprint and cabling connections as its immediate predecessor, the Zebra Iris GTX smart cameras features a sturdy IP67-rated housing and robust M12 connectors for its external interfaces, allowing them to operate in dusty, wet, and other demanding conditions. These smart cameras accept standard C-mount lenses within a dust- and liquid-proof protective cap. Contained within this cap is an interface to a Corning® Varioptic® C-C-Series auto-focus lens for focus adjustment from within on-device software. Zebra Iris GTX also feature an LED lighting intensity control output—compatible with Advanced illumination Inline Control System (ICS) 3 lighting control and Smart Vision Lights brick spot lights—for direct adjustments within the on-device software. The ability to adjust the lens focus and control illumination intensity directly from within on-device software eliminates the need for manual intervention in hard-to-reach places.

Quick and reliable response

Zebra Iris GTX smart cameras offer real-time digital I/Os for interfacing directly to automation devices. Each digital I/O on the Zebra Iris GTX is managed by a dedicated hardware engine for real-time performance. The real-time I/O engine enables an output event to occur at a precise moment in time, after a certain elapsed time, or following a specific input event. An input event can come directly from an input, including from an incremental rotary encoder or a count derived from an input. A programmed output event is stored in a hardware list, which is traversed based on a clock or an input event. The carrying out of an output event results in a state transition, pulse, or pulse train on a specific output. Multiple hardware timers, which can be cascaded together, are available to count or generate specific events.

Zebra Iris GTX also feature a hardware-assisted mechanism for PROFINET communication, ensuring timely response when the automation controller is set up for a short cycle time or when the processor is too busy performing other tasks.

Zebra Iris GTX at a glance

Boost performance by up to 3x over its precursor thanks to an Intel x6000 series embedded processor

Capture high-resolution images at high speed through a choice of CMOS sensors from two to 16 Megapixels

Deploy in dirty, humid, or harsh industrial environments by way of a compact IP67-rated design

Communicate actions and results to other automation and enterprise equipment via real-time digital I/Os, and Ethernet (TCP/IP, CC-Link IE Field Basic, EtherNet/IP™2, Modbus®, PROFINET®, and native robot interfaces)

Handle Human-Machine Interface (HMI) function by way of VGA and USB connectivity

Simplify vision setup and upkeep via integrated lens focusing and illumination intensity control

Synchronize to the manufacturing line through the support for incremental rotary encoders

Solve machine vision applications efficiently with Aurora Design Assistant by constructing flowcharts instead of writing program code

Maintain control and independence through the ability to code custom flowchart steps

Tackle machine vision applications with utmost confidence using field-proven tools for analyzing, locating, classifying, measuring, reading, and verifying

Leverage deep learning for visual inspection through image classification and segmentation tools

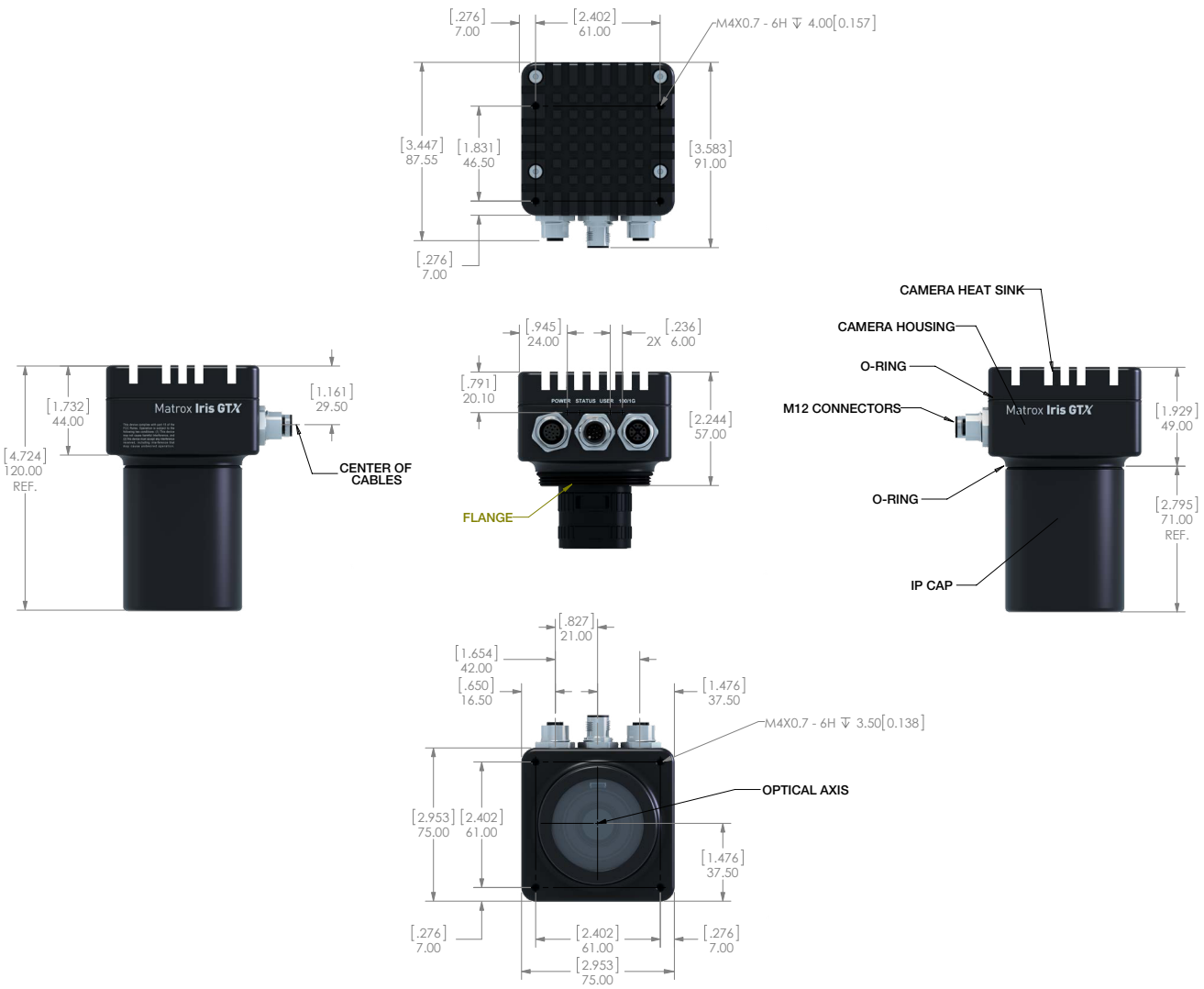
Software Environment

Flowchart-based vision software

Zebra Iris GTX smart cameras come ready for running applications developed using Aurora Design Assistant—an integrated development environment (IDE) for Microsoft® Windows®. Users can easily configure flowcharts to create machine vision applications, rather than write program code. The IDE also lets users design a graphical web-based operator interface for the application. The flowchart-based approach streamlines development to get applications up and running quickly. Refer to the Aurora Design Assistant datasheet for more information.

Dimensions

Zebra Iris GTX dimensions



Dimensions: (inches) millimeters

Specifications

Zebra Iris GTX										
Hardware										
Model	GTX 2000	GTX 2000C	GTX 5000	GTX 5000C	GTX 8000	GTX 8000C	GTX 12000	GTX 12000C	GTX 16000	GTX 16000C
Sensor model	XGS 2000		XGS 5000		XGS 8000		XGS 12000		XGS 16000	
Sensor type	CMOS									
Sensor geometry	1/1.25 in		2/3 in		1/1.1 in		1 in		1.1 in	
Format	Mono-chrome	Color	Mono-chrome	Color	Mono-chrome	Color	Mono-chrome	Color	Mono-chrome	Color
Resolution	1920 x 1200		2592 x 2048		4096 x 2160		4096 x 3072		4000 x 4000	
Frame rate (effective)	Up to 70 fps	Up to 17 fps	Up to 41.7 fps	Up to 10 fps	Up to 39.6 fps	Up to 10 fps	Up to 28 fps	Up to 7 fps	Up to 21.6 fps	Up to 5 fps
Pixel size	3.2 x 3.2 µm									
Gain range	1x to 11.875x (0 to 21.5 dB)									
Shutter speeds	50 µsec to 4.2 sec									
External trigger latency[3]	55 µsec	192 µsec	55 µsec	192 µsec	55µsec	192 µsec	55 µsec	192 µsec	55 µsec	192 µsec
External strobe latency[4]	57 µsec	194 µsec	57 µsec	194 µsec	57 µse	194 µsec	57 µsec	194 µsec	57 µsec	194 µsec
Processor	Intel Atom x6211E with two cores and 1.3 GHz base (3.0 GHz burst) frequency									
Memory	4 GB LPDDR4/x									
Storage	32 GB eMMC									
Network	Gigabit Ethernet									
HMI	VGA									
	USB 2.0 (for keyboard and mouse)									
Others	Dedicated 0 V-10 V LED lighting intensity control for Advanced illumination ICS 3 or Smart Vision Lights brick spot light Note: See Third-party Accessories for more details.									
	Dedicated interface for Corning Varioptic C-C Series auto-focus lens Note: See Third-party Accessories for more details.									
Digital I/Os	Three (3) opto-coupled inputs (with incremental rotary encoder support)									
	One (1) dedicated opto-coupled trigger input									
	Three (3) opto-coupled trigger outputs									
Connectors	M12-X 8-pin (female) for Gigabit Ethernet									
	M12-A 12-pin (female) for power, digital I/Os, and LED lighting intensity control									
	M12-A 12-pin (male) for VGA and USB 2.0									
Power consumption	15 W (625 mA @24 VDC)									
Dimensions	75 x 57 x 75 mm (2.95 x 2.24 x 2.95 in) lens Note: Refer to Dimensions diagram for more details.									
Weight	504 g with lens cover, 407 g without lens cover									
Lens type	C-mount									
Operating temperature	0°C to 45°C (32°F to 113°F)									
Ventilation requirements	Natural convection									

Specifications (cont.)

Zebra Iris GTX	
Hardware	
Certifications	FCC Part 15 Class A, CE mark
	EN55011 Class A, EN61326-1 industrial environment
	ICES-003/NMB-003 Class A
	IEC 61010-1: 2010/AMD 1: 2016
	CAN/CSA-C22.2 No. 61010-1-12,UPD1: 2015, UPD2: 2016, AMD1:2018
	UL 61010-1, 3rd edition (2012), AMD1:2018
	RCM Class A: IP67 enclosure (IEC 60529: dust-tight and protected against temporary immersion)

Ordering Information

Part number	Description
Hardware	
GTX2000 or GTX2000+	Zebra Iris GTX smart camera with monochrome 1920x1200 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX2000C or GTX2000C+	Zebra Iris GTX smart camera with color 1920x1200 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX5000 or GTX5000+	Zebra Iris GTX smart camera with monochrome 2592x2048 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX5000C or GTX5000C+	Zebra Iris GTX smart camera with color 2592x2048 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX8000 or GTX8000+	Zebra Iris GTX smart camera with monochrome 4096x2160 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX8000C or GTX8000C+	Zebra Iris GTX smart camera with color 4096x2160 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX12000 or GTX12000+	Zebra Iris GTX smart camera with monochrome 4096x3072 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX12000C or GTX12000C+	Zebra Iris GTX smart camera with color 4096x3072 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX16000 or GTX16000+	Zebra Iris GTX smart camera with monochrome 4000x4000 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
GTX16000C or GTX16000C+	Zebra Iris GTX smart camera with color 4000x4000 sensor, dual-core Intel Atom CPU, 4 GB of memory, 32 GB eMMC storage.
Accessories	
GTX-STRKIT	Zebra Iris GTX starter kit for 2 and 5 MP models. Includes power supply, 16 mm C-mount lens, Ethernet cable, power cable, VGA/USB cable, and breakout box for digital I/Os.
GTX-STRKIT2	Zebra Iris GTX starter kit for 8, 12, and 16 MP models. Includes power supply, 16 mm C-mount lens, Ethernet cable, power cable, VGA/USB cable, and breakout box for digital I/Os.
M12-CBL-PWRIO/3	9.8 ft (3 m) cable for Zebra Iris GTX to connect power, discrete I/Os, and LED lighting intensity control. M12 to open end.
M12-CBL-ETH/5	16.4 ft (5 m) Ethernet cable for Zebra Iris GTX. M12 to RJ45 connector.
M12-CBLVGAUSB	3.2 ft (1 m) cable for Zebra Iris GTX to connect VGA and USB. M12 to HD-15 and USB connectors.
IO-BREAKOUT-BOX	Zebra I/O Breakout Box for digital I/O and power connector for Zebra Iris GTX.
IO-BOB-AC	60 W AC/DC power adapter for the Zebra I/O Breakout Box.

Ordering Information (cont.)

Part number	Description
Software	
Aurora Design Assistant Development Package and Run-Time License Software Keys	
Included with GTX2000(C), GTX5000(C), GTX8000(C), GTX12000(C) and GTX16000(C)	Separate installation media with the Aurora Design Assistant IDE and on-line documentation as well as a Aurora Design Assistant Maintenance registration number. Allow the Aurora Design Assistant IDE to run when it is connected to them. Pre-loaded with the Aurora Design Assistant run-time environment and are licensed for the Aurora Design Assistant Machine Vision, Identification, Image Compression, Metrology, Color Analysis (GTX...C models only), and Industrial and Robot Communications run-time packages. The String Reader and SureDotOCR®, Geometric Model Finder, Registration and Classification run-time packages need to be licensed separately. See Aurora Design Assistant Run-Time Licenses section for details. Training a Classification context using Aurora Imaging Library CoPilot also requires DAXDEVU.
Included with GTX2000(C)+, GTX5000(C)+, GTX8000(C)+, GTX12000(C)+ and GTX16000(C)+	Separate installation media with the Aurora Design Assistant IDE and on-line documentation as well as a Aurora Design Assistant Maintenance registration number. Allows the Aurora Design Assistant IDE to run when it is connected to them. Pre-loaded with the Aurora Design Assistant run-time environment and licensed for all Aurora Design Assistant packages. Training a Classification context using Aurora Imaging Library CoPilot also requires DAXDEVU.
Aurora Design Assistant Maintenance Program	
DAMAINTENANCE	One-year extension to the Aurora Design Assistant maintenance program per developer. Note: 50% educational discount for DAMAINTENANCE with proof of affiliation with an academic institution. Included in the original purchase price of the Aurora Design Assistant development package, registered users are entitled to one year of technical support, access to updates, and Vision Academy online training website.
Vision Academy Online Training	
Included with Aurora Design Assistant Maintenance Program	Vision Academy Online provides a range of categorized instructional videos on how to use the software to create applications. Vision Academy Online is available to customers with current Aurora Design Assistant maintenance subscriptions, as well as those evaluating the software. Visit www.matrox.com/imaging/en/vision_academy/ for more information.
Vision Academy On-Premises Training	
DATRAIN *Ask for availability.*	*Introduction to Aurora Design Assistant*: Three-day instructor-led training on developing machine vision applications using the Aurora Design Assistant IDE. *Key topics*: Developing a vision or inspection system using flowcharts instead of coding; setting up an operator view; choosing analysis and processing tools; interfacing to automation controllers. Visit https://imaging.matrox.com/en/products/services/vision-academy/training/on-premises for more information.

Third-Party Accessories

Supplier	Description
Optics	
Corning Varioptic	C-Series C-39N0-160-I2C: Variable focus 16 mm effective focal length (EFL) liquid lens with I2C control
Corning Varioptic	C-Series C-390N0-250-I2C: Variable focus 25 mm EFL liquid lens with I2C control
Illumination	
Advanced illumination	ICS 3 Inline Control System: Continuous and strobe mode inline controller
Buechner	Rondo-LX IP67: Ring light with mechanical adapter
Smart Vision Lights	EZ Mount Ring Light: Ring light with built-in driver
Smart Vision Lights	Mini Ring Light: Ring light with built-in driver
Cables	
Components Express	MI-1-X-L0-XXM: M12 X-Code Gigabit Ethernet cable, straight
Components Express	MI-1-X-L2-XXM: M12 X-Code Gigabit Ethernet cable, right angle
Components Express	MI-K0-X-L0-XXM: M12 X-Code to industrial Ethernet cable
Components Express	GTR-VGA-USB: VGA/USB I/O breakout cable (contact CEI for application and configuration details)
Components Express	GTR-LTYCBL: Light breakout cable (contact CEI for application and configuration details)
Components Express	GTR-YCBL: Power breakout cable for camera and light (contact CEI for application and configuration details)
Phoenix Contact	SAC-12P-MS/5,0-PVC SCO: 5 m cable to connect power, discrete I/Os, and LED lighting intensity control. M12 to open end
Phoenix Contact	SAC-12P-MS/10,0-PVC SCO: 10 m cable to connect power, discrete I/Os, and LED lighting intensity control. M12 to open end
Phoenix Contact	NBC-MSX/2,0-94F/R4AC SCO: 2 m Ethernet cable. M12 to RJ45 connector
Phoenix Contact	NBC-MSX/10,0-94F/R4AC SCO: 10 m Ethernet cable. M12 to RJ45 connector
Light Brackets	
Components Express	E-GTR-LB: Iris GTR flip-light bracket with light plate
Components Express	EN-SL-A: Swivel link mount adapter, fits SLM-1 and ASFB-1
Lens Covers	
Components Express	EN-DC55-xx: 55 mm O.D., clear LP286 filter available in either 30 mm, 40 mm, 50 mm, 60 mm, 70 mm, 75 mm, 80 mm, 90 mm, or 100 mm lengths
Components Express	EN-DC55-55x: 55 mm O.D., LP286 filter of 55 mm length available in either clear, red, blue, orange, VIS Bandpass/UV/NIR Block, and Near IR Bandpass formats
Components Express	EN-DC55-25-XR: Lens cover extension ring
Components Express	GMLC-75-PW: Disposable protective window for EN-DC55 lens covers

Endnotes:
1. The software may be protected by one or more patents; see Patents for more information.
2. Certification pending.
3. From input rising edge to start of sensor integration
4. From input rising edge to active low strobe outpot (Mode 0).

NA and Corporate Headquarters
+1 800 423 0442
inquiry4@zebra.com

Asia-Pacific Headquarters
+65 6858 0722
contact.apac@zebra.com

EMEA Headquarters
zebra.com/locations
contact.emea@zebra.com

Latin America Headquarters
zebra.com/locations
la.contactme@zebra.com

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