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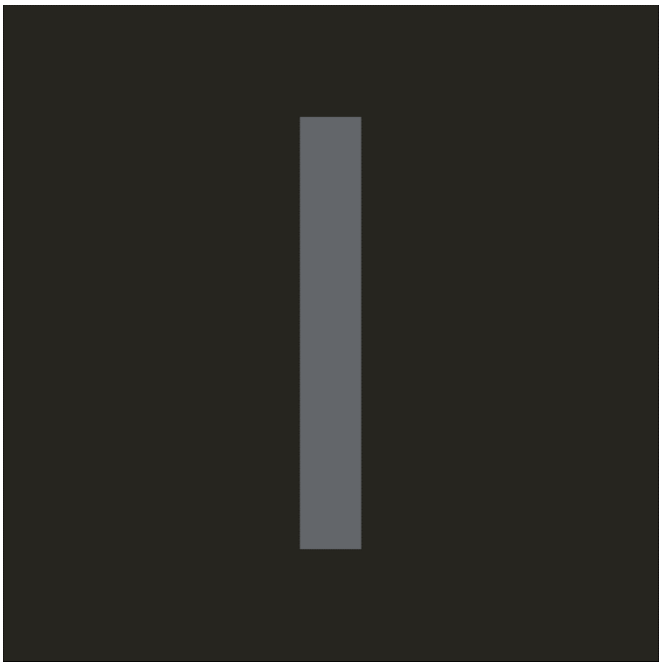


INUKTUN ICON™ C SOFTWARE

Contents

About This Manual

This manual has been prepared to assist in the operation of Eddyfi Technologies' systems and software. Correct, prudent and safe operation rests with the operator who must thoroughly understand the operation, maintenance, service, and job requirements. The specifications and information in this manual are current at the time of printing.

ICON™ software is continually being updated and improved. This manual endeavor to explain and define the functionality of the application. Furthermore, screen shots and detailed functionality may differ slightly from what is described in this manual.

All features and functions within ICON™ software are described within this manual. **The specific features available to a user are determined by the software license. Not all features are always accessible.**

Eddyfi Technologies reserves the right to change and/or amend specifications at any time without notice. Clients will be notified of any changes to their equipment. Information in this manual does not replace specific regulations, codes, standards, or requirements of others such as government regulations.

Specifications

ICON™ software was created to provide device control and data gathering capabilities for Eddyfi Technologies Crawlers and Camera Systems using a Windows™ based computer.

Minimum Computer System Requirements

Processor	Sixth generation Intel® Core i5 or greater
Graphics	Intel® UHD 620 or greater with Intel® Quick Sync enabled DirectX 11 or higher compatible
RAM	8 GB minimum
Application Disk Space	30 GB minimum (for application installation and database)
Data Disk Space	>500 GB for visual inspection data (separate system and data HDD or SSD with 3.0 GB/s access speeds recommended)
Operating System	Windows™ 10 (Professional recommended)
Screen Resolution	1920 x1080 minimum

Note: ICON™ is a resource intensive application; other applications may also consume resources and as a result they may interfere with the operation of ICON™.

Note: Requirements are subject to change based on system requirements and configuration. Support for systems not meeting recommended minimum specifications may be refused.

Required Folder Permissions

The ICON™ software keeps multiple important files in **C:\ProgramData\ICON 4** folder. As known, the Windows NTFS file system applies permissions to every file and folder. The lack of permissions can cause the Access Denied error to occur and the application to stop functioning.

To avoid this, make sure all users supposed to work with ICON™ have Full Control permissions on that folder. The way of how to achieve this depends on the current PC and network configuration. In the simplest cases, complete the following steps:

1. Navigate to C:\ProgramData\ICON 4\.
2. Right-click on the folder, select Properties, and then the Security tab.
3. Check/add all the users and allow them Full Control permission.

Note: The folder **C:\ProgramData** is a hidden folder, so ensure that the Hidden Items checkbox is checked in the File Explorer View tab. Please contact your System Administrator in case of any issues.

Supported Video Frame Grabbers

The following video capture devices are supported by ICON™:

- Black Magic
- Epiphan AV.io SDI
- Magewell USB Capture Plus frame grabber family

Note: Ensure that the requirements specified by the frame grabber manufacturer meet the system requirements.

Supported Eddyfi Technologies Products

The ICON™ software has been developed to support Eddyfi Technologies devices and inspection systems including but not limited to:

- Microtrac™ 4000 Micro-controlled tracks
- Minitrac™ 7000 and 8000 Micro-controlled tracks
- Spectrum™ 45 / 90 / 120 Cameras
- Versatrax 100 Inspection Systems
- Versatrax 150 Inspection Systems
- Versatrax 50 Inspection Systems
- MaggHD Inspection Systems

ICON™ Software Applications, Features and Functionality

The features and functionality associated with the different application tiers of ICON™ software are detailed in Table 1. When ICON™ software is first installed, a 30-day trial license may be granted for evaluation purposes. Contact Eddyfi Technologies if the trial license is required. The software will no longer be fully functional after 30 days and a valid license key must be entered for full activation. Once the software is activated with the appropriate license key, the software will expose the licensed features to the user based on Table 1 - ICON™ Software Features and Functionality.

Primary applications included with ICON™ software are:

ICON™ Diagnostics — A free application installed through its own installation package or be a module for all ICON™ Licensed Tiers. Users can connect a **single** device at a time for calibration, diagnostics, and configuration purposes.

ICON™ Licensed Tiers — Represents a licensed functionality tier that includes all the primary applications used to configure, control, and report. Available tiers include:

- ICON™ CMP — **Companion**. Single system configuration with a single camera plus a tether encoder, with no advanced features.
- ICON™ STD — **Standard**. Single system configuration with up to two Microtrac or three Picotrac tracks, actuators, multiple cameras, sensors plugins and running predefined automation routines and alarms.
- ICON™ PRO — **Professional**. Fully featured use of multiple configurations, supports large class and custom vehicles, configurable control panels, configure and run automation routines and alarms.

Table 1 - ICON™ Software Features and Functionality	Application Tiers			
	ICON™ Diagnostics	ICON™ CMP	ICON™ STD	ICON™ PRO
Configuration Management				
Configuration Management		◒	◒	●
Multiple Configurations				●
Device Control				
Track Control	○		◒	●
Single Camera Control	○	●	●	●
Multiple Camera Control			◒	●
Auxiliary Light Control	○		◒	●
Actuator Control	○		◒	●
Sensor Control	○		◒	●

Table 1 - ICON™ Software Features and Functionality	Application Tiers			
	ICON™ Diagnostics	ICON™ CMP	ICON™ STD	ICON™ PRO
Discrete State Device Control	○		◒	●
Plugin Control			◒	●
Device Calibration	○		◒	◒
Video				
Single Camera Video Viewing	○	●	●	●
Multiple Camera Video Viewing			●	●
Picture-In-Picture Viewing			●	●
SD Video Recording		●	●	●
HD Video Recording		●	●	●
Video Overlay Templates		●	●	●
Data Retention				
Managed SQL Database		●	●	●
Job Management				
Export **Job** File (.i**Job**) for Data Transfer Between Systems			●	●
Multiple Video Recordings per **Job**		●	●	●
One-Click **Job** Start/Stop		●	●	●
Automatic Background Export of Video		●	●	●
Automatic Export of Snapshots		●	●	●
Save Snapshots to **Job** Database		●	●	●
Tag Snapshots		●	●	●
Tag Snapshots with Inspection Codes			●	●
System Management				
ICON Device Manager		◒	◒	●

Table 1 - ICON™ Software Features and Functionality	Application Tiers			
	ICON™ Diagnostics	ICON™ CMP	ICON™ STD	ICON™ PRO
System Preferences		◒	●	●
Configurable **Job** Attributes			●	●
System Management (continued)				
Plugin Device Manager for Add-on Plugin Modules			◒	●
Configurable Gamepad Profiles		●	●	●
Configurable Instrument Panel			●	●
Configurable Control Panel				●
Communication Diagnostics	○	●	●	●
Import Inspection Standards		●	●	●
Control and Operations				
Support for Multiple Displays			●	●
Instrument Panel			●	●
Keyboard Control		●	●	●
Mouse Control		●	●	●
Touch Screen Control		●	●	●
Gamepad Control		●	●	●
Predefined Automation Routines			●	●
Configurable Automation Routines		●	●	●
Customized Access Groups			●	●
Windows™ Local User Credentials			●	●
Windows™ Domain User Credentials			●	●
Feature Access Control by Access Group			●	●
License Management		●	●	●

Table 1 - ICON™ Software Features and Functionality	Application Tiers			
	ICON™ Diagnostics	ICON™ CMP	ICON™ STD	ICON™ PRO
Notification and Alarm Management				
System Notifications		●	●	●
Predefined Alarms			●	●
Configurable Alarms				●

○ Access restricted to one device ◒ Availability determined by system configuration ● Feature available

Getting Started

The Getting Started section is intended to get the software operational with basic functionality. It is advised that you read the entire user manual for detailed application set-up and operation. Topics covered in this section include:

- ICON™ Installation
- Importing System Configuration(s)
- License Activation
- Entering the ICON™ Interface
- Instrument Panel Configuration
- One-Button Start/Stop/Export
- Game Pad Control
- Keyboard Control

ICON™ Installation

The following steps will provide you with the instructions to install the ICON™ software.

1. Download and launch the installer executable. The Inuktun ICON™ can be downloaded from https://eddyfi.com/en/software/inuktun-icon
2. Install the prerequisite software packages as directed by the installation wizard.
3. Select the desired ICON™ packages for installation.
4. Click **Finish**.

Entering the ICON™ interface

A configuration file is required in order to operate an Eddyfi Technologies inspection system through ICON™ software. Before starting ICON™, acquire the system configuration files (*.icfg) for your specific inspection system(s) from Eddyfi Technologies.

FIGURE 1: DEFAULT ICON CONFIGURATION

Once the ICON™ software is installed, the default single-web-camera configuration is available

There are three ways to enter the ICON™ operations screen once the installation process is complete and a system configuration has been added. The options are:

1. Wait for the highlighted ICON™ configuration to start automatically after ~30 seconds.
2. Navigate to the desired ICON™ configuration and double-click to start.
3. Right-click the ICON™ configuration and select **Start** from menu.

License Activation

ICON™ software requires a license for each computer it is installed on. When the application is first installed, it is not activated and requires a valid activation key to start functioning. A 30-day trial license can be granted for evaluation purposes. The software will no longer be fully functional after 30 days and a valid activation key must be entered for full activation.

Before starting the activation, obtain an 8-character **license key** from Eddyfi Technologies. The activation process is as follows:

1. Navigate to the ICON™ license **Activation** screen through **Backstage** in the **About** section.

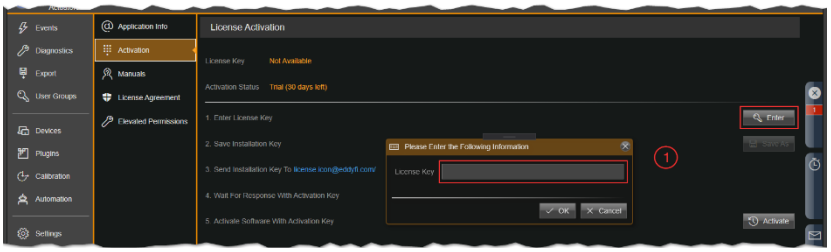


FIGURE 2: ENTERING LICENSE

Click the **Enter** button in the license key field and enter the 8-character license key in the pop-up window.

2. An **installation key** will then be generated for the specific computer. Click the **Save As** button to

FIGURE 3: SAVING INSTALLATION KEY & ACTIVATING ICON

temporarily save the generated installation key file (.iink). Multiple installation keys may be generated based on the same license key.

3. Email the installation key file to license.icon@eddyfi.com/

Note: The activation process may take 1-2 business days for a response.

4. AFTER THE INSTALLATION KEY IS RECEIVED AND PROCESSED, AN **ACTIVATION KEY** FILE (.IACK) WILL BE RETURNED. CLICK THE **ACTIVATE** BUTTON AND NAVIGATE TO THE LOCATION OF THE PROVIDED ACTIVATION KEY.

5. Click the **OK** button. The ICON™ software license is now activated.

ICON™ Control and Operations Screen

The Control and Operations Screen consists of the various panels, elements and regions used for control and operation of an Eddyfi Technologies inspection system. The main window is divided into multiple sections with various operational elements. See the Control and Operation Screen table for further detail on each section.

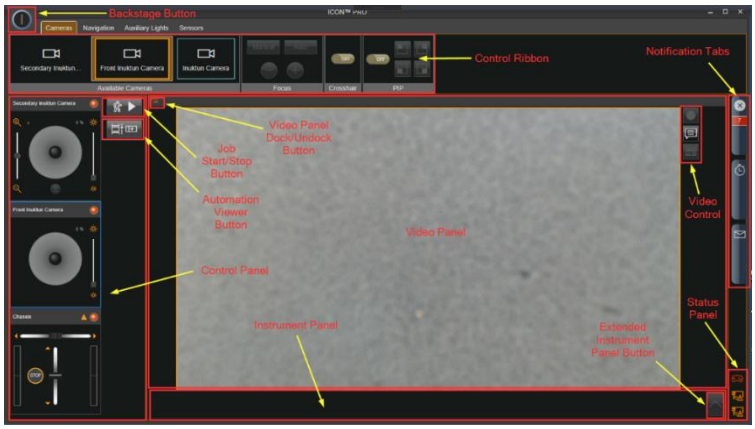
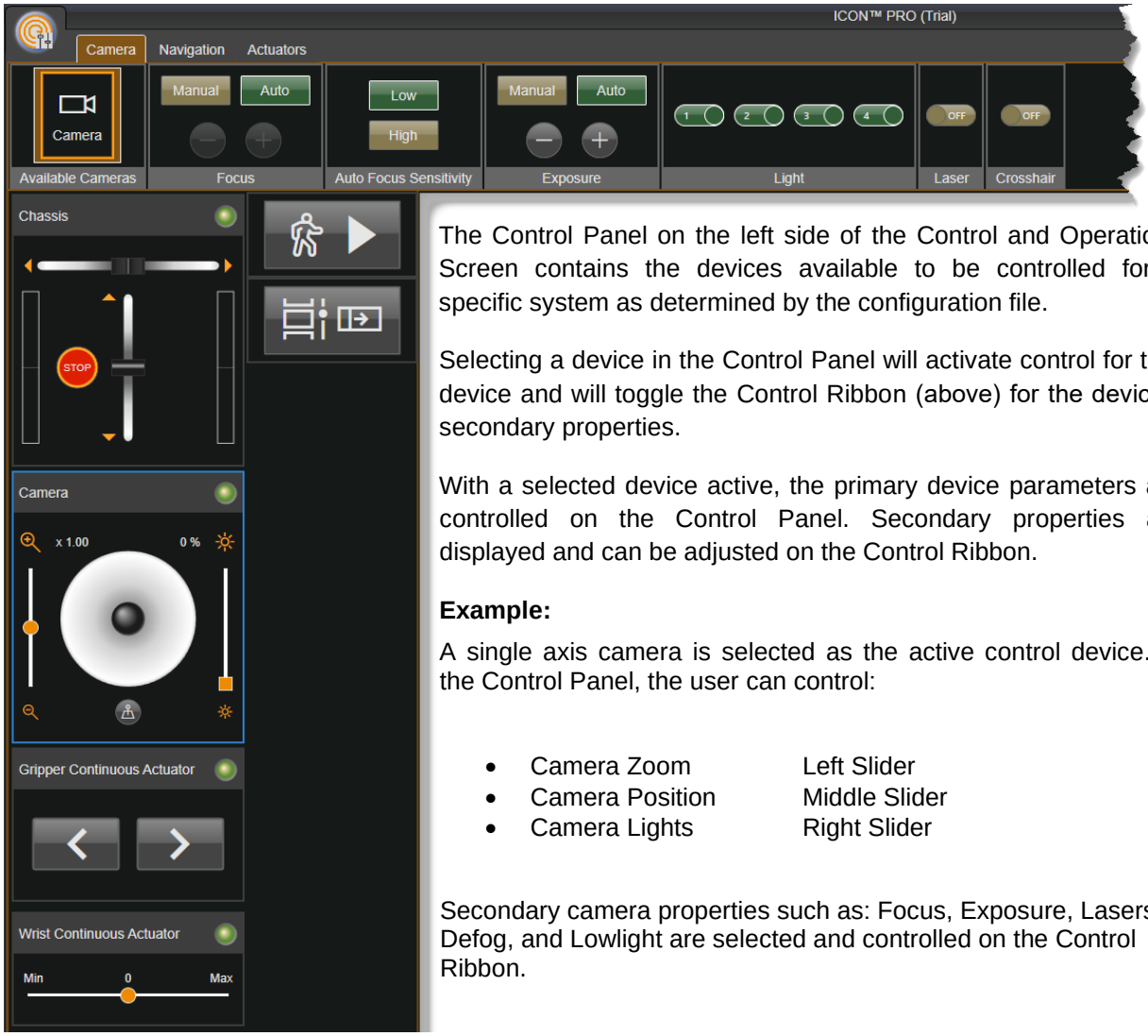


FIGURE 4: CONTROL AND OPERATIONS SCREEN

Note: The above Control and Operations Screen may differ depending on the system configuration. The general layout will be the same for all systems.

SCREEN ELEMENT	FUNCTION
Control Panel	Contains the configured control elements used to operate specific system devices such as Tracks, Cameras, Lights, Actuators, and so on.
Control Ribbon	Displays control elements for the specific selected device in the control panel.
Video Panel	Displays live video from the currently selected camera. Camera selection can be changed on the Control Ribbon if more than one camera is available.
Video Control	Displays common video controls such as **Record** and **Snapshot**.
Notification Tabs	Displays the number of current notifications grouped by their category and importance/severity. Clicking on any tab will open the notification panel for the appropriate category.
Status Panel	Displays system status information.
Instrument Panel	Live data from the system is displayed on the instrument panel. The content of the instrument panel is configured in **Backstage** through the **Instrument Panel Manager**.
Extended Instrument Panel Button	When the extended instrument panel is configured, instruments will be overlaid onto the video panel when toggled.
Job Start/Stop Button	Starts/Stops a **Job**. All data, videos, and snapshots are stored in the ICON™ Suite database within the context of a **Job**. A simplified one-button start/stop/export can be configured within ICON™ to streamline operator workflow. Refer to the **Configuring One-Button Start/Stop/Export Operation** section for more detail.
Automation Viewer Button	If available, toggles the Automation Viewer to start/stop automation routines.
Video Panel Dock/Undock Button	This button is used as an option to undock the video panel. The video panel can then be placed on a secondary monitor or re-docked at any time.
Backstage Button	**Backstage** button toggles between the main control screen and the ICON™ Backstage configuration utility.

System Operation



The Control Panel on the left side of the Control and Operations Screen contains the devices available to be controlled for a specific system as determined by the configuration file.

Selecting a device in the Control Panel will activate control for that device and will toggle the Control Ribbon (above) for the device's secondary properties.

With a selected device active, the primary device parameters are controlled on the Control Panel. Secondary properties are displayed and can be adjusted on the Control Ribbon.

Example:

A single axis camera is selected as the active control device. In the Control Panel, the user can control:

- Camera Zoom — Left Slider
- Camera Position — Middle Slider
- Camera Lights — Right Slider

Secondary camera properties such as: Focus, Exposure, Lasers, Defog, and Lowlight are selected and controlled on the Control Ribbon.

FIGURE 5: CONTROL RIBBON & CONTROL PANEL

Configuring System Devices

System Configuration Management

A configuration file is required to operate an Eddyfi Technologies inspection system using ICON™ software. The configuration file essentially defines the composition, communication, and control elements associated with a specific inspection system. Multiple configurations can be imported depending on software license capabilities. ICON™ software provides a tool to deal with multiple system configuration or with a single one if this is determined by the software license.

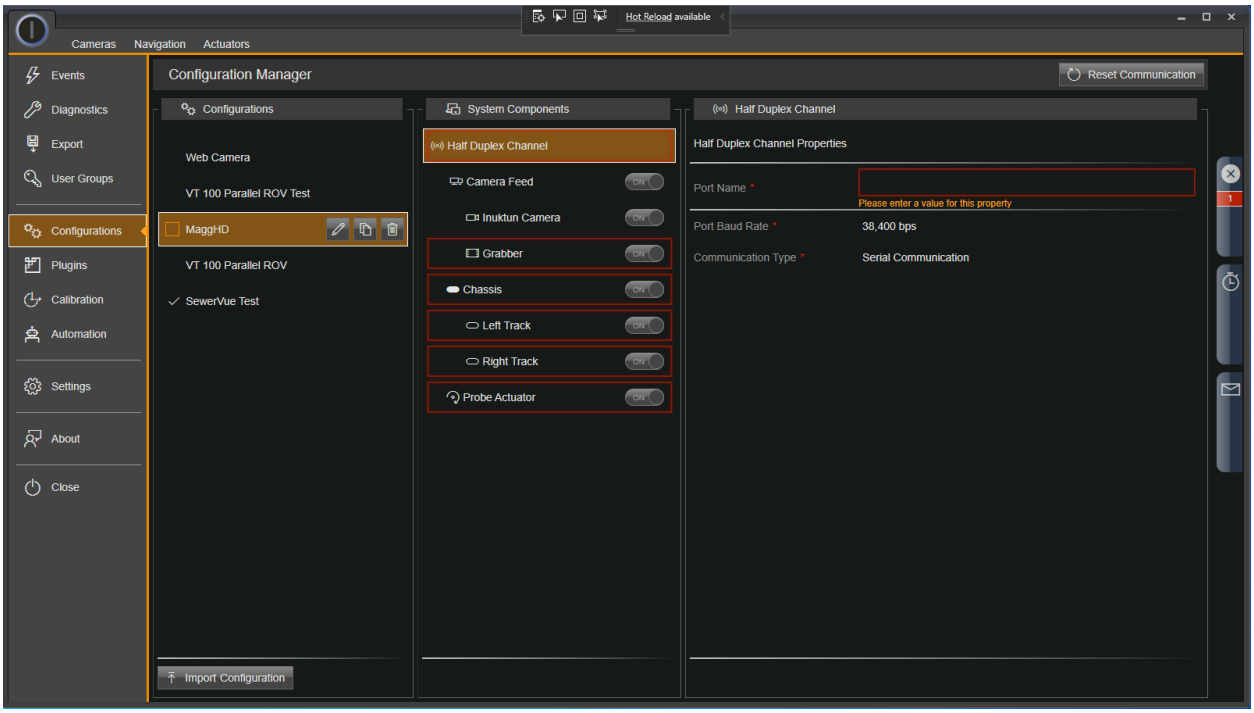


FIGURE 6: SYSTEM CONFIGURATION MANAGER

Import System Configuration(s)

To import system configurations from the configuration file associated with your Eddyfi Technologies system, complete the following steps:

1. Navigate to **Backstage** -> **Configurations**.
2. Click Import Configuration button at the bottom of the manager to show the import dialog box.
3. Select the configuration file (*.icfg)

4. Once the file has been selected, select a configuration(s) to be imported, and click the **OK** button to complete the selection.

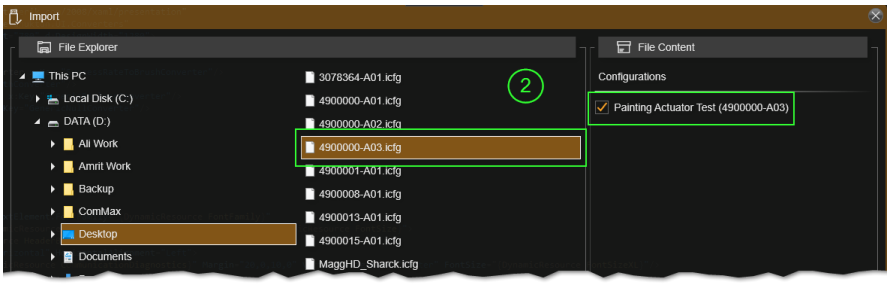


FIGURE 7: SELECTING A SYSTEM CONFIGURATION

Note: If the software license does not have the Multiple Configurations feature, the confirmation dialog box will pop up to confirm replacing the only existed configuration.

Selecting and Loading a System Configuration

The selected and loaded system configuration is always marked by the checked sign. By default, the last previously selected configuration is selected again to enter ICON™ interface. This can be changed, refer to the **User Group** section for more detail.

FIGURE 8: THE SELECTED CONFIGURATION MARK

FIGURE 9: THE CONFIGURATION SELECTION CHECKBOX

To select and load another configuration, click on its title and then on the checkbox on the left of it. Finally confirm the choice in the confirmation dialog.

Removing a System Configuration

To remove a system configuration, click  button beside its name and confirm the action.

Note: Only a not selected and loaded system configuration can be removed.

Renaming System Configuration

ICON™ allows to import the same configuration multiple times. All of them will have the same title defined in their configuration files. The title can be changed, however, if needed.

To rename a configuration complete the following steps:

4. Navigate to **Backstage -> Configurations**.
5. Select a configuration from the configuration list.
6. Click  to start editing.
7. Enter the desired title. It is recommended to keep it concise and descriptive. When completed, click either  to save or  to cancel the changes.

FIGURE 10: RENAMING A CONFIGURATION

System Components

After a new system configuration has been added to ICON™, some setup of the system devices is required. Setup of system devices is performed in the **Backstage** configuration manager through **Configurations**.

Configurations will provide some guidance as to which properties need to be completed by highlighting the missing information with a red outlined box. The system configuration will determine which items need to be configured or filled in. All outlined areas will need to be completed before a system is fully operational. Refer to the **System Components** section for greater detail on system configurations and setup.

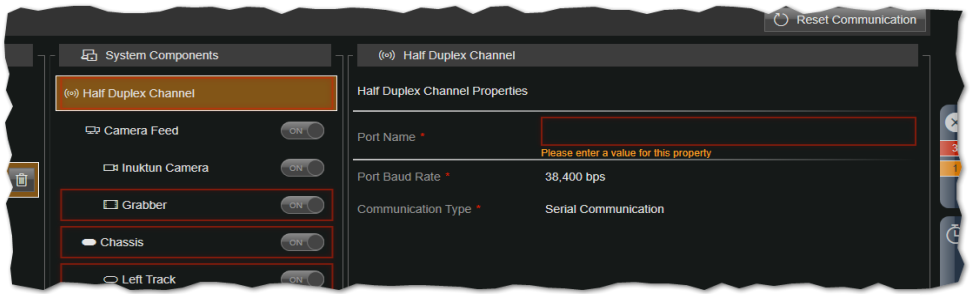


FIGURE 11: SYSTEM COMPONENT CONFIGURATION

Note: Only a selected and loaded system configuration can be configured. The setting for other unloaded configurations, however, can be observed by selecting a configuration and one of its components.

Device Serial Numbers

Each Eddyfi Technologies Device is programmed with a serial number from the factory. This serial number must be system unique or the system will not work. If a duplicate serial number is found, the serial number can be changed using ICON™ Diagnostics.

Entering a device serial number, is as follows:

1. Navigate to **Backstage** -> **Configurations**.
2. Select the device from the list of System components.
3. Click **Edit**.
4. Enter in the space provided or pick up from the dropdown list the Device Serial Number.

Note: Serial numbers are case sensitive. To see the list of available serial numbers in the dropdown list, it is strongly recommended to set up communication channels **Port Name** properties first. To refresh the list, click  beside the dropdown list.

5. Click **Save**.

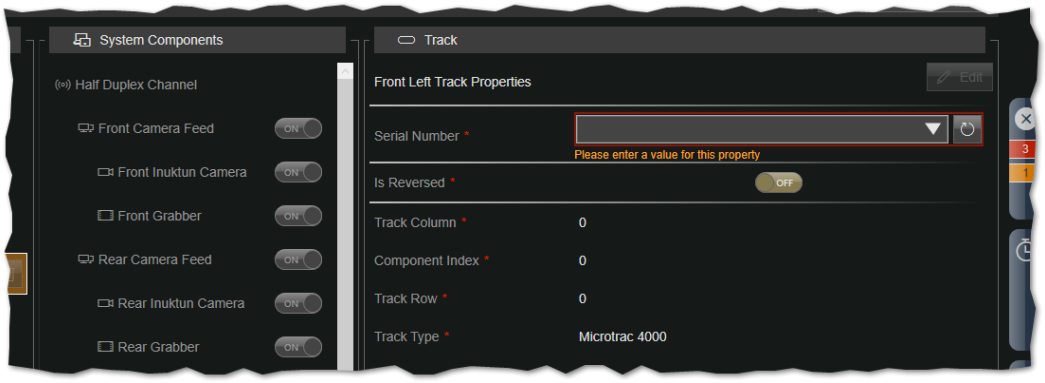


FIGURE 12: DEVICE SERIAL NUMBER ENTRY

Configuring a One-Button Job Start/Stop/Export Operation

The **One-Button Start/Stop/Export** configuration allows for a simplified inspection workflow. This is one example of how workflow can be optimized for a streamlined inspection process. The One-Button Start/Stop/Export configuration uses the following workflow:

1. A **Job** is started using the **Start Job** button. The **Job** gets named, then the video automatically starts recording.

   Note: Multiple video sources can be configured to start recording at the same time.

2. The user controls the system and performs an inspection. Snapshots and video tags may be used.

3. The **Job** is stopped when inspection is complete. The stop action automatically exports the video and snapshots to the export folder.

Below is an example of a One-Button Start/Stop/Export configuration workflow. Refer to the relevant sections of this manual for more detailed information.

1. Navigate to **Backstage** -> **Settings** -> **Preferences**.
2. Toggle the **Enable Automatic Video Export** and **Enable Automatic Snapshot Export** to **ON**.

FIGURE 13: PREFERENCES FOR ONE-BUTTON ACTIONS

3. In **Configurations** -> **Selected Configuration** -> **System Components**, select **Camera**, then **Edit**, toggle **Default Recording** to **ON**.

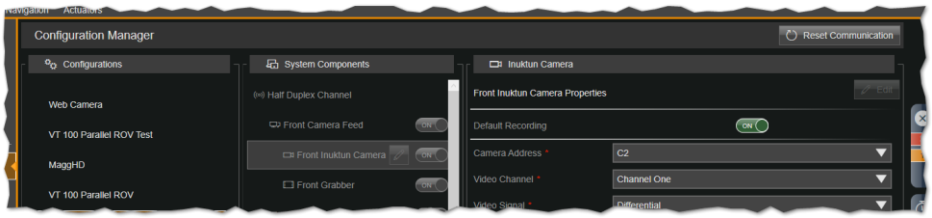


FIGURE 14: SETTING DEFAULT RECORDING FOR ONE-BUTTON START/STOP/EXPORT

4. 4. In User Groups -> Selected User Group -> Features, select Job Management, then toggle to OFF Enable Video Controls.

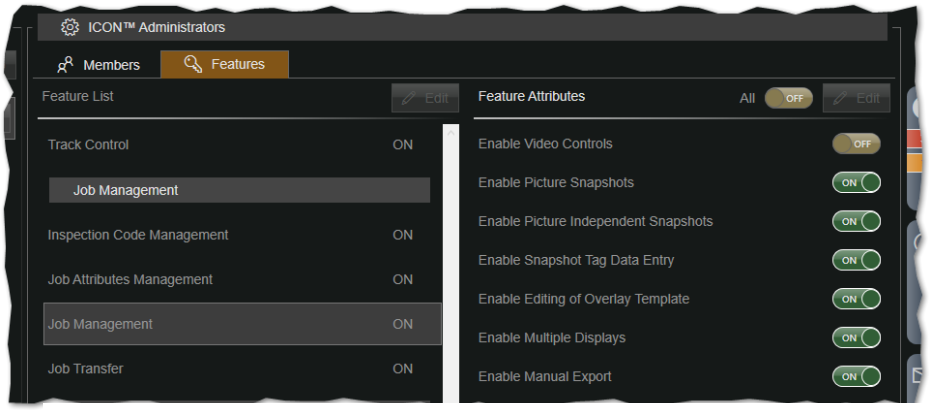


FIGURE 15: DISABLING VIDEO CONTROLS FOR ONE-BUTTON START/STOP/EXPORT

5. The **One-Button Start/Stop/Export** configuration is now set. This type of configuration can vary depending on desired operation or level of user permissions. This is one of the many types of configuration setups that can be implemented in ICON™ software.

ICON™ Configuration File Carousel

The Configuration Carousel will appear each time ICON™ software starts. This is where system configurations can be alternatively selected when entering ICON™ interface. Its appearance depends on the number of configurations have been imported. In case of one or two configurations, to switch between them, just click on the desired one. In case of three or more, use a mouse scroll or click the yellow arrow buttons.

FIGURE 16: SYSTEM CONFIGURATION START-UP SCREEN

After selecting a desired configuration, enter the ICON™ interface as described in the **Getting Started -> Entering the ICON™ Interface** section

ICON™ Backstage

ICON™ **Backstage** can be accessed by clicking the ICON™ button in the top left corner on the main window. **Backstage** is where numerous features, functions, and system control settings are managed. When entering **Backstage,** the main control panel is located to the left. **Backstage** consists of the following sections (depends on the activated license tier) and will be discussed in more detail.

- Event Viewer
- Communication Diagnostics
- Video Export Manager
- User Group Manager
- Device Manager
- Plugin Manager
- Calibration Manager
- Automation Manager
- Settings

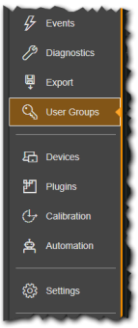


FIGURE 17: BACKSTAGE CONTROL PANEL

Events

The Event Viewer contains valuable information regarding the current system configuration in use. Notifications are helpful when setting up a system, as well as troubleshooting system errors. For convenience, events are split into three categories: errors, alarms, and messages.

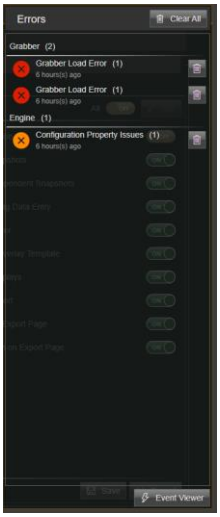


FIGURE 18: EVENT VIEWER

There are two ways to access the Event Viewer. It can be accessed by clicking **Backstage** button and then the Events tab, or by clicking one of the three **Events** tabs labelled **Errors**, **Alarms**, and **Messages**, at the right side of the main window, then, when the Event Panel slides in, by clicking the **Event Viewer** button at the bottom-right of the panel.

When accessing the Event Viewer from the main window or in case of clicking on any other part of the application, the Event Panel will slide out to the left. You can clear events from the Panel by selecting **Clear All** or individually, by clicking the **Delete** button.

Note: The Event Panel on the right side displays only runtime events. They can appear and disappear as the application

keeps running. Clearing or deleting events from the panel does not affect the application event history.

The Event Viewer displays this history. Automatically events are loaded just once when the application starts and then must be refreshed manually by clicking on the **Refresh** button. The events can be filtered by a category, dumped into a file for diagnostic and troubleshooting purposes, or cleared events away from the history by clicking on the appropriate button.

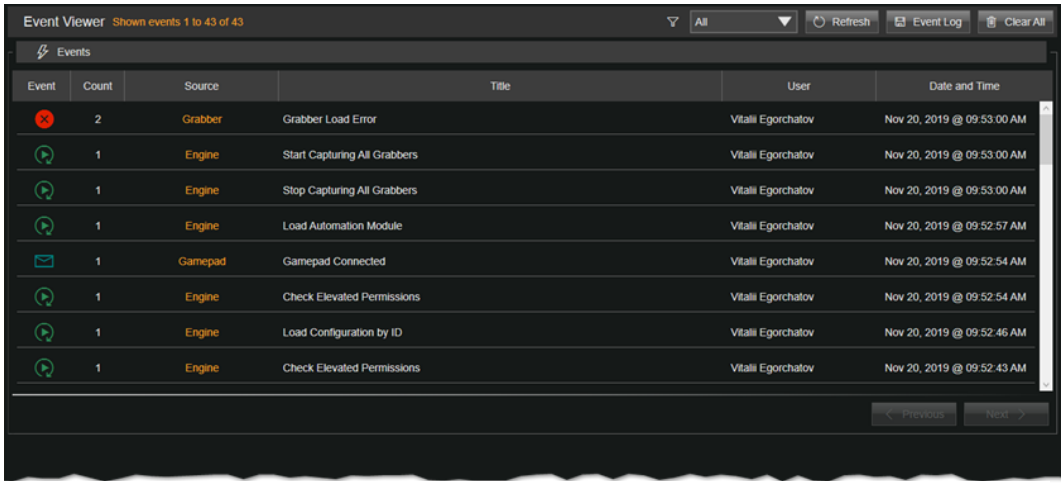


FIGURE 19: BACKSTAGE EVENT VIEWER

Diagnostics

Communication Diagnostics provide information on the status of system communication tasks. A system may utilize multiple communication channels, depending on complexity. Each communication channel may have multiple tasks associated with it. Communication channels can be viewed separately through the **Separate Channels** tab or combined through the **Combined Channel** tab. Separate Channels will show all the tasks associated with that channel. Combined Channel will show all the channels and the tasks will be combined.

Communication Diagnostics - Separate Channels

The Separate Channels view is divided into three main headings: Task, Progress, and Port %. At the bottom left are the active communication channel tabs. Select between the tabs to view channels individually. Tasks will be displayed for that specific channel.

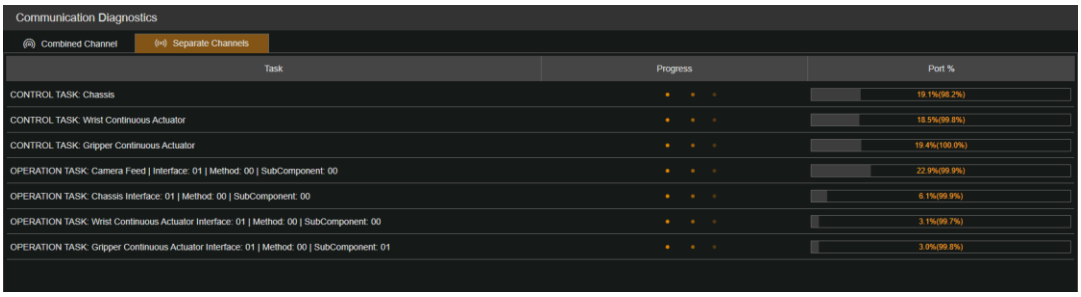


FIGURE: 20: COMMUNICATION DIAGNOSTICS - SEPARATE CHANNELS PAGE

Communication Diagnostics - Combined Channel

The Combined Channel view is divided into four main headings: Communication Channel, Task, Progress, and Port %. Tasks are combined and the overall communication information will be displayed for all channels.

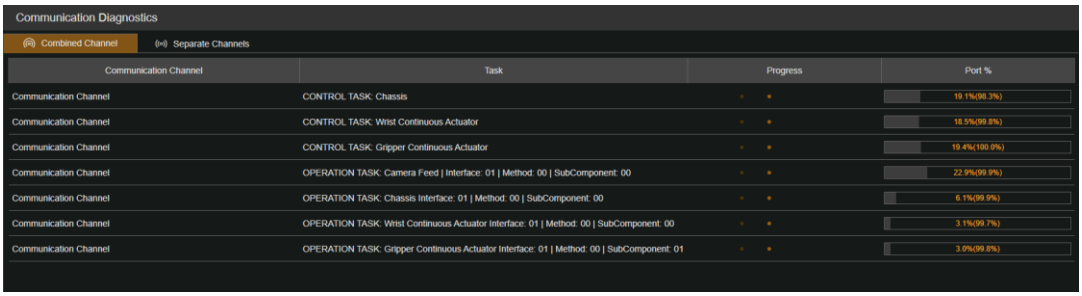


FIGURE 21: COMMUNICATION DIAGNOSTICS - COMBINED CHANNEL PAGE

Port Percentage

There are two pieces of information associated with the Port % tab. The first percentage, on the left, is the channel utilization rate of a task. This is the percent of communication packets received through that channel. The sum of the task percentages on a channel theoretically add up to 100%. The second percentage, on the right, is the success rate of the task. The task is completing successfully, indicated by 100%.

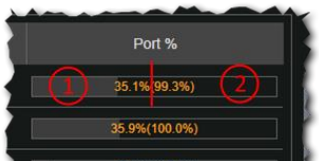


FIGURE 22: PORT PERCENTAGE

Exports

The Video Export manager is used to review, export, and delete recent and past recorded **Jobs** as well as their videos and snapshots. By default, all **Jobs Made Within Current Session** will be displayed on the **Recorded Jobs** panel. The dropdown menu also allows selection between **Jobs Made Today** and **All**. A selected **Job** video and snapshots will be displayed on the **Job Videos** and **Job Screenshots** panels accordingly. Displayed information includes the camera name, date, and time of the beginning of recording, duration, resolution, frame rate (fps), and data rate (kbps).

Note: Please refer to the **Job Recording** section in this manual for detailed instructions.

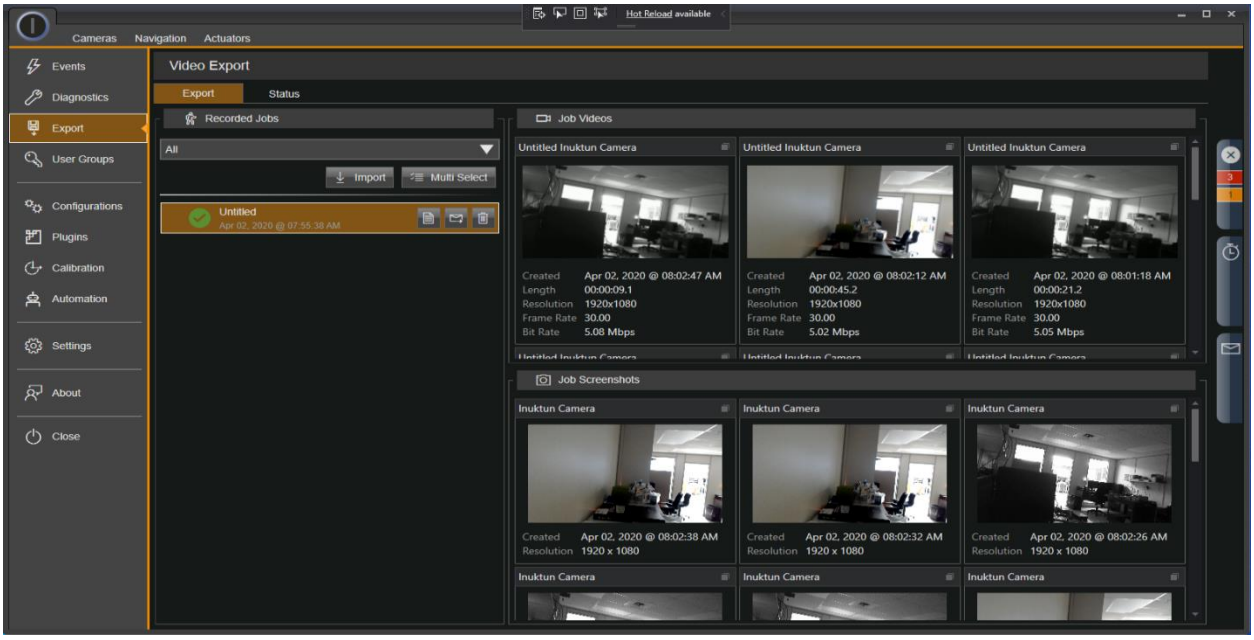


FIGURE 23: VIDEO EXPORT PANEL

Export Videos

To select a video, click on its title. The tile will expand and show export parameters panel.

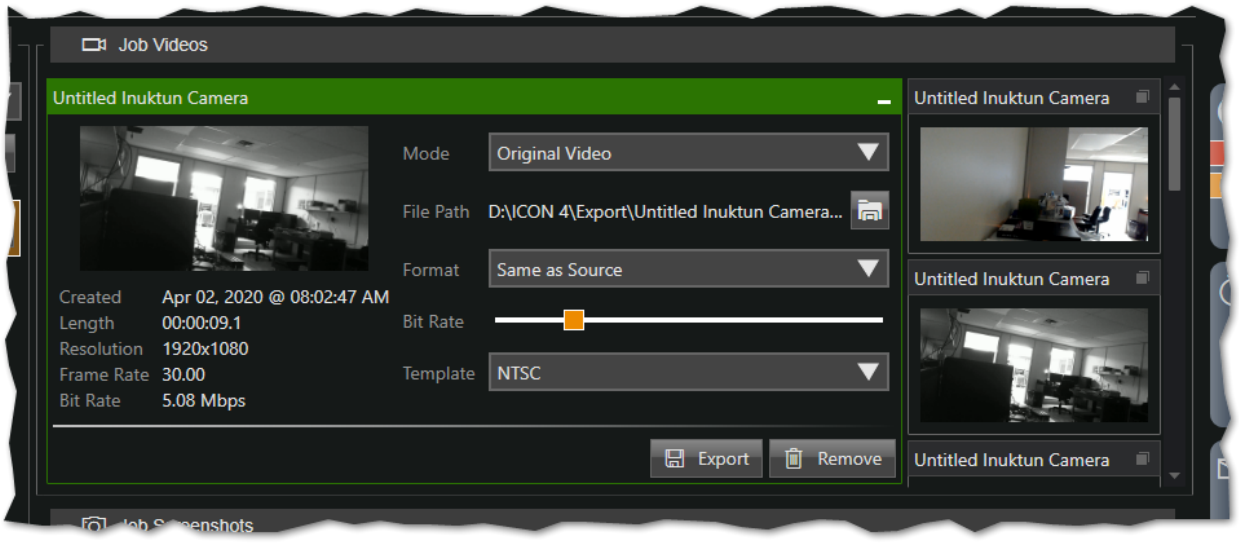


FIGURE 24: VIDEO EXPORT PARAMETERS PANEL

Three video export modes are available:

- Original Video (no changes in the video)
- Formatted Video (the video is formatted into one of the following formats)
  - Same as Source
  - NTSC
  - PAL
  - 1080i 59.94 fps
  - 1080i 30.00 fps
- Template Annotations

To export a video, complete the following steps:

1. Select the desired video export mode.
2. Select the desired format if Formatted Video is selected or the desired overlay template if the option is Template Annotations. Refer to the **ICON™ Backstage -> Settings -> Overlay Templates** for details.
3. Select the export file location. If not selected, the default value defined in **Preferences** -> **Set Default Export Location** is used.
4. Select the desired export bit rate, the higher the value the higher the quality but it takes more disk space.
5. Click the **Export** button to export a video file.

Notifications about video export status will pop up on the screen. The status of the video export can be also observed on the **Status** tab of the same panel. It is possible to see the progress of the video export process or cancel the export if needed.

FIGURE 25: VIDEO EXPORT STATUS PANEL PARAMETERS PANEL

The exported video can be found at the defined location.

Export Snapshots

Like videos, to select a snapshot, click on its title. The tile will expand and show export parameters panel.

To export a snapshot, just click the **Export** button and select a destination folder. The exported snapshots can be found at the defined location.

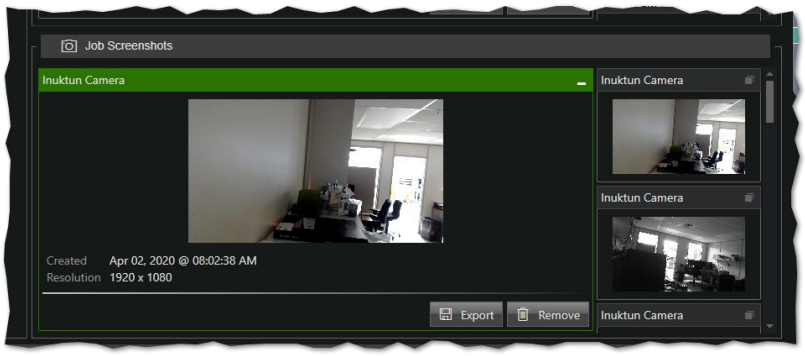


FIGURE 26: SNAPSHOT EXPORT PARAMETERS PANEL
PARAMETERS PANEL

User Groups

The User Groups Manager is a tool that allows administrators to create and manage user groups with different access levels. User groups allow an administrator to enable or disable certain features for use within ICON™ for specific groups of users.

The **User Groups Manager** is used to manage user groups, allowing different accessibility for different categories of users. When installing ICON for the first time, the special ICON™ Administrators group with the only user (the current one) is created. This grouped is locked, has all permissions, and cannot be deleted. It must also have at least one user inside. The list of available features for this group cannot be modified.

By clicking the **+ New Group** button, a new group can be created, and users can then be added.

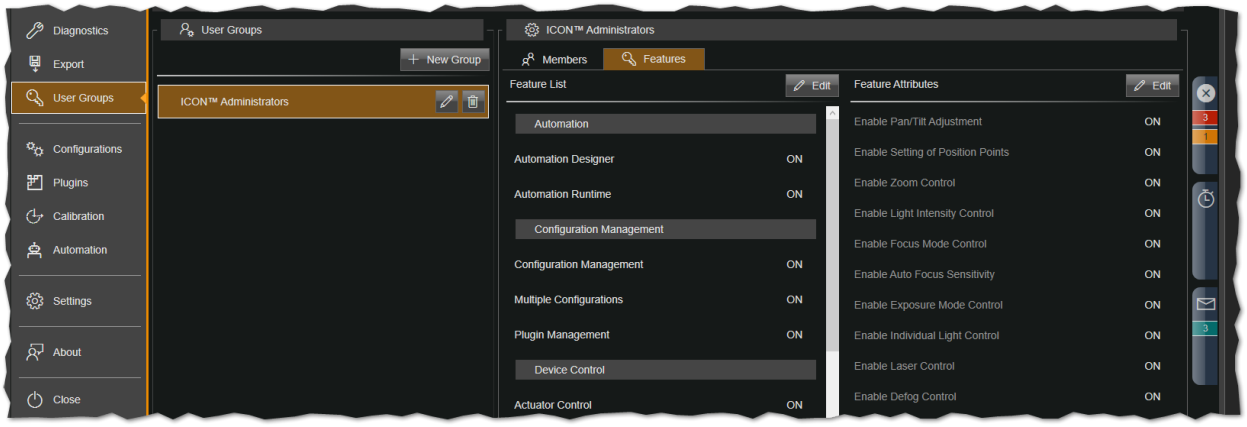


FIGURE 27: USER GROUP MANAGER

Note: The **Group Feature Manager** can only be accessed by ICON™ Administrators.

CREATING A NEW USER GROUP

Steps to create a new user group are:

1. Navigate to: **Backstage -> User Groups**.
2. Select **+ New Group**.
3. Enter in the **Group Name**, **Group Description**, and select a **Default Configuration.**
4. Click **Save**.

Note: A default configuration specifies which configuration is pre-selected on the ICON™ Configuration Carousel. It allows to simply the search of the desired configuration when there are many of them. If the value is set as None, the last previously selected configuration is selected again to enter ICON™ interface.

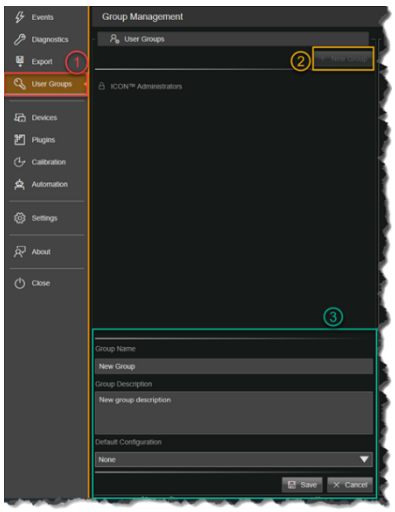


FIGURE 28: CREATING A NEW USER GROUP

A new group will be created, and **Group Features** will then be active for configuration purposes.

REMOVING OR MODIFYING USER GROUPS

To remove a user group, click the **Delete** button. A pop-up window will ask for confirmation. Select **OK**. To modify group names, descriptions, or default configurations, click the **Edit** button. Select **Save** when complete.

ADDING OR REMOVING USERS FROM A GROUP

To add a user to a user group, first select the user group to which members are to be added. Click the **Members** tab, to the right of the **+ New Group** button. Select the user by selecting the domain, groups, and desired group members from the dropdown menus and clicking the Add User(s) buttons, on the right.

To remove the user, click the **Delete** button next to the user within the group.

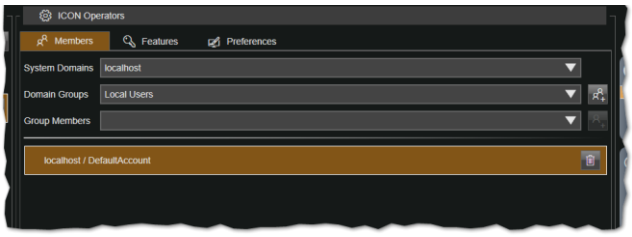


FIGURE 29: ADDING / REMOVING USER GROUP MEMBERS

Features

This tab allows the administrator to enable or disable features and control feature attributes for the selected user group under the **User Groups** section.

Automation

This Feature category contains all permissions surrounding automation rules and routines, including alarms.

AUTOMATION DESIGNER

1. **Enable Create and Edit Automation Routine** – Allows the operator to create and edit automation routines.
2. **Enable Create and Edit Automation Rule** – Allows the operator to create and edits automation rules.

AUTOMATION RUNTIME

1. **Enable Import Automation Module** – Allows the operator to import automation rules and routines.
2. **Enable Delete Automation Module** – Allows the operator to delete existing automation rules and routines.
3. **Enable Run Automation Routine** – Allows the operator to run automation routines.
4. **Enable Toggle Rule** – Allows the operator to enable/disable automation rules.

Configuration

CONFIGURATION MANAGEMENT

1. **Enable Configuration Management** – Allows the operator to import or delete configurations.
2. **Enable Modification of Runtime Properties** – Allows the operator to modify the current configuration's run-time properties.
3. **Enable Modification of Tunable Properties** – Allows the operator to edit the current configuration's tunable properties.

MULTIPLE CONFIGURATIONS

This option allows the operator to switch between different configurations.

Note: If both the **Enable Configuration Management** and **Multiple Configuration** are disabled, the system configuration start-up page will be skipped at start-up.

PLUGIN MANAGEMENT

1. **Enable Plugin Management** – Allows the operator to add or removes plugins to/from the current configuration
2. **Enable Modification of Plugin Properties** – Allows the operator to edit plugin properties.

Device Control

ACTUATOR CONTROL

This option allows the operator to control actuators.

AUXILIARY LIGHT CONTROL

This option allows the operator to control auxiliary lights.

CAMERA CONTROL

1. **Enable Pan/Tilt Adjustment** – Allows the operator to control a camera's Pan and Tilt Action.
2. **Enable Setting of Position Points** – Allows the operator to work with a camera's set points.
3. **Enable Zoom Control** – Allows the operator to control a camera's zoom.
4. **Enable Light Intensity Control** – Allows the operator to control a camera's light intensity.
5. **Enable Focus Mode Control** – Allows the operator to control a camera's focus mode.
6. **Enable Auto Focus Sensitivity** – Allows the operator to change a camera's focus sensitivity.
7. **Enable Exposure Mode Control** – Allows the operator to adjust a camera's exposure mode and level.
8. **Enable Individual Light Control** – Allows the operator to enable or disable an individual light on the camera.
9. **Enable Laser Control** – Allows the operator to enable or disable the laser light on the camera.
10. **Enable Defog Control** – Allows the operator to turn on or off the camera's defogging function.
11. **Enable Image Stabilization** – Allows the operator to turn on or off camera's image stabilization function.
12. **Enable Low Light Compensation** – Allows the operator to turn on or off camera's image low light compensation.
13. **Enable Display Crosshair** – Allows the operator to turn on or off a display's crosshair.

DEVICE CALIBRATION

1. **Enable Device Calibration** – Allows the operator to calibrate device feedback.
2. **Enable Device Offset Setting** – Allows the operator to change device feedback offset values.

GAMEPAD CONTROL

1. **Enable Editing of Gamepad Profiles** – Allows the operator to edit the gamepad key mappings.
2.

SENSOR CONTROL

This option allows the operator to control sensors.

SWITCH CONTROL

Switch Control

Eddyfi Technologies systems can be equipped with discrete state devices (switches). All actuators are visible on the **Switches** tab of the **Control Ribbon** and the **Device Manager** and have correspondent tiles on the **Control Panel**.

Switch States

Eddyfi Technologies switches can be either binary (just two states like ON/OFF) or multi-state with up to 256 different states:

In the former case, the control represents a simple button with ON/OFF states. To switch the state just click on the button.

FIGURE 30: SWITCH ON/OFF BUTTON

In the case of the multi state switch, the control represents a slider similar to the actuator position control.

FIGURE 31: MULTI-STATE SWITCH SLIDER

To control the switch state, drug the slider knob to the desired state within the range. The green bar shows the actual switch state. It can be used to monitor the actual switch state when direct observation is impossible

TRACK CONTROL

1. **Enable Throttle/Steering Adjustment** – Allows the operator to navigate the vehicle.
2. **Enable Chassis Mode Control** – Allows the operator to switch vehicle navigation mode. Options available are **Speed Mode** and **Power Mode**.

   Note: Tracks will move according to the encoder feedback for **Speed Mode** by maintaining the desired track speed. With **Power Mode**, tracks are set based on the desired power output level.

Job Management

INSPECTION CODE MANAGEMENT

This option allows the operator to edit and manage inspection codes that will be assigned to a **Job**.

JOB ATTRIBUTES MANAGEMENT

This option allows the operator to edit and manage attributes that will be assigned to a **Job**.

JOB MANAGEMENT

1. **Enable Video Controls** – Allows the operator to manually start or stop video recording.

Note: When this feature is off, the video recording function will be set to simplified mode. By contrast, when this feature is on, it will be set to advanced mode. Refer to the **Job Recording -> Video Recording** section, for more details.

2. **Enable Picture Snapshots** – Allows the operator to take snapshots.
3. **Enable Picture Independent Snapshots** – Allows the operator to take independent snapshots.
4. **Enable Snapshot Tag Data Entry** – Allows the operator to tag snapshots during a recording.
5. **Enable Overlay Layer** – Allows the operator to enable/disable overlay layer over camera video.
6. **Enable Editing of Overlay Template** – Allows the operator to edit the overlay template using the **Overlay Template Designer**.
7. **Enable Multiple Displays** – Allows the operator to enable or disable picture-in-picture display mode.
8. **Enable Manual Export** – Allows the operator to manually export videos.
9. **Enable All Job on Export Page** – Allows the operator to see all the historical **Job**s in **Video Export Manager**. This option will be hidden in the dropdown menu when disabled.
10. **Enable Job Deletion on Export Page** – Allows the operator to delete historical **Job**s through the **Video Export Manager**.

JOB TRANSFER

1. **Enable Job Import on Export Page** – Allows the operator to import **Job** files (*.ijob) which have been exported from another ICON™ system.

2. **Enable Job Export on Export Page** – Allows the operator to export recorded **Jobs** into encapsulated **Job** files (*.ijob), which can be saved in any storage location, so user may transfer **Job**s among computers.

Licensing and Access Management

USER GROUP MANAGEMENT

1. **Enable Editing of User Groups** – Allows the operator to edit user groups and user group features.

2. **Enable Editing of User Group Members** – Allows the operator to edit existing user group Notification Management

This option allows the operator to read detailed error information, export error logs, and manage notifications from the Notification Manager.

PREFERENCE MANAGEMENT

This option allows the operator to make changes to the global system preferences.

CONTROL PANEL ADJUSTMENT

This option allows the operator to work with control panels and select templates, rearrange, or resize control panel tiles.

INSTRUMENT PANEL ADJUSTMENT

This option allows operator to work with instrumental panels and edit, select templates, rearrange, or resize instrument panel tiles.

PREFERENCE MANAGEMENT

1. **Enable Editing of System Preferences** – Allows the operator to make changes to the global system preferences.

2. **Enable Editing of Current Group Preferences** – Allows the operator to make changes to user groups preferences.

Configurations

The **System Configuration Manager** is used to manage system configurations, set up serial communication, initialize devices, edit parameters, and enable/disable devices. The manager is divided into three sections:

- The list of system configurations
- The list of system components of the selected configuration

- The list properties of the selected system component

Refer to **Getting Started** -> **System Configuration Management** to learn more about managing the configuration list.

When a new system configuration has been added to ICON™, some initial device setup is required. When setting up inspection system devices, the ICON™ System Configuration Manager will provide some guidance as to which remaining properties have issues, by highlighting them with a red box. The system configuration determines which items need to be configured. All outlined areas need to be completed before a system can be initialized. It is recommended to configure communication channels first.

ICON™ validates the system settings and, if it detects any changes and determines there are no issues, the system communication is restarted automatically when the backstage is closed. The communication can also be restarted manually by clicking on the **Reset Communication** button at the top left corner.

All system properties are split into three categories by their access level: run-time, tunable, and factory.

1. **Run-time Property** – Has no initial value, must be set before starting operation, the operator must have **Enable Modification of Runtime Properties** feature enabled.
2. **Tunable Property** – Has the default initial value which can be changed if needed the operator must have **Enable Modification of Tunable Properties** feature enabled.
3. **Factory Properties** – Has the locked factory values, cannot be changed, given for information and diagnostic purposes only.

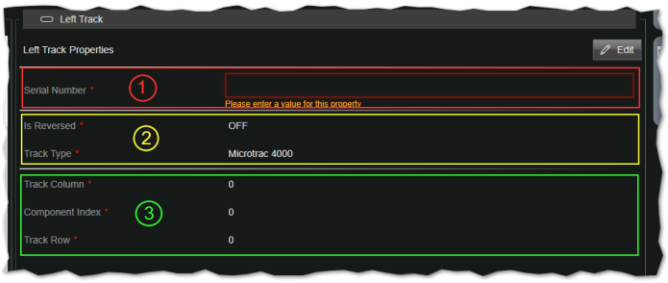


FIGURE 32: SYSTEM COMPONENT PROPERTY CATEGORIES PARAMETERS PANEL

Note: Not all three categories are always presented for a system item. Some may have just two or even one. Describes only run-time and tunable properties, which can be set through ICON™ interface.

Configuring Communication Channels

To configure serial communication with a connected device:

Note: Device communication setup may differ depending on the type of system configuration.

1. Navigate to **Backstage -> Configurations -> Selected Configurations -> System Components.**
2. Select the channel to be configured.
3. Click **Edit.**
4. Select the appropriate port from the dropdown menu. Use **ICON™ Diagnostics** to identify which port is associated with a given device.
5. Click **Save.**

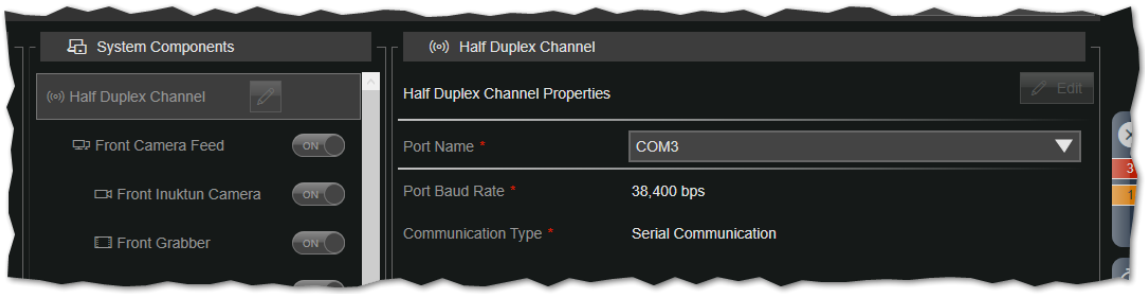


FIGURE 33: COMMUNICATION CHANNEL SETTINGS

Note: Each communication channel must have a unique COM port number. The red error border appears to indicate the duplication.

Configuring System Devices

System Configuration Manager is where all devices can be enabled or disabled and where the properties of these devices can be edited. Under the title of each device, subcomponents of the device properties can be configured. The following sections detail various system device setup and configurations such as cameras, frame grabbers, tracks, and actuators.

Note: Depending on the type of system, there may be other system devices not mentioned in the section below. However, setting up system devices will follow the same format for all devices.

VIDEO CAPTURE DEVICES – FRAME GRABBERS

Frame grabbers are key devices for video capture, processing, and storage. ICON™ supported frame grabbers include:

- Black Magic — Used on High Definition Systems
- Epiphan AV.IO — Used on High Definition Systems
- Magewell — Used on Standard and High Definition Systems

Frame Grabber Properties

- Grabber Device — Defines a specific frame grabber
- Video Format — Defines a video format for the selected frame grabber
- Video Quality — Defines a video file bitrate and required disk space, 15 % recommended as default

Note: Refer to the Frame Grabber Table below for parameters when configuring frame grabbers.

Frame grabber configuration steps:

1. Select **Capture Device**, and then click **Edit.**
2. Select the appropriate **Grabber Device** and **Video Format** for it from the dropdown menu.

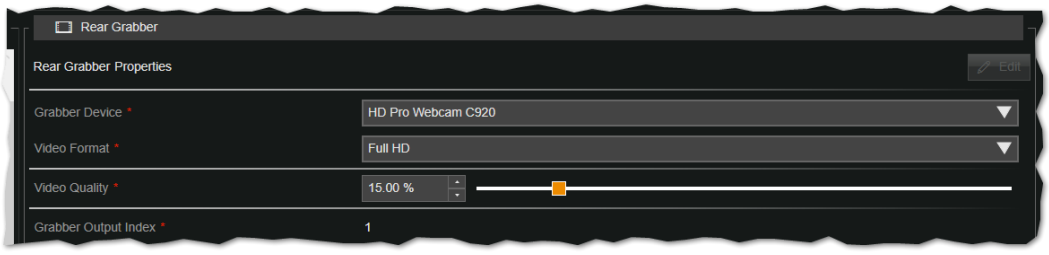


FIGURE 34: VIDEO GRABBER CONFIGURATION

Note: Only Eddyfi Technologies supported video formats can be selected from the list.

3. Select the appropriate video quality.
4. Click **Save** and navigate to the Control and Operations Screen. The system will initialize automatically.

Table: Frame Grabber Parameter Settings

	Black Magic	Magewell	Epiphan
Frame Grabber Device	Intensity Pro	Magewell DVI+/SDI+	AV.IO SDI Video
Video Format (Recommended)	• NTSC UYVY 720x480@29.97ib 4:3 • PAL UYVY 720x576@25.00iT 4:3 • 1080i59.94 • 1080P29.97	• Full HD • HD • SD	• YUY2 1920x1080 @60.00P 16:9

CAMERAS

Cameras are key devices for electronic motion picture acquisition. The type of camera depends on the current configuration. They can dramatically vary by functionality, shapes, and sizes.

Camera Properties

- Default Recording — Defines if the camera starts recording automatically when the operator starts a **Job**
- Camera Address — Defines the camera communication address
- Video Channel — Defines the camera output channel
- Video Signal — Defines the camera video signal type
- Camera Address / Serial Number — Defines the camera communication address / Defines the camera serial number (can be found on a sticker located on the camera)

Camera Configuration Steps

1. Select the camera from **System Devices.**
2. Click **Edit** to start configuration.
3. Toggle the **Default Recording** option to **ON** or **OFF**.

4. In case of **Camera Address**, set it to **C2** for the only camera in the system or for the camera with pan and/or tilt functionality; For all the rest cameras, the value must be incremented by one (**C3**, etc.). In case of **Serial Number**, enter or select from the dropdown list the camera Serial Number

Note: Each camera must have a unique address / serial address. The red error border appears to indicate the duplication.

5. Set **Video Channel** to **Channel One** (works in most cases)

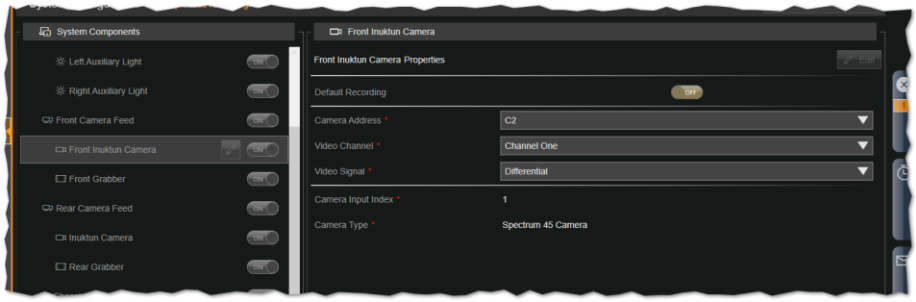


FIGURE 35: CAMERA CONFIGURATION

6. Set **Video Signal** to **Differential** (works in most cases)

7. Click **Save.**

CHASSIS AND TRACKS

Chassis are composite devices which may consist of two and more tracks. Chassis settings are broken down into two sections, **Track Properties** and **Chassis Properties**

Track Properties

- Serial Number — Defines the track serial number (can be found on a sticker located on the track)
- Is Reversed — Defines a direction of the track
- Track Type — Defines a track type
- Chassis Steering Mode — Defines the chassis steering mode: in **Crawler Steering** mode, there is no need to apply throttle to turn; in **Throttle Steering** mode, the crawler cannot turn without moving forward or backward.

Chassis Properties

- Row Differential — In case a chassis has more than one row of tracks, defines the ratio of how much slower the rear row is compared to the front one (where 0 is no difference)

Track Configuration Steps

1. Select the track from **System Devices** then click **Edit.**
2. Enter or select from the dropdown list the track **Serial Number**.

Note: Each device must have a unique serial number. The red error border appears to indicate the duplication. Click  to refresh the list of detected serial numbers.

3. Check the **Track Column** to confirm the track direction. Normally, “0” represents the Left Track, “1” represents the Right Track.
4. For the **Left Track**, set **Is Reversed** to **OFF.** For the **Right Track**, set **Is Reversed** to **ON.**

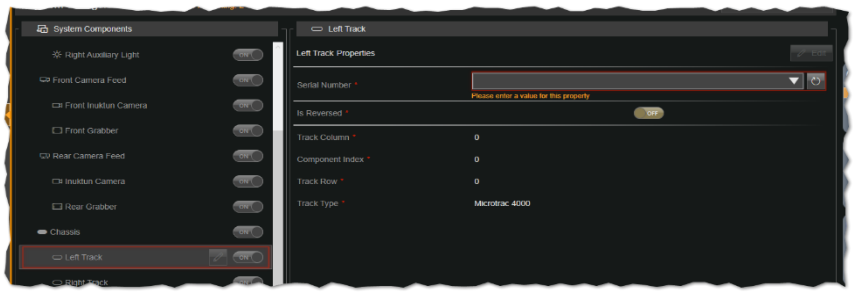


FIGURE 36: TRACK CONFIGURATION

5. Click **Save.**
6. Repeat steps for the remaining tracks.

Chassis Configuration Steps

1. Select **Chassis**, and then click **Edit.**
2. Select a steering mode.
3. If it has just one row, set **Row Differential** to 0; otherwise, set it to 0.15.
4. Click **Save.**

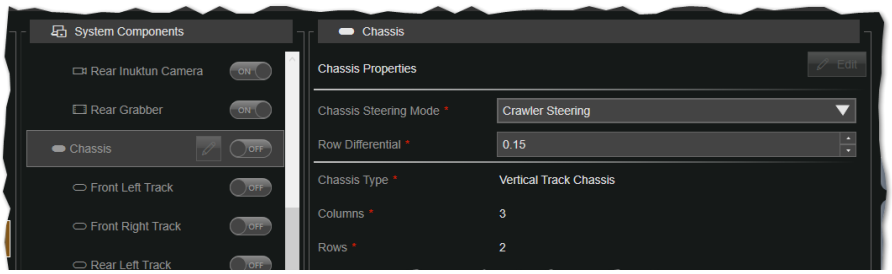


FIGURE 37: CHASSIS CONFIGURATION

Check how the chassis is controlled and steered. Repeat steps if needed.

ACTUATORS

Actuators are components of a system that move or control other mechanisms Examples of actuators are camera raise mechanisms, sensor probe servo motors, manipulators, etc. Some actuators can have feedback parameters, some can have outputs. Both feedback parameters and outputs allow the operator to control the actuator state (motor current, actuator position, and speed are among the most common). The feedback parameters are factory settings and cannot be changed. The output, by contrast, can be modified by the operator. They extend the feedback parameters by performing some calculations defined by their mapping functions.

Actuator Properties

- Serial Number — Defines the actuator serial number (can be found on a sticker located on the actuator)
- Arguments — Not applicable now
- Is Reversed — Defines a direction of the actuator
- Outputs — Defines mapping functions and units for outputs

Actuator Configuration Steps:

1. Select the actuator from **System Devices,** and then click **Edit.**
2. Click **Edit** to start configuration.
3. Enter or select from the dropdown list the actuator **Serial Number**.

Note: Each device must have a unique serial number. The red error border appears to indicate the duplication. Click  to refresh the list of detected serial numbers.

4. Reverse the rotation direction if applicable.

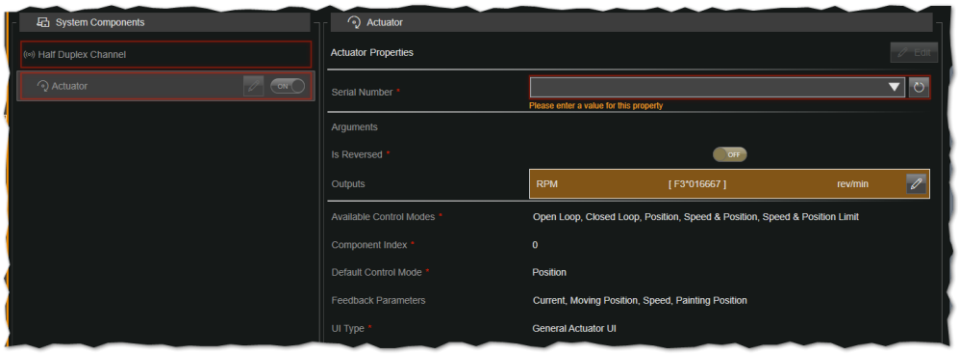


FIGURE 38: ACTUATOR CONFIGURATION

5. For every output, click to start editing. Enter the desired mapping function referring to feedback parameters according to their order in the list (F1, F2, etc.). When completed, click either to save or to cancel the changes. For example, a mapping function provided above converts the actuator's angular rotation speed unit from degrees per second to revolutions per minute.

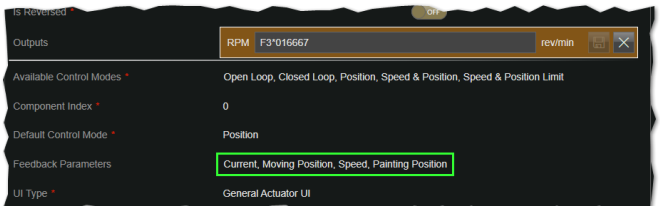


FIGURE 39: ACTUATOR OUTPUT CONFIGURATION

Note: Mapping functions can significantly vary depending on many factors. It is not recommended changing them without consulting with Eddyfi Technologies qualified personnel first.

6. Click **Save.**

SENSORS

Sensors are devices or modules that detect events or changes in its environment and send the information to the system. Examples of sensors are reel distance encoders, orientation, radiation, pressure detectors, etc. Same as actuators, some sensor can have feedback parameters, some can have outputs. The configuration of outputs is similar to actuator feedback and output configuration. Refer to the **Actuators** section for more detail.

Sensor Properties

- Serial Number — Defines the actuator serial number (can be found on a sticker located on the actuator)
- Outputs — Defines mapping functions and units for outputs

Sensor Configuration Steps:

1. Select the sensor from **System Devices.**
2. Click **Edit** to start configuration.
3. Enter or select from the dropdown list the sensor **Serial Number**.

Note: Each device must have a unique serial number. The red error border appears to indicate the duplication. Click to refresh the list of detected serial numbers.

4. Configure every output if needed. Refer to the **Actuators** section for more detail.
5. Click **Save.**

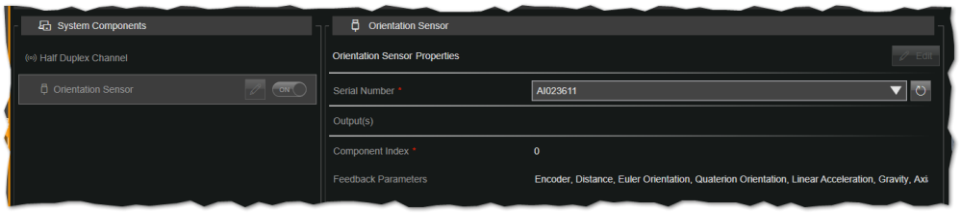


FIGURE 40: SENSOR CONFIGURATION

AUXILIARY LIGHTS

Many systems are equipped by auxiliary lights. Lights can be individual or grouped together. In either case, each light must be configured individually.

Light Properties

- Serial Number — Defines the light serial number (can be found on a sticker located on the light)

Light Configuration Steps

1. Select the light from **System Devices,** then click **Edit** to configure the light.
2. Enter or select from the dropdown list the light **Serial Number**.

Note: Each device must have a unique serial number. The red error border appears to indicate the duplication. Click  to refresh the list of detected serial numbers.

FIGURE 41: LIGHT CONFIGURATION

3. Click **Save.**
4. Repeat steps for the remaining lights.

DISCRETE STATE DEVICES (SWITCHES)

There are systems equipped by switches to turn on/off system components. The number of switches and their possible states are predefined by the configuration file.

Switch Properties

- Serial Number — Defines the switch serial number (can be found on a sticker located on the switch)

Switch Configuration Steps

1. Select the switch from **System Devices,** then click **Edit** to configure the switch.

2. Enter or select from the dropdown list the switch **Serial Number**.

Note: Each device must have a unique serial number. The red error border appears to indicate the duplication. Click  to refresh the list of detected serial numbers.

3. Click **Save**

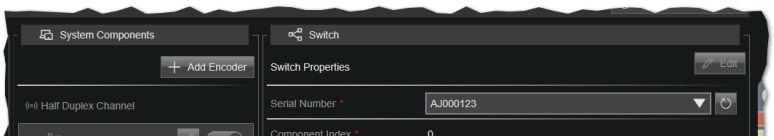


FIGURE 42: SWITCH CONFIGURATION

4. Repeat steps for the remaining switches.

Enabling/Disabling Devices

Each device, or any of its subcomponents, may be enabled or disabled. The most common scenario is to prevent a malfunctioning device, or its subcomponent(s), from interfering with communication to other working devices.

Note: Disabling a device will disable all its user interface control elements, but the device will still be visible on the **Control Ribbon**.

In case of composite devices, disabling any number of subcomponents will cause a warning icon  to appear on the component device control panel tile header.

If ICON™ is not enabled to establish a connection with any of the devices or their subcomponents, it disables the faulty devices itself, but errors notifying of these connection failures come up on the screen.

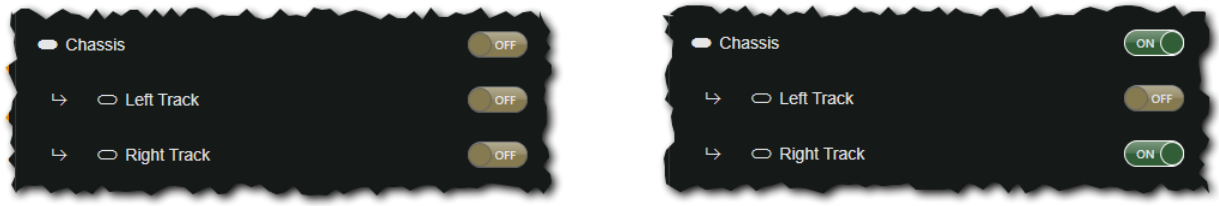


FIGURE 43: DISABLING THE WHOLE CHASSIS OR AN INDIVIDUAL TRACK

Note: The system communication must be restarted when any device enabled/disabled status has been changed.

Renaming System Components

All devices and channels are given some unique titles used for identifying and referencing them. They are used in the **System Configuration Manager**, on the **Control Ribbon**, **Control Panel**, and **Instrument Panel** tile headers. The title can be changed, however, if needed.

To rename a device or a channel complete the following steps:

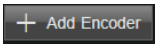
1. Navigate to **Backstage -> Configurations**.
2. Select a configuration from the configuration list.
3. Select a component from the list of system components.
4. Click  to start editing.
5. Enter the desired title. It is recommended to keep it concise and descriptive. When completed click either  save or  to cancel the changes.

FIGURE 44: RENAMING A SYSTEM COMPNENT

Reel Encoder

By default, no configuration has a reel encoder any longer. The operator, however, can add the encoder to every configuration or remove it if not needed. To add the encoder to a configuration, complete the following steps:

1. Navigate to: **Backstage -> Devices**.
2. Select the loaded configuration.



3. Select a channel to put the encoder on. It can be either an existing configuration channel or a new channel not presented in it. Click **OK** to complete the operation.
4. Once being added, the communication will be restarted automatically, and the encoder will appear among the rest of devices. By nature, the encoder is just a sensor. The operator will have to configure it as an ordinary sensor device.

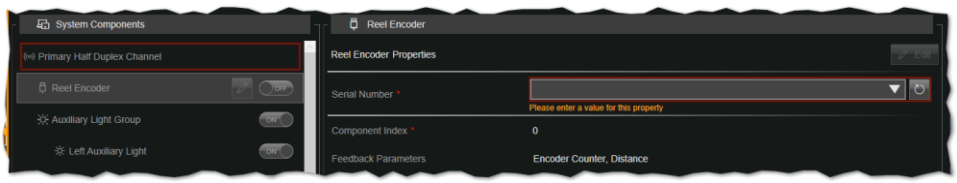
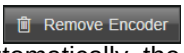


FIGURE 45: REEL ENCODER CONFIGURATION

To remove the reel encoder, just click 

and confirm the action. Like adding the encoder, the communication will be restarted automatically, the encoder will disappear.

Note: Removing the encoder will result in removing all tiles from **Instrument Panel** associated with it.

Plugins

Plugins provide the operator with the ability to control third-party sensors and devices that are not developed by Eddyfi Technologies. By installing plugins, the functionality of ICON™ is significantly extended. Refer to a specific plugin manual for more details.

Internally, plugins are library files (*.dll) that must be physically stored on the hard drive. Some plugin library files are already included into the ICON™ installation package. In case of need to add a plugin file later, complete the following steps:

1. Acquire a plugin library file(s) from Eddyfi Technologies, according to the third-party device.
2. Navigate to ICON™ installation folder through path: **C:\Program Files\ICON 4\.**
3. Create a folder under the root of this folder called **Plugins**, if it doesn't already exist.
4. Open the **Plugins** folder and then create another folder under this directory to place the library file. The folder name is flexible, but it is easier to manage plugins if this correlates to the third-party device.
5. Copy and paste the *.dll file(s) into the new folder.

Adding Plugin Packages

To add a plugin to the system, complete the following steps:

1. Navigate to: **Backstage -> Plugins**.
2. Select the available plugin from the dropdown list under the title **Available Plugin Packages.**
3. Click to add the desired plugin.

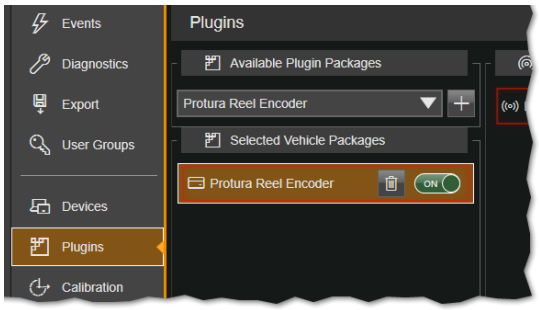


FIGURE 46: ADDING PLUGINS

4. Added plugins will be displayed in **Selected Plugins** list.

Note: Some plugins must be unique in the system, some can be added in any number. In the former case, the button will be disable [+] button when the system already has such a plugin to prevent duplications.

Configuring Plugin Device

Like standard Eddyfi devices, plugin devices require configuration before using. The configuration process is the same most time. Normally, a plugin requires the following configuration steps:

1. Select a plugin from the **Selected Plugins** list.
2. Set the communication channel for the device, choosing the appropriate port.
3. Set available running parameters for the device if any.
4. Enable or disable a plugin device by clicking the toggle button beside its name in the **Selected Plugins** list.

Removing Plugin Device

To remove a plugin, select a plugin from the **Selected Plugins** list. Click  beside its name and confirm the action.

Note: Removing the plugin will result in removing all tiles from **Control Panel** and **Instrument Panel** associated with it.

Calibration

Generally, calibration is an operation to establish a relationship between an actuator or sensor feedback value and some value measured usually manually by an instrument. There are many calibration types in ICON™ software. In some cases, it affects the precision of a feedback value; in others, it defines the operational parameters of a device. All feedback parameters are split into two categories: those to be calibrated on the **Backstage**, and those to be calibrated on the **Control Ribbon**. By default, devices come pre-calibrated from the factory. Backstage calibration is used for feedback parameters which must be recalibrated only under some exceptional circumstances. Control ribbon calibration, by contrast, is used for feedback parameters whose recalibration is a part of routine operations.

Calibration Manager

The **Calibration Manager** is used to calibrate the operational parameters of a device. It shows only devices that have feedback parameters to be calibrated on the **Backstage**. ICON™ Calibration Manager will provide some guidance as to which feedback parameters remaining are not calibrated, by highlighting them with a red box. It also highlights all devices with at least one feedback not calibrated.

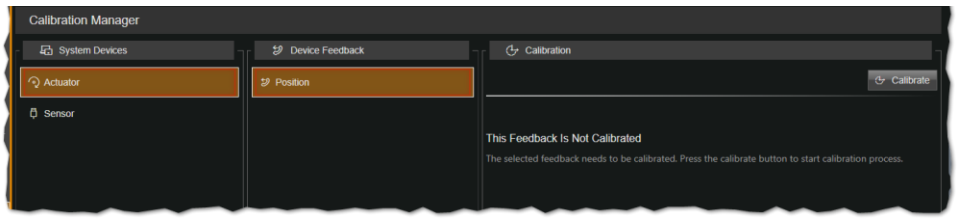


FIGURE 47: CALIBRATION MANAGER

Calibrating Device Feedback

Calibration process varies for different feedback parameters. For convenience, ICON™ Calibration Manager will lead through the process by providing some guidance.

To calibrate a device feedback parameter on the **Backstage**, complete the following steps:

1. Navigate to: **Backstage -> Calibration**.
2. Under the **System Devices** column, select the device to be calibrated.
3. Select the device feedback from the list in the **Device Feedbacks** column.
4. Click **Calibrate** in the upper right corner.
5. Follow the calibration steps to calibrate the feedback.

Note: If the feedback is already calibrated, the **Reset** button is shown instead. Click it to drop the feedback calibration, confirm the action, then proceed.

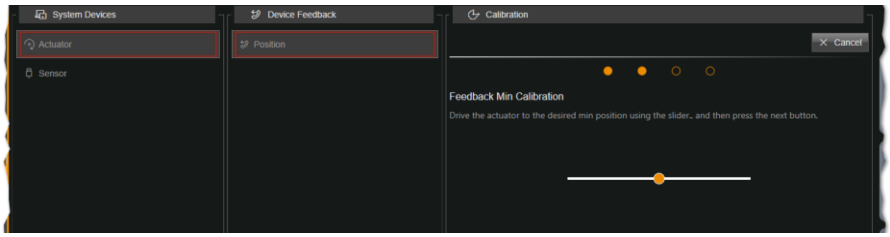


FIGURE 48: BACKSTAGE CALIBRATION PROCESS SAMPLE

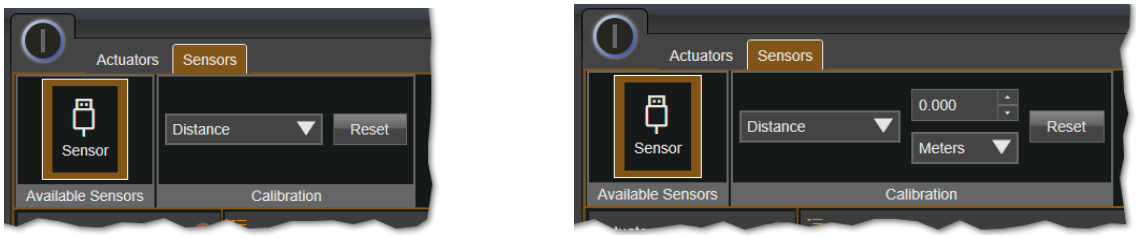


FIGURE 49: CONROL RIBBON CALIBRATION PROCESS SAMPLES

Task Automation

Automation is the ICON™ software utility that allows the operator to automatically monitor the system parameters or/and perform tedious and repetitive tasks. All automation units are split into two categories: automation rules and routines. A rule defines a condition and action that is performed when the condition is met. A routine defines a sequence of steps the system must perform without the operator interaction.

Based on this division, ICON™ software has **Automation Rules Manager** and **Automation Routine Manager** respectively. Both allow the operator to import and configure automation rules/routines. To import an automation rule/routine, navigate to **Backstage -> Automation -> Automation Rules / Automation Routines**, and click the **Import** button. The next steps are like importing system configurations. Refer to the **Getting Started -> Importing Inspection System Configuration(s)** section for more detail.

Automation Actions

All automation actions that can be executed fall into the following distinct **Action Type Categories**:

1. **Alarm Action –** When triggered, this action displays an alarm to the operator on the main control screen. When designing the rule, the designer will need to specify whether the user will be required to acknowledge the alarm or not and, also, to define the severity of the alarm.

2. **Crawler Action –** When triggered, this action provides a specific command to the crawler, a communication channel, or to a specific device.

3. **Job Action –** When triggered, this action allows changes to **Job** status and **Job** attributes.

4. **Video Action –** When triggered, this action allows Video recording, snapshots, Tags, Annotations, and Camera-to-display mapping changes.

Automation Variables

Some actions require additional arguments to start execution. The values of arguments can be either hard coded by the action's designer or bound to variables. ICON™ software allows the operator to change the value of variables and, thus, change the behavior of an action.

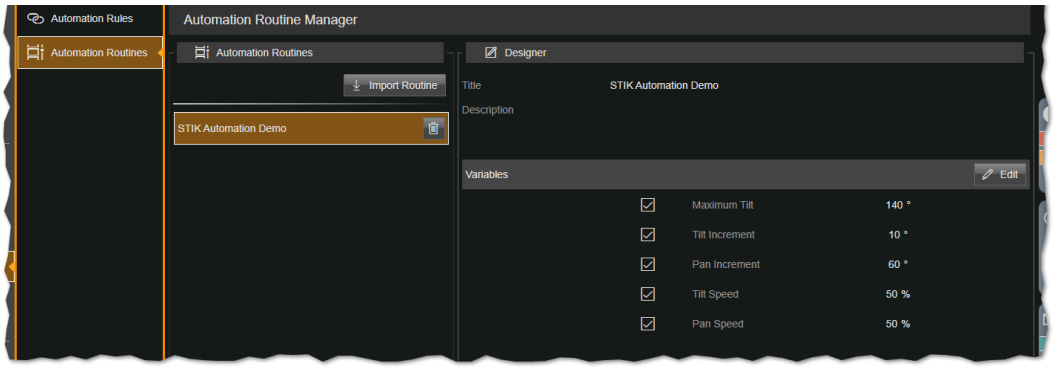


FIGURE 50: AUTOMATION VARIABLES

Both automation rules and routines have the same automation variable management. To change a rule/routine variable values, complete the following steps:

1. Navigate to: **Backstage -> Automation -> Automation Rules / Automation Routines**.
2. Select the rule / routine.
3. Click **Edit**.
4. Set desired values.
5. Click **Save**.

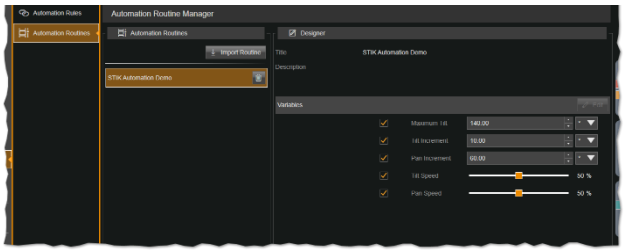


FIGURE 51: EDITING AUTOMATION VARIABLE VALUES

Note: the checkbox on the right side of a variable title is for routines only. They define whether the operator can enter another value for this variable when a routine starts, or the value defined as described above will be used always.

Automation Rules

Automation rules are specific actions that are executed when a predefined condition is met. Actions can be set for conditions based on the sensor values for devices, as defined by the configuration. Parameters such as current draw, input voltage, encoder counts, speed, pitch, tilt, roll, temperature, and humidity values are just a few examples.

The most common scenario is to use an alarm action to indicate some extreme conditions or failures. In this case, alarms will be seen on the **Alarm Panel** right below the **Control Ribbon**, and/or on the **Alarm** section of the **Event Panel** on the right side.

Automation rule come into effect immediately after being imported. The operator, however, can enable/disable a rule if needed.

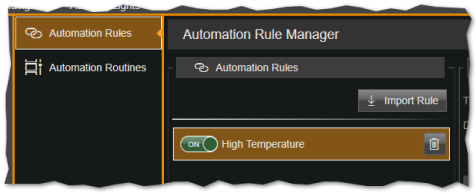


FIGURE 52: ENABLING AUTOMATION RULES

Automation Routines

Automation routines allow a custom implementation for conditional and looping expressions to control an inspection system autonomously.

Actions can be set for conditions based on the sensor values for devices, as defined by the configuration. Parameters such as current draw, input voltage, encoder counts, speed, pitch, tilt, roll, temperature and humidity values are just a few examples.

Automation routine execution is controlled on the **Automation Viewer** which can be toggled by clicking

FIGURE 53: TOGGLING THE AUTOMATION VIEWER

on the Automation Viewer button.

Note: The expanded viewer occupies a noticeable part of a display. Some low-resolution displays can have no more room to accommodate the Instrument Panel after this. An appropriate notification will be shown in this case.

To select and run a routine, complete the following steps:

1. Expand the **Automation Viewer**.
2. Select the routine to run from the dropdown list.
3. Click **Start**.

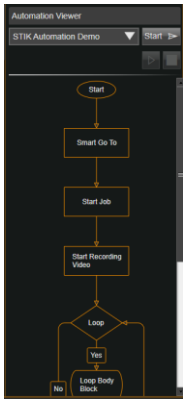


FIGURE 54: AUTOMATION ROUTINE VIEWER

Note: If the desired routine has variables with its value allowed to change when the routine starts, an appropriate dialog will prompt the operator to either confirm or enter those values.

4. **Stop** or **Pause** the running routine if needed.

5. **Resume** the routine if paused.

Note: If any routine is running and the operator is leaving the main Control and Operation Screen, the routine will be paused automatically. The operator must to resume the routine manually to proceed.

6. Once the routine is completed, it stops automatically.

Note: Automation functionality is under constant development and, therefore, can differ from described above. Some systems are equipped with the **Automation Routine / Rule Designer**. It is recommended consulting with Eddyfi Technologies qualified personnel for instructions on how to use it first.

Settings

Settings contains all the ICON™ software system features that can be created and edited depending on system configuration and desired operational functionality. Features in System Manager include:

- Job Attributes
- Inspection Standards
- Gamepad Profiles
- Instrument Panels
- Control Panels
- Default Overlay
- Preferences

Many of these features can have multiple instances, allowing multiple operators to configure the control system to their liking. For example, multiple **Gamepad Profiles**, multiple **Control Panel** layouts, and multiple **Instrument Panel** layouts are possible.

Preferences

SYSTEM NOTIFICATIONS

- **Error Logging Level –** Defines the level of system error and specific notifications which will be logged to the database. Available levels are: **Low** (All Possible Errors), **Medium** (Medium and High Severity Errors Only), and **High** (High Severity Errors Only).

- **Error Notification Level -** Defines the level of system error and specific notifications which will be pop up on the screen. Available levels are: **Low** (All Possible Errors), **Medium** (Medium and High Severity Errors Only), and **High** (High Severity Errors Only).

- **Stop the Crawler When a Dialog is Shown -** Defines the crawler should stop all its motion when any dialog pops up on the screen.

Job Attributes

Job Attributes are a series of key words and assigned values which help to describe a **Job**. This metadata is helpful for tracking important information associated with a **Job**. Location, time, operator, and weather conditions are just a few examples of **Job Attributes** that can be added.

A **Job Attribute** allows the operator to specify the pertinent information such as location, **Job** site, or operator. The **Job Attribute Value** is an option that the operator starting a **Job** may select to fill in for each **Job Attribute**. For example, for a **Job** Attribute such as a **Job** site, some attribute values might be “Site A”, “Site B”, “Site C”, etc.

When an operator starts a **Job**, they will be provided with a dialog box prompting them to enter values for each attribute, using a dropdown menu.

CREATING JOB ATTRIBUTES

To create a new **Job Attribute**, complete the following steps:

1. Navigate to: **Backstage -> Settings -> Job Attributes**.
2. Click **+ New Job Attribute**, then enter Attribute Title.
3. Select whether the operator can enter the attribute runtime values if required or just select a value from the dropdown list.
4. Select whether the value must be entered before the operator can proceed.
5. Click **Save.**
6. Click **New Attribute Value**, then enter an attribute value, select **Save.**
7. Repeat to create more attributes and their values as desired.

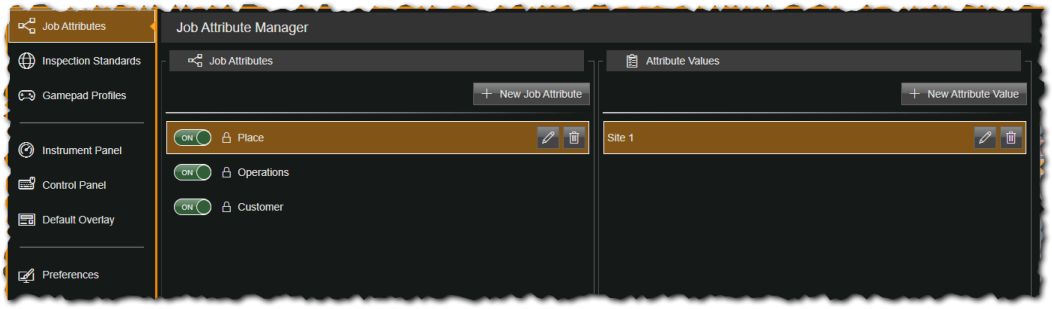


FIGURE 55: JOB ATTRIBUTE MANAGER

ASSIGNING JOB ATTRIBUTES TO JOBS

Toggle the desired attributes to **ON/OFF** in the **Job Attribute Manager** to make **Job Attributes** visible/invisible in the **Start Job** dialog box. Select the desired value for every attribute. If an attribute marked as required, the value is mandatory. If an attribute allows runtime values, in addition to selecting values from the dropdown list, the operator can edit existing or add new values.

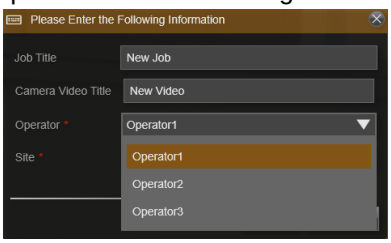


FIGURE 56: ASSIGNING JOB ATTRIBUTES TO A JOB

CREATING EXTERNAL JOB ATTRIBUTE FILES

Job Attribute can also be created from an external source file like *.txt or *.csv. To create a new **Job Attribute** file, complete the following steps:

1. Open a new file in WordPad.
2. In a new line, write the **Attribute Title.**
3. Separate with a comma, and then write the **Attribute Value.**
4. Start a new line and repeat the process.

Note: Attribute pairs that share the title will be categorized into the same **Job Attribute Title**. Files with .csv use the same format.

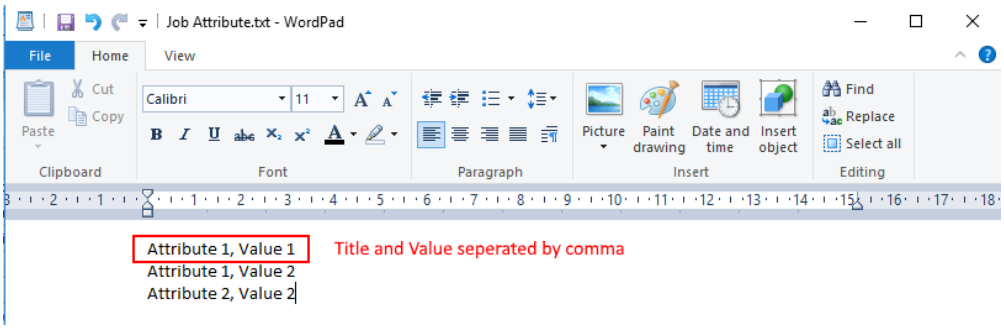


FIGURE 57: CREATING A JOB ATTRIBUTE FILE

USING JOB ATTRIBUTES FROM AN EXTERNAL FILE

When using an external **Job Attribute** file, the system settings will need to be changed. To do so, complete the following steps:

1. Navigate to **Backstage -> Settings -> Preferences.**
2. Click **Edit.**
3. Navigate to the **Job Attributes** section.
4. Select **Set Job Attribute Source** option to **Get Attributes from External File.**
5. Move to **Set Default Job Attribute File Path.**
6. Click **Open** and select the external source file (.txt or .csv).
7. Click **Save**.

Note: Job Attributes and their values will be replaced by the values from the external file until you set the option back to **Get Attributes from Database**. No runtime values are allowed.

Inspection Standards Manager

When a user is inserting a tag during a video recording, they can also enter an inspection code with the tag. The code helps users to categorize the problem encountered at the moment when the tag is inserted. The inspection code must be predefined in an inspection code standard. In the Inspection Standard Manager, users can create and manage inspection code. Only one set of Inspection Standards can be used at a time.

CREATING INSPECTION STANDARDS

To create an inspection standard, complete the following steps:

1. Navigate to **Backstage -> Settings -> Inspection Standards.**
2. Click **+ New Inspection Standard**.
3. Fill in the **Inspection Standard Title** and **Description**.
4. Click **Save**.
5. Click **+ New Standard Code**, then enter the inspection code and its description, click **Save**.
6. Repeat to create more inspection standards and their codes as desired.

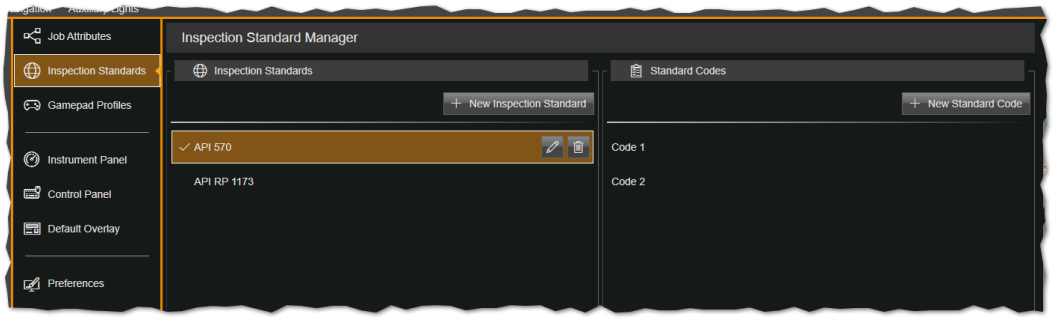


FIGURE 58: INSPECTION STANDARD MANAGER

SETTING A DEFAULT INSPECTION STANDARD

Only one standard can be active at any given time. Click the checkbox to the left of the standard to select it as the default.

Gamepad Profile Manager

The **Gamepad Profile Manager** is used to create and edit gamepad profiles and key mapping. Multiple profiles can be created for various users or user groups.

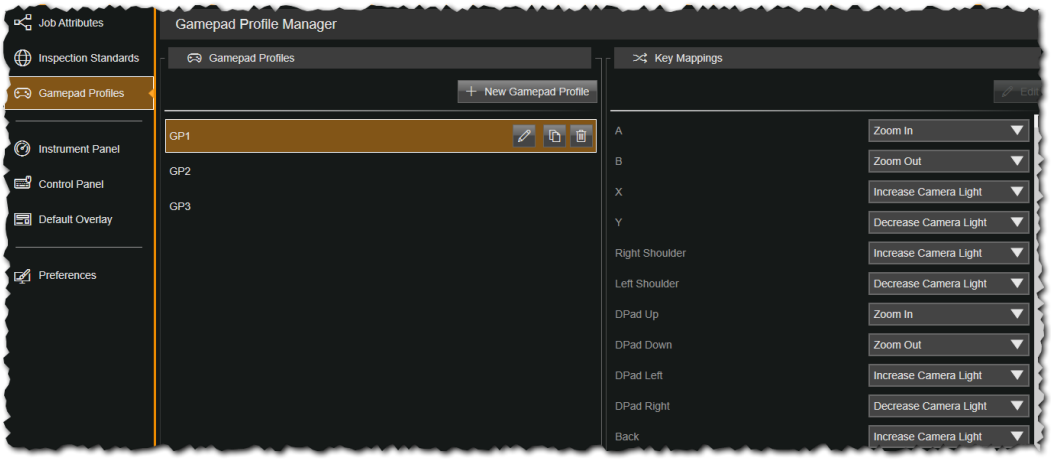


FIGURE 59: GAMEPAD PROFILE MANAGER

CREATING A NEW GAMEPAD PROFILE

To create a new gamepad profile, complete the following steps:

1. Navigate to **Backstage -> Settings -> Gamepad Profiles**.
2. Click **New Gamepad Profile**.
3. Enter the **Profile Title** and **Profile Description**.
4. Click **Save.**
5. To map the keys of the created profile, click **Edit** under **Key Mappings.**
6. Map keys as desired; refer to the Mapping Gamepad Keys section in this manual.

Note: Leave the function as **No Action** to make the key unused.

8. Click **Save**.

Note: New gamepad profiles can also be based on existing profiles by clicking on  button to make a copy, and then editing the new profile.

Instrument Panel Manager

The **Instrument Panel** displays device parameter readings from the system on the main **Control and Operation Screen**. Parameters such as temperature, input voltage, track speed, and camera tilt can be monitored on the Instrument Panel. The Instrument Panel is made up of two Panel sections – the **Regular Panel** and the **Expanded Panel**. The **Regular Panel** is always displayed on the main control screen, while the **Expanded Panel** can be expanded or collapsed. Creating and managing Instrument Panels is performed through the **Instrument Panel Manager** in the **Backstage**.

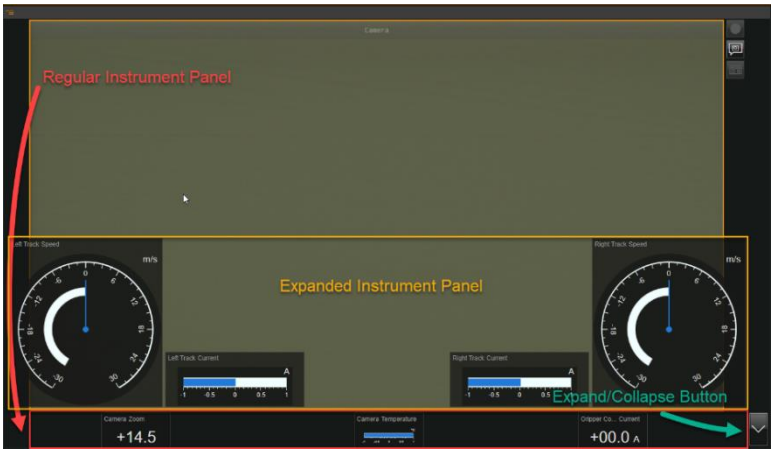
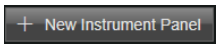


FIGURE 60: INSTRUMENT PANEL

CREATING A NEW INSTRUMENT PANEL

A configuration can have as many instrument panels as needed. To create a new **Instrument Panel**, complete the following steps:

1. Navigate to **Backstage -> Settings -> Instrument Panel**.
2. Click 

3. Once the new panel appears, design the panel as described below.
4. Click **Save**.

Note: New instrument panel can also be based on existing panel by clicking on button  to make a copy, and then editing the new panel.

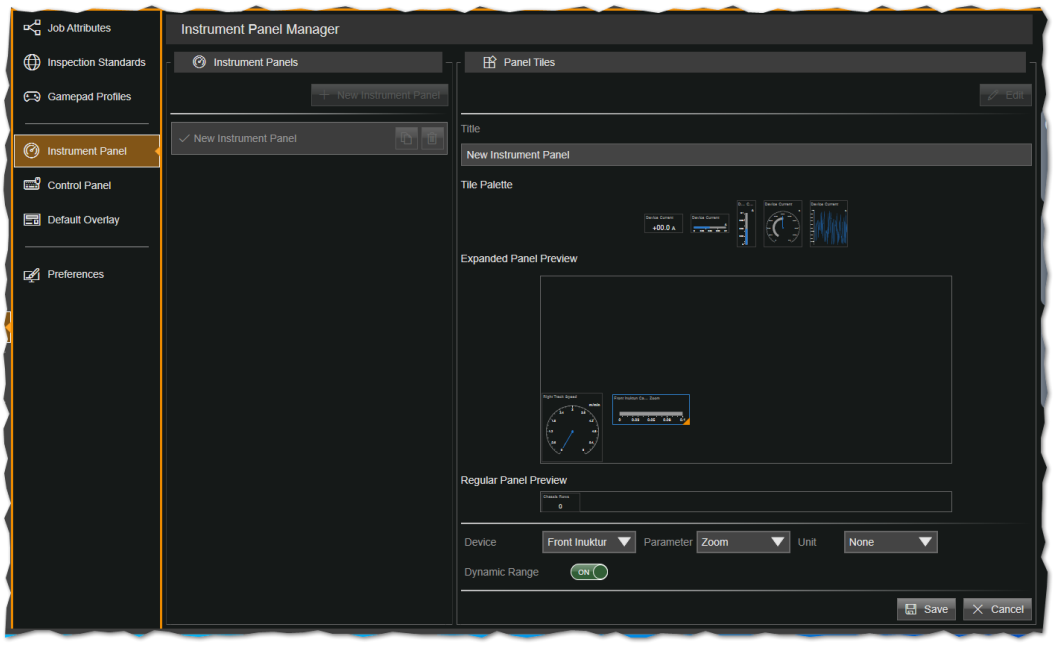


FIGURE 61: INSTRUMENT PANEL MANAGER

EDITING AN INSTRUMENT PANEL

After a new instrument panel has been created, it is already in the edit mode. To edit an existing panel, click **Edit** under **Panel Tiles**. To build the panel, panel tiles are dragged and dropped from the **Tile Palette**. The upper area holds the **extended** size tiles, while the lower one is the **regular** size panels. Tiles can be relocated anytime as desired. To remove a tile, drop it over the **Tile Palette** header highlighted in red.

FIGURE 62: ADDING AND RELOCATING PANEL TILES

CHANGING THE SIZE OF THE TILE

The tiles are set to their default size when they are initially placed. To change the size, select a tile and click on the arrow in the lower right corner and drag the tile to the desired size.

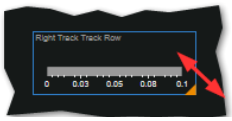


FIGURE 63: TILE RESIZING

CHANGING THE COLOUR OF THE TILE

Tile element colours including **Foreground**, **Scale Background**, and **Scale Accent** can be changed. Foreground refers to the displayed measurement value on the scale. Scale Background refers to the open space above or beside the scale. Scale Accent refers to the colour of the scale itself.

To change the colors, right click on the tile and select the element to be changed, and then select the desired colour.

FIGURE 64: TILE COLOUR SELECTION

BINDING DEVICE PARAMETER TO THE TILE

To display a desired parameter on the screen, bind the parameter with a properly configured tile. To bind a device parameter to a tile, complete the following steps:

1. Select the tile to be bound to a parameter.
2. Select the desired **Device** from the dropdown menu.
3. Choose the parameter to bind to the tile from the **Parameter** dropdown menu.
4. Select a unit for the parameter from the **Unit** dropdown menu.
5. Repeat for other tiles as required.

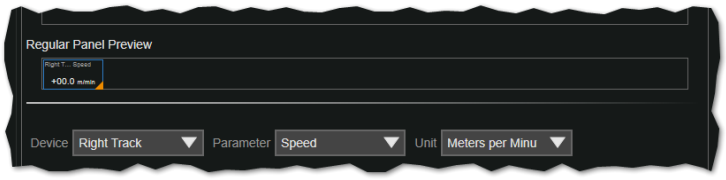


FIGURE 65: BINDING A DEVICE TO A PARAMETER TILE

Note: A tile with no device parameter assigned is invalid. The panel cannot be saved as long as it has any invalid tiles. Invalid tiles are highlighted in red.

SETTING THE MEASUREMENT RANGE FOR THE PARAMETER

For Horizontal Gauges, Vertical Gauges, Radio Gauges, and Live Charts, displayed ranges can be set in order to properly show the measured values. There are two ways to set the measurement range: make it either a static or a dynamic. A static range never changes, whereas a dynamic one always adjusts its maximum/minimum values once the actual value exceeds them. By default, the range is dynamic.

To set a static range for a parameter, set **Dynamic Range** to **OFF** and enter its **Minimum** and **Maximum** values

FIGURE 66: SETTING MEASUREMENT RANGE

To set a dynamic range for a parameter, just set **Dynamic Range** back to **ON**.

For Live Charts, the **Duration** defines the amount of time the data samples are displayed on the chart. The longer the **Duration**, the more samples will be displayed. By default, the **Duration** is 20 seconds, but it can be increased up to 10 minutes.

FIGURE 17: SETTING SAMPLE DURATION

SETTING A DEFAULT INSTRUMENT PANEL

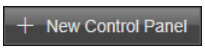
Only one instrument panel can be active at any given time. Click the checkbox to the left of the panel to select it as the default.

Control Panel Manager

The **Control Panel** allows the operator to control multiple system devices on the main **Control and Operation Screen**. Unlike instrument panels, the system must have at least one control panel which is generated automatically for every system configuration added to the system A control panel has fixed number of tiles for every device must be controlled. Creating and managing Instrument Panels is performed through the **Instrument Panel Manager** in the **Backstage**.The process is like creating and editing **Instrument Panels**.

CREATING A NEW CONTROL PANEL

A configuration can have as many control panels as needed. To create a new **Control Panel**, complete the following steps:

1. Navigate to **Backstage -> Settings -> Control Panel**.
2. Click 

3. Once the new panel appears, design the panel as described below.
4. Click **Save**.

Note: New instrument panel can also be based on existing panel by clicking on button  to make a copy, and then editing the new panel.

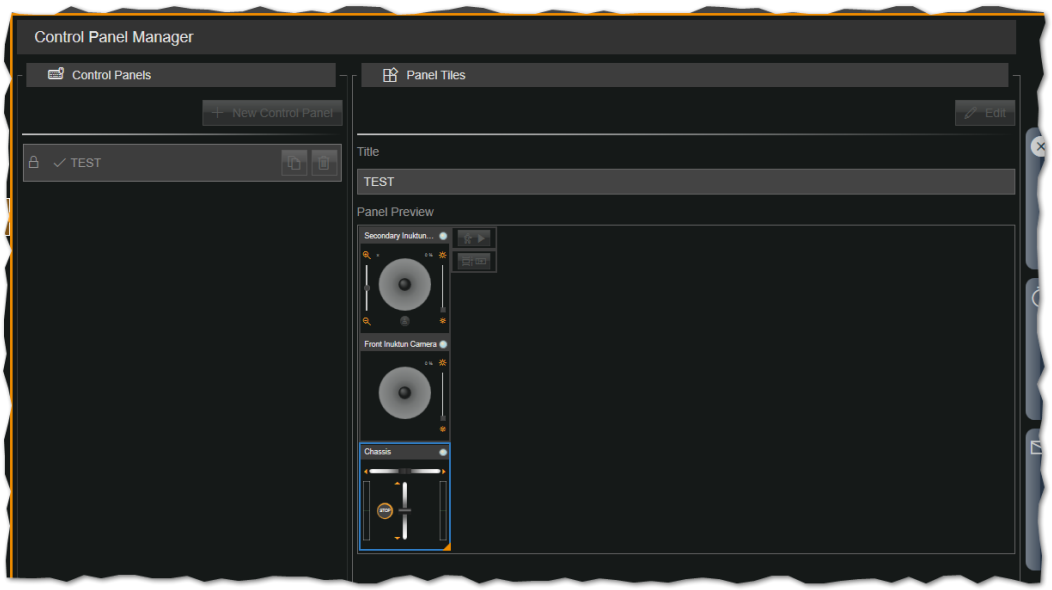


FIGURE 68: CONTROL PANEL MANAGER

EDITING A CONTROL PANEL

After a new instrument panel has been created, it is already in the edit mode. To edit an existing panel, click **Edit** under **Panel Tiles**. Unlike **Instrument Panel**, control panel tiles cannot be added or removed but can be relocated anytime as desired.

Note: Changing the layout of control panel elements may decrease the size of the main camera display area. If the camera's display area is too small, the instrument panel will not be fully displayed. Undocking the camera display area to a second screen can be utilized to enable larger control panel elements, along with more instrument panel elements.

CHANGING THE SIZE OF THE TILE

The tiles are set to their default size when they are initially placed. To change the size, select a tile and click on the arrow in the lower right corner and drag the tile to the desired size.

FIGURE 69: TILE RESIZING

TRANSFORMING THE TILE

The tiles are set to their default template when they are initially placed. Some have additional templates available. To transform the tile, right click on the tile and select an available option from the dropdown menu.

FIGURE 70: TILE TRANSFORMATION

Note: Some templates can take more space than others. If the desired template is shown as an option but disabled, try to clear the space around it.

Overlay Template Designer

The ICON™ software has a built-in **Overlay Template Designer**, which allows annotation elements to be placed over an exported video.

CREATING A NEW OVERLAY TEMPLATE

To create a new **Overlay Template**, complete the following steps:

5. Navigate to **Backstage -> Settings -> Overlay Templates**.
6. Click + New Template
7. Once the new template appears, design the template as described below.
8. Click **Save**.

Note: New overlay template can also be based on an existing template by clicking on button to make a copy, and then editing the new panel.

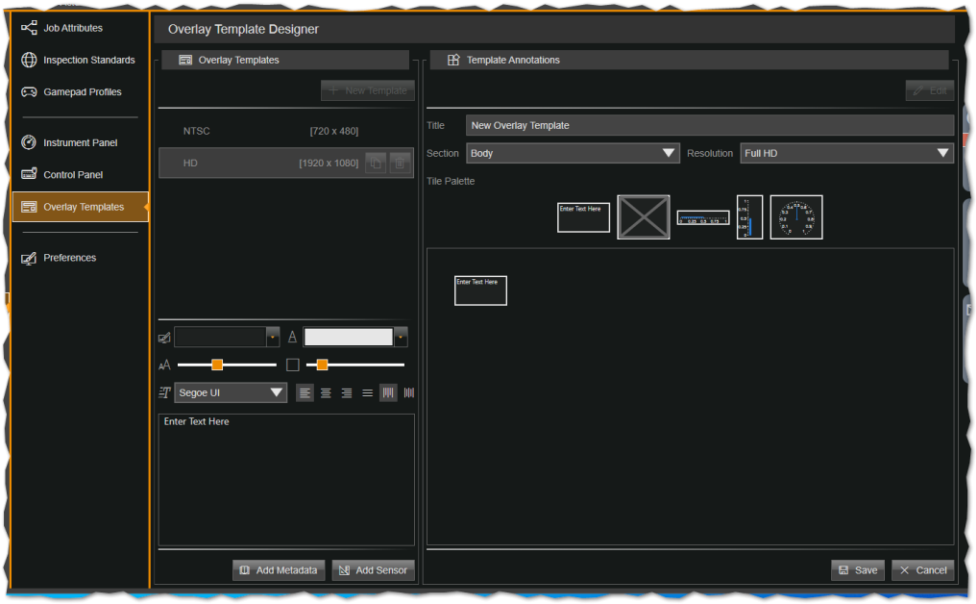


FIGURE 71 OVERLAY TEMPLATE MANAGER

EDITING AN OVERLAY TEMPLATE

After a new template has been created, it is already in the edit mode. To edit an existing template, click **Edit** under **Template Annotations**. To build the templates, annotations are dragged and dropped from the **Tile Palette**. To remove an annotation, drop it over the **Tile Palette** header highlighted in red.

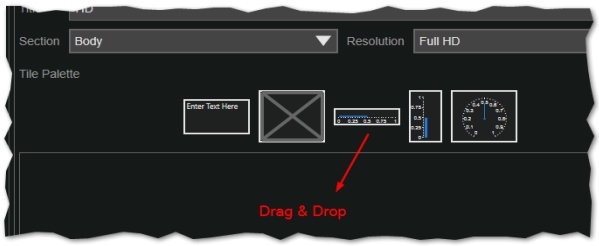


FIGURE 72: ADDING AND RELOCATING ANNOTATIONS

CHANGING THE SIZE OF THE ANNOTATION

The annotations are set to their default size when they are initially placed. To change the size, select an annotation, move the mouse cursor to its any edge, and drag the annotation to the desired size.

ANNOTATION TYPES

There are five annotation types currently supported by the ICON™ software which may be grouped into three categories:

- **Text annotations** (allows to enter any text, multiple sensor values in the form of text, and metadata values such as date and time as well as job and video titles
- **Image annotations** (allows to display a single image)
- **Gauge annotations** (allows to display a single sensor value in the form of a horizontal, vertical, or radial gauge)

To edit an annotation of any type, select it and the its property editor will slide up. Property editors vary for different annotation types.

SETTING TEXT ANNOTATION PROPERTIES

For text annotations, it is possible to select colours including **Background** and **Foreground** and their opacity. The foreground colour is also applied to the annotation border. The border thickness can also be adjusted. Some text properties including a font size and family as well as text horizontal and vertical alignments are also available

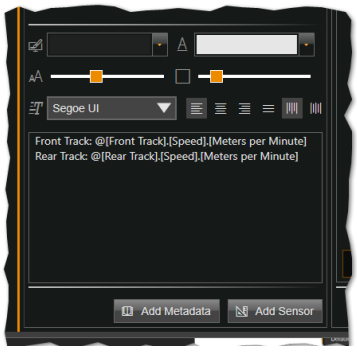


FIGURE 73: TEXT ANNOTATION PROPERTIES

The user can type any random text and/or bind the text with either a sensor or metadata values. To display a desired sensor on the annotation, they must be first bound together. A text annotation can be bound with multiple sensors. To bind a sensor to annotation, complete the following steps:

6. Select the annotation to be bound to a sensor.
7. Put the cursor at the desired position in the text
8. Click **Add Sensor** button. The dialog box will pop up.
9. Select the desired **Device** from the dropdown menu.

10. Choose the parameter to bind to the tile from the **Parameter** dropdown menu.
11. Select a unit for the parameter from the **Unit** dropdown menu.
12. Click **OK**.

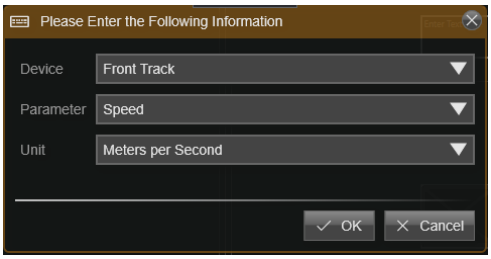


FIGURE 74: BINDING A SENSOR TO AN ANNOTATION

In the text, sensors are represented in the encoded format like @[Device].[Sensor].[Unit]. It is not recommended to modify sensor definitions manually.

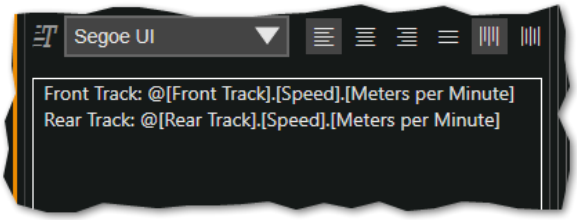


FIGURE 75: TEXT ANNOTATION SENSOR BINDING SAMPLE

To bind a metadata to annotation, complete the following steps:

1. Select the annotation to be bound to a sensor.
2. Put the cursor at the desired position in the text
3. Click **Add Metadata** button. The dialog box will pop up.
4. Select the desired **Metadata** type from the dropdown menu.
5. Click **OK**.

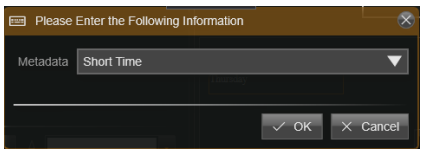


FIGURE 76: BINDING A METADATA TO AN ANNOTATION

In the text, metadata are represented in the encoded format like @[Metadata]. It is not recommended to modify metadata definitions manually.

SETTING IMAGE ANNOTATION PROPERTIES

Like text annotations, for image ones, it is possible to select colours including **Background** and **Foreground** and their opacity. The foreground colour is applied to the annotation border. The border thickness and the image opacity can also be adjusted.

FIGURE 77: IMAGE ANNOTATION PROPERTIES

To add an image to the annotation, click **Load Image** and select a desired image file. *.jpg, *bmp, and *.png files are supported. Big image files will be automatically resized to the maximum image annotation size of 400 x 400 pixels.

SETTING GAUGE ANNOTATION PROPERTIES

For Horizontal Gauges, Vertical Gauges, and Radial Gauges, it is possible to select colours including **Background**, **Foreground, Accent** and their opacity. The border thickness can also be adjusted. Unlike text annotations, a gauge can be bound with one sensor only.

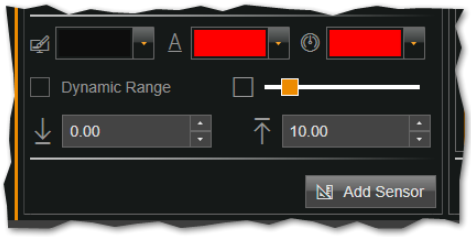


FIGURE 78: GAUGE ANNOTATION PROPERTIES

For every gauge, its displayed range can be set in order to properly show the measured values. There are two ways to set the measurement range: make it either a static or a dynamic. A static range never changes, whereas a dynamic one always adjusts its maximum/minimum values once the actual value exceeds them. By default, the range is dynamic. To set a static range for a parameter, uncheck **Dynamic Range** and enter its **Minimum** and **Maximum** values. To set a dynamic range for a parameter, just check **Dynamic Range**.

Preferences

The ICON™ software supports global preferences applied to the whole system and all users, including administrators, regardless of group identity.

USER INTERACTION

- **Enable Leaving Control Screen Confirmation –** Enables a confirmation prior to leaving the Device Control
- **Enable Pan Inversion** – Inverts the pan direction of the camera.
- **Enable Tilt Inversion** – Inverts the tilt direction of the camera.
- **Enable Pan/Tilt Scaling** – Enables scaling of the camera Pan & Tilt speed with the current
- camera zoom factor.

GAMEPAD CONTROLLER

- **Left Stick Dead Zone Shape** – Sets the **dead-zone shape** of the left joystick.
- **Left Stick Dead Zone Size** – Sets the **dead-zone sensitivity** of the left joystick.
- **Right Stick Dead Zone Shape** – Sets the **dead-zone shape** of the right joystick.
- **Right Stick Dead Zone Size** – Sets the **dead-zone sensitivity** of the right joystick.
- **Gamepad Enabled** – Sets whether a gamepad can be used to control the system.

EXPORT

- **Enable Automatic Video Export –** Controls whether **Videos** are automatically added to the export queue when a recording or **Job** is stopped.
- **Enable Automatic Snapshot Export** – Controls whether **Snapshots** are automatically added to the export queue when a recording or **Job** is stopped.
- **Set Default Export Location –** Controls where videos and snapshots from ICON™ are exported.
- **Export Mode** – Sets the default mode for video export operations. Available modes are **Original Video**, **Formatted Video**, **Template Annotations**.
- **Export Video Format** – Sets the default video format. It is applied only if **Formatted Video** export mode is selected. Available formats are **Same as Source**, **NTSC**, **PAL**, **1080i 59.94 fps**, **1080i 30.00 fps**
- **Export Video Quality** – Sets the default video export quality (the higher the percentage, the higher output bitrate and more disk space required)
- **Export Video Overlay Template** – Sets the default video overlay template which will be applied when the **Template Annotations** export mode is selected.

JOB ATTRIBUTES

- **Set Job Attribute Source –** Sets the source from where ICON™ gets **Job** Attributes; it can either get the **Job** Attributes from the database or from external files.
- **Set Default Job Attribute File Path –** Sets the path of the external file from which to import **Job** Attributes.

DATA

- **Log Debug Parameters –** When enabled, ICON will log additional device data for diagnostic purposes. Enabling this preference will cause ICON to use additional database space.
- **Value Change Threshold –** Defines the amount a data value must change before it is updated in the database. Increasing this value will reduce ICON's database usage but decrease the accuracy of data. At 0%, ICON will log all value changes.

About

In the **About** section, operators can find information about ICON™ and its activation status, as well as access the user manual. ICON™ Software Licensing and Elevated Permissions are also managed in this section.

Application Info

Application Info displays ICON™ Software application information such as **Revision** and **Build**.

Activation

Activation provides information about the license key, installation key, activation status, Plugin licenses, as well as Extension license features. Refer to the **Getting Started -> Licence Activation** section for details on activating an ICON™ Software license.

Manuals

In the **Manuals** section, operators can view the **ICON™ C User Manual** (this manual) for operating instructions.

License Agreement

In this section, operators can review the **License Agreement**, which has been acknowledged when installing **ICON™ Software Suite**.

Elevated Permissions

In this section, an operator may temporarily elevate permissions of his or her **user group** to access all the available features defined by the main license. The process is like the licence activation. Refer to the **Getting Started -> Licence Activation** section for more detail.

Control and Operation

All devices supported by ICON™ software are split into the following categories:

FIGURE 79: SELECTING A DEVICE FOR CONTROL

- Cameras
- Navigation
- Auxiliary Lights
- Actuators
- Sensors

To select a device for control, use one of the following options:

- Select the appropriate tab on the **Control Ribbon**, then select the device to be controlled.

- Alternatively, select a tile on the **Control Panel**, ICON™ software will select the right tab and device on the **Control Ribbon** automatically.

- Use the keyboard to switch between devices. Refer to the **Keyboard Control** section for more details.

The selected device will have a brown border on the **Control Ribbon** and, if it has a **Control Panel** tile, a blue border will appear around the tile.

Camera Control

Eddyfi Technologies systems can be equipped with multiple cameras. Some of them are designed for capturing video and cannot be directly controlled through ICON™ software. They are, however, still visible on the **Camera** tab of the **Control Ribbon** and the **Device Manager** but have no correspondent tile on the **Control Panel**. Available camera control options vary based on the specific camera type.

Video Switching

ICON™ software supports up to two displays: the primary and the secondary ones. It causes the camera selector to have two level of selection correspondingly. The primary selected camera will have a yellow border on the **Control Ribbon** and the selected secondary camera will have a blue one.

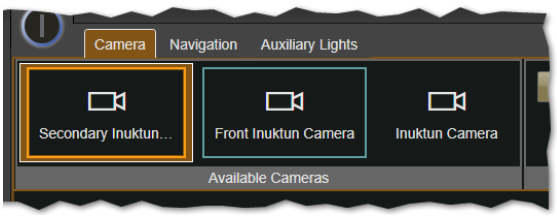


FIGURE 80: PRIMARY & SECONDARY CAMERAS

The video stream coming out of the primary camera is always shown on the primary display, coming out of the secondary camera – on the secondary display. Refer to the **Picture-In-Picture** section below for more details.

Note: If a system is equipped with more than two cameras, a video switching device will be required. The mapping algorithm and the number of possible switching permutations can vary based on the specific system configuration. The operator cannot switch cameras, however, if both cameras currently mapped to displays are recording.

Camera Imager Control

ZOOM

FIGURE 81: ZOOM CONTROL

If a camera has **Zoom**, its control is located on the left of the camera controller, on the **Control Panel** tile, outlined below in red. Moving the slider up and down will enable the camera to zoom in and out.

The slider position controls the rate of the cameras' zoom and, therefore, will zoom faster as the slider moves further away from the center point. Releasing the slider will automatically stop the camera zoom.

The zoom in and out buttons (magnifying glasses) at the top and bottom of the zoom slider can be used for the maximum speed zoom adjustment.

FOCUS

FIGURE 82: FOCUS CONTROL

If a camera has **Focus**, its control is located on the **Control Ribbon**. By default, **Focus** is initialized to **Auto**. Select **Manual** to manually focus the camera. The  buttons can then be used to focus **IN** and **OUT**.

Note: When switching from manual to auto focus, the camera may not immediately focus. In this case, zoom **IN** or **OUT** to trigger the camera's auto focus.

AUTO FOCUS SENSITIVITY

FIGURE 83: AUTO FOCUS SENSITIVITY

If a camera has **Auto Focus Sensitivity**, its control is located on the **Control Ribbon**. It defines how fast the camera adjusts its focus and is only available if **Auto** focus is selected. By default, **Auto Focus Sensitivity** is set to **Low**. Select **High** if a more immediate focus response is required.

EXPOSURE

If a camera has **Exposure**, its control is located on the **Control Ribbon**. Generally, it defines the brightness of the video. By default, **Exposure** is initialized to **Auto**. Select **Manual** to enable the **Manual Exposure**  adjustment. The buttons can then be used to adjust the **Exposure** levels. Hold the buttons down for faster exposure response.

FIGURE 84: EXPOSURE CONTROL

CAMERA LIGHT CONTROL

On Spectrum 90™, Spectrum 120™, and MaggHD™ cameras, the lights can be individually controlled. Individual lights can be toggled **ON** and **OFF** on the **Control Ribbon**, while **Brightness** is controlled at the **Camera Device** control tile on the **Control Panel**.

To control lights individually, toggle the **Lights** control button to turn specific lights **ON** or **OFF**. To adjust the light intensity, use the slider bar located to the right of the camera controller, outlined here in red.

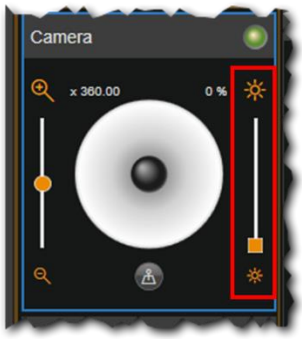


FIGURE 85: LIGHT INTENSITY CONTROL

Click any position on the slider bar to reach an intensity level directly. The max and min light buttons at the top and bottom of the zoom slider can be used for setting the light intensity to the minimum and maximum level respectively.

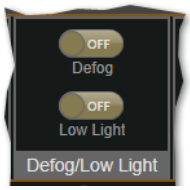
FIGURE 86: INDIVIDULA LIGHT CONTROL

LASER

If a camera has **Lasers**, its control is located on the **Control Ribbon**. Toggle the button to turn lasers **ON** or **OFF**.

FIGURE 87: LASER CONTROL

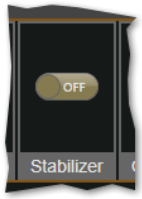
DEFOG/LOWLIGHT



If a camera has **Defog/Lowlight**, their controls are located on the **Control Ribbon**. The **Defog Mode** reduces the effects of the fog and make objects appear clearer. The Low Light reduces the noise in low-illumination conditions. By default, both **Defog** and **Low Light** are initialized to **OFF**. Toggle these buttons to enable the **Defog** or **Low Light** features.

FIGURE 88: DEFOG/LOWLIGHT CONTROL

STABILIZATION

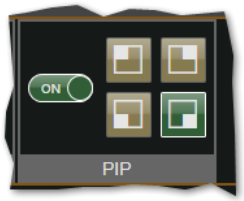


If a camera has **Stabilizer**, its control is located on the **Control Ribbon**. The **Stabilizer Mode** reduces image blurring cause by, for example, vibration. By default, this feature is initialized to **OFF**. Toggle the button to enable image stabilization.

Note: When **Stabilizer** is toggled **ON** via the **Video Panel**, a blue screen will appear momentarily and recover automatically. This is normal.

FIGURE 89: STABILIZER CONTROL

Picture-In-Picture



If Your Eddyfi Technologies system is equipped with two or more cameras, **PIP** (Picture-in-Picture) control is available and located on the **Control Ribbon**.

When toggled to **ON**, the secondary display will appear on the **Video Panel**, so video signals from two cameras can be observed simultaneously. Refer to the **Video Switching** section above for more details.

FIGURE 90: PIP CONTROL

The secondary display can be placed at any location on the **Video Panel**. By default, it is docked in the right bottom corner. The four corner buttons on the **Control Ribbon** can also be utilized to dock the display around. For more precise positioning, the display can be dragged and dropped.

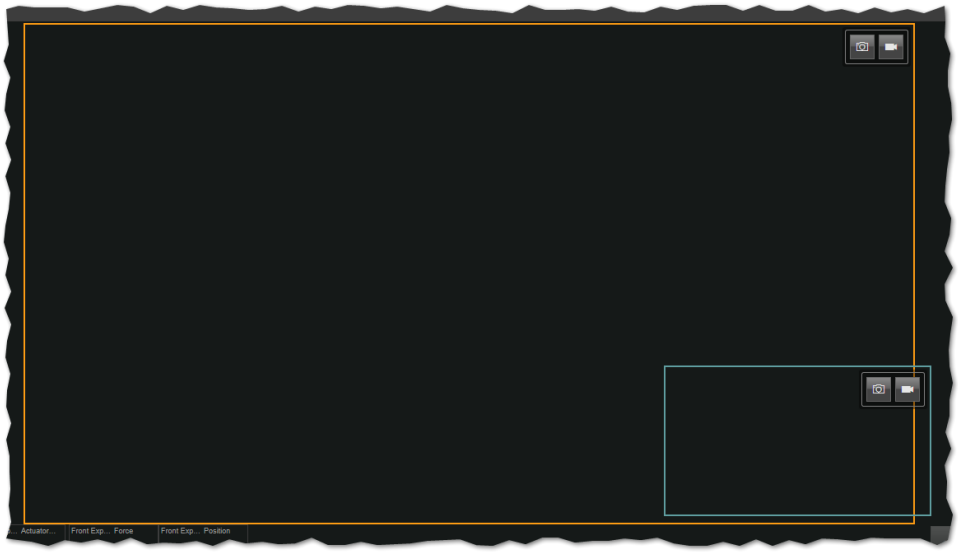


FIGURE 91: MULTI-CAMERA DISPLAY

Crosshair

When the **Crosshair** mode is enabled, right-angled bisecting lines will appear on the video panel. Crosshair can be used to determine the screen centre or as reference when observing objects and estimating sizes for features of interest.

Camera Attitude Control (Pan/Tilt)

The attitude of a camera consists of two functions, **Pan** and **Tilt**. Spectrum™ cameras have both elements while the MaggHD™ is Tilt only. The attitude of a camera can be manipulated to target an object for observation.

FIGURE 92: CAMERA VIRTUAL JOYSTICK

Functions to manipulate a camera are:

- Move the virtual joystick **Up** to tilt upward.
- Move the virtual joystick **Down** to tilt downward.
- Move the virtual joystick **Left** to pan Left.
- Move the virtual joystick **Right** to pan Right.
- Move the virtual joystick **Diagonally** to pan and tilt in an arbitrary direction

Note: The virtual joystick can also be locked in position for continuous pan and tilt, without the operator having to hold the joystick in position. To lock the joystick, use keyboard control. Refer to the **Keyboard Control** section for details.

Camera Set Points

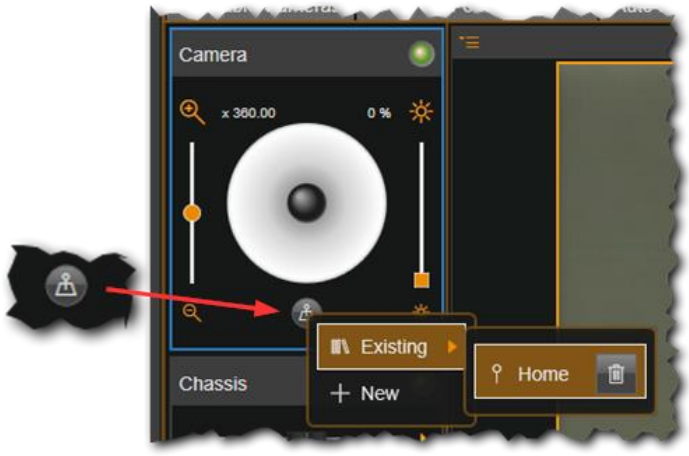


FIGURE 93: SET POINT SETTING

For cameras with Pan/Tilt control, the **Set Points** option is available. It allows the operator to store camera current pan/tilt positions (set points) in memory and return to them as required.

By default, the only stored set point is the **Home** with pan and tilt values equal zero.

To move to a set point, click **Set Point** on the camera controller, select **Existing** option on the popup menu, select a desired set point.

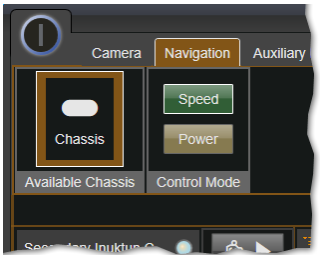
To create a **Set Point**, navigate the

camera to the desired position, click **Set Point** on the camera controller, select **New** option on the popup menu, enter in the title, click **Save**.

Track Control

Eddyfi Technologies systems can have multiple tracks for locomotion. From the control perspective, they are all grouped into a single unit called a **Chassis**. Through ICON™ software, the operator can control a chassis but not a single track. All chassis are visible on the **Navigation** tab of the **Control Ribbon** and the **Device Manager** and have correspondent tiles on the **Control Panel**.

Control Modes



All Eddyfi Technologies tracks have two control modes, **Speed** and **Power**. To change between the two, open the **Navigation** tab of the **Control Ribbon**, select the chassis; then click on either button on the **Control Mode** group. **Speed** control will actively maintain the set track speed adjusting the power, while **Power** control simply keeps the power at some level so the speed can vary based on the load. Both control types allow the operator to control the direction and speed of a vehicle.

FIGURE 94: CHASSIS CONTROL MODES

Moving & Steering

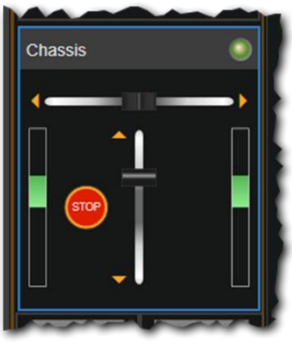


FIGURE 95: TRACK CONTROL

To move a vehicle forward or backward, adjust the vertical slider upward or downward. To control the moving direction of the vehicle, the middle position of the vertical slider means zero throttle. Use this function in conjunction with turning to make gentle sweeping turns with the vehicle.

Note: Being released, the throttle slider retains it value, and the system keep moving. In case of emergency, refer to the **Emergency Stop** section below to stop the system instantly.

To turn a vehicle, adjust the horizontal slider to the left or right, to control the turning direction of the vehicle.

The chassis can be steered in two different modes: in **Crawler Steer** mode, there is no need to apply throttle to turn; the system can pirouette in place by moving only the horizontal slider, as one track will move forward and the other will move backward. In **Throttle Steer** mode, the crawler cannot turn without moving forward or backward. By default, the **Crawler Steer** mode is enabled. Refer to the **User Groups -> Group Preferences** section to set the steering mode preference.

The **Chassis Control** has power/speedometer displays placed on either side of the control. These displays are linked to the very left and right front tracks (depends on the direction) and are indicative of

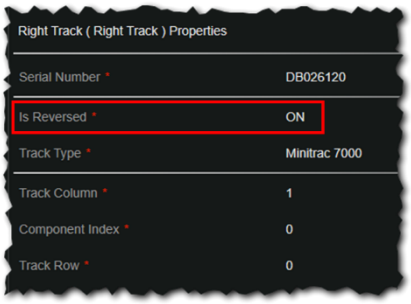
the power/speed percentage. Green color indicates that the track on that side intends to move forward, and red color indicates that it intends to move backward.

Emergency Stop

When the tracks are set to **Speed** control, selecting STOP on the **Chassis Control** sets the speed of all tracks to zero. Tracks will servo to the zero position and will resist movement if there is a force trying to push them; for instance, a magnetic crawler on a vertical wall will hold position.

When the tracks are set to **Power** control, selecting STOP on the **Chassis Control** sets the power of all tracks to zero. Tracks will be free to back-drive; for instance, a magnetic crawler on a vertical wall will begin rolling down.

Track Reversal



Tracs are physically all identical – there is no difference between a right track and left track. By installing a track on the right side, only its orientation is reversed. In order to have it move in the direction consistent with its controls, the right track must be set to **Reversed**. Go to **Device Manager** and find the subsection for **Right Track** in **System Device** section, then set **Is reversed** option to **ON**.

FIGURE 96: DEVICE MANAGER-IS REVERSED

Note: Changing this setting to **OFF** for right tracks or changing this setting to **ON** for left tracks is not recommended.

Actuator Control

Eddyfi Technologies systems can be equipped with different actuators. All actuators are visible on the **Actuators** tab of the **Control Ribbon** and the **Device Manager** and have correspondent tiles on the **Control Panel**.

Control Modes

Eddyfi Technologies actuators have three operational modes:

- **Power** – allows to adjust the actuator power.
- **Speed** – allows to maintain the actuator set speed.
- **Position** – allows the actuator to move to the specific position.

From the control perspective, an actuator can work in one of two modes, **Manual** and Auto. To change between the two, open the **Actuators** tab of the **Control Ribbon**, select the actuator; then click on either button on the **Control Mode** group.

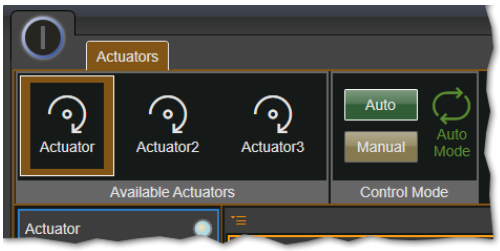


FIGURE 97: ACTUATOR CONTROL MODES

The **Manual** control mode is always the **Power** operational mode and it is supported by all actuators. The **Auto** control mode depends on the actuator type and varies. Both control modes allow the operator to control the actuator.

Note: In case if an actuator only supports the **Power** operational mode, the **Auto** control mode coincides with the **Manual** mode, and the **Control Mode** selector is hidden.

By default, actuators work in the **Auto** mode. The **Manual** mode is used to keep control under actuator in case of emergency when the normal control is unavailable due to, for example, broken speed/position encoders.

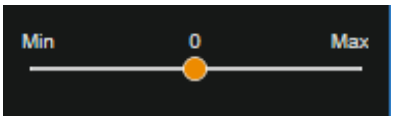
Operating in the Manual mode results in changing an actuator's behaviour. Thus, the 

warning icon will be shown on the **Control Ribbon**.

Actuator Control

ICON™ software has different controls for different actuator operational modes. Refer to the **Control Modes** section above for more details.

POWER CONTROL



To control the actuator power, drug the slider knob away from the centre into the desired direction. The further the knob from the centre, the faster the actuator moves. The knob does not hold its position. To stop the actuator, just release the knob.

FIGURE 98: POWER CONTROL

SPEED CONTROL

To control the actuator speed, set the desired speed first using the slider. The knob holds its position. To move the actuator, click and hold one of the buttons below the slider. To stop the actuator, just release the button.

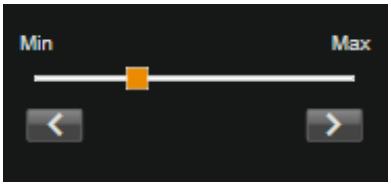


FIGURE 99: SPEED CONTROL

POSITION CONTROL

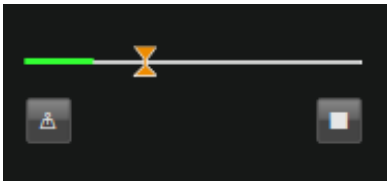


FIGURE 100: POSITION CONTROL

The slider on this control represents the actuator motion range as it is defined by calibration. To control the actuator position, drug the slider knob to the desired point within the range. The green bar shows the actual actuator position. It can be used to monitor the actuator movement when direct observation is impossible.

To stop the actuator, click on  button. For actuators with position control, the **Set Points** option is available. It operates like camera **Set Points does**. Refer to the **Camera Control -> Camera Set Points** section for more details.

Push Button Control

FIGURE 101: PUSH BUTTON CONTROL

For most actuators, the **Push Button Control** option is available. Based on the actuator operational mode, clicking on either button will result in the following behaviour:

- **Power** – moves the actuator with maximum power in the desired direction.
- **Speed** – moves the actuator at maximum speed in the desired direction.
- **Position** – moves the actuator toward the maximum or the minimum position within the actuator motion range.

The option can be achieved by changing the actuator control template. Refer to the **Settings -> Control Panel Manager -> Transforming the Tile** for more details.

Direction Reverse

To to reverse the control relationship between arrow keys and rotation directions, complete the following steps:

1. Navigate to **Backstage -> Devices**.
2. Select the actuator in the **System Devices** list.
3. Click **Edit**.
4. Toggle it to **ON** to reverse the rotate direction.
5. Click **Save**.

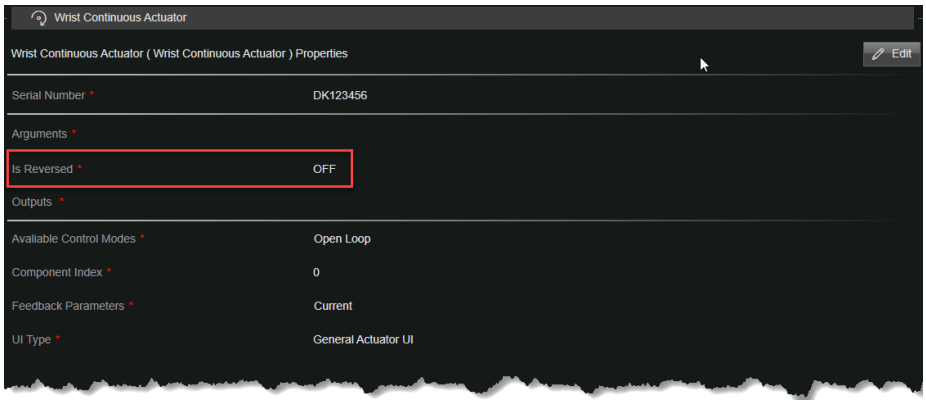


FIGURE 102: REVERSE ACTUATOR DIRECTION

Sensor Control

Switch States

Eddyfi Technologies switches can be either binary (just two states like ON/OFF) or multi-state with up to 256 different states:
In the former case, the control represents a simple button with ON/OFF states. To switch the state just click on the button.

FIGURE 103: SWITCH ON/OFF BUTTON

In the case of the multi state switch, the control represents a slider similar to the actuator position control. To control the switch state, drug the slider knob to the desired state within the range. The green bar shows the actual switch state. It can be used to monitor the actual switch state when direct observation is impossible

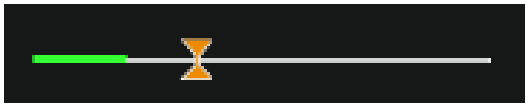


FIGURE 104: MULTI-STATE SWITCH SLIDER

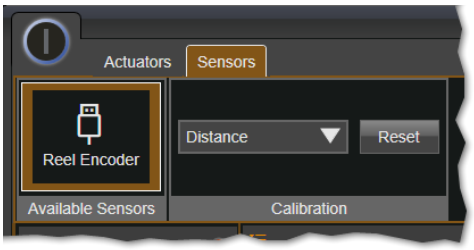


FIGURE 105: SENSOR CALIBRATION SAMPLE

Eddyfi Technologies systems can be equipped with different sensors. All sensors are visible on the **Sensors** tab of the **Control Ribbon** and the **Device Manager**, but none of them have correspondent tiles on the **Control Panel**.

Some sensors can have calibration sections which can vary based on the sensor type.

Refer to the **Calibration -> Calibration Device Feedback** section for more detail.

Job Management

Starting a Job

A **Job** is a key term in ICON™ software. A **Job** instance contains all telemetry data, video, snapshots, tags, etc. To start a **Job**, click on  button on the **Control Panel**, and a dialog box will appear, prompting the operator for information about the **Job**. The number of fields to fill in depends on the number of Video started recording automatically and **Job Attributes** defined in the system. Refer to the **Settings -> Job Attributes** and **Job Recording -> Video Recording** sections for more details.

Once a Job is started, ICON™ software will automatically start recording all telemetry data which can be retrieved later for analysis and reporting purposes. To stop a **Job**, click the  button on the **Control Panel.**

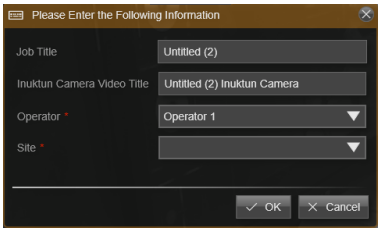


FIGURE 106: 'START JOB' DIALOG BOX

Video Recording

Recording Mode

ICON™ software provides for every camera the **Default Recording** option. Enabling this option causes cameras currently mapped to either of the displays to start video recording automatically when a **Job** starts. Coupled with disabling the **Job Management -> Enable Video Controls**, this leads the system to switch into the **Simplified Video Recording** mode. It implies a one-to-one relationship between a **Job** and a **Video**. By contrast, the **Advanced Video Recording** mode allows to have multiple **Videos** within a **Job**.

In the **Advanced Video Recording** mode, when a **Job** is started, cameras with the **Default Recording** option **ON** will start recording automatically. Other cameras with the **Default Recording** option **OFF**, will not. In this case, the operator must start recording manually by  clicking button on the **Job Control Tool Bar**. A dialog box will open, prompting for a **Video Title**. Regardless the **Default Recording** option, the operator can start and stop video recording at any time without stopping a **Job**. Each video within a **Job** will have a unique identifier even if the operator prefers to keep the same title for all videos. Refer to the **ICON™ Backstage Job Control -> System Devices -> Configuring System Devices -> Cameras** section for more detail on how to change the **Default Recording** option for a camera.

Recording Videos

In the **Simplified Video Recording** mode:

1. Click  button to start a **Job**.
2. Fill out the **Start Job** dialog box and click **OK**.
3. All cameras with the **Default Recording** option **ON** will start recording immediately.
4. Click  to stop the **Job**. and stop recording for all cameras.

In the **Advanced Video Recording** mode:

1. Click  button to start a **Job**.
2. Fill out the **Start Job** dialog box and click **OK**.
3. All cameras with the **Default Recording** option **ON** will start recording immediately.
4. Click  button on the **Job Control Tool Bar** of either display to start video recording.
5. Click button on the **Job Control Tool Bar** of either display to stop video recording.
6. Create additional **Videos** within the current **Job** by repeating steps 4 and 5.
7. Click  to stop the **Job**. and stop recording for all cameras.

Note: Verify the video recording if system power is interrupted during an inspection. Video files may be corrupt or damaged.

FIGURE 107: START/STOP RECORDING

Available Free Space Monitor

ICON™ software provides an available free disc space monitor to detect when the data disc drive is full and video recording cannot be carried on any longer. The monitor has a **Status Icon** located on the **System Status Panel**.

The monitor has tree states: Normal, Warning, and Critical

1. **Normal**. If the hard drive has more than 20 GB available free space, the icon is green with its free space indicator full. It is saafe to keep video recording at this stage. 

2. **Warning**. When the available space is less than 20 GB but more than 5 GB, the icon is orange with its free space indicator showing the remaining space. An appropriate notification will pop up. At this stage, it is strongly recommended to stop video recording and any job running; clean up the hard drive by removing all unnecessary files and transferring old jobs to another storage. 

3. **Critical**. When the available space is less than 5 GB, the icon will turn red with its free space indicator empty. An appropriate notification will pop up. Any job running will be stopped automatically in 30 seconds. 

Exporting Videos

ICON™ software provides two modes of video export, **Automatic** and **Manual**. Refer to the **ICON™ Backstage -> Settings -> Preferences -> Export** section to select the default mode and the desired export parameters.

AUTOMATIC VIDEO EXPORT

All the videos will be exported automatically to the default export location automatically whenever the video stop being recorded.

MANUAL VIDEO EXPORT

To manually export video and learn more about **Video Export Manager**, refer to the **ICON™ Backstage -> Export** section

Note: ICON™ software requires a Hard Disk Drive with at least 3.0 GB/s to guarantee successful video export. A slow hard drive may block the rapid read and write operation from ICON™ software.

Video Export Agent

Refer to the **ICON™ Backstage -> Export** section to learn more about the **Video Export Manager** and the **Video Export Agent**. The interface of the **Video Export Agent** shows all the videos that are queuing for export or being exported within the current session. The following information is available for every video:

- Export progress
- Time the video being made
- Duration of the raw video,
- Exported length of the video
- Elapsed and remaining time of export

During the video export process

- click  to cancel the export.

When the export is completed

- click  to play the exported video in the Windows default video player
- click  to open the location of the video in the File Explorer.

If the export of a video gets stuck for an unreasonable time, it is suggested to cancel and reattempt the export. Complete the following steps to do so:

1. Navigate to **Backstage** -> **Export**.
2. Click the **Clear Video Export** button to reset the video export statuses.

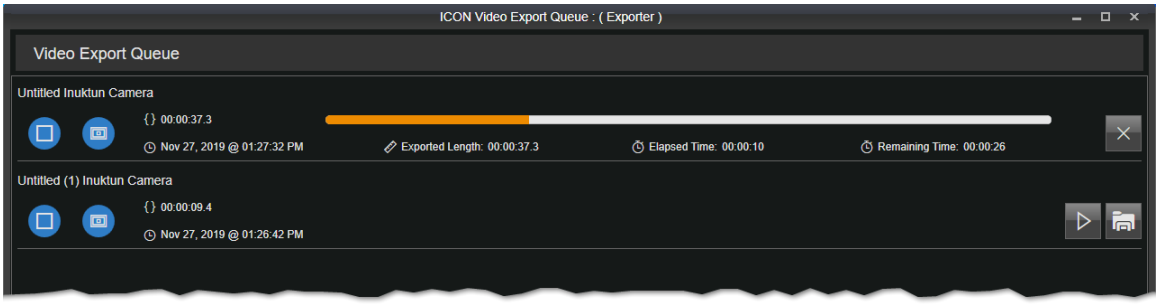


FIGURE 108: ICON™ VIDEO EXPORT AGENT

3. Click the **Restart Video Export** button to restart the **Video Export Agent**.

Note: ICON™ software requires a Hard Disk Drive with at least 3.0 GB/s to guarantee successful video export. A slow hard drive may block the rapid read and write operation from ICON™.

Taking Snapshots

ICON™ software, snapshots can of two categories: **Independent** or **In-Job**. The former can be stored via inside any of the folder on the system hard drive and has no relations with any **Jobs**. The las, by contrast, is stored in the predefined Media Storage Location and belongs to a specific **Job**. It helps for grouping them, as well as for reporting and analysis purposes.

Independent Snapshots

To take an **Independent Snapshot**, stop a **Job** if there is any, then click on button on the **Job Control Tool Bar** of either of displays to capture the frame. Finally, specify a location where the image file should be stored. ICON™ software will show a notification with the snapshot's thumbnail.

In-Job Snapshots

To take an **In-Job Snapshot**, start a **Job** if there is not any. If the operator has **Job Management -> Enable Snapshot Tag Data Entry** set to **OFF**, the further process is like taking an **Independent Snapshot**. Otherwise, after clicking on button, fill in the necessary sections in the pop-up dialog window, and click **OK** to complete.

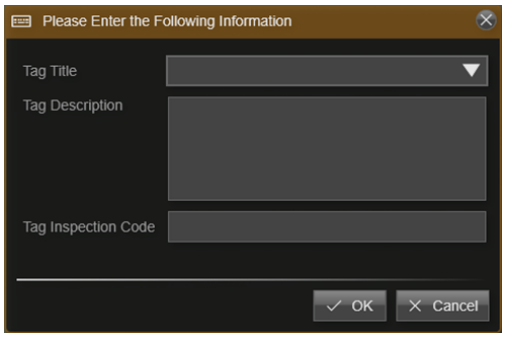


FIGURE 109: TAG DATA ENTRY DIALOG BOX

Note: The tag and comments are tied to the **Job** when **OK** is pressed. Pressing **OK** is required even with no text entered. The tag data will be saved in the database and can be selected again from the **Tag Title** combo box.

Export Snapshots

ICON™ software provides two modes of snapshot export, **Automatic** and **Manual**. Refer to the **ICON™ Backstage -> Settings -> Preferences -> Export** section to select the default mode and the desired export location.

AUTOMATIC SNAPSHOT EXPORT

All the snapshots will be exported automatically to the default export location automatically whenever the job being stopped.

MANUAL SNAPSHOT EXPORT

To manually export snapshots and learn more about **Video Export Manager**, refer to the **ICON™ Backstage -> Export** section.

Toggling Overlay

This option is only available for a **Video** being recorded. To turn the **Integrated (Default) Overlay ON**, click on button located on the **Job Control Tool Bar** of either displays. The Its pattern will change to and the correspondent indicator will appear on the display. To turn the **Integrated (Default) Overlay OFF**, click on the button again. Repeat these actions as desired. When the camera currently mapped to the display is not recording, the button is disabled.

Note: The **Integrated (Default) Overlay** is not visible on the **Video Panel**, but if it is **ON** it will be displayed in exported videos for the that time.

The **Integrated (Default) Overlay** can turned on automatically each time when the **Video** starts being recorded. Refer to the **ICON™ Backstage -> Settings -> Preferences -> User Interaction** section to select this option. The operator can turn the overlay **ON** and **OFF** at any time. Turning the overlay **OFF** manually is not required as it will be automatically turned **OFF** when the **Video** stops being recorded.

Exporting Video with Overlay

To apply the current **Integrated (Default) Overlay** from the beginning until the end of the, complete the following steps:

1. Navigate to **Backstage -> Settings -> Preferences -> Export**.
2. Set the option **Set Automatic Video Overlay Source** to **Template Annotations Only**.
3. Set the option **Set Automatic Video Overlay Template** to **Icon Default Overlay**

To apply the **Integrated (Default) Overlay** as it used to be at the time of video recording and for the time it was **ON** only:

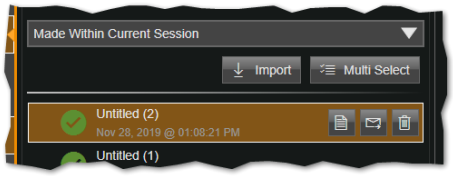
1. Navigate to **Backstage -> Settings -> Preferences -> Export**.
2. Set the option **Set Automatic Video Overlay Source** to **Video Annotations Only**.
3. If an overlay template has been applied to the video during recording, the exported video will display annotations.

Managing Recorded Jobs

Deleting Recorded Jobs

Caution: Deleting **Jobs** is an irreversible operation. They cannot be undeleted, and all videos, snapshots, tags, and telemetry data related to those **Jobs** will be lost.

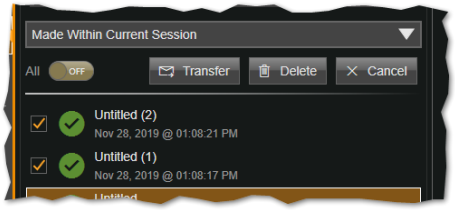
DELETING AN INDIVIDUAL JOB



To delete a single recorded **Job** in **Video Export Manager**, select the **Job** you want to delete from the Recorded **Job**s list. Beside the **Job** title, click button and confirm the action.

FIGURE 110: DELETING A SINGLE JOB

DELETING MULTIPLE JOBS



ICON™ software provides the option to delete multiple **Jobs** at a time. In **Video Export Manager**, click **Multi Select** and then check the checkbox in front of the **Job** requiring deletion. Click the **Delete** button at the top and confirm the action.

FIGURE 111: DELETING MULTIPLE JOBS

Transferring Recorded Jobs

ICON™ software allows **Jobs** to be transferred from one computer to another individually or as a group. The process of selecting **Jobs** for transferring is like of selecting them for deleting. Refer to the **Deleting Recording Jobs** section above for more details.

EXPORTING JOBS

To export an individual or a group of **Jobs**, complete the following steps:

1. Navigate to Backstage -> Export.
2. Select a **Job/Jobs** to be exported from the **Recorded Jobs** list.
3. Click  button beside the **Job** title in case of a single job or the **Transfer** button at the top to start exporting.
4. Choose a folder in the File Explore where to export the encapsulated **Job** (*. ijob) file(s) on the computer.

Answer whether the original **Job(s)** must be removed from the system. Click **Yes** if you want to delete original files when exporting.

IMPORTING JOBS

To import a **Job**, complete the following steps:

1. Navigate to **Backstage -> Export**.
2. Click the **Import** button on the top.
3. In the 'Open File' dialog, choose the **Job** (*.ijob) file to be imported from the disk drive.

Getting Job Telemetry Data

ICON™ software allows to retrieve a **Job** telemetry data for analysis and reporting purposeso as a *.csv file. This operation does not affect neither any of a **Job**-related data nor the **Job** itself. To get a **Job** data, complete the following steps:

1. Navigate to **Backstage -> Export**.
2. Select a **Job/Jobs** to get data from the **Recorded Jobs** list.
3. Click  button beside the **Job** title.
4. In the popped-up dialog, select all the devices and their parameters to be retrieved.

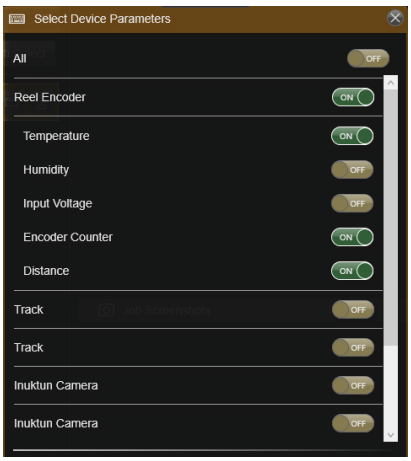


FIGURE 112: SELECTING TELEMTRY DATA

5. Click **Ok**.
6. In the standard Windows 'Save File as...' dialog, enter a file name to store the data.
7. Click **Save**.

Xbox Controller

To use the Xbox controller, the operator must be in a user group with the preference **Group Preferences -> Gamepad Controller -> Gamepad Control Access** set to **ON**. ICON™ software will ignore the Xbox controller otherwise. Refer to the **ICON™ Backstage -> User Group -> Group Preferences** section for more detail.

Connecting the Xbox Controller

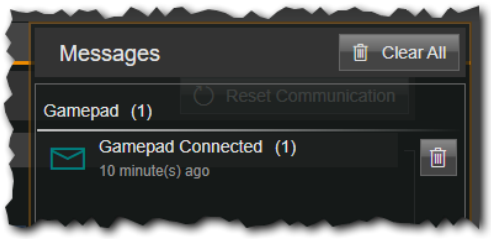


FIGURE 106: GAMEPAD CONNECTED NOTIFICATION

Plug the Xbox controller's USB cable into an available USB port on the computer or interface box. Once the controller is connected, ICON™ software will post to the **Notification Panel** and show  icon on the **System Status Panel** indicating that the controller is connected.

Note: A driver may need to be installed depending on the Windows system configuration.

Control Mapping

Xbox controller mapping depends on the **Gamepad Profile** assigned to a user group. Refer to the **ICON™ Backstage -> Settings -> Gamepad Profile Manager** for more details on how to create and map a gamepad.

Note: The available functions that an Xbox controller control element can be mapped to depend on the nature of the element. The buttons on an Xbox controller can be separated into two distinct categories: analog and digital. Digital buttons have only a pressed or released status – **ON** or **OFF**. Analog type buttons, however, are dynamic with increased touch or motion. Analog buttons include the left and right trigger and the left and right thumb sticks. As a result, for example, the left and right triggers can only be used to control a camera's zoom function or move actuators.

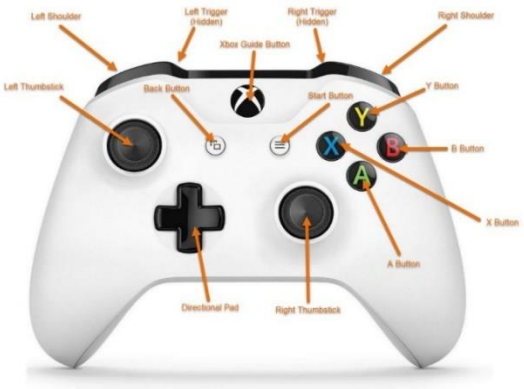


FIGURE 113: GAMEPAD LAYOUT

Xbox Controller Settings

ICON™ software allows each user group to have their own can Xbox controller's settings, the desired **Gamepad Profile**, the **Dead Zone** size and shape. Refer to the **ICON™ Backstage -> User Group -> Group Preferences** section for more detail.

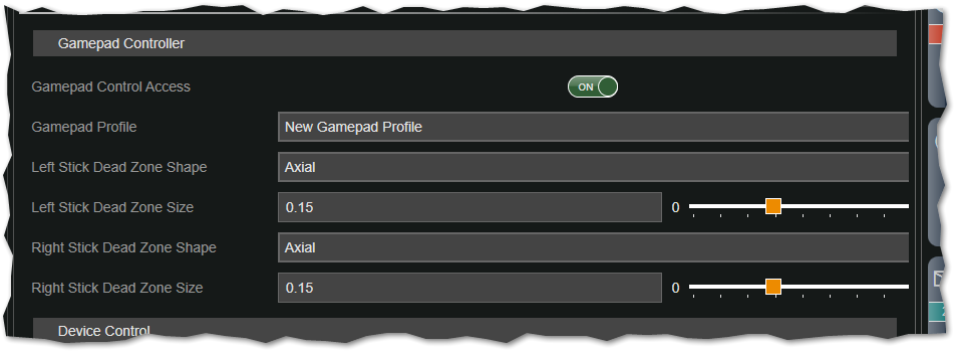


FIGURE 114: ADJUSTING A DEAD ZONE SIZE

DEAD ZONE SIZE

When an Xbox thumb stick is centered, it is in the **Dead Zone**. This means that there are no signals being sent to the software. The sensitivity of the thumb stick can be changed by adjusting the Dead Zone size and type, allowing for movement before a command is sent.

DEAD ZONE SHAPES

Dead Zones can be adjusted to be Axial, Radial or None. An Axial Dead Zone covers a cross-shaped region on the thumb stick, increasing the required movement along the X-axis and Y-axis. A Radial Dead Zone has uniform margins around the center of the thumb stick. Adjustment to the margins of a Dead Zone is performed by moving the yellow dot along the slider or entering a value.

FIGURE 115: AXIAL AND RADIAL DEAD ZONE SHAPES

Keyboard Control

ICON™ software allows the operator to control the selected device via the PC keyboard. Two categories of devices are currently supported, **Cameras** and **Chassis**. To control a device, select it first. Refer to the **Control and Operation** section for more details. Alternatively, pressing the **Tab** key on the keyboard allows to transfer control from one tab on the **Control Ribbon** to another and select the first device in the list from each tab.

Camera Keyboard Control

Key	Command
Up Arrow ↑	Tilt Up
Down Arrow ↓	Tilt Down
Left Arrow ←	Pan Left
Right Arrow →	Pan Right
CTRL + ↑	Zoom Tele
CTRL + ↓	Zoom Wide
Shift + CTRL + ↑	Increase Light Intensity
Shift + CTRL + ↓	Decrease Light Intensity
Esc	Center Joystick and Stop Pan/Tilt

Note: Releasing the key will not reset the joystick and sliders back to center position, like the mouse or gamepad control does. The joystick and the sliders will be locked in place to give continuous command. Press **Esc** button or manually set the joystick or slider to center to stop the operation.

Track Keyboard Control

Key	Command
Up Arrow ↑	Throttle Forward
Down Arrow ↓	Throttle Backward
Left Arrow ←	Steer Left
Right Arrow →	Steer Right
Esc	Center Throttle and Stop Steer

Note: Releasing the key will not reset the throttle and steering sliders back to center position, like the mouse or gamepad control does. Press **Esc** or manually set the sliders to the center to stop the operation.

System Status Panels

The **System Communication Channel Status Panel** shows the status of each communication channels in the system. The color of the icon indicates the working status of the communication channel.

- **Green** - the communication port is opened, and the communication packets are transmitting normally.
- **Orange** - the communication port is open, but there are no packets transmitted or received. It is usually caused by no devices that can be discovered and initialized on this channel due to any reason.
- **Red** - the communication port is closed or failed – no communication is established.

FIGURE 116: SYSTEM COMMUNICATION CHANNEL STATUS PANEL

Besides the indicators for the whole channel, ICON™ software also has an individual **System Device Status Panel** indicator for each device that has **Device Control** tile on the **Control Panel**. The indicators are located at the upper-right corner of the tile.

- **Green** – at least 80 % of packets transmitted to this device are acknowledged.
- **Orange** – from 60 to 80 % of packets transmitted to this device are acknowledged. The device can still be controllable.
- **Red** – less than 60 % of packets transmitted to this device are acknowledged. The device is likely to be uncontrollable.
- **Blue** – unknown status. No attempts to communicate with the device were made.

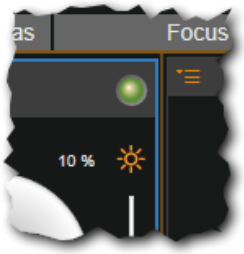


FIGURE 117: SYSTEM DEVICE STATUS PANEL

Known Issues

Installation Issue

If you receive the error: “Fatal error: Microsoft SQL Server Data-Tier Application Framework (x64) mandatory prerequisite was not correctly installed.” Follow the installation instructions below:

1. Ensure that the ICON installer is local (not on the network).
2. Ensure that your PC does not have any updates pending.
3. Prior to installation, restart your PC.
4. Ensure you have full administration privileges.
5. Follow the ICON installation setup wizard.
6. Following the installation, restart your PC to ensure installation was properly applied.

Job Start/Stop Button Disabled

Symptom:

ICON™ is launched, but the **Start Job** button on the ICON™ interface is grey and disabled.

Cause:

Some parts of the ICON™ settings are not configured properly.

Resolution:

Hover over the disabled button to see the tool tips. Common reasons are:

1. Camera frame grabbers or imagers are not configured properly.
2. The video saving folder and export folder is not accessible.
3. The video saving folder and export folder is missing.

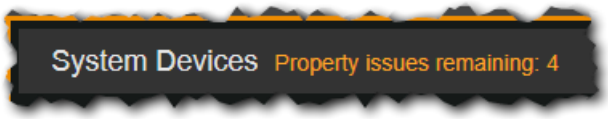


FIGURE 118: PROPERTY ISSUES BESIDE THE 'SYSTEM

Navigate **Backstage -> Devices.** There may be hints beside the **System Device** header

Refer to **ICON™ Backstage -> System Devices** section for more details.

If this is not the case, navigate to **Backstage -> Setting -> Preference -> Storage Locations**. Set the **Media Storage Location** and the **Default Export Location** to a location that your account has permission to read and write.

Camera Exposure Level Circulating

Symptom:

When the device is a camera with adjustable exposure level, manually increasing exposure to the most over-exposed level, then increasing exposure one more time, will change the exposure level to the most under-exposed level.

Cause:

Firmware issue.

Resolution:

Try to avoid making camera over-exposed.

ICON™ Initialization Problem

Symptom:

1. Initialization cannot complete within a few minutes. Initialization information stops updating.
2. Initialization finished, but one or more devices has a red status light.

Cause:

Communication failure.

Resolution:

When initialization cannot finish itself, end the ICON™ task in the **Windows Task Manager**, then start ICON™ software again. Otherwise, try initializing ICON™ manually again through **ICON Device Manager**.

Troubleshooting

In case of having a trouble with ICON™ software, try the following solutions.

Video Problems

Issue – USB Frame Grabber Is Not Showing Up

Symptom:

The USB frame grabber is plugged in and appears in **System Device Manager**, but not in the dropdown list

Cause:

Windows 10 Fast Startup prevents the proper loading of device drivers for USB frame grabbers.

Resolution:

a) Turn **OFF** Fast Startup.

b) Go to **Start -> Settings -> System -> Power & Sleep -> Additional power settings -> Choose what the power buttons do -> Change settings that are currently unavailable**.

c) Uncheck **Turn on fast startup**.

d) Click **OK** and close all windows.

e) Restart the computer for change to take effect.

Issue – No Video Signal

Symptom:

Message "**No Video Signal"** on the display.

Cause:

- Incorrect frame grabber selected.
- Incorrect frame grabber configuration.
- Video source disconnected or unplugged.

Resolution:

a) Make sure the camera's tether is connected properly.

b) Make sure interface box cables are all connected properly.

c) Make sure camera and interface box are plugged in and turned on.

d) Select a different frame grabber device for the camera in **ICON Device Manager**. For details on how to select and configure video frame grabbers, refer to the Video Frame Grabber Configuration section in this manual.

e) Select the correct input type to match the video. For example, if the camera is outputting Full HD video 1920 x 1080p @ 29.97fps and is inputted into the frame grabber via component video, select the Component 1080p29.97 option.

Communication Problems

Issue – Device Status Indicator is Red

Symptom:

Device status indicator is red on one or several devices.

Cause:

- Device is unplugged.
- Wrong communication port selected.
- Incorrect device serial number.

Resolution:

a) Make sure all devices are connected properly and are powered on.

b) Select a different communication port. To determine which is the correct port do the following:

   a. Close ICON™.

   b. Open ICON™ Devices.

c. Select a serial port and click discover.

d. f all the devices in the system appear on the correct port(s), then the correct port(s) are found. Otherwise, repeat step c.

c) Ensure all the device serial numbers in the system are entered using **System Device Manager** correctly. To find the device serial number, use **ICON™ Diagnostics** to scan the ports.

Installation Problems

Issue – Installation Fails

Symptoms:

Installation does not complete and shows the error "**Installation Failed**."

Cause:

- Windows is out of date.
- Windows has a restart pending.
- Incorrect system date and time.

Resolution:

a) ICON™ software will install on Windows 10 systems only.

b) Check for available Windows updates. Install any available updates.

c) Restart the computer.

d) Ensure the date and time are correct.

Initialization Problems

Issue – ICON™ Initializes to the ICON Device Manager

Symptoms:

After starting ICON™ software, passing the initialization stage, the operator is redirected to **ICON Device Manager**.

Cause: Error or conflict in system configuration could not be resolved automatically.

Resolution:

a) Ensure all device serial numbers are unique and entered correctly.

b) Ensure the correct frame grabbers are selected and there are no duplicates.

c) Ensure all camera addresses are unique.

d) Check that device cabling is connected properly and power is on.

e) Check that the appropriate communication port is selected.

Issue – ICON™ hangs on Initialization

Symptoms:

ICON™ software hangs on an initialization step and cannot be closed.

Cause:

- Intermittent connection with device(s).
- Video frame grabber intermittent connection or device driver issue.

Resolution:

a) Check all devices are connected properly and devices and interface box are powered on.

b) Make sure USB frame grabbers are connected to the appropriate USB port. USB frame grabbers require a USB 3.0 or higher port to function correctly.

c) Try a different USB port if using a USB frame grabber.

d) Reinstall frame grabber device driver.

Contact Eddyfi Technologies for technical support if the problem persists.

Parts and Repairs

Ordering Parts/Customer Service

Spare or replacement parts are available and can be ordered directly from your local office.

When ordering parts, you will have to provide the original sales order acknowledgement (SOA) number. A serial number of a system component can also be used for identification purposes.

XML and mirror files are available from the factory with provision of your system serial number.

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Warranty Repairs

Warranty conditions are specified in the Warranty section. Should any conditions of the manufacturer's warranty be breached, the warranty may be considered void. All returned items must be sent prepaid to Eddyfi Technologies at the above address.

Factory Returns to Canada

Some sub-assemblies of your Eddyfi Technologies product are not field-serviceable and may need to return to the factory for repair. Warranty claims must return to the factory for evaluation.

To return an item for evaluation or repair, first contact Eddyfi Technologies at our toll-free number or e-mail address. Eddyfi Technologies will supply a Return Merchandise Authorization (RMA) number with detailed shipping and customs instructions. Items shipped without an RMA number will be held at Eddyfi Technologies until the correct paperwork is completed. If cross-border shipments are not labelled as per the instructions, the items may be held by customs and issued additional fees.

All returned items must be sent prepaid unless other specific arrangements have been made.

When the product or system is being shipped anywhere by courier or shipping company, it must be packaged in the original packaging it was received in. This measure greatly reduces the consequences of rough handling and subsequent shipping damage.

Eddyfi Technologies cannot be held responsible for damages due to improper packaging. Shipping damage may have significant impact on repair turnaround times.

Limited Warranty Policy

Refer the Eddyfi Technologies website for warranty terms for this product.
https://www.eddyfi.com/en/salesterms