

# Matrox Design Assistant X Version 2006 Update 1 (7.1)

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## 1. What's New in DA X Version 2006

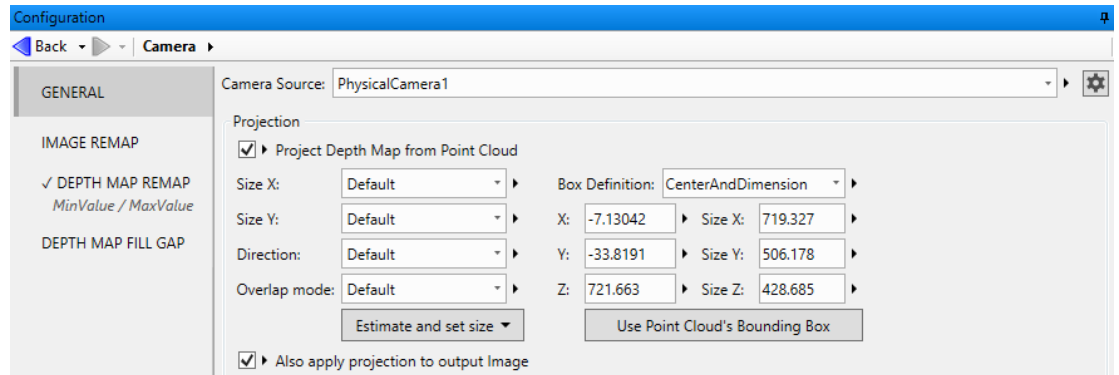
### Update 1

DA X 2006 Update 1 (7.1) provides additional 3D device support, improved depthmap quality and corrects some issues found in 7.0.

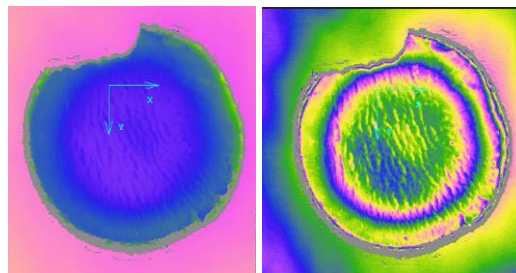
DA X 2006 Update 1 (7.1) can be installed side by side with DA X 2006 (7.0).

## New

- Additional Third Party 3D camera support
  - o Check the device specific 3D Cameras getting started documents for information on installation and integration with vendor specific software.
  - o Intel Realsense D435 and L515
  - o FRAMOS D400e
  - o Helios 2
  - o GenTL support for 2D and 3D cameras – including Basler Blaze
  - o Updated the SDK version used by some previously supported devices (e.g. PhotoNeo)
- Improved projection conversion from Point Cloud to Depth Map
  - o Box Definition section added to Camera step and to AlignPlane
  - o better calculation of Default size of the depth map, particularly when large borders of invalid pixels are present. Estimate best size button now offers "Shrink" or "Grow" options.
  - o Support a fixed box region of the point cloud. By default, the entire bounding box is used. For certain 3D devices, especially TOF, there can be a lot of spurious points that appear far from the object of interest. These random outliers can cause the projection to vary widely in size and scale from grab to grab. Specifying a fixed size region will give stable projections despite noisy outliers.
  - o Refer to the topic/PDF "Introduction to Design Assistant X 2006" for instructions on how to use the new options, they have not yet been added to the User Guide.



- o
- New colormaps. Based on a perceptually uniform mapping, versions with more color cycles highlight small deformations.



- Added Viewport control to ExtractProfile step – allows specifying a fixed size for the profile image. This provides a more stable profile image than an auto- sized image when the height of the object varies a lot, or you wish a larger margin to place references or datum lines. When profiling very flat surfaces it allows to to increase the vertical display resolution. Refer to the topic/PDF "Introduction to Design Assistant X 2006" for instructions on how to use the new options, they have not yet been added to the User Guide.
- The Platform Configuration Camera pane allows opening the Capture Works utility directly. Capture Works supports GenTL devices and the Matrox Altiz 3D setup, as well as GigEVision and USB3Vision cameras. Over time it will replace Capture Assistant.

- Addition to LISTFILES function, supports faster identification of which files need to be deleted when managing local image archives if the folders are of type TimeStampedFolders, for example the formats used by the DAViewer utility. It searches from the oldest folders rather than searching all the folders.
- The DeleteFiles step can now delete folders explicitly.
- Calibration from grid – added the GridHintAngle parameter to allow full control of axis orientation, was previously not possible in PartialGrid mode.
- StringReader – support linking constraints – allows constraints, such as expected string, to change at runtime. Note that changing the constraint values does incur additional time.
- Method to allow non-Administrator users to logon to the runtime platform -Adjust code so a user can change the ScheduledTask of RuntimeMonitor to run at boot under System user instead of next user logged on.
- Add registry key to disable the Delete Projects button on Manage Projects Portal Page (on Windows systems)

## Changes and Fixes

### Acquisition

Fix issue with CameraSettings step at runtime with certain cameras.

TriggerMode for Third Party 3D sensors using Genicam Features still assumes FrameStart triggers, but now also tries AcquisitionStart.

Fix to ImageQueueAvailable for Genicam Third Party 3D cameras

Fix to applying some GeniCam features Third Party 3D cameras.

Optimized non-triggered grab cycle time for Genicam Third Party 3D cameras

CameraFocus step EvaluateFocus operation in DesignTime is now available in Emulation mode, and when a project is running on the connected platform.

Install USB3 driver fix for UserDeviceID, some USB3 camera's User defined names could not be set.

Fix issues with some ImperX and Helios Triton cameras.

### Communication:

Optimize CommReader (minimize number of calls to low level when large number of fields in DataFromPLC)

Fix design time issue where Comm fields appeared to revert to type Boolean in in EtherNet/IP and Profinet, based on an RX/RX setting in CC-Link

Add warning message if UDP not yet allocated when switching from design time to runtime

Fix ProjectSwitch step mechanism when using EtherNet/IP with QuickComm

DA Restart – remove delay

Modbus Master fix bug that was limiting register offsets to 128 even for remote slaves.

### Processing:

Image processing on Depth Maps – subtraction and derivative operations reset the Z reference value to zero.

Previously kept the offset from the first source.

Image processing fix crash with exception Error in MbufInquire component types when working with 3D images.

BlobAnalysis Fix bug in highlighting blobs when selecting in display and result table.

Fix in background image of Measurement edge strength graph

Metrology – fix crash when Base Feature was linked to a variable

Metrology – simplified adding an array of points to the step using Parametric Edgel features.

Reconfiguring the Shape of a step's Region at runtime no longer resets its Coordinate system / Fixture

SureDot OCR – optimized reading when using linked constraints if none of the constraint values have changed.

CNNMap – fix region initialization when Re-Import

### Recipes and Persistence:

Recipe Fix Measurement template does not save training values (e.g. min, max of constraints) across switching current recipe.

Recipe Fix exception when Apply Multiple across recipes if AngleMode not enabled in all recipes

Recipe Fix rare crashes – deleting ModelFinder in recipe

Recipe – update Status step links across all recipes after Copy/Paste

Recipe – fix initializing region dimensions when switching recipes containing CNN steps.

Persistence – fix issues if persistent strings contained the null character \0

Recipe – upgrading projects with recipe steps that had been renamed, now correctly transfers the new naming to all expressions in the upgraded recipes.

#### **Other:**

Using Git to archive projects containing the PatternMatching step generated larger than expected differences due to some random values in the MIL Mpat contexts. This has been rectified.

IrisGTR Fix possible error returning HOSTNAME on MIOS systems

IrisGTR ViewUtility fix when saving files to network path

Filmstrip MaxTrendWithImage –fix Auto calculation for minimum constraints

Toggle button color change sometimes didn't take effect

DeleteFiles step - fix checked for files' existence only locally,

Annotations – fix issue when steps renamed and added and reused names.

Line Profiles no longer leave ghost line annotations.

## **DA X 2006 Official Release**

DA X Version 2006 (7.0) introduces many important changes and additional 3D capability. These changes are described below and in the documentation topic Introduction to Design Assistant X 2006, available as a pdf file in the Documentation folder and in the Readme appendix of the User Guide.

Support for **Rapixo CXP** framegrabber

Support for variable length linescans (GigEVision)

#### **Third Party 3D Components**

- Restructured camera lists – GigE Vision Cameras that support Components (GenICam Gen DC) have their own category
- Added support for additional devices, e.g. Matrox Altiz, Sick Ranger, Wenglor ShapeDrive. Please refer to the Documentation link 3D Cameras section/folder.
- Support for inputting single profile scans.

#### **Profile Analysis**

**ExtractProfile** step – New - extracts a profile from a 3D or intensity image – outputs in discrete edgel point format that imports directly into the Metrology step, or as a connected curve format that can be used with finder steps for fixturing profiles.

#### **Metrology step**

- Added new interactive construction methods to fit segments, arcs, circles to one or more sections of a profile
- Added AreaUnderTheCurve and AreaBetweenCurves tolerances, perimeter tolerances
- Added concept of a “reference profile”

**AlignPlane** step - New - Generate a leveled depth map based on one or more coplanar regions, tilting them into the Z=0 plane, suitable for volume measurements, thresholding, or other operations that require a horizontal base plane.

**Bead Analysis** step change Now returns the intensity/height value at each point, suitable for approximating volume when run on a depth map.

**LoadPointCloud** change -Load existing 3D PLY/STL files now displays the C/depth band. Use the Project3D custom step to convert the point cloud output of LoadPointCloud into a depth map.

ImageWriter change and Image set change -Supports Matrox component format .mbufc

**CNNClassMap stepNew** – generate a map output image which indicates the best class match at various locations (coarse segmentation)

**Mask step New**- Modify images by applying a sequence of area fills, area smooths, and hole interpolated fills – typically used to create mask images to hide unwanted portions or isolate portions of interest, optionally without introducing sharp contours or discontinuities.

### Operator View changes

- Support drawing patternmatching and modelfinder model masks and color sample masks in the operator view. RuntimeModelDefinition example illustrates the feature.
- Support binding of a “comparison” operator (>, .=. <>, etc) from an Operator View element to part of a Condition statement – simplifies setting up more configurable template projects (Our sample template projects have all been updated accordingly)
- Borders and padding dialog improved
- Breaking Change – the Legacy step OperatorInputs, which was deprecated since DA 4.0, has been removed. Direct binding from the input elements to steps, platform or variables must be used instead.
- The Legacy option to delay sending operator view input data until a Submit Data button is pressed has been removed.

**Switch step changes** Restructured to accept conditions that can be bound to the operator view as 3 separate items Left hand, operator, right hand

### Pass Fail status conditions added directly to steps

- All analysis steps now have their own pass/fail status result which can be based on one or more conditions
- accept conditions that can be bound to the operator view as 3 separate items Left hand, operator, right hand. The operator list now includes a Nominal +/- Tolerance.
- The addition of a Status output to all analysis steps means that some upgraded projects will need to be edited since several steps that had a Status result previously that produced values different from Pass/Fail required renaming of the outputs. More details are found in the topic “Upgrading Projects “

User Interface WPF - Toolbars and additional dialog have been redone using WPF to provide better interface scalability to **4K displays**

**Browser** -Select the browser you want to use when deploy and for startup projects

**Advanced editor** updated New more easily readable font and **Command completion** support shows parameter options as you type (more like Visual Studio editor)

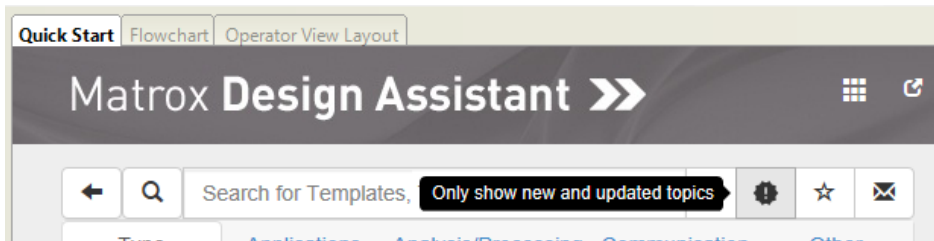
**Recipes** synchronization updated - **Warning flags** on steps that are part of recipe and flags in the Recipes pane to warn you that the connected runtime platform version of the project is not in sync with the version you are editing.

### Communications

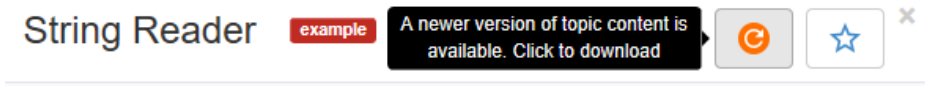
- Added support for **CC-Link IE Field Basic** used by Mitsubishi PLCs
- Unified CommReader and CommWriter steps – simpler to write projects that support more than one protocol. EthernetIPReader/Writer and ProfinetReader/Writer steps in older projects are automatically upgraded to CommReader/Writer.
- Platform portal pages offer new **PLC Emulation mode**
  - o Monitor and set values in the DataFromPLC tables
  - o Available for EtherNet/IP, PROFINET, CC-Link IE Field Basic, and MODBUS
  - o simulates the Quick Comm handshake

### Examples

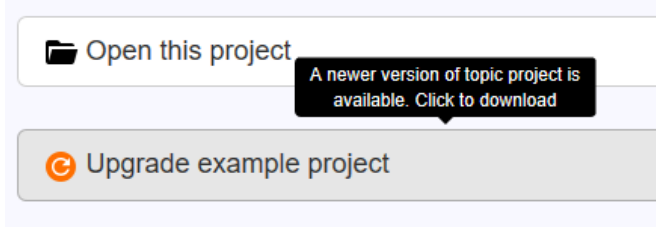
- Access modified examples, newest examples, updated tutorials, etc. from the Quick Start page.
- To fetch new example material, on a computer that has access to the internet, click on the New and Updated button to see what has been changed.



- Download the updated supporting material from the example's description page.



- Download modified projects from the corresponding button.



## 2. Installation and Upgrading

### 1. Side by Side – Multiple Installations

NOTE: DA X Version 2006 (7.0) may be installed “side by side” with DA X Version 1905 or DA 5.1 on a PC if you need to support older versions in the field.

Connecting to or deploying to a remote runtime platform will require updating the platform to the same version and build as the DA design time.

**IMPORTANT** – be certain to **import and synchronize any runtime models, regions and recipe information** before opening an older project in the newer release. Keep a backup copy of all projects – from both the development computer and from the runtime platform if the operator view allows changing any parameters or models.

Projects opened in a higher build number of Design Assistant will be upgraded automatically, and from then on cannot be opened in a lower build number.

Side by side Installations - Use the Design Assistant Runtime Manager from the MIL Control Center to select which version of the localhost runtime will be active (only one runtime can be active at a time).

Design Assistant versions 4, 5 and X are based on MIL 10, and share the same MIL runtime licenses. Note that new functionality such as CNN Classification, 3D image acquisition and analysis may require additional runtime license packages. While DA is connected to your target platform, and a project is open, the Platform Project License Information menu will provide all necessary information .

## 2. New Installation of Matrox Design Assistant

### Prerequisites for the PC version

- 64-bit Windows 7 with SP1 or Windows 10 (Version 1607 to 1809)
- Internet Explorer 11 (Update 15 or higher) is required when deploying. An HTML5-enabled browser such as Chrome or Firefox can be used to view Portal Pages and Operator Views. If your Internet Explorer is not sufficiently up to date, you may need to apply an update such as kb3008923 for Windows 7.
- Has sufficient free hard disk space.
  - ~ 3 GB (Design-time + Run-time)
  - ~ 2.1 MB (Run-time only)
- If the .NET framework and other required Microsoft redistributables need to be installed, another ~160MB might be required.
- A processor that supports the SSE2 instruction set.
- Installation requires an administrative user account.
- If you are using GigE Vision cameras, sufficient Network Interface Controllers (NICs), that support Jumbo packets, to handle the bandwidth of your cameras. (Configuration information found in the CaptureAssistantHelp.pdf. It is found in {installation path}\Matrox Imaging\Tools.)

### .NET Framework 4.7.1

NOTE: Design Assistant X requires .NET Framework 4.7.1. Microsoft .NET Framework installation on Windows 7 will verify the Trusted Root Certificate using the Internet. Ensure that the system on which you are installing has Internet access.

If that is not possible, you can acquire the appropriate Certificates by applying one or more Microsoft KB updates.

For Windows 7 (x64) SP1 you can use kb3149737 (Trusted Root Certification Authorities).

### Install Design Assistant

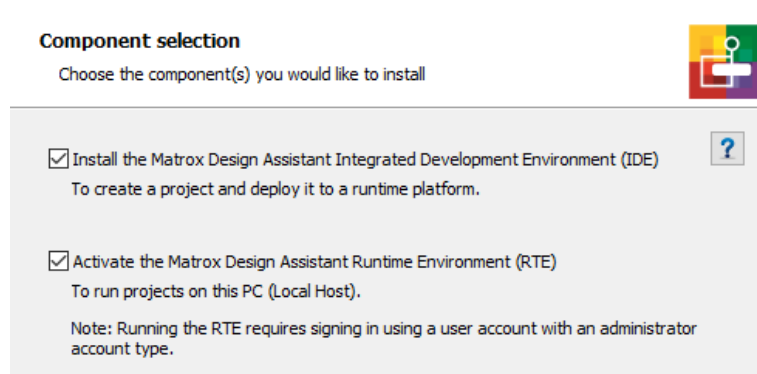
NOTE 1: You must have a copy of the Design Assistant setup that is local to the PC on which you are installing. Place the setup in a folder with a short pathname (e.g. C:\DASetup). Some components cannot be installed from a network drive (such as, the Matrox GigE Vision driver).

NOTE 2: Anti-virus programs can sometimes interfere with the installation process. Temporarily disabling your anti-virus program may help if you're having trouble with your installation, particularly if the error event shows a faulting application whose name is of the form M10U...x64.exe.

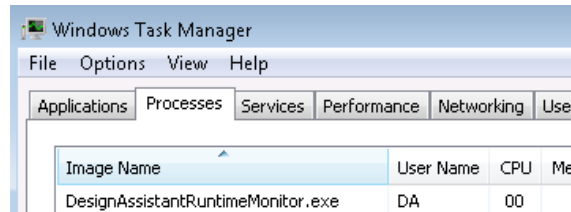
Run DesignAssistantSetup.exe to install Design Assistant.

The first two options (i.e., IDE and RTE) are typically both selected for your development PC.

Selecting only the second option (i.e., only RTE), is used when setting up a PC that will be deployed in the field without the Design Assistant design time environment.



IMPORTANT when installing on a Matrox 4Sight Gpm: After installing Design Assistant, the next reboot may start a firmware (FPGA) upgrade. If you get a message telling you that DesignAssistantRuntimeMonitor is using MIL, then you must use the Task Manager to kill the DesignAssistantRuntimeMonitor process so that the upgrade can continue.



## 3. Upgrading

### Upgrading Matrox IrisGTR

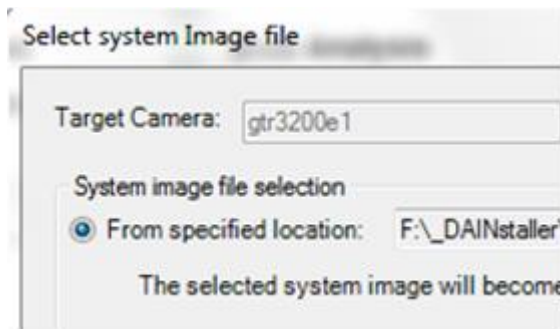
IMPORTANT –Upgrading the Matrox IrisGTR will erase all content on the camera. Refer to the document “*Matrox IrisGTR Upgrade Procedure.pdf*” for information on backing up recipes and Project Change Validation sets.

The IrisGTR operating system (MIOS) and Design Assistant runtime environment are upgraded together from an .iso file. Generally, this is done when Design Assistant tries to connect to an IrisGTR with a different version, or explicitly through the Platform IrisGTR Reset Camera Contents menu command.

When connecting the Design Assistant application to a GTR, you will be prompted to upgrade IrisGTRs of lower build number.

To upgrade, browse to the appropriate file using the “From specified location” option in the upgrade dialog.

- An IrisGTR system image (.iso) file containing the MIOS and DA X V 2006 (7.0) is used to upgrade.(for example MIOS-02.xx.xxx.00x-DA-7.0.xxx.iso) .



IMPORTANT – The upgrade may also require upgrading the BIOS. Refer to the document “*Matrox IrisGTR Upgrade Procedure.pdf*” for BIOS upgrade instructions.

### Upgrading Projects from a previous version of Design Assistant

- General information
  - To avoid losing setup changes made to a project from the Operator View, first synchronize any changes that were made on the runtime platform, then make a backup copy of your project before upgrading it to this new version of Design Assistant.
- Changes to Design Assistant X that could affect upgraded projects.
  - The majority of the required changes will be done automatically.



- Pay particular attention if your project DA X1905 or DA 5 project links to the .Status output or an analysis step, for example CodeReader.Status. The Status output has been repurposed, and the previous result has been renamed, for example to ReadStatus. You will have to edit the links after upgrading.
- Pay particular attention if your project DA 5 project uses MODBUS communication, EtherNet/IP communication, PROFINET communication – you will have to define Instances of the communication protocol in MilConfig and select them in the project’s platform configuration dialog.
- There are a series of upgrade documents. These documents are found in the User Guide Readme appendix and via the Documentation link in MIL Control  
e.g. Upgrading from DA 5.x to Design Assistant X.pdf.

## 4. Documentation, examples and tutorials

- Documentation
  - This Readme and other introductory material is available in the Documentation folder and as an appendix to the User Guide
  - Context sensitive instructions are available at all times via the QuickAccess pane of the Design Assistant application.
  - The Matrox Design Assistant User Guide describes how to use the application and provides procedures for configuring the various steps. Click on an item that you want more information on, and press F1. The User Guide is also accessible from the MIL Control Center and from the Design Assistant Help Menu.
  - The Matrox Iris GTR with Design Assistant Installation and Technical Reference manual, IrisGTR.pdf, is provided in the Documentation folder accessible from the MIL Control Center.
- Tutorials
  - These are available from the Quick Start pages. Also the Matrox Vision Academy provides access to a wide range of training videos.
- Example flowchart projects
  - These are available from the Quick Start pages.
- Example HMI .NET projects (OperatorAPI)
  - These are available from the Quick Start HMI page.
- Example custom steps .NET projects
  - These are available from the Quick Start Custom Steps page.
- Location of example projects
  - C:\Users\Public\Documents\Matrox Imaging\DA 7.0

## 5. Limitations

For Design Assistant X Version 2006

### 5a. All Platforms

- When a project is deployed, the browser selected in the Platform Select Browser menu is launched.
  - If your choice is Internet Explorer 11 it requires a reasonably up to date Internet Explorer 11. (The RTM version may cause errors). By default Internet Explorer 11 limits the number of websockets to 6. Hosting a DA operator view requires more. The Design Assistant installation automatically increases this limit. However, if you access a Design Assistant operator view from IE 11 on a computer that does not have DA installed on it, an error will appear in the browser and you will be prompted to accept a change to a registry key to increase the limit.
- A standard user (not in Administrators group) can run the Design Assistant IDE in Emulation mode or connected to a remote platform. Standard users cannot run a localhost runtime, and should use the DARuntimeManager utility to disable the runtime environment.
- SureDotOCR font file names must begin with a letter, not a number, or they will appear truncated to the first letter.
- Do not use direct binding from operator view elements to StringReader step CharacterConstraints – these inputs are not “linkable” and trying to bind may cause the project to be unloadable.
- Custom step development for deployment to a Windows platform requires the Targeting Pack for .NET 4.7.1. This is an installation option for Visual Studio 2017 (recommended). If you do not have the Targeting

Pack installed, you can get it from the Internet or in the CustomSteps\DotNetFrameworkDeveloper folder of your Design Assistant installation media.

## 5b. Iris GTR Platform

- When upgrading the BIOS of an IrisGTR smart camera, in the rare circumstance that you receive a message “Error: file offset + size..”, enter the command to run the .bin again. Refer to section 3. Upgrading and to the document “Matrox IrisGTR Upgrade Procedure.pdf”.
- The Hardware Installation and Technical Reference manual “IrisGTR.pdf” is included. The most recent version can be downloaded from the Matrox Imaging website, [http://www.matrox.com/imaging/en/products/smart\\_cameras/iris-gtr/manuals/](http://www.matrox.com/imaging/en/products/smart_cameras/iris-gtr/manuals/).
- Additional information is provided in the “Getting started with Matrox Iris GTR.pdf” document
- A serial port adapter to USB is not supported for SerialPort steps, but is supported for MODBUS/RTU.
- Network share path and file names in TextWriter or ImageWriter must not contain spaces.

## 5c. Indio System

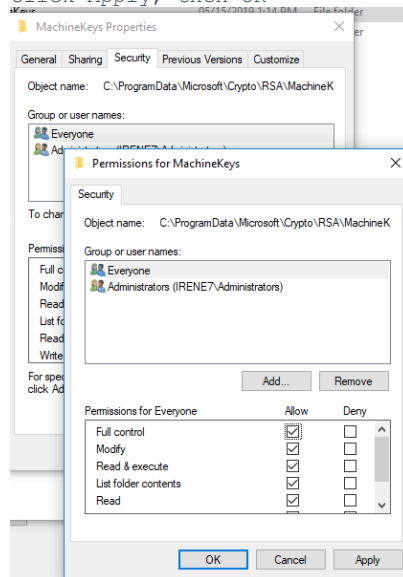
- To successfully enable the EtherNet/IP industrial protocol on the GigE port of the Indio, an Ethernet cable must be connected to the Ethernet output connector and the Network Adapter must not be in Link-Local (Auto-configure) mode. Typically, it should be in static addressing mode.

## 5d. EV-6 System

- If accessing the portal pages or operator views causes errors, especially errors mentioning IIS, then you need a newer version of the EV6 system software (build 18 and higher)

## 6. Troubleshooting

- Microsoft Windows Issues
  - Error 8013141c Cryptographic failure while signing assembly. This problem may appear after a Windows Upgrade. This error prevents links inside DA projects from working and prevents deployment of projects.
  - Solution A –
    - Go to %programdata%\Microsoft\Crypto\RSA (different path for Windows 7)
    - Right click on MachineKeys, select Properties. Select the Security tab
    - Select 'Everyone' as the user
    - Click on Edit
    - Select Allow full control
    - Click Apply, then OK



- Solution B– Alternately, set the properties of Design Assistant.exe to run “as an Administrator”.

- Cause: This error occurs when the user account cannot access the Microsoft\Crypto\RSA\MachineKeys folder
  - The folder is found in different locations
    - Windows 7: C:\Documents and Settings\All Users\Application Data
    - Windows 10: C:\ProgramData
  
- Troubleshooting with Matrox Iris GTR.
  - See the *“Getting started with GTR.pdf”* document for full details. It is found in the Documentation folder and as an appendix to the User Guide.
- Troubleshooting with PC platforms with GigE Vision or USB3 Vision
  - Refer to Appendix C: Troubleshooting in the User Guide
  
- Getting assistance
  - If it is necessary to seek assistance from Matrox Imaging Technical Support, it is important to generate an information log.
  - From MIL Control Center, run MILConfig, select Troubleshooting and then Start log.
  - The MILConfig utility will collect information from your PC and from the last connected runtime platform, if it is reachable.

## 7. Licensing Notes

Uses Bink Video. Copyright © 1997-2020 by RAD Game Tools, Inc.