

Zebra Iris GTX™

Installation and Technical Reference



ZEBRA

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Chapter

1

Before you begin

This chapter describes the features of your Zebra Iris GTX, lists the various smart camera models available, describes the software required to develop your imaging applications, outlines documentation conventions, provides an overview of this manual, and specifies where to find further support.

Introduction

Zebra Iris GTX combines the integration of a conventional smart camera with the flexibility of a traditional PC-based machine vision system. Zebra Iris GTX is a fully programmable device, allowing extensive customization. Zebra Iris GTX comes pre-installed with the Matrox Design Assistant runtime environment.

Matrox Design Assistant is an intuitive, flowchart-based, integrated development environment (IDE). System integrators and professional end-users can easily and quickly develop and deploy machine vision applications on a highly integrated platform without the need for traditional programming skills. The integrated development environment provides access to a comprehensive set of highly-efficient and field-proven image analysis and measurement tools.

Zebra Iris GTX features an Intel-architecture processor, and uses a global shutter CMOS image sensor from a range of monochrome and color options. The CMOS image sensor allows the exposure phase of a triggered grab to occur while the previous image is being transferred. The Intel-architecture processor is an Intel Atom x6211E processor. The 32-Gbyte eMMC (flash disk) provides in-camera (on-board) storage for both the operating system and additional data. 4 Gbytes of LPDDR4x SDRAM provides in-camera (on-board) volatile storage.



Zebra Iris GTX is fully integrated in an IP67 enclosure, eliminating the need to separately source a sealed camera housing, while still providing easy access to the lens.

Zebra Iris GTX can connect to a display device through the VGA/USB connector and it can communicate with other devices through the Gigabit Ethernet network interface (100/1000 BaseT) and digital auxiliary I/O signals. An advanced I/O engine is included to allow you to communicate and coordinate events using the auxiliary I/O signals (for example, to trigger and set the duration of the exposure).

The network interface can be used for general purpose, Gigabit network communication, or for communication with external devices using the PROFINET, EtherNet/IP, CCLink, or Modbus industrial protocols. For PROFINET communication on the network interface, Zebra Iris GTX provides a PROFINET engine with a hardware-assisted PROFINET interface. The hardware-assisted interface supports a minimum I/O cycle time of 1 msec.

Models available

There are ten models available in the Zebra Iris GTX family of products.

Zebra Iris GTX feature	GTX2000	GTX2000C	GTX5000	GTX5000C	GTX8000	GTX8000C
Sensor chip type	1/2.2"-type		2/3"-type		1/1.1"-type	
Effective resolution	1920x1200		2592x2048		4096x2160	
Color / Monochrome	Monochrome	Color	Monochrome	Color	Monochrome	Color
Frame rate ^a	70.7 fps	17.6 fps	41.7 fps	10.4 fps	39.6 fps	9.9 fps

Zebra Iris GTX feature	GTX12000	GTX12000C	GTX16000	GTX16000C
Sensor chip type	1"-type		1.1"-type	
Effective resolution	4096x3072		4000x4000	
Color / Monochrome	Monochrome	Color	Monochrome	Color
Frame rate ^a	28 fps	7.0 fps	21.6 fps	5.4 fps

a. Frame rate is established solely upon rates of acquisition. Your results will differ when including processing time.

Color versions of this smart camera utilize a sensor with a Bayer color filter but store the images in BGR32 packed format, by default.

Software overview

Zebra Iris GTX can come packaged with Matrox Design Assistant or only with MIL.

The Zebra Iris GTX with Design Assistant is distributed with Matrox Design Assistant, a flowchart-based, integrated development environment (IDE). It allows you to create an imaging application without writing a single line of code. Application development is a step-by-step approach, where each step is taken from an existing toolbox and is configured through a series of dialog windows. Matrox Design Assistant runs on your development computer and uses the resources of your Zebra Iris GTX smart camera (for example, to grab an image and communicate with connected devices) to build projects. Once the project is built, it runs on your Zebra Iris GTX without relying on the resources of your development computer.

With Matrox Design Assistant, you can:

- Create your project as a series of steps using a flowchart.
- Test your project from your computer without any additional code editors or compilers and without deploying (copying and running) your project on your Zebra Iris GTX.
- Design and layout a web page (operator view) to receive operator input and to display your project's output.
- Run, terminate, and re-run the project on your Zebra Iris GTX from within Matrox Design Assistant.

Imaging projects can:

- Grab images from your Zebra Iris GTX or use images from disk.
- Analyze images using several industry-proven image analysis and measurement tools (for example, code reader and Geometric Model Finder tools). Blob and edge analysis is also supported, along with color matching, code recognition, character recognition, bead inspection, measurement, metrology, 3D reconstruction, and a number of additional processing and analysis features.

- Perform calibration for 2D images.
- Send and receive user-defined digital I/O signals (auxiliary I/O signals) controlled by software or by the timers in the Advanced I/O engine.
- Write image and text files (for example, CSV) locally or on network drives.
- Send and receive information and save images across the network using OPC-UA.
- Provide HMI user input and result display through configurable, web-accessible operator views.
- Send and receive information across the network using TCP/IP, Modbus, CCLink, EtherNet/IP, and PROFINET protocols.

MIL

MIL is a high-level programming library with an extensive set of optimized functions for image capture, processing, analysis, transfer, compression, display, and archiving. Image processing operations include point-to-point, statistical, spatial filtering, morphological, geometric transformation, and FFT operations. Analysis operations support camera calibration, are performed with sub-pixel accuracy, and include pattern recognition (normalized grayscale correlation and Geometric Model Finder), blob analysis, edge extraction and analysis, measurement, image registration, metrology, character recognition (template-based, and for both normal and dot-matrix text, feature-based using String Reader and SureDotOCR respectively), code recognition and grading (1D, 2D, and composite code types), bead inspection (continuous strip of material), 3D reconstruction, 3D processing, 3D analysis, classification, and color analysis.

MIL applications are easily ported to new Zebra hardware platforms and can be designed to take advantage of multi-processing and multi-threading environments.

MIL-Lite

MIL-Lite is a subset of MIL. It includes all the MIL functions for image acquisition, transfer, display control, and archiving. It also allows you to perform processing operations that are typically useful to pre-process grabbed images.

Inspecting your Zebra Iris GTX package

You should check the contents of your Zebra Iris GTX package when you first open it. If something is missing or damaged, contact your Zebra representative.

Zebra Iris GTX with Design Assistant base package

If you purchased the Zebra Iris GTX with Design Assistant base package, it includes the following:

- Zebra Iris GTX smart camera. This includes the Matrox Design Assistant runtime environment, the MIOS operating system, and some preloaded utilities (for example, Putty, FileZilla, and Virtual Network Computing). It also includes a run-time license for some common Matrox Design Assistant steps; for a detailed list of steps that are included, please visit our website: www.zebra.com/us/en/products/industrial-machine-vision-fixed-scanners.html
- IP lens case.
- VGA/USB connector cap.
- Liquid lens connector cap.
- Matrox Design Assistant installation files on a USB key.
- ❖ Note that your Zebra Iris GTX base package does not include any cables, a power supply, nor a manual iris lens. To purchase these items, contact a Zebra sales representative.

Zebra Iris GTX with MIL-only base package

If you purchased the Zebra Iris GTX with MIL-only package, it includes the following:

- Zebra Iris GTX smart camera, pre-installed with the Windows 10 IoT enterprise operating system, and a run-time license for MIL. The run-time license includes the industrial and robot communication module. This might change over time; contact your Zebra representative for more information. This license also allows for Distributed MIL configurations.
- IP lens case.

- VGA/USB connector cap.
 - Liquid lens connector cap.
 - Zebra Iris GTX Rescue Utility DVD (which includes a sticker with your Windows 10 IoT enterprise license).
 - System and Drivers Utilities DVD.
- ❖ Note that your Zebra Iris GTX base package does not include any cables, a power supply, or a manual iris lens. To purchase these items, contact a Zebra sales representative.

Zebra Iris GTX starter kit

There are two versions of the Zebra Iris GTX starter kit. The GTX-STARTER-KIT is meant for use with all Zebra Iris GTX smart cameras with sensors less than 5 Mpixels; these kits include a standard sized lens. The GTX5000-STR-KIT is meant for use only with the Zebra Iris GTX 5000 series of smart cameras (which have a 5 Mpixel sensor); this kit includes a slightly larger lens. Both Zebra Iris GTX starter kits include the following:

- External power supply.
- M12-CBL-ETH/5, a 100/1000 BaseT Ethernet cable with an M12 8-pin (male) X-coded connector on one end and an RJ-45 registered jack on the other. This cable connects your Zebra Iris GTX to another computer or a network.
- M12-CBL-PWR/3, a Digital I/O and power cable with an M12 12-pin (male) connector on one end and open ended wires on the other. This cable connects your Zebra Iris GTX to power and third-party digital I/O devices.
- GTR-CBL-VGAUSB, a VGA/USB cable with an M12 12-pin (female) connector on one end and a HD-15 (female) connector and a USB connector on the other end. This cable connects your Zebra Iris GTX to a display device and a USB device (such as, a keyboard or mouse).
- One C-mount lens.

- Zebra I/O Breakout Box. This device contains several wire terminal blocks, switches, and push buttons. It is designed to provide a means to connect third-party devices to your Zebra Iris GTX in a development environment or on the production floor.

**Handling
precautions**

The lens of Zebra Iris GTX is a sensitive device. It should never be touched directly. Always cover the lens if the smart camera is not in use to reduce dust buildup. If dust accumulates on the lens, use either a can of compressed air or a lens cloth to remove the dust.

Available separately

The following items are available separately.

- Zebra I/O Breakout Box. This open enclosed-board contains several wire terminal blocks, switches, and push buttons. It is designed to provide a means to connect third-party devices to your Zebra Iris GTX in a development environment or production floor.
- M12-CBL-PWR/3, an open-wire digital I/O and power cable. On one end is an M12 12-pin (male) connector. The other end consists of 12 separately-colored wires. This cable is meant to connect your Zebra Iris GTX to your Zebra I/O Breakout Box, or to obtain power and to connect with third-party digital I/O devices. For more details about this cable, refer to the *Digital I/O and power connector* subsection of the *Zebra Iris GTX connectors* section, in *Appendix B: Technical reference*.
- M12-CBL-ETH/5, a 100/1000 BaseT Ethernet cable with an M12 8-pin (male) X-coded connector on one end and an RJ-45 registered jack on the other. For more details about this cable, refer to the *100/1000 BaseT Ethernet connector* subsection of the *Zebra Iris GTX connectors* section, in *Appendix B: Technical reference*. This cable is meant to connect your Zebra Iris GTX to another computer or network device.
- GTR-CBL-VGAUSB, a VGA and USB cable with an M12 12-pin (female) connector on one end and a HD-15 (female) connector and a USB connector on the other end. For more details about this cable, refer to *VGA/USB connector* subsection of the *Zebra Iris GTX connectors* section, in *Appendix B: Technical reference*. This cable is meant to connect your Zebra Iris GTX to a display device and a USB device (such as, a keyboard or mouse).

Third-party supported devices

The following items are available from third-party suppliers. Your Zebra Iris GTX was designed to work with them, but they are optional.

- Light controllers (such as, the Advanced Illumination inline control system or the Smart Vision Lights brick light). These can be used to control your strobe (or light). Your Zebra Iris GTX provides a signal to control the connected light's intensity. For information, refer to *Digital I/O and power connector* subsection of the *Zebra Iris GTX connectors* section, in *Appendix B: Technical reference*.
- Varioptic Caspian C-39N0-160-I2C or C-39N0-250-I2C lens (liquid lens). This lens is available from Varioptic and fits inside your Zebra Iris GTX's IP lens case for IP67 compatibility. For more details about how to connect this lens, refer to *Optionally connecting a liquid lens* section, in *Chapter 2: Powering and connecting to your Zebra Iris GTX*.

Documentation conventions

Your Zebra Iris GTX is a network-aware device. The terminology used throughout this document mirrors that of local area networks (LANs).

In this document, any computer that can communicate with your Zebra Iris GTX is referred to as “your computer”. If you use your computer to develop your applications for your Zebra Iris GTX, it is referred to as your development computer.

The procedure to select a menu item from a submenu uses a simplified format. For example, the following procedure:

Select the **Edit** menu item from the main menu, and then select the **Copy** menu command from the presented submenu.

will be replaced by:

Select the **Edit Copy** menu item.

Zebra Iris GTX safety warnings and key to symbols

Before connecting to and using your Zebra Iris GTX, you should be aware of the meaning of the symbols on the smart camera and the important safety precautions. The following is a list of precautionary symbols on Zebra Iris GTX and their meaning.

Symbol ^a	Description
	<p>The case of your Zebra Iris GTX can become quite hot and should not be touched while operating. Always allow hot surfaces to cool down before touching your Zebra Iris GTX.</p>
	<ul style="list-style-type: none"> • Caution: Consult this manual^b before connecting to and using Zebra Iris GTX. For hardware connection instructions, refer to <i>Chapter 2: Powering and connecting to your Zebra Iris GTX</i>; for environmental and electrical specifications and connector pinout descriptions, refer to <i>Appendix B: Technical reference</i>. <p>This product must be used as specified; otherwise, the protection provided by its components might be compromised.</p> <ul style="list-style-type: none"> • Refer to the Electrical specifications section, in <i>Appendix B: Technical reference</i> of this manual, for voltages and current ratings. • There are no serviceable parts inside this product. In case of defect, contact your Zebra representative. • To maintain IP67 conformity, all unused connectors on your Zebra Iris GTX must be capped and the IP case must be screwed firmly into place. • This product meets the requirements of a Category 1 installation as per industry standards^c. • This product is designed for use in a pollution degree 2 environment as per industry standards^c. • This product is designed for indoor use only. • This product is designed to operate at temperatures ranging from 0°C to 45°C at a non-condensing relative humidity maximum of 99%. • This product is not intended for use at altitudes exceeding 2000 m.
	<p>DC current only. Your Zebra Iris GTX can only be powered using a 24 V DC power source.</p>

a. Note that these symbols might not necessarily be the same color as depicted.

b. Manual available on the Zebra website at www.zebra.com/us/en/products/industrial-machine-vision-fixed-scanners.html

c. As per CAN/CSA-C22.2 No 61010-1-12, UL std. No 61010-1 (3rd edition), and EN Std. No. 61010-1 (3rd Edition)

Manual overview

This manual provides all the information required to power, connect, and configure your Zebra Iris GTX to develop and deploy imaging applications.

For information on powering your Zebra Iris GTX, reading the LEDs, connecting your smart camera to your network, and connecting to it remotely, and connecting it to third-party devices, refer to *Chapter 2: Powering and connecting to your Zebra Iris GTX*.

For a summary of the key features of Zebra Iris GTX, and pinout descriptions for external connectors of your Zebra Iris GTX, refer to *Appendix B: Technical reference*.

If you have a Zebra Iris GTX with Design Assistant, to use the various utilities and to recover the Matrox Imaging operating system (MIOS) on a Zebra Iris GTX, refer to *Appendix C: Matrox Imaging operating system utilities and recovery*.

Need help?

If you experience problems during installation or while using this product, you can refer to the support page on the Zebra website:

<https://supportcommunity.zebra.com/s/contactsupport?brand=matrox>. The support page provides information on how to contact technical support.

To request support, you should first complete and submit the online Technical Support Request Form, accessible from the above-mentioned web page. Once you have submitted the information, a support agent will contact you shortly thereafter by email or phone, depending on the problem.

Vision Academy

The Vision Academy online training resource is also available to help customers visualize the steps involved in using various products. Specialized Vision Academy videos provide guidance on basic and advanced steps used in working with Zebra Iris GTX. For access to these videos, visit the Zebra website.

Chapter

2

Powering and connecting to your Zebra Iris GTX

This chapter guides you through powering your Zebra Iris GTX, connecting it to another device, and reading the LEDs.

Powering and connecting to your Zebra Iris GTX

The Zebra Iris GTX has the following interfaces (from left to right):



- **Digital I/O and power connector.** Used to receive power from an external power source. The connector can also receive trigger input and send/receive digital auxiliary I/O signals to/from third-party I/O devices. In addition, the connector has a specialized analog intensity (dimming) control signal intended to be used with a lighting device (such as, an Advanced Illumination inline control system (ICS3), a Smart Vision Lights Brick light, or a similar device).
- **VGA/USB connector.** Provides connectivity between your Zebra Iris GTX and a display device and/or a USB device (such as a keyboard or a mouse).
- **100/1000 BaseT Ethernet connector.** Provides connectivity between your Zebra Iris GTX and your computer or your network. Zebra Iris GTX can gain access to a LAN via Gbit Ethernet (GigE, 1G BaseT, or 1000BaseT), fast Ethernet (100BaseT), or twisted pair Ethernet (10BaseT). This interface can also be used for communication with external devices using the PROFINET, EtherNet I/P, CCLink, or Modbus protocol. For PROFINET, the interface operates as a hardware-assisted PROFINET interface. The LAN connection associated with the hardware-assisted PROFINET interface can be shared with other traffic.

- **Liquid lens connector** (not depicted). Used to provide automatic focusing of your Varioptic Caspian C-39N0-160-I2C or C-39N0-250-I2C lens.

To use your Zebra Iris GTX, perform the following:

1. Connect an external power supply and your third-party I/O devices to the Digital I/O and power connector of your Zebra Iris GTX using the provided cable.

If you have purchased the Zebra Iris GTX starter kit use the open-ended digital I/O and power cable and Zebra I/O Breakout Box, included in the kit, to make the connections.

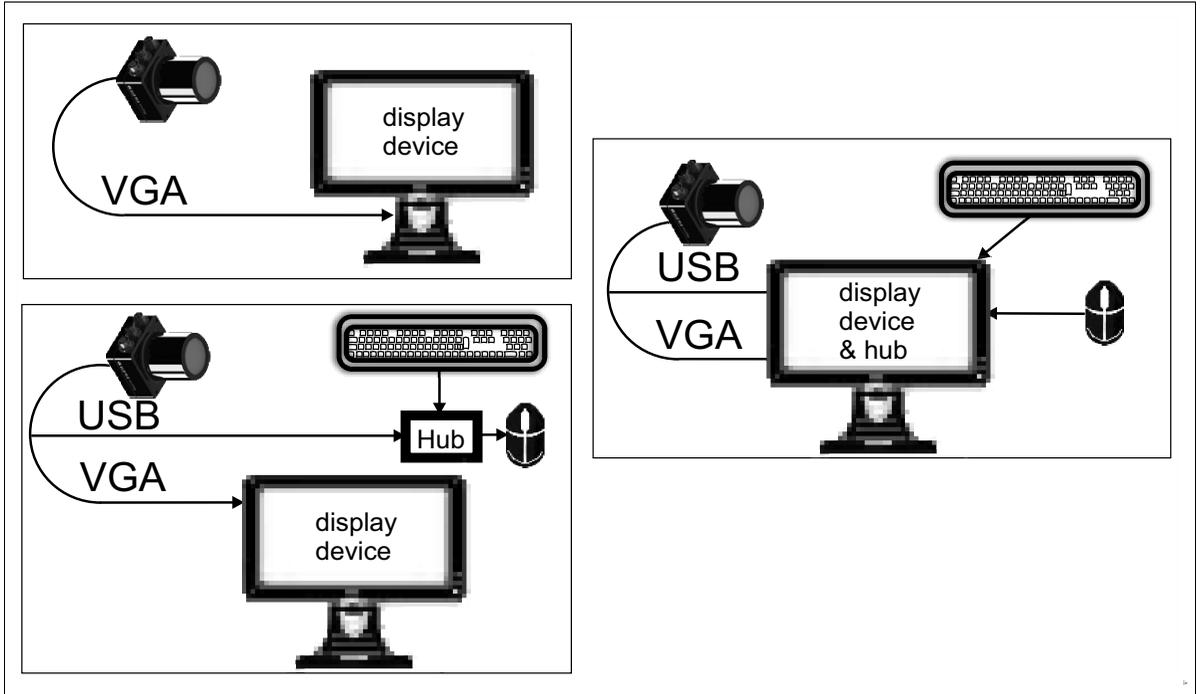
If you have purchased Zebra I/O Breakout Box separately, you can make your own cable. Alternatively, you can use the M12-CBL-PWR/3 open-wire digital I/O and power cable from Zebra; however, you must use a custom cable to connect it to a power supply. For more information regarding the pin-out of your Zebra Iris GTX power and I/O connector, refer to the *Digital I/O and power connector* subsection of the *Zebra Iris GTX connectors* section, in *Appendix B: Technical reference*.

2. Connect your display device and USB device to the VGA/USB connector of your Zebra Iris GTX using the VGA/USB cable (either the cable from the starter kit or GTR-CBL-VGAUSB).

Alternatively, you can build your own. For more information regarding the pin-out of your Zebra Iris GTX VGA/USB connector, refer to the *VGA/USB connector* subsection of the *Zebra Iris GTX connectors* section, in *Appendix B: Technical reference*.

There are multiple ways to connect devices to the VGA/USB cable. If connecting to a display device that has a VGA connector available, we recommend using it. To connect your Zebra Iris GTX to a display device and one or more input devices (such as a keyboard and mouse), connect a USB hub to the USB connector of

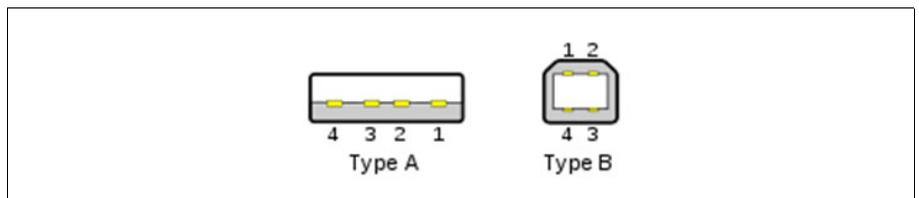
your VGA/USB cable. Once the hub is connected, connect your keyboard and mouse to the hub. Note that, in some cases, your display device can also act as a USB hub.



❖ Note that if you are using a Zebra VGA/USB cable, the cable has a type A USB connector.

If you are not using this connector, the VGA/USB cap must remain in place for IP67 conformity.

If connecting the Zebra VGA/USB cable to a device requiring a type B connector, use a type A to type B USB cable to connect the VGA/USB cable to your device.



3. Connect your network or your computer (peer-to-peer) to the Zebra Iris GTX 100/1000 BaseT Ethernet connector using a network cable with an M12 8-pin X-coded connector on one end (either the cable from the starter kit or M12-CBL-ETH/5).

Connect the RJ45 connector of the cable to the network connector of your network/computer.

After making the network connection, you might need to configure your Zebra Iris GTX so that it can communicate with your network or computer. To do so, refer to *Adding Zebra Iris GTX to your network* section, later in this chapter.

If not using the network connection, the connector must be capped to maintain IP67 conformity.

4. Connect your lens to the Zebra Iris GTX housing, screwing it in firmly. Note that if you are using a Varioptic Caspian C-39N0-160-I2C or C-39N0-250-I2C lens, refer to *Optionally connecting a liquid lens* section, later in this chapter.

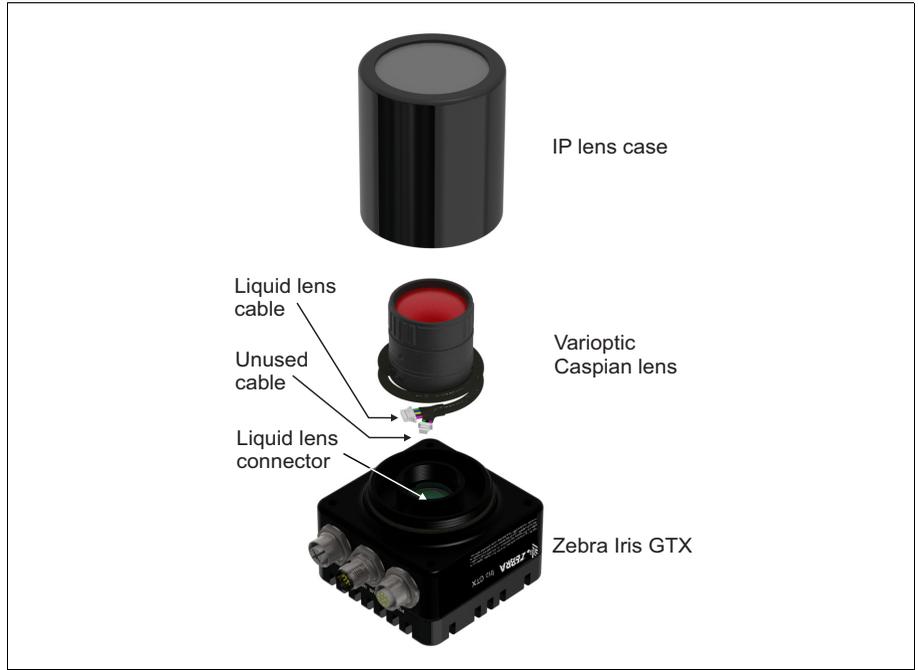
Important

Screw on the IP lens case until it is firmly in place over the lens and on the Zebra Iris GTX housing. Note that the IP lens case must be in place for IP67 conformity.

5. If using your Zebra Iris GTX in a deployment environment, you must fasten your smart camera to a support using its provided mounting holes. For the dimensions of the mounting holes, refer to the *Dimensions* section, in *Appendix B: Technical reference*.

Optionally connecting a liquid lens

If using a Varioptic Caspian C-39N0-160-I2C or C-39N0-250-I2C lens, it must be connected to your Zebra Iris GTX's liquid lens connector.



To do so, perform the following steps:

1. Disconnect the power from your Zebra Iris GTX.
2. If in place, unscrew the IP lens case from your Zebra Iris GTX.

3. Remove the plug covering the liquid lens connector inside the camera lens housing, using non-conductive tweezers.



4. Screw the lens onto the lens enclosure, until it is firmly in place.
5. The Varioptic Caspian lens has two cables. Wrap the longer cable (with the 6-pin connector) tightly around the Varioptic Caspian lens housing.
6. Plug the 6-pin connector of your Varioptic Caspian lens into the liquid lens connector on your Zebra Iris GTX. To do so, use non-conductive tweezers. Once the connector is in place, use the tweezers to press firmly on either side of the connector to ensure a good connection.
7. Tuck the 3-pin connector (and its branched wire) into the folds of the longer cable. The 3-pin connector is not used.
8. Slide the IP lens case over the lens, and screw it into the Zebra Iris GTX housing, until it is firmly in place.
 - ❖ Note that the IP lens case must be in place for IP67 conformity.
9. Reconnect the power to your Zebra Iris GTX.

Adding Zebra Iris GTX to your network

Corporate-wide networks typically use DHCP servers to assign each connected device an IP address. If your Zebra Iris GTX is still in its factory-configured state, and your network uses a DHCP server, no configuration is required to use your Zebra Iris GTX on your network.

Much of the information found in this section is directed to users with a Zebra Iris GTX camera with Matrox Design Assistant, because in this case, the camera uses the Matrox Imaging Operating System (MIOS).

Device name (AUTO NETNAME)

By default, Zebra Iris GTX comes factory configured with a device name (AUTO NETNAME), which can be found on a sticker attached to your Zebra Iris GTX smart camera and is unique for each camera. If you are connecting to a static network, use the IP address of the camera; otherwise, if you are connected to a DHCP network, this name is used:

GTXxxxxxx

The xxxxxx corresponds to the six hexadecimal digits of your Zebra Iris GTX's MAC address. This can be changed to a more meaningful name through the Matrox Design Assistant configuration portal.

The Matrox Design Assistant configuration portal on your Zebra Iris GTX is located at <http://GTXxxxxxx>, where *GTXxxxxxx* is your smart camera's device name. This portal allows you to manage many aspects of your smart camera (for example, configure settings, manage projects, and set up communication). You can change network settings in the **TCP/IP** tab of the **Administration** page (gear icon), where you can also change the device name (AUTO NETNAME) of your camera.

Using a static IP address with networks that do not use DHCP

If your network does not use DHCP, you must access and configure your Zebra Iris GTX to use a static IP address. To access Zebra Iris GTX when you don't know its current IP address, you can physically connect to it or use the Matrox System Discovery (MtxSysDiscovery) utility on your development computer.

Connecting directly to your Zebra Iris GTX

If you do not know your Zebra Iris GTX's IP address, you can physically connect to it and change its IP address; to do so, perform the following:

1. Connect your Zebra Iris GTX to a monitor, mouse, and USB keyboard. Then, turn on the connected monitor, mouse, and USB keyboard before plugging in your Zebra Iris GTX to a power source.
2. On your Zebra Iris GTX, launch your web browser, and go to the following address:

http://localhost

3. When the Matrox Design Assistant configuration portal loads, go to the **Administration** page by clicking on the **gear** button.
4. Click on the **TCP/IP** tab.
5. Enter the IP address, subnet mask, and gateway address in the spaces provided. When done, click on the **Save settings** button.

Your IP address is now changed.

Using the Matrox System Discovery utility for Zebra Iris GTX

If you do not know your Zebra Iris GTX's IP address, you can use the Matrox System Discovery (MtxSysDiscovery) utility to access it and change its IP address; to do so, perform the following:

1. On your development computer (where Matrox Design Assistant is installed), launch the MIL Control Center utility.
2. In the MIL Control Center utility, select Design Assistant Tools for the version of Matrox Design Assistant.
3. In the Design Assistant Tools directory, select and run the Matrox System Discovery utility (MtxSysDiscovery).

The Zebra Iris GTX will find all the Zebra Iris GTXs on the same subnet, and allow you to modify their communication settings.

Connecting to your Zebra Iris GTX desktop

From your smart camera's desktop, you can launch the MILConfig utility (to configure updates, assist in troubleshooting your runtime application with Zebra technical support, and set default values), as well as access files stored on your smart camera.

Accessing your Zebra Iris GTX desktop remotely

If you do not want to keep a keyboard, mouse, and monitor connected to your Zebra Iris GTX, once your smart camera is on your network, you can connect to your Zebra Iris GTX remotely by using a virtual network computing (VNC) program. Several VNC programs are available on the Internet. A few choice examples are available to download directly from your smart camera. To download and install one of these programs, perform the following:

1. For Zebra Iris GTX with Design Assistant users, go to the following web address:

```
http:\\GTXxxxxxx:8080
```

Replace xxxxxx with the six digits of your smart camera's MAC address, or if you have changed the camera's device name, replace GTXxxxxxx with its new name. You can also replace GTXxxxxxx with the smart camera's IP address.

2. Select the installer that best matches your needs.

Follow all on-screen instructions. Refer to the provided documentation for assistance.

3. Before using the installed VPN, you must first enable Auto logon in the Matrox Design Assistant portal.

Logging in

When using VNC for the first time, you must log into your Zebra Iris GTX using the default user account:

User name:	mtxuser
Password:	Matrox

Warning

- ❖ Do not delete or rename the mtxuser account. You can, however, change the password.

Accessing your Zebra Iris GTX from your PC

Once your Zebra Iris GTX is added to your network, you can remotely access the hard disk of your Zebra Iris GTX using Microsoft Windows Explorer. Typically, Zebra Iris GTX will be listed as a computer under the **Network** folder. When you try to access the files on your Zebra Iris GTX, you are prompted for a user name and password. Note that these fields are case-sensitive.

If you are accessing your camera from a computer on a separate domain, remember to suffix the camera's name with the camera's device name:

```
\\GTXxxxxxx\mtxuser
```

On Zebra Iris GTX with Matrox Design Assistant, several folders are shared by default, including the `mtxuser` user's folder.

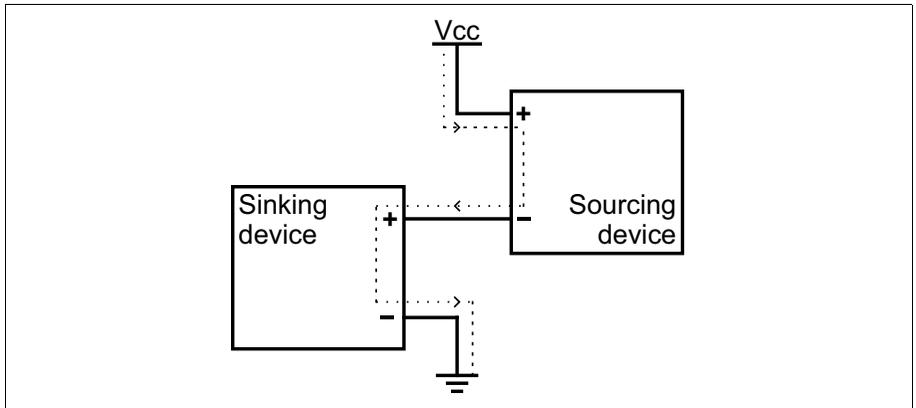
In Matrox Design Assistant, you can use the `PATH` function with predefined settings to access a few of the more commonly used paths.

Type of files	File path	Path command in Matrox Design Assistant	Examples
Matrox Design Assistant Documents	\\GTXxxxxxx\mtxuser\Documents	PATH("DA Documents")	{PATH("DA Documents")}\SavedImages {PATH("DA Documents")}\SavedTextFiles {PATH("DA Documents")}\Images
Matrox Design Assistant Project files	\\GTXxxxxxx\mtxuser\da\Projects	PATH("DA Project")	{PATH("DA Project")}\Images

Connecting to the auxiliary I/O interface

Zebra Iris GTX has an auxiliary I/O interface with 7 optically isolated auxiliary signals. Four are inputs that support sinking and sourcing configurations and can receive 24 V. Three are outputs that support sinking configurations and operate at up to 24 V nominal; you could connect one of the outputs in a sourcing configuration, but the other two outputs would no longer be available. Zebra Iris GTX also has an analog intensity (dimming) control signal, which is discussed in the *Connecting a light controller and the analog intensity control signal* section later in this chapter.

Note that sinking and sourcing concepts refer to the *conventional current flow*, which means current flows from the positive potential towards the negative potential. A sinking device provides a path to *sink* current towards ground or to the *return path*; a sinking device does not provide power. A sourcing device provides a path that sources current; it provides a path from the power source. In the following diagram, the device on the right is the sourcing device, and the device on the left is the sinking device.



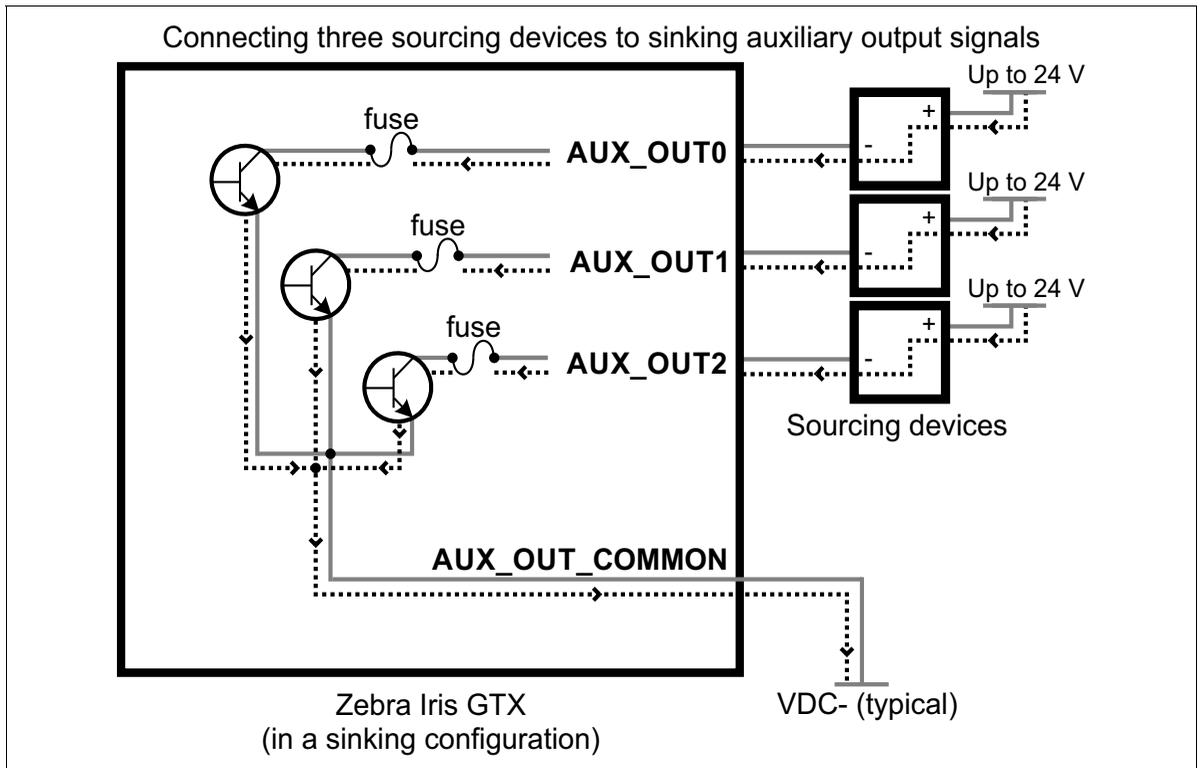
Equivalent circuit only

When setting up auxiliary I/O, be aware that you need to configure these pins on the software side as well. If you are using Matrox Design Assistant, refer to the *Connecting to your Zebra Iris GTX as your runtime platform* section of the *Zebra Iris GTX appendix* in the *Matrox Design Assistant help file* for this information.

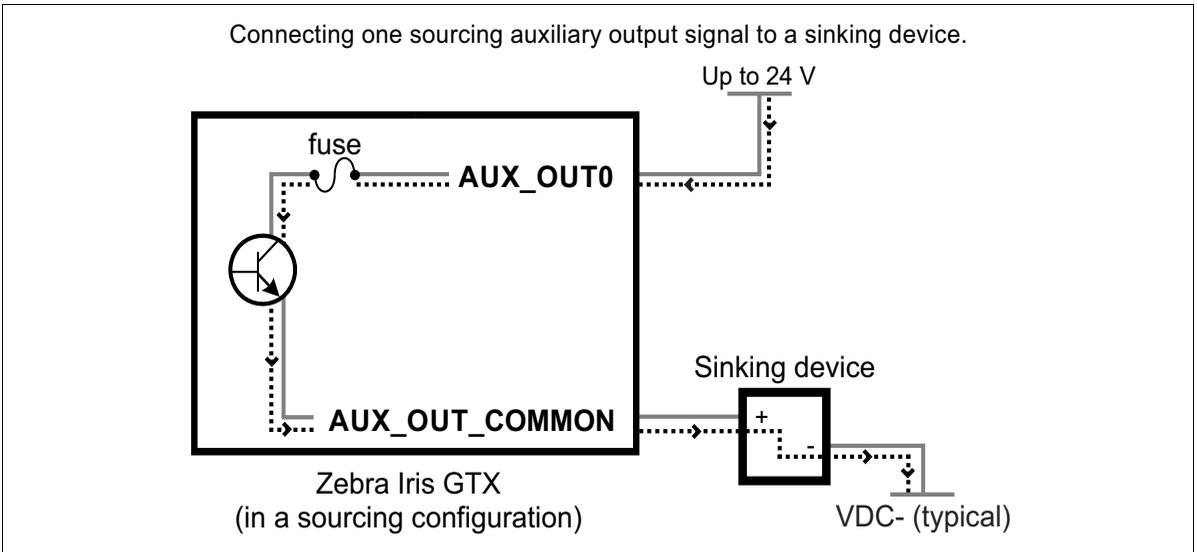
Connecting devices to the auxiliary output signals

Zebra Iris GTX auxiliary output signals can be interfaced with input modules (with sourcing or sinking input signals) found on most programmable logic controllers (PLCs) and other devices. The auxiliary output signals can also be interfaced with inductive load devices (such as a relay or a small motor).

The Zebra Iris GTX auxiliary output signals are sinking output signals, based on an NPN-type transistor. They need to be connected to an external power source because on their own, they are not capable of providing voltage to drive a device. They are typically connected in a sinking configuration because they only have one dedicated pin (AUX_OUT0, AUX_OUT1, AUX_OUT2, respectively) and share their other pin (AUX_OUT_COMMON). So, typically, a sourcing device is connected to their dedicated pin and the return path is connected to the common pin. The exact connection between the output signal, the connected device, and the power source depends on the type of device to which you connect.



You can also connect a single auxiliary output signal in a sourcing configuration, such that the common pin is connected to a sinking device and the dedicated pin is connected to the power supply. However, in this configuration, the other two auxiliary output signals are not available. The exact connection between the output signal, the connected device, and the power source depends entirely on the type of device to which you connect.



Equivalent circuit only

When an auxiliary output signal is **on**, the circuit between its AUX_OUT pin and AUX_OUT_COMMON pin is closed, allowing current to flow from the AUX_OUT pin to the AUX_OUT_COMMON pin, if the AUX_OUT pin is attached to a power source or a sourcing device. When an auxiliary output signal is **off**, the circuit between the AUX_OUT and AUX_OUT_COMMON pins of the signal is open and no current flows through.

Important

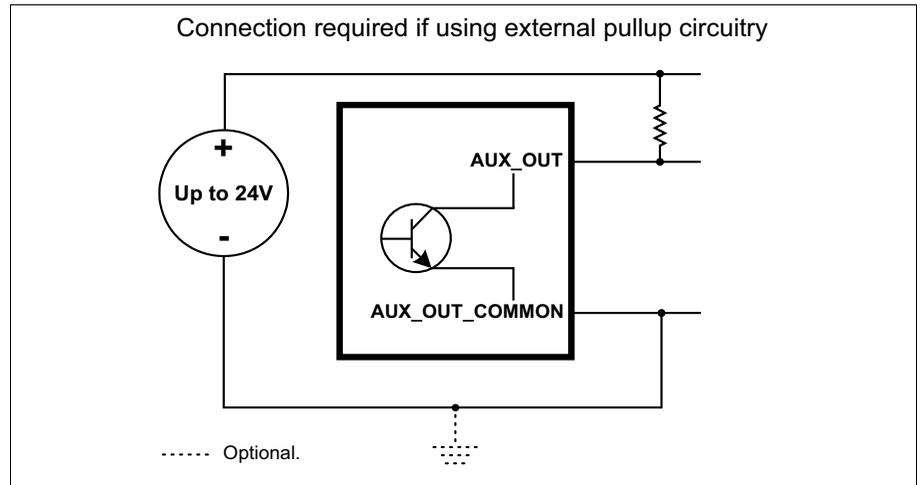
Note that the power source must be provided externally.

When the auxiliary output signal is attached to a device, the following can be observed:

Connection	Observed at	Observed voltage	
		Signal on (closed so current can flow from AUX_OUT to AUX_OUT_COMMON pin)	Signal off (open so current cannot flow from AUX_OUT pin to AUX_OUT_COMMON pin)
Sourcing device attached to AUX_OUT pin and return path attached to AUX_OUT_COMMON pin	AUX_OUT pin	Low	Floating (voltage level is imposed by the sourcing device)
	AUX_OUT_COMMON pin	Low	Low
Power supply attached to AUX_OUT pin and sinking device attached to AUX_OUT_COMMON pin	AUX_OUT pin	High	High
	AUX_OUT_COMMON pin	High	Floating (voltage level is imposed by the sinking device)

Connecting to a digital device that requires two predictable voltage levels to operate

The auxiliary output signals can, therefore, only present one predictable voltage level for a given configuration: a low voltage level in a sinking configuration or a high voltage level in a sourcing configuration. Their other output state is, by default, floating. So, if you need to connect to a digital device that requires two predictable voltage levels to operate, pullup or pull-down circuitry must be added.



Equivalent circuit only

To add pullup or pull-down circuitry, attach an external pullup or pull-down resistor, respectively. A resistance value of 3 KOhms is suggested to protect your Zebra Iris GTX. Since your Zebra Iris GTX auxiliary output signals can sink up to 50 mA, use the documentation of your input to calculate the required resistance for your external pullup/pull-down resistor (if necessary).

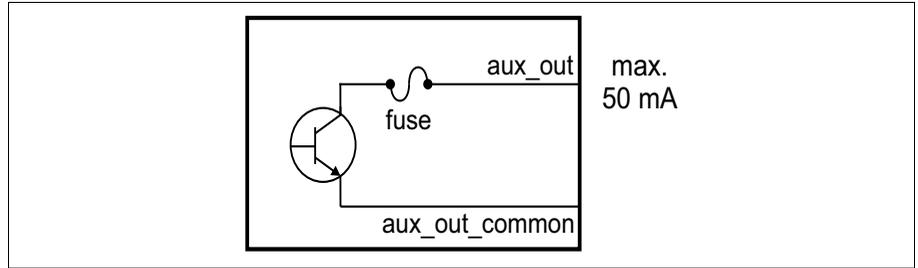
In the connections above, the pullup circuitry causes an inversion if the input of the device is connected to the AUX_OUT pin. When the auxiliary output signal is **on**, the circuit between its AUX_OUT and AUX_OUT_COMMON pins is closed, and current flows from the power source to the AUX_OUT_COMMON pin. So the observed voltage at the AUX_OUT pin will be low. Whereas, when the auxiliary output signal is **off**, the circuit between its AUX_OUT and AUX_OUT_COMMON pins is open, and current flows from the power source to the input of the device. In this state, the current is limited by the pullup's resistor value.

Warning

The Zebra Iris GTX auxiliary output signals are compatible with voltages up to 24 V. However, by default, the auxiliary output signals offer low resistance. When they are **on** (their circuit is closed), current flows directly through them. Ensure that the circuit created between the power source, the output signal, the connected device, and return path does not cause more than 50 mA to flow through the signal.

As a precaution, the auxiliary output signals are individually fuse-protected up to 50 mA. Zebra Iris GTX uses resettable fuses. The fuses protect Zebra Iris GTX if you accidentally connect their corresponding auxiliary output signal to a device that sources/sinks more current than Zebra Iris GTX can safely transmit. If more than 50 mA of current goes through your Zebra Iris GTX, the fuse will eventually trip. After disconnecting your Zebra Iris GTX, the fuse will reset only after it has sufficiently cooled,

The diagram below depicts Zebra Iris GTX's on-board fuse.



Equivalent circuit only

Optically-isolated output signals

The Zebra Iris GTX auxiliary output signals are optically isolated from the power and analog intensity (dimming) control signal as well as from the Zebra Iris GTX auxiliary input signals. They are not, however, optically isolated from each other as they share a common pin (AUX_OUT_COMMON).

About the connections in the following subsections

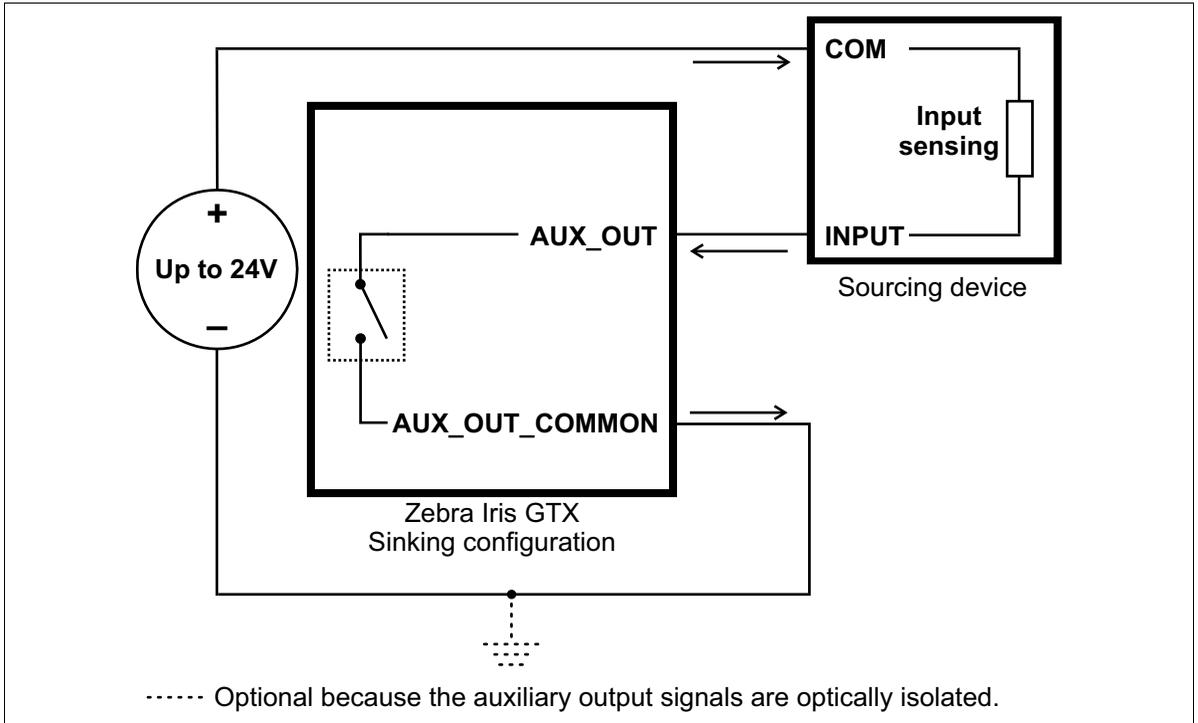
The following subsections detail how to connect the most common third-party devices to the Zebra Iris GTX auxiliary output signals. Ground is only shown in the following subsections for reference, in case you need to reference your return path to ground. To connect to a light controller (such as, an Advanced Illumination or Smart Vision Lights lighting controller), see *Connecting a light controller and the analog intensity control signal* section later in this chapter.

Power, as depicted in the following diagrams, represents a nominal voltage of up to 24 V (+/- 10%). For minimum and maximum voltage requirements, refer to the electrical specification of the opto-isolated output signals, in *Appendix B: Technical reference*.

The signal names in this section are shortened to fit within the diagrams: from AUX_OPTOIND_OUTn to AUX_OUT and from AUX_OPTOIND_OUT_COMMON to AUX_OUT_COMMON.

Connecting an auxiliary output signal to a sourcing input

Connect a Zebra Iris GTX auxiliary output signal to a sourcing input, as shown below.

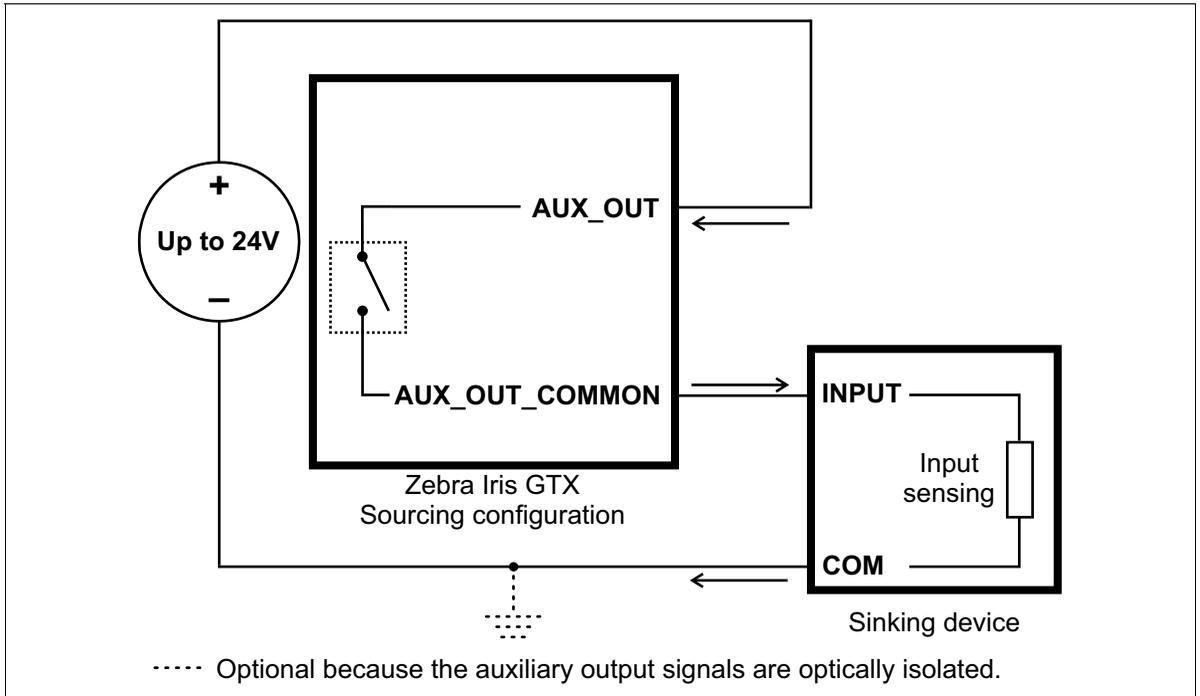


Equivalent circuit only

- ❖ Note that, when connecting a resistive load sourcing device instead of an input sensing sourcing device, the same connection would be used as displayed above.

Connecting an auxiliary output signal to a sinking input

Connect a Zebra Iris GTX auxiliary output signal to a sinking input, as shown below. In this case, the pullup circuitry is used to source the current to the sinking input.



Equivalent circuit only

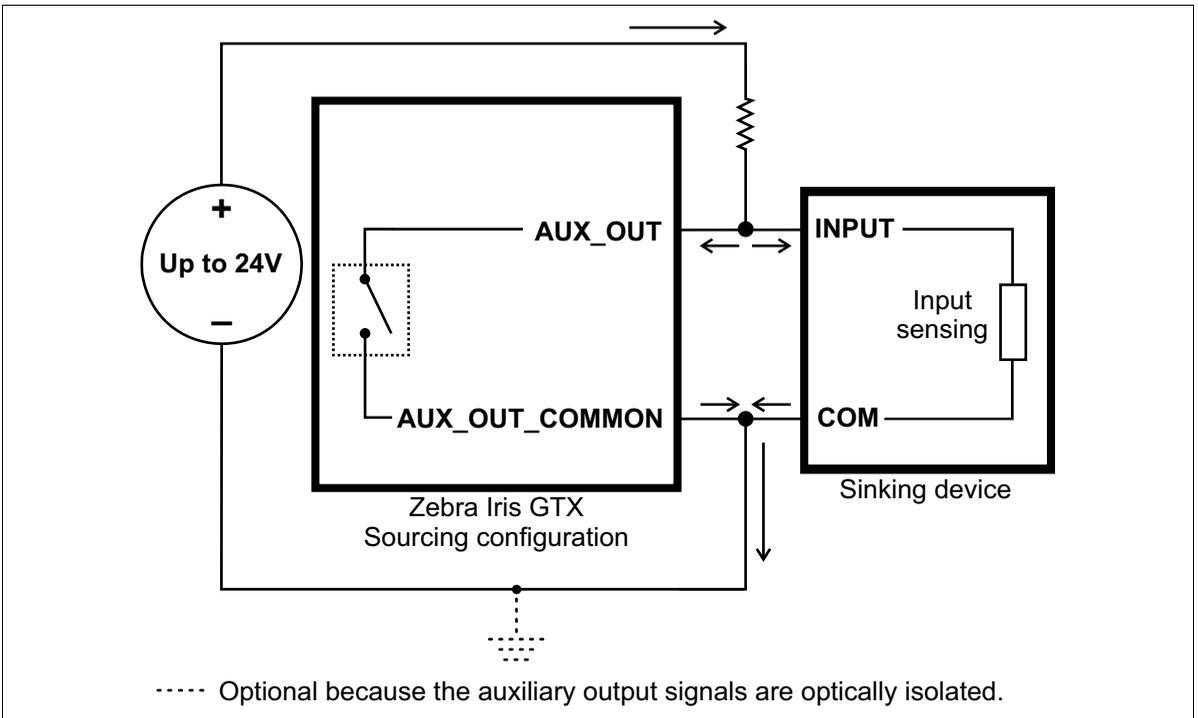
Important

In this configuration, the other two auxiliary output signals are not available.

- ❖ Note that, when connecting a resistive load sinking device instead of an input sensing sinking device, the same connection would be used as displayed above.

Connecting an auxiliary output signal to a sinking input using an external pullup resistor

To not lose two of the available three auxiliary output signals, you can connect an auxiliary output signal to a sinking input as follows. Note that, in this configuration, you will need to connect an external pullup resistor. Since your Zebra Iris GTX auxiliary output signals can sink up to 50 mA, use the documentation of your sinking device to calculate the required resistance for your external pullup resistor (if necessary).

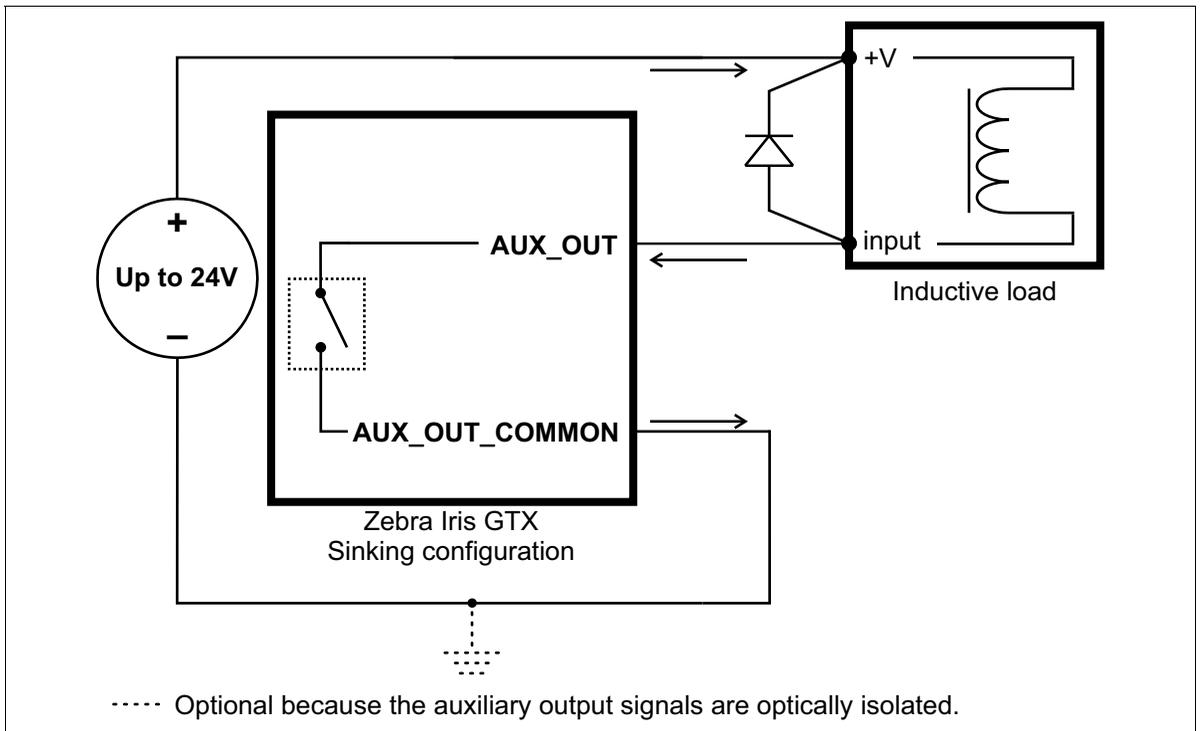


Equivalent circuit only

Connecting an auxiliary output signal to an inductive load input

Connect a Zebra Iris GTX auxiliary output signal to an inductive load input, as shown below.

An inductive load device, such as a traditional relay, requires that you use a flyback diode to protect Zebra Iris GTX from over and under-voltage, as shown below. This diode should be connected as close as possible to the input and voltage source of your inductive load device.



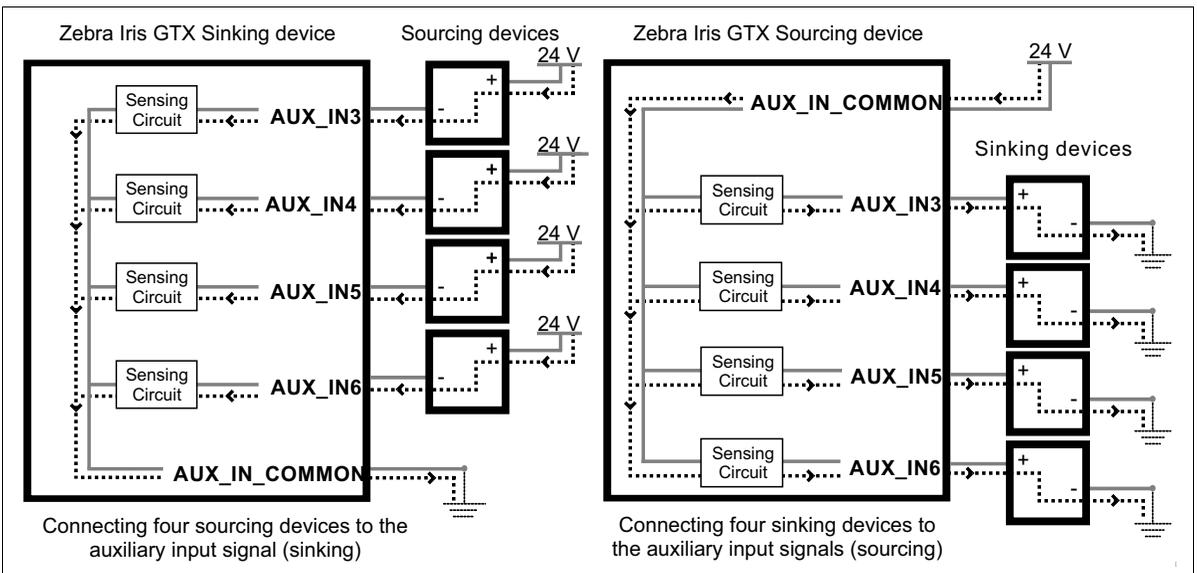
Equivalent circuit only

Connecting devices to the auxiliary input signals

Zebra Iris GTX auxiliary input signals can be interfaced with a wide variety of devices (such as proximity detectors). The Zebra Iris GTX auxiliary input signals only detect when current flows between their AUX_IN pin and AUX_IN_COMMON pin. As such, an auxiliary input signal must be connected to a device that controls the flow of current. When current is detected, the signal is reported as **on**; otherwise, it is reported as **off**. In software, you can enable an interrupt to be generated the moment current is detected. For information on the electrical specifications of the **on** and **off** voltage levels, see the *Electrical specifications* section, in *Appendix B: Technical reference*.

Each of the four available auxiliary input signals has one dedicated pin (AUX_IN3, AUX_IN4, AUX_IN5, and AUX_IN6, respectively) and shares its other pin (AUX_IN_COMMON) with the other auxiliary input signals.

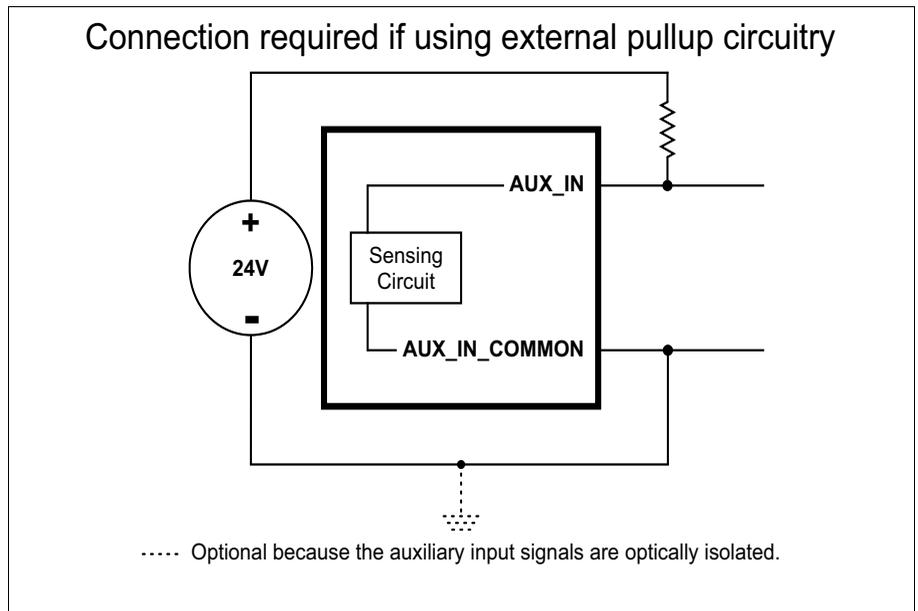
You can connect the auxiliary input signals in a sinking or sourcing configuration. Since the auxiliary input signals share a common pin, they have to be all in a sinking configuration or all in a sourcing configuration. The exact connection between the input signal, the connected device, and the power source depends entirely on the type of device to which you connect. You should essentially connect your device respecting the following:



Pullup circuitry

In some cases, you must add pullup circuitry to connect an output device to an auxiliary input signal; specifically, you must attach an external pullup resistor between the voltage source and the AUX_IN pin.

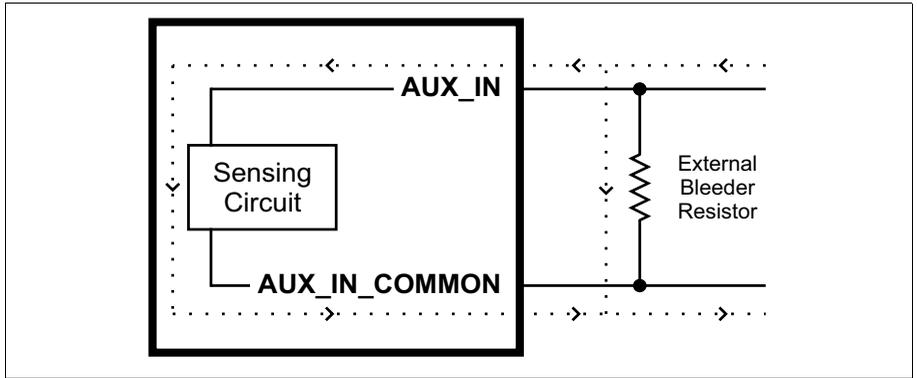
This is required when you connect the AUX_IN_COMMON pin to the electrical return path and the third-party output device is in a sinking configuration. In this case, select a resistor value that will not overcurrent the output device and instead provide just enough current and voltage to your Zebra Iris GTX auxiliary input signals, according to the *Electrical specifications* subsection in *Appendix B: Technical reference*. Note that you should use a resistor with an appropriate power rating for your circuit.



Equivalent circuit only

Bleeding resistor

By default, if properly configured, the current should flow from the AUX_IN pin to the AUX_IN_COMMON pin (when connected to a sourcing device), or from the AUX_IN_COMMON pin to the AUX_IN pin (when connected to a sinking device). In some cases, the amount of current going through the sensing circuit is insufficient for the connected output device to match its minimum current requirement when the device is in an on or off-state, depending on the configuration of the circuit. To boost the flowing current, connect a 2.2 kOhm external bleeder resistor between the AUX_IN and AUX_IN_COMMON pins. For example:



Equivalent circuit only

About the connections in the following subsections

The following subsections detail how to connect the most common third-party devices to the Zebra Iris GTX auxiliary input signals.

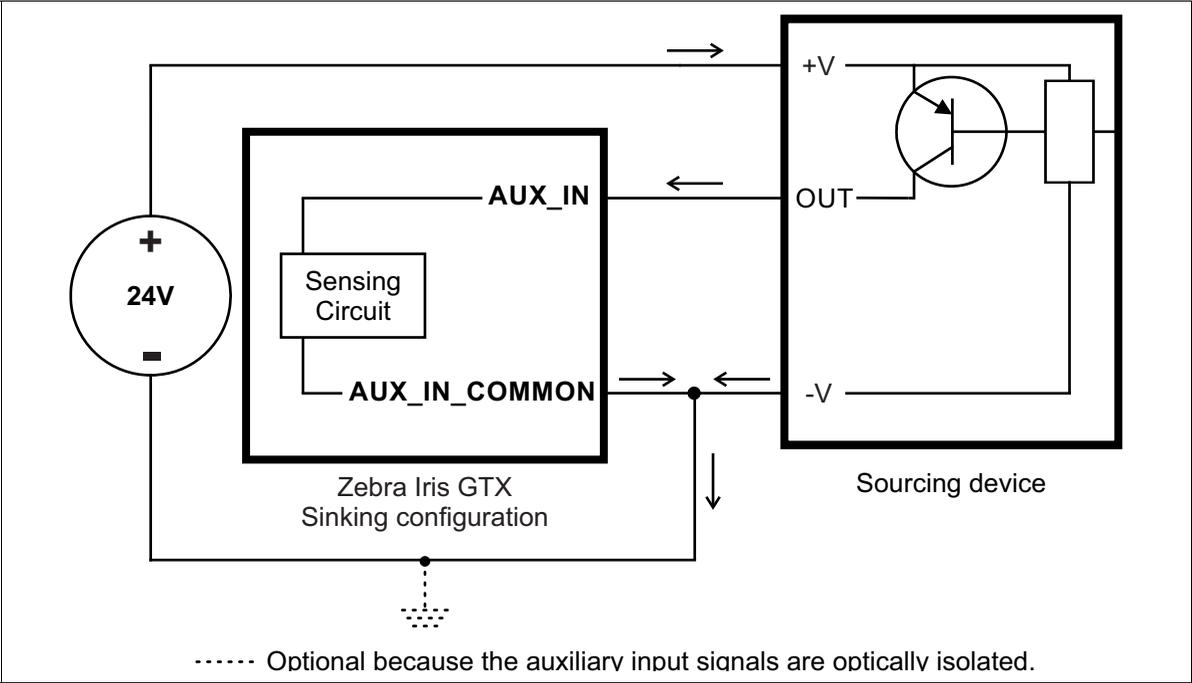
Note that Zebra Iris GTX auxiliary input signals are optically isolated. Ground is only shown in the following subsections for reference, in case you need to reference your return path to ground.

Power, as depicted in the following diagrams, represents a nominal voltage of 24 V (+/- 10%). For minimum and maximum voltage requirements, refer to the electrical specification of the opto-isolated auxiliary input signals, in the *Electrical specifications* subsection in *Appendix B: Technical reference*.

The signal names in this section are shortened to fit within the diagrams: from AUX_OPTOIND_IN_n to AUX_IN; and from AUX_OPTOIND_IN_COMMON to AUX_IN_COMMON.

Connecting a sourcing output device to an auxiliary input signal

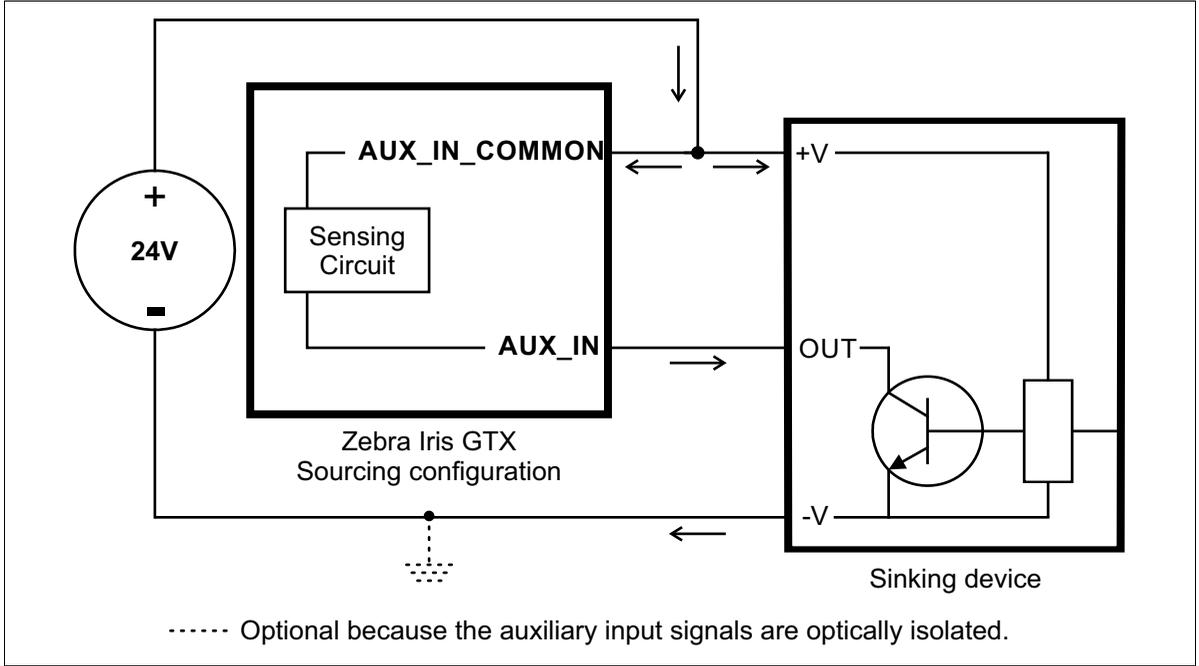
Connect a sourcing output device to Zebra Iris GTX auxiliary input signal, as shown below.



Equivalent circuit only

Connecting a sinking output device to an auxiliary input signal

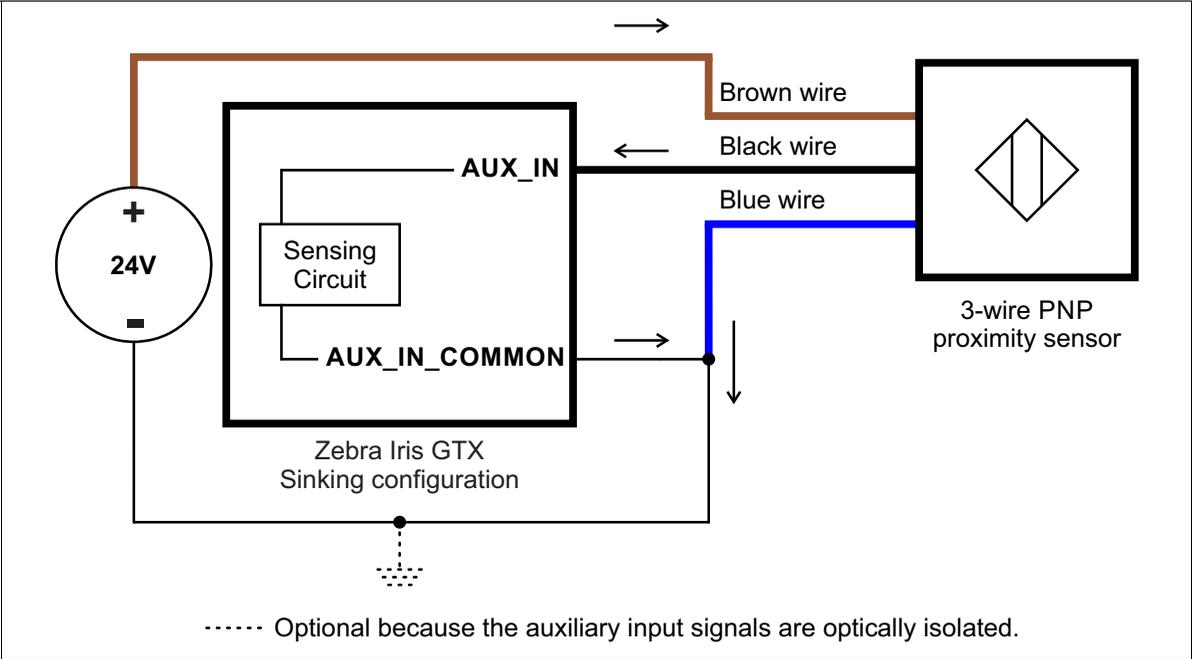
Connect a sinking output device to a Zebra Iris GTX auxiliary input signal, as shown below.



Equivalent circuit only

Connecting a 3-wire PNP proximity sensor to an auxiliary input signal

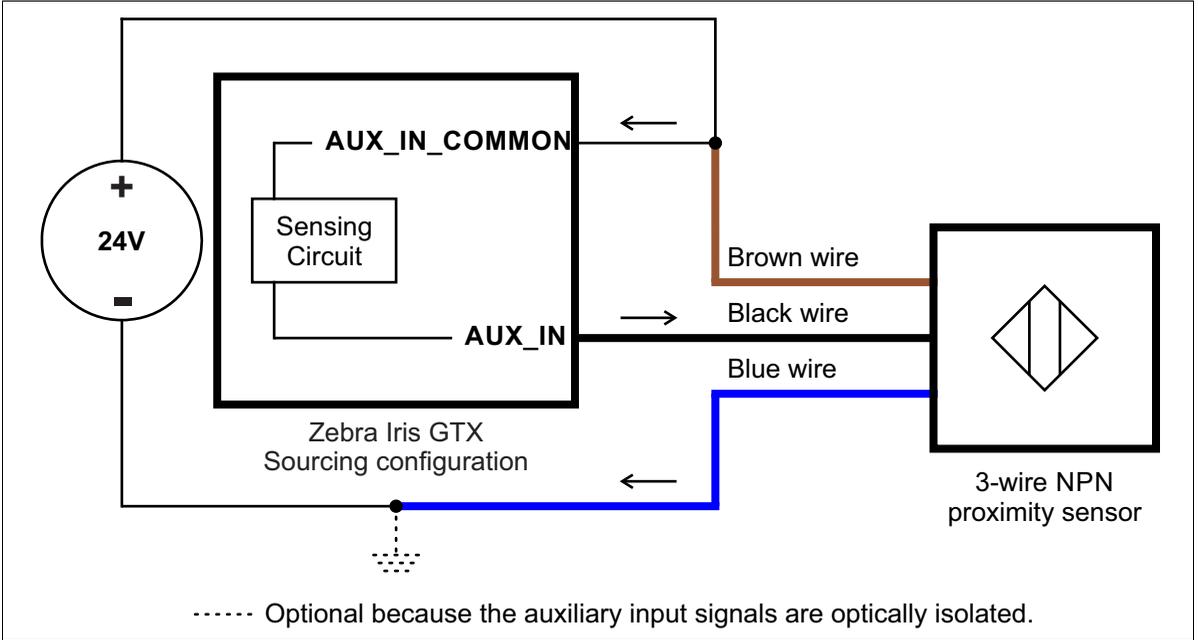
Connect a 3-wire PNP proximity sensor to a Zebra Iris GTX auxiliary input signal, as shown below.



Equivalent circuit only

Connecting a 3-wire NPN proximity sensor to an auxiliary input signal

Connect a 3-wire NPN proximity sensor to a Zebra Iris GTX auxiliary input signal, as shown below.

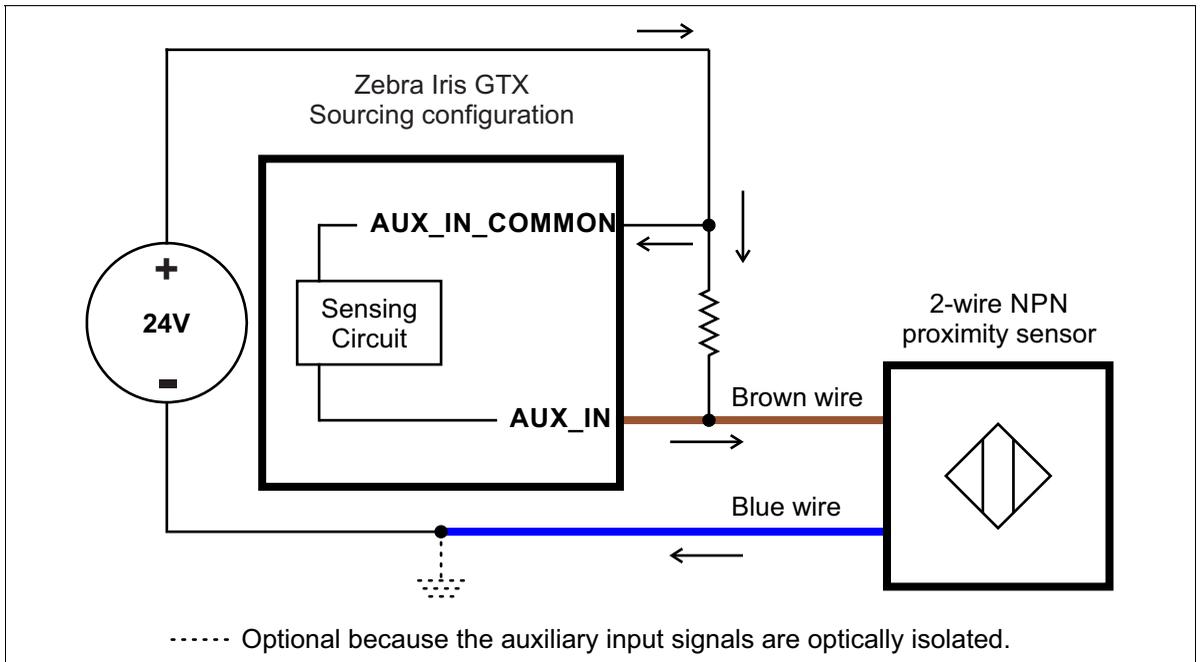


Equivalent circuit only

Connecting a 2-wire proximity sensor to an auxiliary input signal

You can connect a 2-wire proximity sensor to a Zebra Iris GTX auxiliary input signal in either a sourcing or sinking configuration (that is, on a positive or negative power wire). Note that in both cases, you will need to install an external bleeder resistor, to ensure that a minimum amount of current flows into the proximity sensor in its on-state and in its off-state.

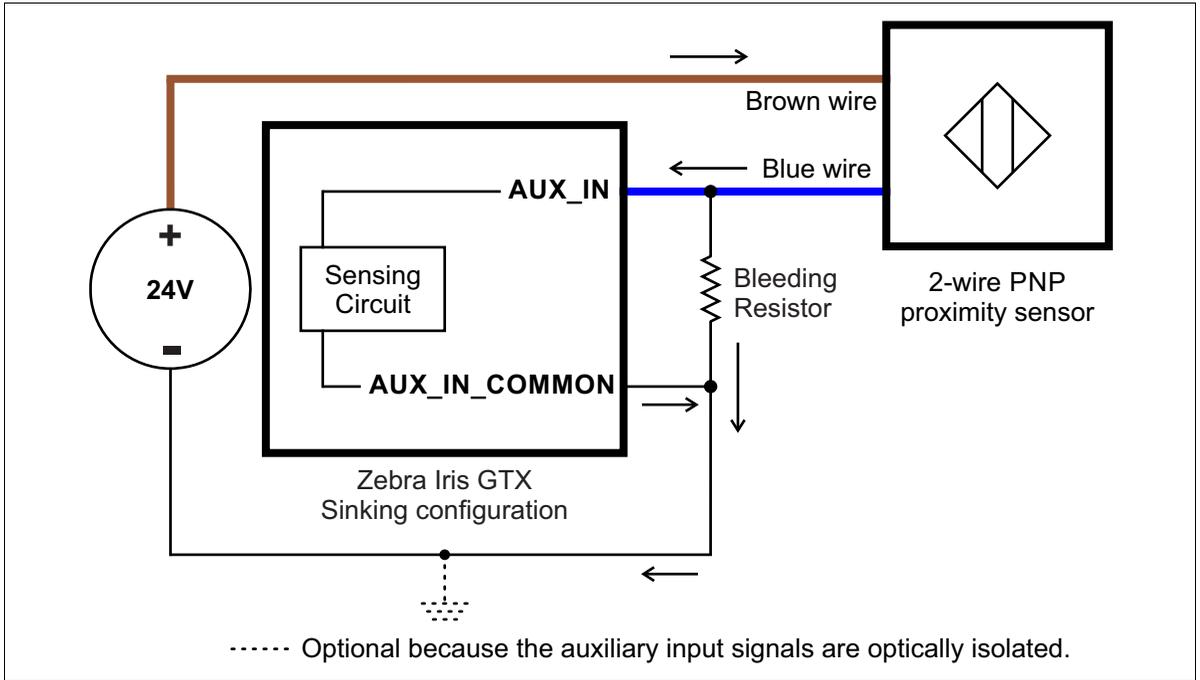
- For the auxiliary input signal to source the current (that is, to connect an auxiliary input signal on a positive power wire), connect the 2-wire device to the auxiliary input signal as shown below. You must also install an external bleeder resistor between the AUX_IN_COMMON pin and brown wire of the proximity sensor.



Equivalent circuit only

The bleeder resistor's value should guarantee that the minimal required current is provided to the connected sensor (the third-party device). For details regarding the sensor's minimum current requirements, refer to its documentation. Note that you should use a bleeder resistor with an appropriate power rating for your circuit.

- For the auxiliary input signal to sink the current, connect the 2-wire device to auxiliary input signal as shown below. Install the external bleeder resistor between the blue wire of the proximity sensor and the AUX_IN_COMMON pin.



Equivalent circuit only

Connecting a light controller and the analog intensity control signal

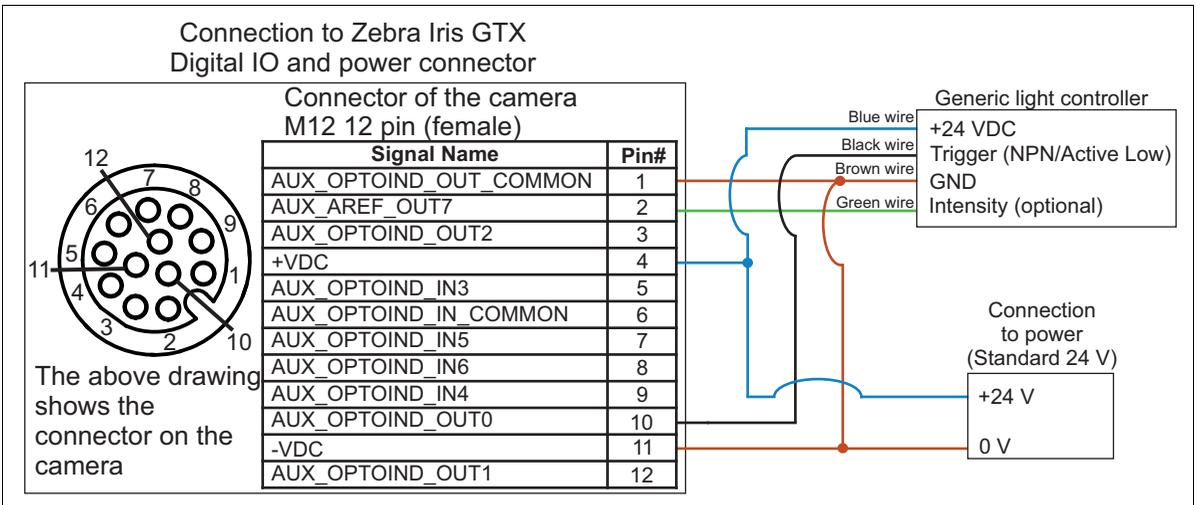
Zebra Iris GTX includes an auxiliary I/O engine, with an analog intensity control signal (AUX_AREF_OUT7), which provides a slow changing analog intensity (dimming) control signal from 0-10 VDC. This control signal can be used to set the intensity for a light controller (for example, with an Advanced Illumination inline control system or Smart Vision Lights brick light); however, it should not be used to draw any current or drive power.

To set the intensity of the light controller using Matrox Design Assistant, chose **Physical Camera** under the **Cameras** item of the Platform configuration dialog, and enter a value for **Intensity**. See the *Grab and auxiliary I/O overview* section of the *Zebra Iris GTX appendix* in the *Matrox Design Assistant help file* for more information.

Connect the lighting controller's intensity pin directly to the analog intensity control pin (AUX_AREF_OUT7). The following examples show how to connect Zebra Iris GTX to the trigger and intensity pins of your lighting controller.

Connecting a sourcing light controller (NPN pin)

If your lighting controller has an NPN pin (sourcing input signal), it expects to be connected in an NPN topology, whereby the connected, controlling auxiliary output signal sinks the current and the input pin sources the current. To do so, connect the sourcing light controller to an auxiliary output signal and the analog intensity control signal (AUX_AREF_OUT7) of Zebra Iris GTX as shown below¹.

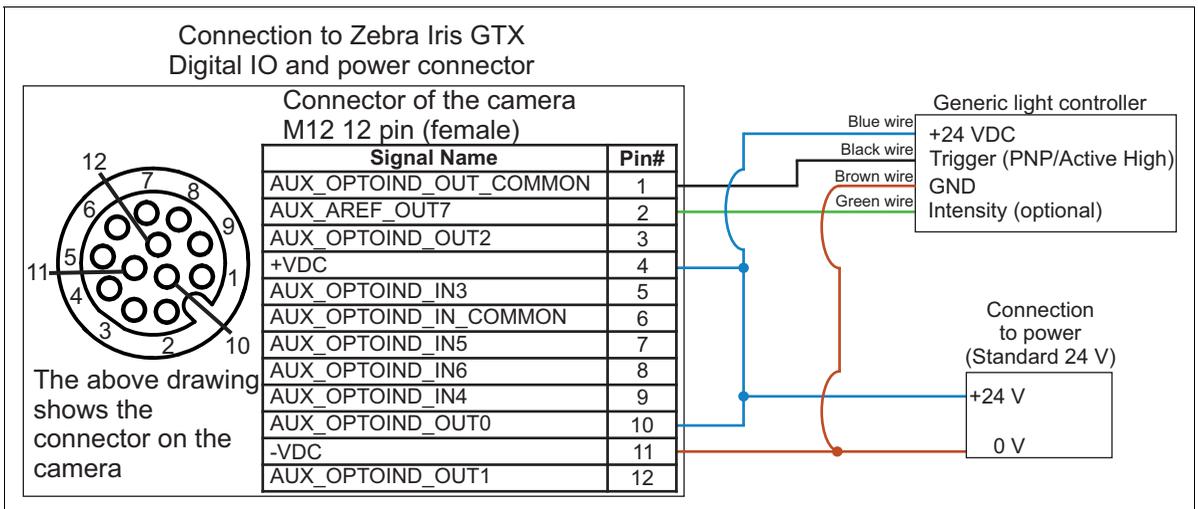


1. When the auxiliary output signal is on, the circuit between AUX_OPTOIND_OUT0 and AUX_OPTOIND_OUT_COMMON is closed. This allows current to flow from AUX_OPTOIND_OUT0 to AUX_OPTOIND_OUT_COMMON, before sinking to ground. When the auxiliary output signal is off, the circuit is open and no current flows.

Connecting a sinking light controller (PNP Pin)

If your lighting controller has a PNP pin (sinking input signal), it expects to be connected in a PNP topology, whereby the connected, controlling auxiliary output signal sources the current and the input pin sinks current. To do so, connect the sinking light controller to an auxiliary output signal and the analog intensity control signal (AUX_AREF_OUT7) of Zebra Iris GTX as shown below.¹

Note that in this configuration, the other two auxiliary output signals (AUX_OPTOIND_OUTn) from Zebra Iris GTX are not available.



1. When the auxiliary output signal is on, the circuit between AUX_OPTOIND_OUT0 and AUX_OPTOIND_OUT_COMMON is closed. This allows current to flow from AUX_OPTOIND_OUT0 to AUX_OPTOIND_OUT_COMMON, and to the trigger input of the lighting controller. When the auxiliary output signal is off, the circuit is open and no current flows through.

Appendix A:

Glossary

This appendix defines some of the specialized terms used in this manual.

Glossary

- **Auxiliary signal.**

An auxiliary signal is a user-defined I/O signal that can have one or more additional functions. For example, a signal that can be both a trigger signal and a user-defined input signal, is an auxiliary signal.

- **IP67 enclosure.**

An IP67 enclosure is a specific type of industrial enclosure that is dust and water-tight. The name is derived using the incarnation protection rating (or ingress protection code), and defined in the international standard IEC 60529.

- **Sinking.**

A DC circuit that provides the common reference (low) for the circuit. In the case of your Zebra Iris GTX, determining whether the connection is sinking or sourcing determines how to connect the auxiliary input common signal and auxiliary output common signal, respectively.

- **Sourcing.**

A DC circuit that provides the voltage needed for the circuit. In the case of your Zebra Iris GTX, determining whether the connection is sinking or sourcing determines how to connect the auxiliary input common signal and auxiliary output common signal, respectively.

- **Wire-terminal.**

A wire-terminal is designed to receive a stripped wire; the stripped wire can carry a signal. Typically, multiple wire-terminals are grouped together into an open-wire connector.

Appendix B:

Technical reference

This appendix summarizes the hardware elements of Zebra Iris GTX. In addition, this appendix provides pinout descriptions for the external connectors of your Zebra Iris GTX.

Zebra Iris GTX smart camera summary

Sensor board

Specifications		GTX2000	GTX2000C	GTX5000	GTX5000C	GTX8000	GTX8000C
CMOS sensor	Geometry	1/2.2"-type		2/3"-type		1/1.1"-type	1/1.1"-type
	Format	Monochrome	Color	Monochrome	Color	Monochrome	Color
	Make and model	ON Semiconductor - XGS					
Effective resolution (H x V)		1920x1200		2592x2048		4096x2160	
Frame rate ^a		70.7 fps	17.6 fps	41.7 fps	10.4 fps	39.6 fps	9.9 fps
Pixel size (H x V)		3.2 μm x 3.2 μm					
Gain range		0 to 21.5 dB					
Exposure speeds		50 μs - 4.2 sec					
External trigger latency (Typical value measured from OFF to ON)		N/A		N/A		N/A	
External trigger to output strobe delay (Typical value measured from OFF to ON)		N/A		N/A		N/A	

a. Frame rate is established solely upon rates of acquisition. Your results will differ when including processing time.

Specifications		GTX12000	GTX12000C	GTX16000	GTX16000C
CMOS sensor	Geometry	1"-type		1.1"-type	
	Format	Monochrome	Color	Monochrome	Color
	Make and model	ON Semiconductor - XGS			
Effective resolution (H x V)		4096x3072		4000x4000	
Frame rate ^a		28 fps	7.0 fps	21.6 fps	5.4 fps
Pixel size (H x V)		3.2 μm x 3.2 μm			
Gain range		0 to 21.5 dB			
Exposure speeds		50 μs - 4.2 sec			
External trigger latency (Typical value measured from OFF to ON)		N/A		N/A	
External trigger to output strobe delay (Typical value measured from OFF to ON)		N/A		N/A	

a. Frame rate is established solely upon rates of acquisition. Your results will differ when including processing time.

CPU board

The CPU board of Zebra Iris GTX has the following features:

- **SOC/CPU:** Atom x6211E processor.
- **Volatile memory:** 4 Gbytes of LPDDR4x SDRAM.
- **Non-volatile memory:** 32 Gbytes of flash disk (eMMC) memory.
- **Networking:** One 100/1000 Mbits (or 100 Mbit/1 Gbit) Ethernet networking interface. This interface can be used for communicating with external devices using the PROFINET, EtherNet/IP, CCLink, or Modbus protocol. For PROFINET, Zebra Iris GTX provides a hardware-assisted PROFINET interface that support a minimum I/O cycle time of 1 msec. When using the hardware-assisted PROFINET interface, it will create a second Ethernet communication device with its own independent MAC address and IP settings. The LAN connection associated with the hardware-assisted PROFINET interface can be shared with other traffic.
- An advanced I/O engine that includes the following:
 - **Digital I/Os:** 4 inputs and 3 outputs.
 - › 4 opto-isolated, digital auxiliary input signals (24V).
 - › Input signals have interrupt generation capabilities.
 - › Input signals can sink or source. To source voltage, you must connect an auxiliary voltage source to the common input signal (AUX_OPTOIND_IN_COMMON). For voltage expectations, see *Electrical specifications* subsection of the *Zebra Iris GTX specifications* section, later in this appendix. Whether all the input signals are sinking or sourcing is dependent upon the connection of the common input signal.
 - › Input signals are debounced (that is, configured to wait a given amount of time between accepting a signal change). The debouncing time can be configured using Matrox Design Assistant. For more information, refer to the *Matrox Design Assistant help file*.

- › 3 opto-isolated auxiliary output signals (up to 24 V). Note that these auxiliary output signals are sinking signals that share a common signal. If one of these signals is used as a sourcing signal, the other two are no longer available.
- **One analog output.** A 0-10 V signal designed to connect to the 0-10 V analog intensity control pin of a light controller (such as, an Advanced Illumination inline control system (ICS3), a Smart Vision Lights Brick light, or a similar device). This signal does not provide power; instead, it provides analog intensity (dimming) control (0-10 V translates to 0-100% illumination).
- **Timers.** 1 exposure, 1 strobe, 8 general purpose.
 - › 1 exposure timer. A 28-bit timer used to control the exposure of your Zebra Iris GTX, and allows a range of exposure time from 50 usec to 4 sec. The timer output will always set camera exposure, but can be simultaneously redirected to any auxiliary output signal.
 - › 1 strobe timer. A 28-bit timer whose output can be routed to any auxiliary output signal. The resulting output signal can then be used to control a strobe device. This timer is limited by the maximum possible value for the exposure timer, and when the exposure timer ends, so will the strobe timer.
 - › 8 general timers. Each of the timers (Timer 1 through 8) is a 32-bit timer and can count up to 4,294,967,295 clock ticks before resetting. Each timer can use a specified clock source for its active period and a different specified clock source for its delay period.
- **One I/O command list.** Used to schedule I/O commands, in any order.
- **One rotary decoder.** Supports input from rotary encoders with quadrature output.

- **Display.** Your Zebra Iris GTX can use a video screen connected to the VGA/USB connector to display the Zebra Iris GTX interface. The following information relates to the device that can be connected to the VGA/USB connector.
 - **Output:** RGB analog output.
 - **Maximum supported resolution:** 2048 x 1536¹.
 - **Maximum pixel depth:** 32-bits.
 - **Maximum vertical refresh frequency:** 60 Hz - 85 Hz, depending on resolution.
- **USB connection.** A standard USB keyboard and mouse are supported natively. To connect any other device (such as a specialized keyboard or touch screen) to your Zebra Iris GTX, it must have a specialized device driver. If the device has a third-party provided driver, inquire whether a specialized device driver is available for your Zebra Iris GTX by contacting your local Zebra representative.

Lenses

Each Zebra Iris GTX starter kit ships with a C-mount lens. Contact your Zebra sales representative for details.



Keep the lens free of fingerprints and dust. Do not clean with an alcohol-based cleaning solution and do not spray water or cleaning fluids directly onto the lens. Instead, use a can of compressed air or a lens cleaning cloth to remove dust.

1. Be aware that not all monitors can go up to this resolution; please consult your display monitor specifications to see what resolutions are supported.

The Zebra Iris GTX works with the Varioptic Caspian C-39N0-160-I2C or C-39N0-250-I2C lens (liquid lens). This electronically focus-controllable C-mount lens, fits within the IP lens case, provided with your Zebra Iris GTX. The Varioptic lens connects to the liquid lens connector inside the lens case housing of your Zebra Iris GTX.

General care and cleaning

To clean the unit housing, use a small amount of mild detergent cleaner on a cleaning cloth. Do not pour the cleaner directly onto the unit housing.

To remove dust from the lens cap, use either a can of compressed air or a lens cloth. The air must be free of oil, moisture, and other contaminants that could remain on the lens cap.

To clean the glass window of the lens cap, use a small amount of isopropyl alcohol on a cleaning cloth. Do not pour the alcohol directly on the glass window.

Zebra Iris GTX specifications

The following specifications detail your Zebra Iris GTX.

Electrical specifications

GTX2000, GTX2000C, GTX5000, GTX5000C, GTX8000, GTX8000C, GTX12000, GTX12000C, GTX16000, GTX16000C	
Operating voltage for the Zebra Iris GTX under testing conditions	
	24 V.
Rated current	600 mA
Operating voltage tolerance	± 10%

GTX2000, GTX2000C, GTX5000, GTX5000C, GTX8000, GTX8000C, GTX12000, GTX12000C, GTX16000, GTX16000C	
Varioptic Caspian C-39N0-160-I2C or C-39N0-250-I2C lens (liquid lens)	
Typical	Supplied voltage
	Rated current
	5 V
	50 mA

GTX2000, GTX2000C, GTX5000, GTX5000C, GTX8000, GTX8000C, GTX12000, GTX12000C, GTX16000, GTX16000C		
I/O specifications		
Opto-isolated output signals	Operating voltage	24 V (26 V abs. max)
	Sink current	50 mA max
	Maximum leakage current	1 μ A @ 24 V 1 mA @ 26 V
	ON voltage	0.4 V @ 2 mA 1.1 V @ 25 mA 1.5V @ 50 mA
	PTC ^a fuse max. time-to-trip	1 sec @ 0.5 A
	OFF to ON response	2 μ sec to reach 4 V ^b
	ON to OFF response	50 μ sec to reach 11 V ^b
Opto-isolated input signals	Operating voltage	24 V (26 V abs. max)
	Input current (sink or source) ^c	3.5 mA max ^d , 1 mA min ^e
	ON voltage level	> 11 V ^f
	OFF voltage level	< 4 V
	OFF to ON response	6 μ sec
	ON to OFF response	80 μ sec
0-10 V analog control output signal	Non-isolated. Supports lighting devices (such as, an Advanced Illumination inline control system (ICS3), a Smart Vision Lights Brick light, or a similar device). Note that the 0-10 V is intended for reference voltage only (that is < 1 mA).	

- a. The PTC is an automatically resetting fuse.
- b. This occurred under the following condition: output pulled to 24 V using 1 k Ω .
- c. Regardless whether the signal is sinking or sourcing, this measurement is the same.
- d. Maximum input current at maximum ON voltage. Note that the connected device must not limit the current to a value lower than this.
- e. Minimum input current at minimum ON voltage. This can be used to calculate bleeding resistor needed for 2-wire proximity sensor.
- f. Recommended > 12 V when using Zebra I/O Breakout Box.

Environmental specifications

- For indoor use only.
- Maximum altitude: 2000 meters.
- Operating temperature: 0 to 45 C (32 °F to 113 °F)¹.
- Ventilation requirements: Natural convection.
- Pollution degree: 2 environment.
- Over-voltage category: I
- Ingress protection rating: IP67.

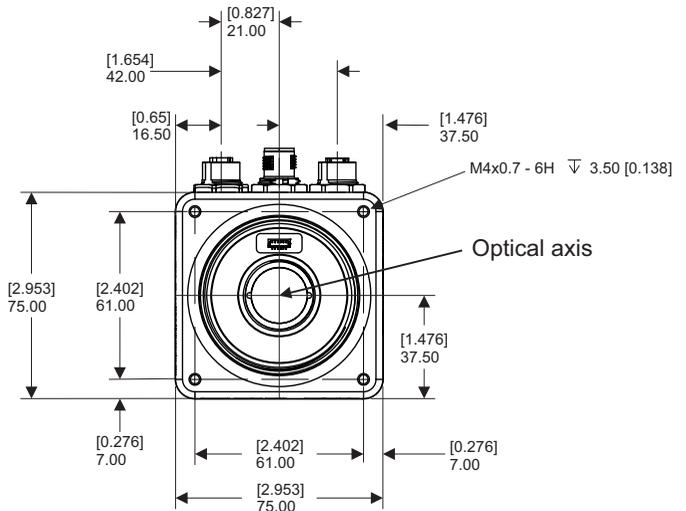
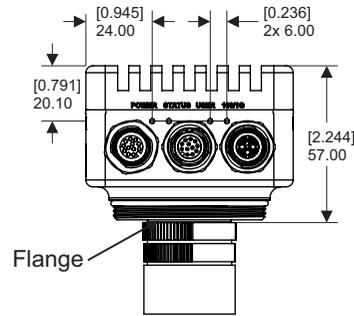
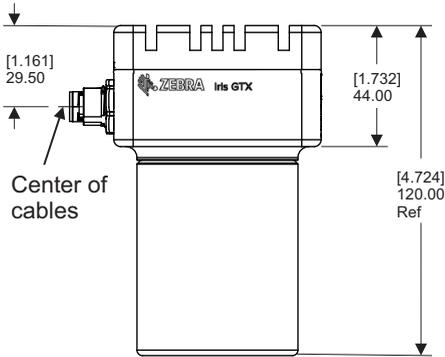
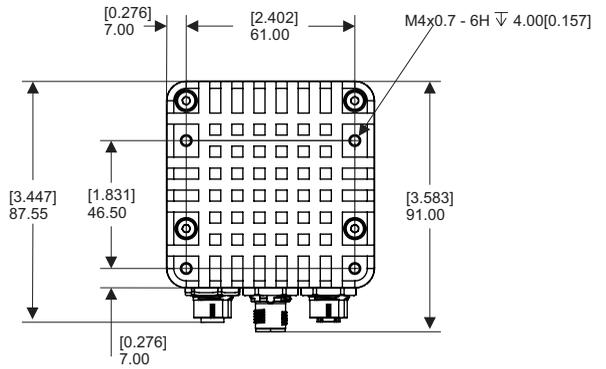
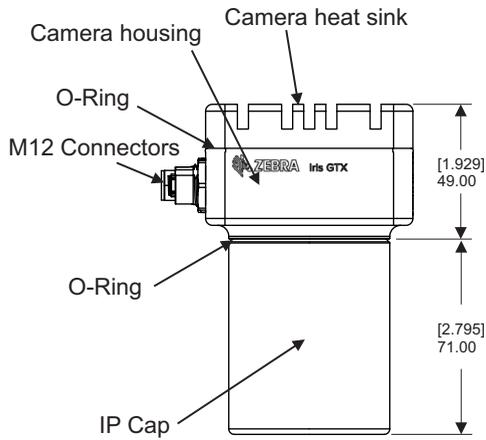
Mechanical specifications

GTX2000, GTX2000C, GTX5000, GTX5000C, GTX8000, GTX8000C, GTX12000, GTX12000C, GTX16000, GTX1600C	
Connectors	M12 8-pin (female) X-coded connector for 100/1000 BaseT Ethernet.
	M12 12-pin (male) connector for VGA/USB.
	M12 12-pin (female) connector for digital I/O and power.
Certification	IP67

Dimensions

Dimensions		GTX2000, GTX2000C, GTX5000, GTX5000C, GTX8000, GTX8000C, GTX12000, GTX12000C, GTX16000, GTX16000C
Weight		407 g (14.35 oz) without IP cap 504 g (17.77 oz) with IP cap
Smart camera length (without the connectors)		75 mm (2.95") ± 2 mm (0.079")
Smart camera height (without the lens)		57 mm (2.24") ± 2 mm (0.079")
Smart camera width		75 mm (2.95") ± 2 mm (0.079")
IP cap length (total length)		71 mm (2.79") ± 2 mm (0.079")
IP cap max lens internal clearance		
	Length (interior from the mounting flange to inside the clear top)	56.69 mm (2.23") ± 2 mm (0.079")
	Diameter	48 mm (0.71") ± 2 mm (0.079")

1. Under current testing conditions.



Dimensions are presented as mm[inches]

Coin cell battery/Pile bouton

- Used to maintain time and date settings of the unit's real-time clock.

Utilisée pour maintenir l'heure et la date de l'unité.

- Battery voltage: 3 V.

Voltage de la pile: 3 V.

- Diameter (max): 20 mm.

Diamètre (max): 20 mm.

- Battery type: BR2032.

Type de pile: BR2032.

LEDs on your Zebra Iris GTX

From the moment you power up your Zebra Iris GTX to the moment you power it down, at least one of the four light-emitting diodes (LEDs) at the back of Zebra Iris GTX should be lit.



The LEDs on your Zebra Iris GTX are:

- **Power LED and User LED.** The colors of these two LEDs change as your Zebra Iris GTX boots.
- **Status LED.** This LED shows the general activity of your Zebra Iris GTX.
- **100/1G LED.** This LED shows the connection status of your Zebra Iris GTX.

The Power and User LEDs typically display one of the following sets of colors:

LED color		Description
Power	User	
Off	Off	Zebra Iris GTX has no power.
Orange	Orange/Red blink	Thermal trip has been detected.
Orange	Off	BIOS execution is in progress.
Green	Orange/Off blink	Overheating was detected. Temperature is above the throttle temperature limit.
Green	Off	Operating System is loading.
Green	Orange	Operating system startup is in progress.
Green	Green	Camera is ready.

The Status LED typically displays one of the following sets of colors:

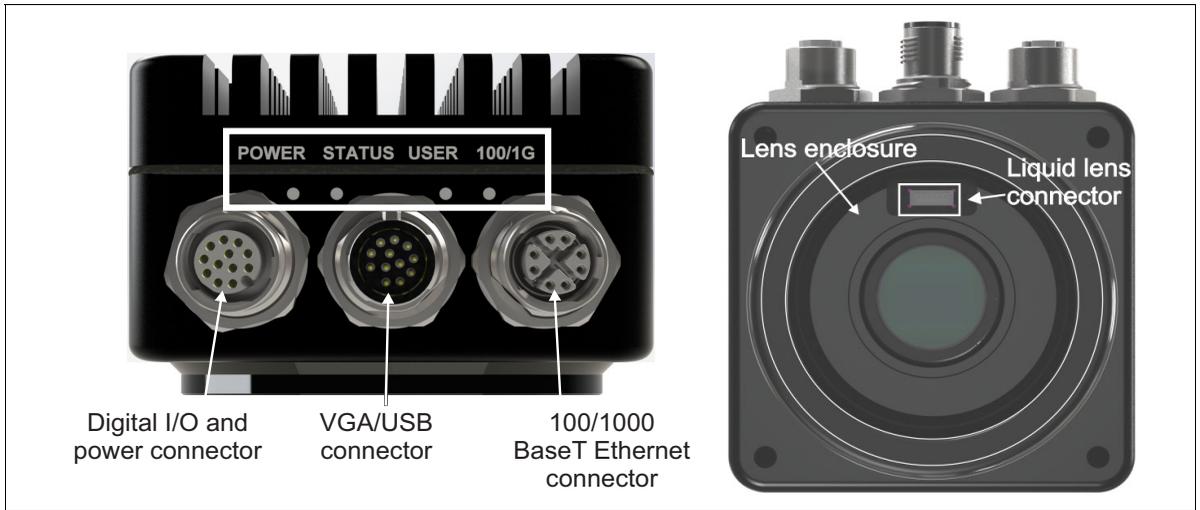
LED Color	Description
Off	There is no power or there is an internal error.
Red/Orange	The image sensor is initializing.
Red/Orange blink	The image sensor is not detected.
Orange	Zebra Iris GTX is in an idle state. A MIL or Matrox Design Assistant application could also be waiting for a trigger.
Green	Zebra Iris GTX image acquisition is in progress.

100/1G LED typically shows the connection status of your Zebra Iris GTX:

LED Color	Description
Off	There is either no activity or a low speed (10 Mbits) connection between your Zebra Iris GTX and the network.
Solid yellow	There is a link on the 100 Mbits/sec connection.
Blinking yellow	The 100 Mbits/sec connection has activity.
Solid green	There is a link on the 1 Gbit/sec connection.
Blinking green	The 1 Gbit/sec connection has activity.

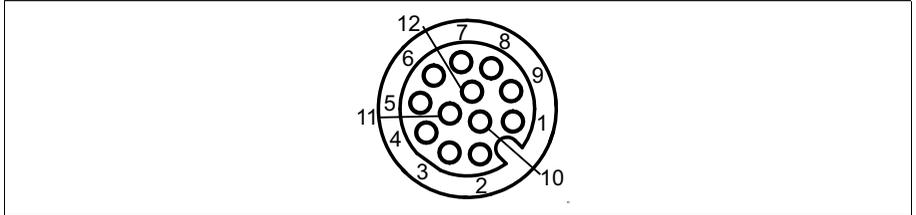
Zebra Iris GTX connectors

Your Zebra Iris GTX has several interface connectors. These are the Digital I/O and power connector, the VGA/USB connector, the 100/1000 BaseT Ethernet connector, and the liquid lens connector.



Digital I/O and power connector

The digital I/O and power connector is an M12 12-pin (female) connector that transmits and receives digital I/O signals, provides an analog intensity (dimming) control signal for an inline control system lighting controller, and provides power to your Zebra Iris GTX.



The pinout for the digital I/O and power connector is as follows:

Pin	Wire color	Hardware signal name	DA name for auxiliary signal	MIL name for auxiliary signal	Description
1	Brown	AUX_OPTOIND_OUT_COMMON	N/A	N/A	Opto-isolated industrial auxiliary signal (output) common.
2	Blue	AUX_AREF_OUT7	N/A	N/A	0-10 VDC Analog intensity control signal (output). Note that this signal uses the - VDC for reference. Supported function: a 0-10 VDC analog intensity (dimming) control signal that can be received by typical lighting controllers (such as, an Advanced Illumination inline control system (ICS3), Smart Vision Lights Brick light, or other similar devices). This pin used to be referred to as the Analog reference voltage signal.
3	White	AUX_OPTOIND_OUT2	AUX I02	M_AUX I02	Opto-isolated industrial auxiliary signal 2 (output). Supported function: user-bit 2 (output 3 of 3).
4	Green	+ VDC	N/A	N/A	Positive pin of the power provided to your Zebra Iris GTX. This pin must be connected to a + 24 V +/- 10% power supply.
5	Pink	AUX(TRIG)_OPTOIND_IN3	AUX I03	M_AUX I03	Opto-isolated industrial auxiliary signal 3 (input).
6	Yellow	AUX_OPTOIND_IN_COMMON	N/A	N/A	Opto-isolated industrial auxiliary signal (input) common. Supported function: Whether you should connect this pin to an electrical return path or a voltage source depends on whether the third party device is sourcing or sinking the current, respectively.
7	Black	AUX_OPTOIND_IN5	AUX I05	M_AUX I05	Opto-isolated industrial auxiliary signal 5 (input).

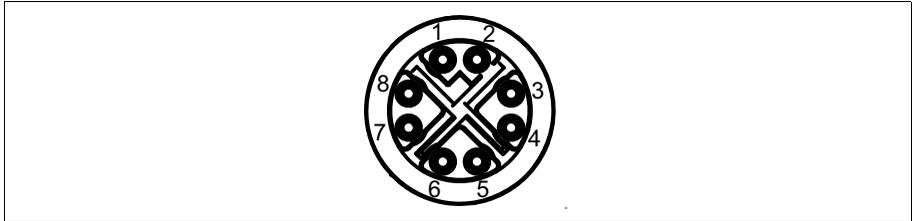
Pin	Wire color	Hardware signal name	DA name for auxiliary signal	MIL name for auxiliary signal	Description
8	Grey	AUX_OPTOIND_IN6	AUX I06	M_AUX I06	M_AUX I06
9	Red	AUX_OPTOIND_IN4	AUX I04	M_AUX I04	Opto-isolated industrial auxiliary signal 4 (input).
10	Violet	AUX_OPTOIND_OUT0	AUX I00	M_AUX I00	Opto-isolated industrial auxiliary signal 0 (output). Supported function: user-bit 0 (output 1 of 3).
11	Gray-Pink	- VDC	N/A		Negative pin of the power provided to your Zebra Iris GTX. This pin must be connected to the electrical return path of the + 24 V +/- 10% power supply connected to the +VDC pin.
12	Red-Blue	AUX_OPTOIND_OUT1	AUX I01	M_AUX I01	Opto-isolated industrial auxiliary signal 1 (output). Supported function: user-bit 1 (output 2 of 3).

To interface with this connector, you can use either the cable that comes with the starter kit, M12-CBL-PWR/3, or you can build your own. To build your own digital I/O and power cable, parts can be purchased from:

Cable information	
Manufacture	Phoenix Contact GmbH & Co. KG
Part number:	SAC-12P- MS/3,0-PVC SCO Order No:1554788
Description:	Sensor/actuator cable, 12-pos., black PVC, straight M12 SPEEDCON plug on free conductor end, length: 3.0 m

100/1000 BaseT Ethernet connector

The 100/1000 BaseT Ethernet connector is an M12 (female) 8-pin X-coded connector that provides communication capabilities at 10 Mbit/sec, 100 Mbit/sec, or 1 Gbit/sec (1000 Mbit/sec). For PROFINET communication, this interface provides a hardware-assisted PROFINET interface, which supports a minimum cycle time of 1 msec.



The pinout for the Ethernet connector is as follows:

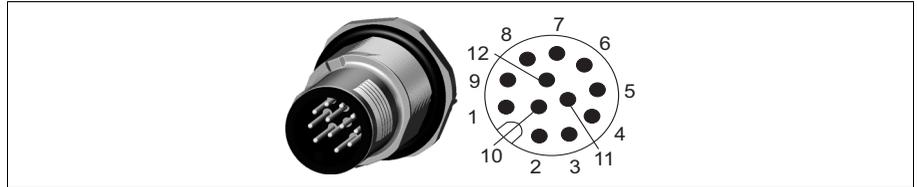
Pin number	Signal name	Description
1	MDI_1+	Bidirectional data A+
2	MDI_1-	Bidirectional data A-
3	MDI_2+	Bidirectional data B+
4	MDI_2-	Bidirectional data B-
5	MDI_4+	Bidirectional data D+
6	MDI_4-	Bidirectional data D-
7	MDI_3-	Bidirectional data C-
8	MDI_3+	Bidirectional data C+

To interface with this connector, you can use either the cable that comes with the starter kit, M12-CBL-ETH/5, or you can purchase a similar cable from an alternate source. For an alternate source of 100/1000 BaseT Ethernet cables, contact:

	Cable information
Manufacture	Phoenix Contact GmbH & Co. KG
Part number:	NBC-MSX/5.0-94F/R4AC SCO Order No.: 1407473
Description:	Assembled Ethernet cable, CAT6A, 8-position, PUR, RAL 5021 (water blue), Plug straight M12 SPEEDCON / IP67, Coding: X, on plug straight RJ45 / IP20, length 5 m.

VGA/USB connector

The VGA/USB connector is an M12 12-pin (male) connector that transmits output video and can both transmit and receive USB signals. The output video signal is a standard RGB analog video output used to send the operating system's desktop to the connected display device.



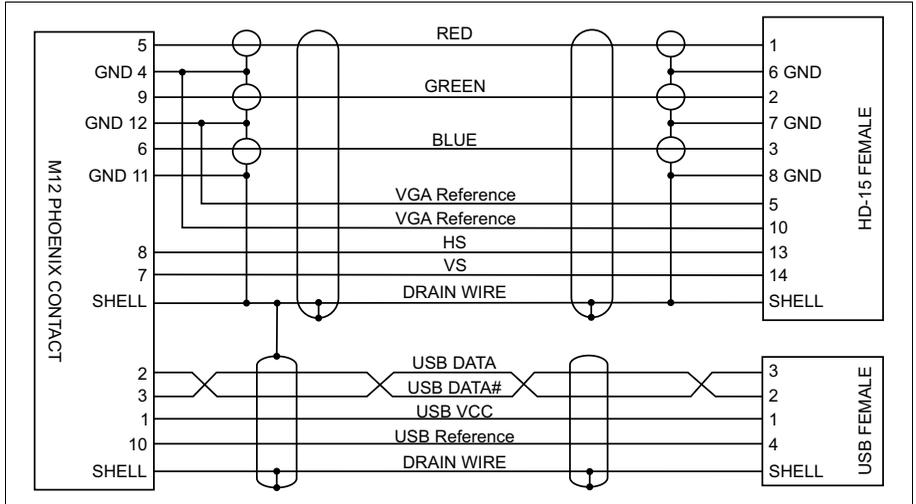
The table below summarizes the supported standard display resolutions:

Standard display resolution	Analog video	Maximum refresh rate
1920 × 1200	RGB	60 Hz
1920 × 1080	RGB	60 Hz
1600 × 1200	RGB	60 Hz
1280 × 1024	RGB	85 Hz
1024 × 768	RGB	85 Hz
800 × 600	RGB	85 Hz
640 × 480	RGB	85 Hz

The pinout for the VGA/USB connector is as follows:

Pin number	Signal name	Description
1	USB_PWR	5 V supplied from your Zebra Iris GTX to the USB peripherals.
2	USB_DATA_P	USB data +.
3	USB_DATA_N	USB data -.
10	USB_REF	USB reference.
5	RED_VID_OUT	R component of the RGB video output signal.
6	BLUE_VID_OUT	B component of the RGB video output signal.
7	VSYNC	Vertical sync of the RGB video output signal.
8	HSYNC	Horizontal sync of the RGB video output signal.
9	GREEN_VID_OUT	G component of the RGB video output signal.
4, 11, 12	VGA_REF	VGA reference.

The following is a wire-diagram of the Zebra GTR-CBL-VGAUSB cable, showing the connection between the Zebra Iris GTX VGA/USB connector on one end and the HD-15 and USB connectors on the other.



This cable can be purchased as part of the starter kit, or separately from Zebra (GTR-CBL-VGAUSB).

Liquid lens connector

The liquid lens connector is a six-pin shrouded male connector designed to connect to the 6-pin connector from a Varioptic Caspian C-39N0-160-I2C or C-39N0-250-I2C lens. The secondary, 3-pin male connector, from the Varioptic lens is not used.

This connector is located inside the lens cap housing of your Zebra Iris GTX.



The pinout for the liquid lens connector is as follows:

Pin number	Signal name	Description
1	PWR	Power supply (+5 V).
2	GND	Ground.
3	SDA	Serial data line signal.
4	SCL	Serial data clock signal.
5	Unused	Unused.
6	Unused	Unused.

Appendix C: Matrox Imaging operating system utilities and recovery

This appendix describes the utilities found on your Zebra Iris GTX and provides instructions on how to recover the Matrox Imaging operating system (MIOS) that comes with Zebra Iris GTX.

Matrox Imaging operating system utilities

Zebra Iris GTX includes several useful utilities. They are available from the following web address:

```
http:\\GTXxxxxxx:8080
```

In the above example, replace xxxxxx with the six digits of your smart camera's MAC address. If you have changed the camera's device name, replace GTXxxxxxx with the name of your smart camera, or use its IP address; for more information, see *Connecting to your Zebra Iris GTX desktop* section, in *Chapter 2: Powering and connecting to your Zebra Iris GTX*.

- ❖ Note that these utilities are stored on your Zebra Iris GTX, but should be installed on your development computer, in case the operating system partition becomes corrupt and you need to use these programs. They can be downloaded from your Zebra Iris GTX's web address, shown at the top of this section.

The utilities offered are as follows:

- **Virtual network computing (VNC).** This utility allow you to remotely connect to your Zebra Iris GTX.
- **Matrox System Discovery (MtxSysDiscovery) utility.** This 64-bit Windows utility allows you to discover Zebra Iris GTX cameras on your network. In addition, it can change network settings, restart or shut down individual smart cameras, or open the portal page of a specific camera. On computers with Matrox Design Assistant installed, this utility is included in the *Tools* folder, accessible from the MIL Control Center.
- **Bonjour browser.** This is a link to the Internet that leads to the Bonjour browser website. Bonjour browser is a program that lists all the services on your subnet. This provides a way to find the IP address of any Zebra Iris GTX on the subnet.

- **FileZilla.** A client utility for transferring files from one computer to another using FTP, FTPS, or SFTP.
- **Putty.** A client console utility for running remote sessions on a computer over a network using the SSH (Secure Shell), Telnet, or Rlogin network protocols.
- **Rufus.** A utility that formats and creates bootable USB keys.

Upgrading the Matrox Imaging operating system

If you have upgraded Matrox Design Assistant, you might be required to update the version of the Matrox Imaging operating system (MIOS) on Zebra Iris GTX. You can configure the MILConfig utility on your development computer to receive updates. You can then use this update to upgrade the camera.

Warning

An upgrade will erase all information on the Zebra Iris GTX storage drive. If you have made changes to a deployed project from its operator view, it is recommended that in Matrox Design Assistant, you synchronize recipes between the runtime and the design time project. Also, import all recipes that you created at runtime, copy all image folders that are stored on Zebra Iris GTX, and back up any validation sets that you need to continue using after the upgrade.

To upgrade the Matrox Imaging operating system (MIOS) on your Zebra Iris GTX, perform the following:

1. Connect remotely to your Zebra Iris GTX from Matrox Design Assistant. Matrox Design Assistant will detect a version mismatch and prompt you to upgrade. When you accept this prompt, an **Update** dialog will appear.
2. In the **Update** dialog, browse to the location on your development computer where MILConfig stored the new MIOS ISO file (.iso). This is generally in the same location as where your Matrox Design Assistant upgrade package is stored.
3. Once the MIOS ISO file has been selected, click on the **Update** button in the **Update** dialog and your update will begin.

The ISO file will be copied to Zebra Iris GTX; then, the camera will power cycle. Upon power cycling, the camera is upgraded.

To apply an MIOS upgrade on several smart cameras, it might be more efficient to upgrade from a USB key, connected to the smart camera's VGA/USB connector, through a GTR-CBL-VGAUSB cable. To do so, you will need to install the MIOS upgrade on one smart camera, back it up on a USB key, and then deploy it on the other smart cameras. See the *Making a backup MIOS and deploying it on multiple units* section, later in this appendix.

Restoring the Matrox Imaging operating system to factory defaults

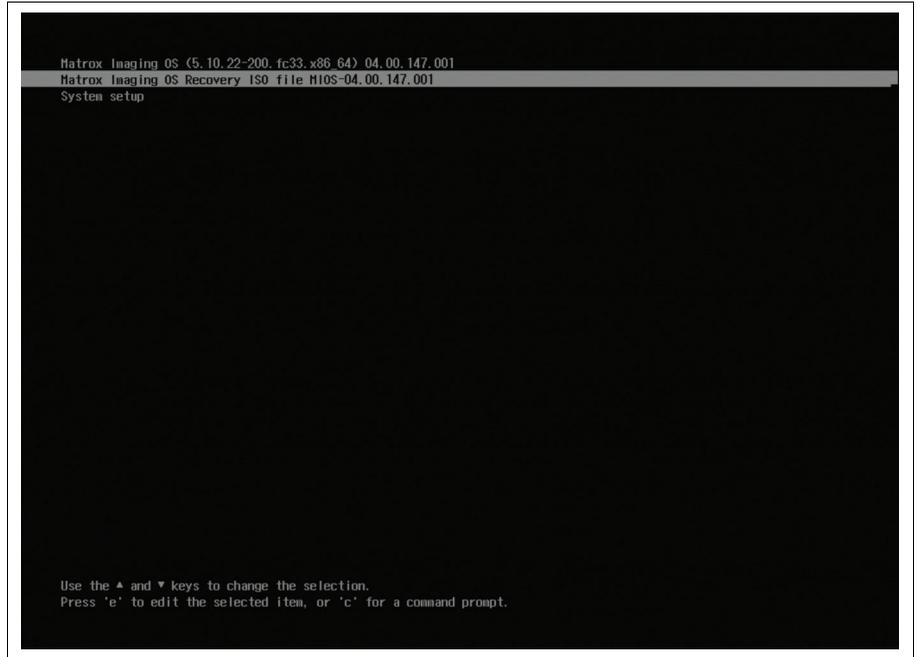
If required, you can restore the Matrox Imaging operating system to the factory default using the MIOS ISO stored in the recovery partition on your Zebra Iris GTX, or you can restore it from a USB key with a factory default MIOS ISO.

Restoring the factory default MIOS

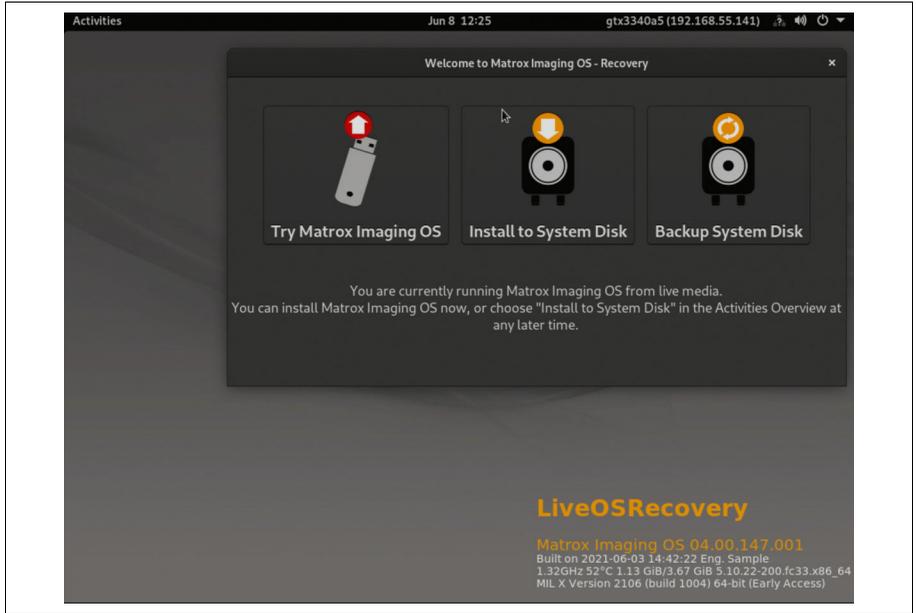
The factory default version of the MIOS ISO is stored on the Zebra Iris GTX recovery partition. To recover the factory default version, perform the following:

1. Connect a monitor, mouse, and keyboard to your Zebra Iris GTX, as described in *Chapter 2: Powering and connecting to your Zebra Iris GTX*.
2. Reboot your Zebra Iris GTX.

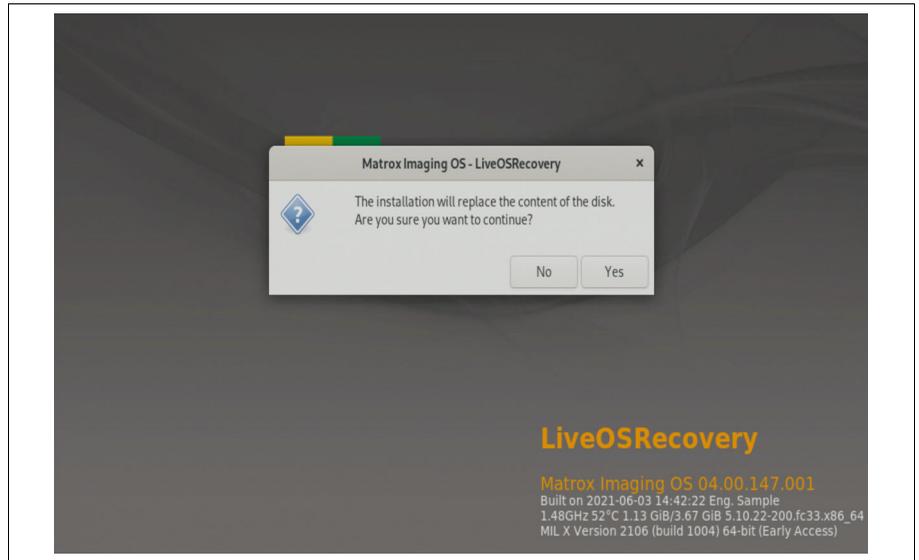
3. Near the end of the BIOS boot process, after the BIOS logo appears, a monochrome screen presents two options: load the current OS or load the recovery ISO from the Recovery MIOS partition. Use your keyboard to select the latter.



4. After selecting to load the MIOS from the recovery partition, a disk check will be performed. Once the check is complete, the **Matrox Imaging OS - Recovery** page is presented.



5. Select **Install to System Disk** to install the factory default MIOS. You will be warned that the installation will replace the contents of your disk and asked if you want to continue. Select **Yes**. An installation screen will be presented and the installation process will begin.



Warning!

This will replace the contents of your Zebra Iris GTX's storage drive.

6. After installation, the unit will reboot. Select **OK** when prompted to reboot, and Zebra Iris GTX will reboot loaded with the factory default MIOS.

Burning and restoring a factory default MIOS with a USB key

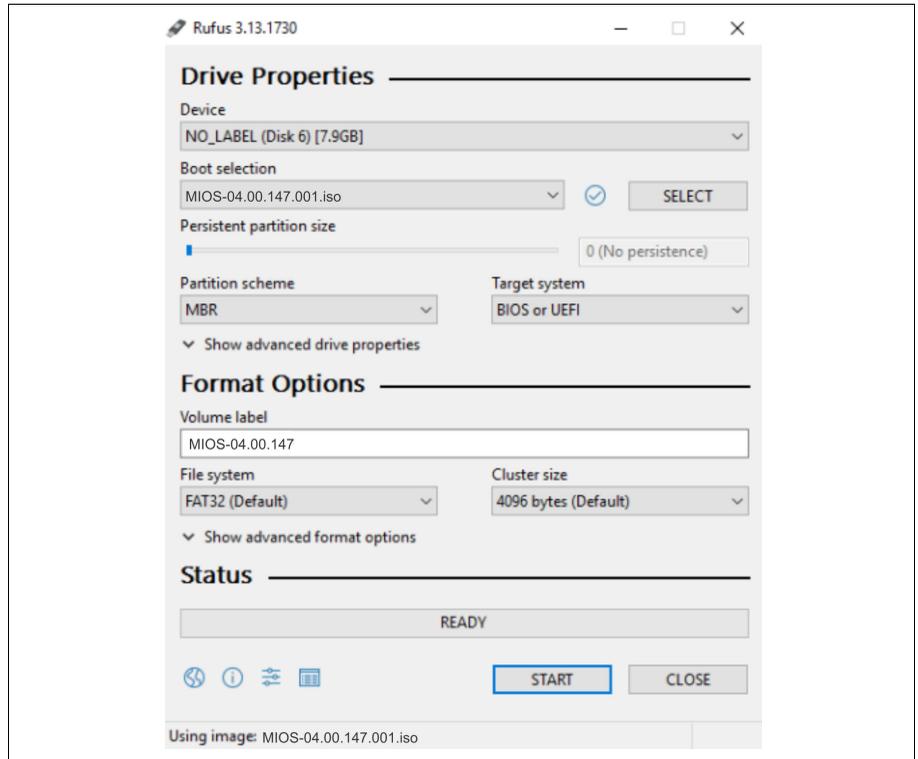
Only a factory default MIOS can be burned to a bootable USB key. If you are trying to restore a backup, see the *Making a backup MIOS and deploying it on multiple units* section later in the appendix. To acquire an ISO of the factory default MIOS, contact your Zebra representative, or refer to the Matrox Design Assistant documentation for the location of the system restore MIOS file in the Matrox Design Assistant installation folder.

Burning a factory default MIOS ISO to a USB key

To safely copy your factory default MIOS ISO and use it to install a new operating system on multiple Zebra Iris GTX units, you should burn the factory default MIOS ISO to a blank USB key with a capacity of 4 Gbytes, or more. To do so:

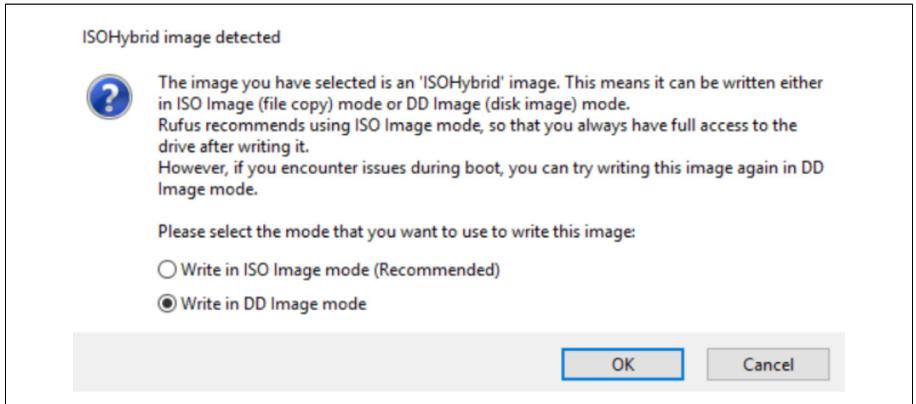
1. Acquire a copy of the factory default MIOS ISO and store it locally on your Microsoft Windows development computer.
2. Connect a blank USB key to your Microsoft Windows development computer.
3. Launch Rufus (the Reliable USB formatting utility). To locate a copy of the Rufus utility, refer to the *Matrox Imaging operating system utilities* section, earlier in this appendix.

4. Click on **Select** to navigate to the location of the MIOS file to burn to the USB key, and select the USB key to use from the **Device** drop-down menu.



5. Set **Partition scheme** to **MBR**, and set **Target system** to **BIOS or UEFI**.
6. Specify a **FAT32** partition, leave **Cluster size** to the default, and leave **Volume label** as is.
7. Click on the **Start** button to begin burning to the USB.
8. A pop-up will appear asking you to download a new version of Syslinux. Click on **Yes**.

9. Another pop-up will appear asking you in which mode to write your ISO image. Select **Write in DD Image mode**.

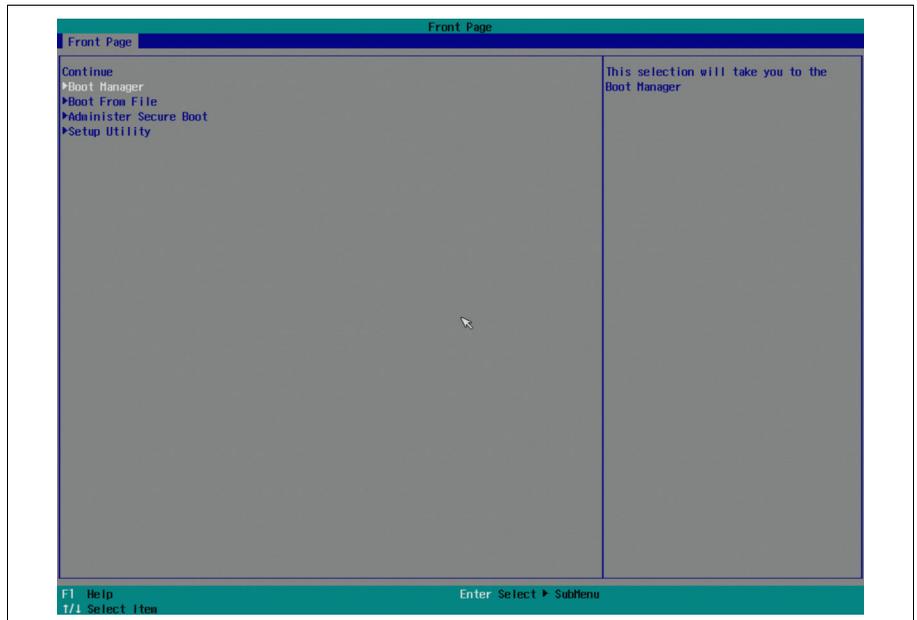


10. Once this process is complete, double-click on the Safely Remove icon in your Windows System Tray, before removing the drive.

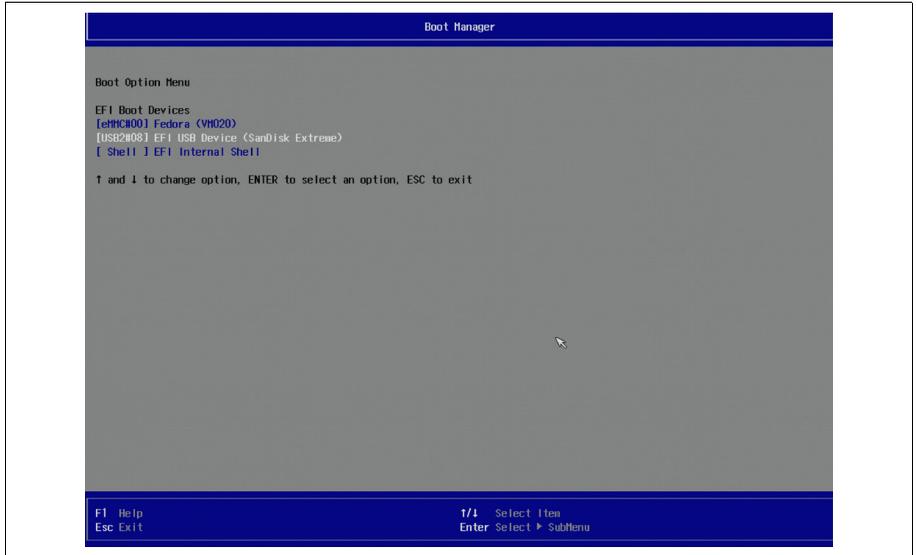
Restoring the factory default MIOS using a USB key

Once your USB key has a burned image of the factory default MIOS, you can use it to install the factory default MIOS onto multiple Zebra Iris GTX smart cameras. To do this, you need to connect your bootable USB key, a monitor, mouse, and keyboard to your Zebra Iris GTX, as described in *Chapter 2: Powering and connecting to your Zebra Iris GTX*.

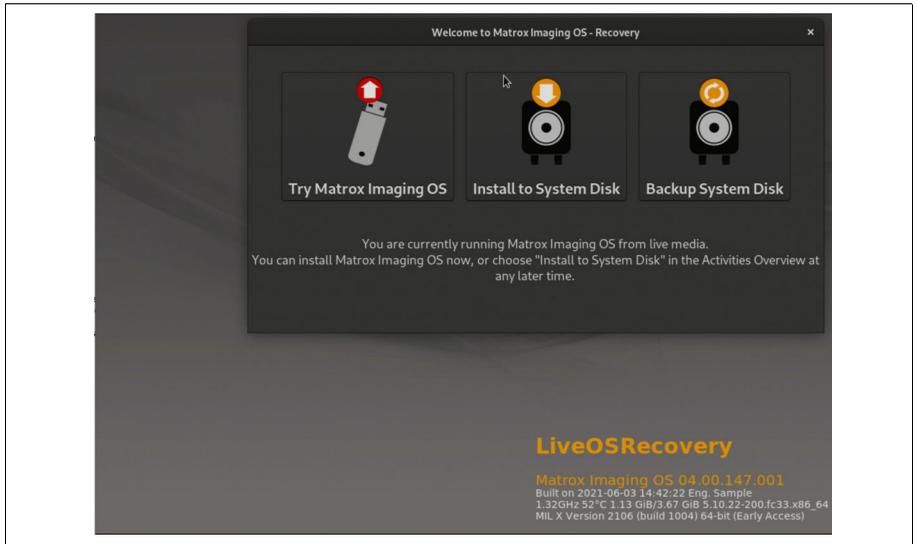
1. With your bootable USB key connected to your Zebra Iris GTX, reboot your Zebra Iris GTX.
2. When the BIOS logo appears, press the ESC key to open the front page of the BIOS menu.
3. Click on **Boot Manager**. The BIOS boot device menu is presented.



- From the BIOS boot device menu, select the EFI USB Device option from the EFI Boot Devices list. Zebra Iris GTX will then boot from the USB key.



- After selecting to boot from the USB key, the Matrox Imaging OS - Recovery page is presented.

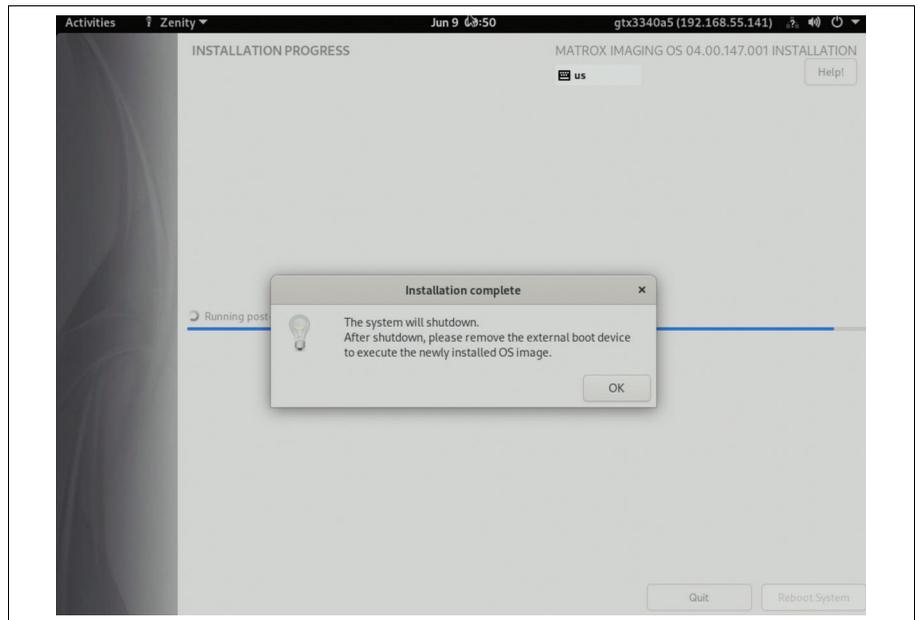


6. Select **Install to System Disk** to install the MIOS found on your USB key. You will be warned that the installation will replace the contents of your disk and asked if you want to continue. Select **Yes**. An installation screen will be presented and the installation process will begin.

Warning!

This will replace the contents of your Zebra Iris GTX's storage drive.

7. After installation, a prompt warns that the system will shut down and that you will need to remove the external boot device before booting up again. Click on **OK** when prompted and remove the external boot device from its port.



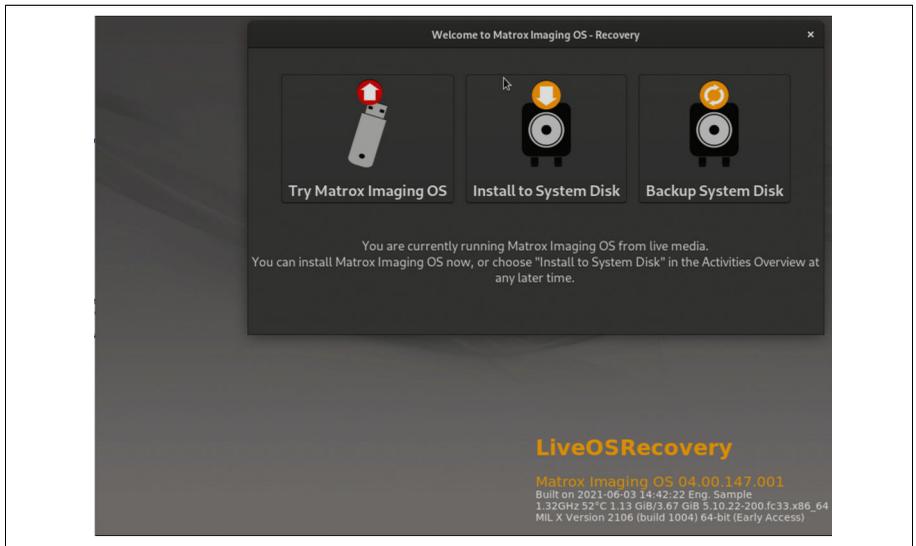
Making a backup MIOS and deploying it on multiple units

If you have updated settings or made specific changes to your MIOS that you would like to use on other units, you will need to make a backup MIOS ISO. This backup is stored in the recovery partition of Zebra Iris GTX. This MIOS ISO cannot be mounted onto a USB key; it can only be stored on one. Alternatively, you can store this backup on your network. Once a backup is saved, it can be deployed on a unit by following the instructions outlined in the subsections below.

Saving a backup MIOS

To create a backup MIOS ISO that you can use in the event that your drive ever corrupts, you should store it on a blank USB key with a capacity of 4 Gbytes, or more. To do so:

1. Follow steps 1-4 of the *Restoring the factory default MIOS* section earlier in this appendix.
2. On the **Matrox Imaging OS - Recovery** page, select **Backup System Disk**.



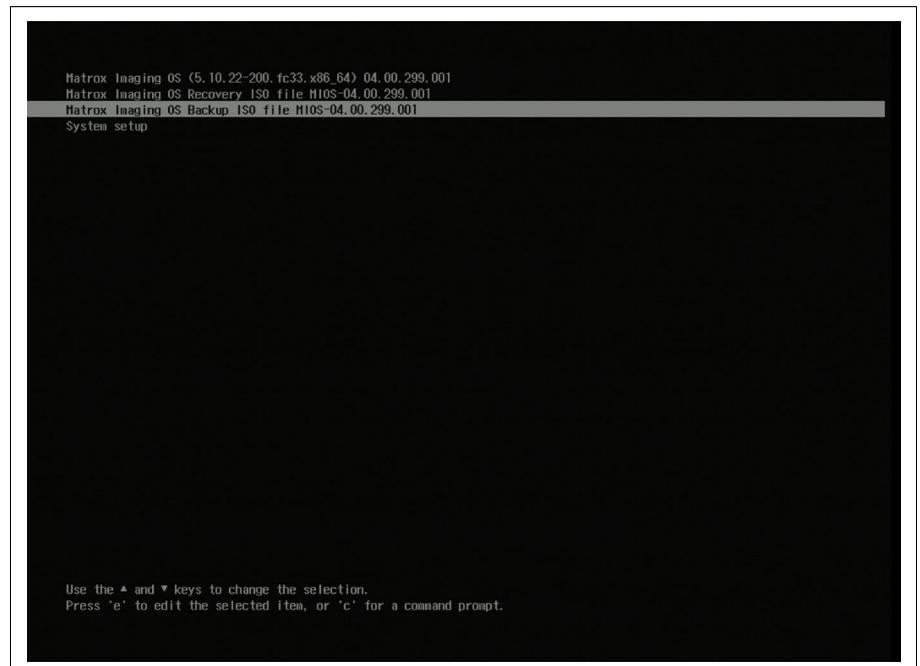
A terminal will open and start the process of creating a backup MIOS ISO. The ISO file will be stored in the *boot/backup/rescue* folder of your Zebra Iris GTX unit.

3. When the process completes, you will get a message that the backup completed successfully. Click on **OK**, and manually reboot your unit.
4. You can now store this backup MIOS ISO on a USB key or somewhere on your network.

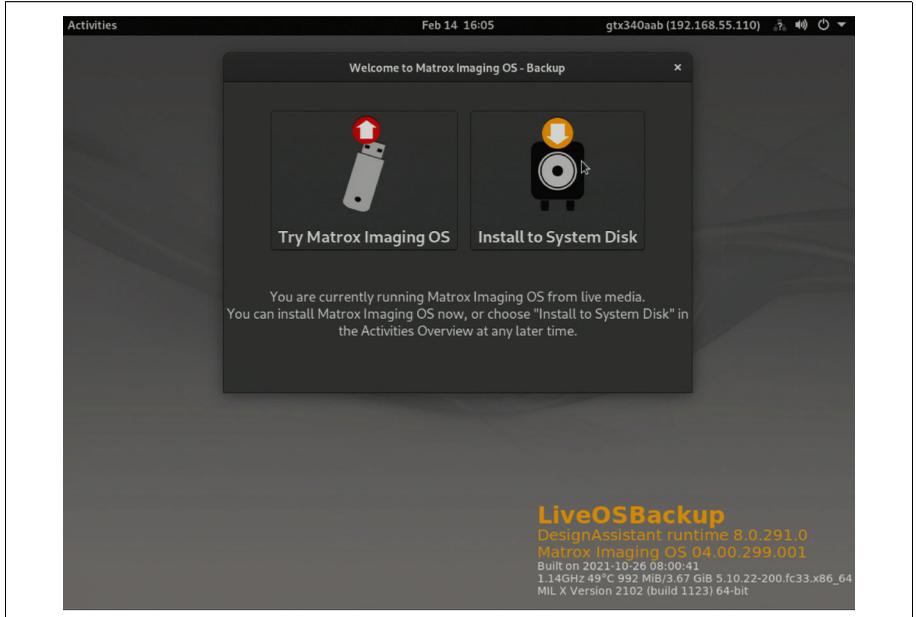
Deploying a backup MIOS to the same unit on which it was created

Once you have made a backup MIOS ISO, you can now deploy this backup if you need to restore the unit. To deploy the backup MIOS ISO, perform the following:

1. Reboot your Zebra Iris GTX.
2. Near the end of the BIOS boot process, after the BIOS logo appears, a monochrome screen presents you with three options, instead of two: load the current MIOS, load the recovery ISO, or load the backup ISO. Use your keyboard to select the latter.



3. After selecting to load the backup ISO, your unit will restart. Do not change the selection on the monochrome screen; eventually, the unit will present the login screen, ask for the default password, and then present the **Matrox Imaging OS - Backup** page. To complete the deployment of the backup on the system disk, select the **Install to system disk** option.

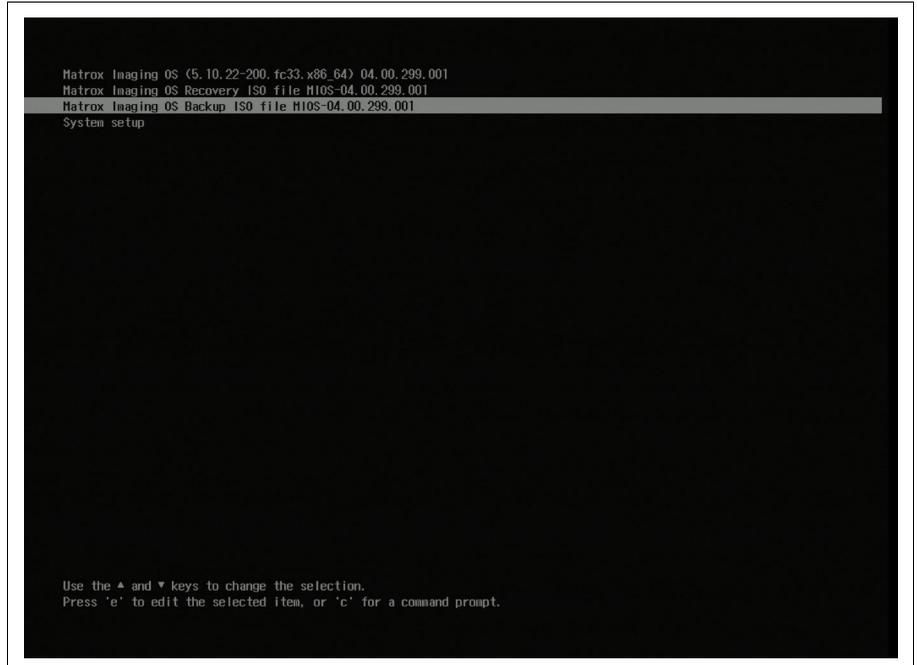


Deploying a backup MIOS to a different unit

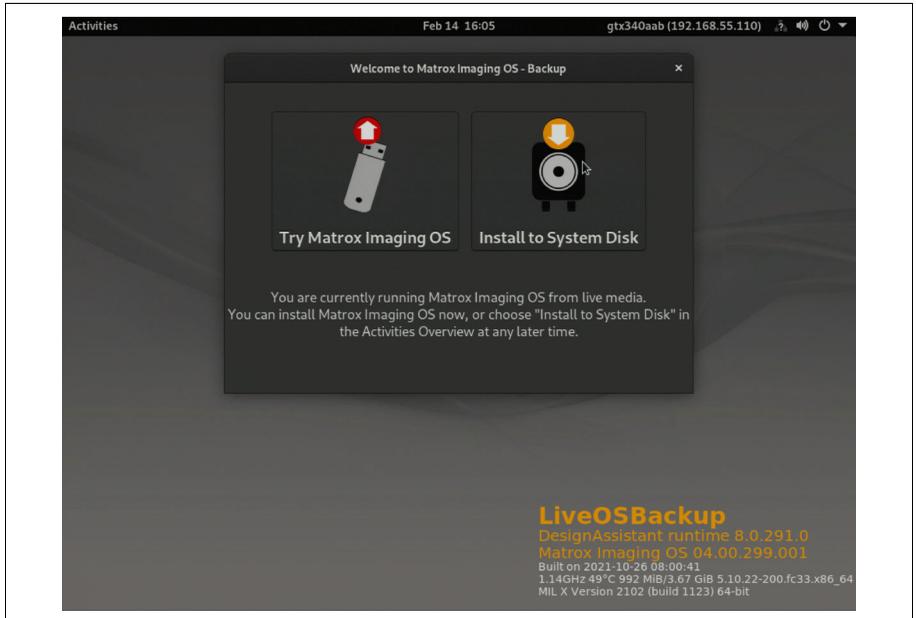
With a backup MIOS ISO saved either on a USB key or somewhere on your network, you can deploy the backup MIOS ISO to multiple units that require the same settings as the backup MIOS ISO. To deploy the backup MIOS ISO to multiple units, perform the following:

1. Locate the backup MIOS ISO and copy it to a known location on the Zebra Iris GTX unit that you will be restoring.
2. Open the Linux command terminal and use `setrescue.sh backup` to install the backup MIOS ISO onto the recovery partition.
3. Reboot the Zebra Iris GTX unit.

4. Near the end of the BIOS boot process, after the BIOS logo appears, a monochrome screen presents three options: load the current MIOS, load the Recovery ISO, or load the backup ISO. Use your keyboard to select the latter.



5. After selecting to boot from the backup MISO ISO, the **Matrox Imaging OS - Backup** page is presented. Select **Install to System Disk**.



After installation completes, the unit will reboot and the backed up version of the MIOS will be deployed.

Updating the Zebra Iris GTX BIOS

After upgrading the operating system, you should verify that you have the most up-to-date BIOS version before beginning.

Important

If you do not have the correct BIOS version, it will cause a problem with your Zebra Iris GTX. The BIOS version is displayed on the **Essential Information** page of the Matrox Design Assistant configuration portal; on this page, you can also see if there are new BIOS versions available.

Updating the BIOS is a delicate operation that requires user-intervention to ensure it is executed without interruption. Note that if a power failure occurs during the BIOS update process, your Zebra Iris GTX will have to be sent to Zebra for repair.

To update the BIOS, perform the following:

1. Access the Zebra Iris GTX desktop. To do so, you can either:
 - Connect directly using a local display and mouse-keyboard connection. To connect a local display, mouse, and keyboard, see the *Powering and connecting to your Zebra Iris GTX* section, in *Chapter 2: Powering and connecting to your Zebra Iris GTX*.
 - Connect remotely via a VNC client, Putty, or through Microsoft Windows telnet. To find a VCN client or Putty, follow the instructions in the *Matrox Imaging operating system utilities* section, earlier in this appendix.
 2. If you are connecting with a VNC client, once the Zebra Iris GTX desktop is displayed, open a terminal window by clicking on the **Activities** menu command and then the **Terminal** icon. When using Putty, you are presented immediately with the terminal window.
- ❖ Note that you must have Auto logon enabled in the Matrox Design Assistant portal in order to connect to a VNC client. This is found on the AUTO LOGON tab of the DEVICE portal page. See the Matrox Design Assistant documentation for more information.

3. Inside the terminal window, go to the `/opt/BIOS` folder using the following commands:

```
cd /opt  
cd BIOS
```

❖ Note that MIOS is case-sensitive.

4. Start the BIOS update application using the following command:

```
sudo ./IRISGTX_<BIOSVERSION>.bin
```

where you should replace `<BIOSVERSION>` with the new BIOS version (for example, `IrisGTX_100002.bin`). The BIOS update starts after a 10-second delay. Once the BIOS update begins, information will appear on your local display.

5. When the BIOS update completes, you will be prompted to reboot Zebra Iris GTX. Changes made will not take effect until you reboot.

Appendix D: Listing of Zebra Iris GTX smart cameras

This appendix lists the key feature changes to the Zebra Iris GTX smart cameras.

Key feature changes

Part number	Version	Description
GTX2000C, GTX5000C, GTX8000C, GTX12000C, GTX16000C	000	First shipping version of Zebra Iris GTX color models running the Matrox Imaging operating system (64-bit) with Matrox Design Assistant IDE.
GTX2000, GTX5000, GTX8000, GTX12000, GTX16000	000	First shipping version of Zebra Iris GTX monochrome models running the Matrox Imaging operating system (64-bit) with Matrox Design Assistant IDE.

Regulatory Compliance

FCC Compliance Statement

Warning

Changes or modifications to these units not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment.

The use of shielded cables for connections of these devices to other peripherals is required to meet the regulatory requirements.

Note

These devices comply with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. These devices may not cause harmful interference, and
2. These devices must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for Class A digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of these devices in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Innovation, Science and Economic Development Canada Compliance Statement

These digital apparatuses do not exceed the Class A limits for radio noise emission from digital apparatuses set out in the Radio Interference Regulations of Innovation, Science and Economic Development Canada (ISED).

Ces appareils numériques n'émettent pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par Innovation, Sciences et Développement Économique Canada (ISDE).

EU Notice (European Union)

WARNING: These are class A products. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures.

AVERTISSEMENT: Ces appareils sont des produits informatiques de Classe A. Lorsque ces appareils sont utilisés dans un environnement résidentiel, ces produits peuvent entraîner des interférences radioélectriques. Dans ce cas, l'utilisateur peut être prié de prendre des mesures correctives appropriées.

This device complies with Directive 2014/30/EU for Class A digital devices. They have been tested and found to comply with EN55011/CISPR11 and EN61326-1/IEC61326-1.

Ces unités sont conformes à la Directive 2014/30/EU pour les unités numériques de Classe A. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55011/CISPR11 et EN61326-1/IEC61326-1.

Directive on Waste Electrical and Electronic Equipment (WEEE)

Europe

(English) European user's information – Directive on Waste Electrical and Electronic Equipment (WEEE)

Please refer to the Zebra Website (zebra.com/weee) for recycling information.

(Français) Informations aux utilisateurs Européens – Règlementation des déchets d'équipements électriques et électroniques (DEEE)

Se référer au site Web de Zebra (zebra.com/weee) pour l'information concernant le recyclage.

(Deutsch) Information für europäische Anwender – Europäische Regelungen zu Elektro- und Elektronikgeräten (WEEE)

Bitte wenden Sie sich an dem Zebra-Website (zebra.com/weee) für Recycling Informationen.

(Italiano) Informazioni per gli utenti europei – Direttiva sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)

Si prega di riferirsi al sito Web Zebra (zebra.com/weee) per le informazioni di riciclaggio.



Caution: Coin cell battery replacement

Risk of explosion if battery is replaced with an incorrect type. Dispose of used batteries according to local instructions and regulations.

Attention: Remplacement de la pile bouton

Il y a risque d'explosion si la pile est remplacée par un type incorrect. Disposer des piles usagées conformément aux instructions et aux réglementations de votre région.

Limited Warranty

Refer to the warranty statement that came with your product, or see the document found on our website (www.zebra.com/warranty).

