

RAYNOK

SOFTWARE GUIDE

RAYNOK Software Guide

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INTRODUCTION

GENERAL DESCRIPTION

RAYNOK is a state of the art, PC-based automation system running within a Windows™ environment composed of many software and hardware elements. This manual is mainly concerned with the software used to operate this system. **RAYNOK** Software allows the user to control vast numbers of moving elements quickly and safely through its streamlined and fully customizable interface. Users can build multiple shows containing many *Cues*, *Autofollows*, and *Complex Motion Profiles* as well as have instant manual control over every element. **RAYNOK** is designed to be as flexible as possible in order to keep up with your creative needs.

RAYNOK incorporates several levels of security lockouts, safety lockouts, speed, position, and duration limits, E-stops, and double checks; all of which add to the safety of the production, without taking anything away from operator efficiency. This document assumes the user has a working knowledge of the Windows™ Operating System, and the Windows™-style software interface. Read and understand the contents of this manual before operating **RAYNOK**. Failing to do so may result in serious injury or death.

SYSTEM REQUIREMENTS

Network requirements

- TCP/IP wired network
- 10/100/1000-Base-T Connections
- Network must not be used for any other purpose besides operating **RAYNOK** in show conditions (ie. not connected to the world wide web)
- "High Quality" Hubs and Cables (specifications will be provided by Niscon Inc.

Operators Stations

Minimum

- Main system (additional backup system recommended)
- Intel Dual Core @ 2.4 GHz
- 2 GB DDR3 RAM
- Hard Drive
- Backup Device (USB stick)
- 1000TX Network card
- 24" monitor running 1080P resolution (for best layout results)
- Windows™ 7 Professional

The main and backup (if available) computers are linked through the network and **RAYNOK** for redundancy, and do not require any additional software or hardware.

SUGGESTED SAFETY PROCEDURES

There is no safety device more important to any machinery control system than an alert and properly trained operator. All personnel that use this motion control system must be properly trained in its safe operation prior to moving any equipment or machinery via the remote control system.

To ensure that the operator is properly prepared to engage in the operation of the machinery and equipment that this control system operates, consider these simple guidelines and safety checks. The list of notes below is just a set of guidelines and should never be taken as the only safety notices to be met. Use this list in conjunction with any performance and safety guidelines provided by the owners of the control system.

Before Operating the System

- Enable the Emergency Stop System
- Reset all axes via the **RAYNOK** software
- All axes should report ready in the status column
- Depress the Emergency Stop Button
- All axes should report E-stop in the status column
- Open the E-stop report view and ensure that the local E-stop button is reporting properly
- Reset the system and test any other Emergency Stop buttons that have been identified by your company or management as integral to the safe operation of the system
- Follow any other guidelines that have been outlined by your company management

To safely move a machine or equipment connected to the system

- **DO NOT WORK ALONE**, controlling this equipment from a remote location can be dangerous, always work with another individual when moving machinery and equipment
- With the assistance of another person, properly trained in the operation of the equipment, stationed in the vicinity of the machinery or equipment to be moved ensure that all equipment and personnel are clear and that there are no collision obstructions
- Understand the limitations of the equipment attached to the machinery
- Do not attempt to run a machine that has the potential to injure personnel who are working on it
- If there are personnel working directly on a machine or it's attached equipment, disable the axis in the control software and turn off the power to the motor drive
- If your system does not have audible or visual warnings that machinery is in motion, warn all personnel working in the vicinity of equipment being moved that it is about to move via a method approved by your management personnel (i.e. Verbally call out via a loud clear voice or radio communications "*Lineset number 22 standing by to move!!*")
- Once the "GO" button has been depressed and the machinery is set in motion again warn all personnel working in the vicinity of the equipment that has been set in motion (i.e. Verbally call out via a loud clear voice or radio communications "*Lineset number 22 moving!!*")
- Maintain your hand in close vicinity to the STOP button
- Stay alert and stay in visual contact with the equipment in motion
- Your attention should only be diverted from the equipment in motion to check the computer screens to verify data pertaining to the current move
- When the equipment has come to a complete stop confirm with the personnel working in the vicinity that motion has stopped

INTERFACE OVERVIEW

FILE MENU

Opens a blank RAYNOK show file	—	 New	Ctrl+N
Opens an existing RAYNOK show file	—	 Open...	Ctrl+O
Closes Current RAYNOK show file	—	Close	
Saves current RAYNOK show file with same filename	—	 Save	Ctrl+S
Saves current RAYNOK show file with user specified filename	—	Save As...	
Locks System Config File from other users	—	Lock System Config File	
Updates System Config File when changes have been made	—	Update System Config File	
Reloads System Config File if unwanted changes have been made	—	Reload System Config File	
Sets Outtrims from user specified file	—	Trim File Open...	
Saves current RAYNOK Trim file with user specified filename	—	Trim File Save...	
Sets Outtrim from Current Positions	—	Set Outtrim from Current Positions	
Opens Print dialog box	—	 Print...	Ctrl+P
Opens Print Setup dialog box	—	Print Setup...	
Opens Page setup dialog box, accessible only while report is open	—	Page Setup...	
Exports show cues, accessible with report open	—	Export As...	
Lists up to 4 most recent files which have been opened	—	1 C:\Raynok\...\Chain Motors.ray	
		2 C:\Raynok\...\LightStart.ray	
		3 XYZ_PerformerFlying.ray	
		4 C:\Raynok\...\ConsoleTest.ray	
Exits RAYNOK	—	Exit	

SETUP MENU

User Manager (Page 94)	—	User Manager	
Application Options window (Page 96)	—	Application Options ...	
Administrative tools list	—	Administrative Tools	▶
Selects User Interface Language, RAYNOK restarts when language is selected	—	Select User Interface Language ...	
Austrian Curtain Manager (Page 87)	—	Austrian Curtain Manager...	
Orchestra Shell Manager (Page 88)	—	Orchestra Shell Manager...	
Confirms Orchestra Shells positioning	—	Shell Orientation Confirm...	
Canopy Shell Manager	—	Canopy Shell Manager...	
DMX Trigger Manager (Page 106)	—	DMX Trigger Manager...	
Power Distribution Manager	—	Power Distribution Manager...	
Constrains Manager (Page 107)	—	Constraints Manager...	
System Alarms Manager (Page 109)	—	System Alarms Manager...	
Opens log file for current show	—	Log Files Viewer...	
Adds a time stamped note to the log file	—	Add a note to a logfile...	
Enters Estop Reset Mode	—	Enter Estop Reset Mode	
Toggles Edit and Show mode	—	Go to Show Mode	F6
Toggles Online and Offline mode	—	Go Offline	
Enters Simulation Mode (Page 31)	—	Simulation Mode...	
Lock user while leaving the station	—	Lock Operator Station	CTRL+L

Axis Calibration...
Axis Configuration...
Axis Tuning...
Axis Bypass...
Axis Load Monitoring...
Axis Load Learn...
Axis Drive Monitor...
Dongle Manager...
Console Port Manager...
Set Active Console Port...
Bypass System Lock Server Error
Show File Summary...
Packet test...
Network Scanner...



Axis Calibration (Page 99)	—	Axis Calibration...
Axis Configuration (Page 99)	—	Axis Configuration...
Axis Tuning (Page 100)	—	Axis Tuning...
Axis Bypass (Page 100)	—	Axis Bypass...
Axis Load Monitoring (Page 101)	—	Axis Load Monitoring...
Axis Load Learn (Page 101)	—	Axis Load Learn...
Axis Drive Monitor	—	Axis Drive Monitor...
Dongle Manager (Page 111)	—	Dongle Manager...
Console Port Manager (Page 112)	—	Console Port Manager...
Set Active Console Port (Page 113)	—	Set Active Console Port...
Bypass System Lock Server Error	—	Bypass System Lock Server Error
Shows the Show File Summary	—	Show File Summary...
Packet Test (Page 102)	—	Packet test...
Network Scanner (Page 102)	—	Network Scanner....

COMMANDS MENU

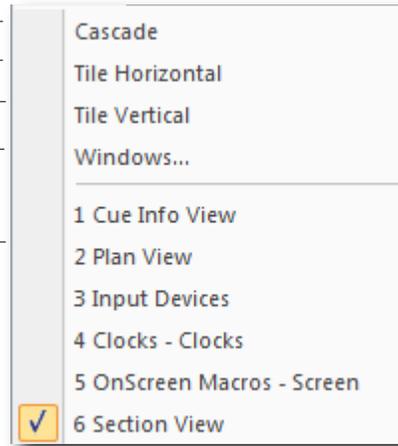
Toggles manual cue mode	M	Manual Move Cue	F3
Calculates the Manual Move profiles needed for all axes to return to a ready state at the beginning of the selected cue	M	Manual move to start of a cue	
Stops all motion using a rapid deceleration		Stop	F2
Powers up all axes active in current cue		Stand By	F4
Selects previous cue in cue list		Select previous cue	F7
Selects next cue in cue list		Select next cue	F8
Executes move profiles listed in current cue		Go	F9
Limits cue execution to operator-triggered cues		Disable autofollows	
Disables motion in all selected axes	D	Disable all selected axes	
Enables motion in all selected axes	E	Enable all selected axes	
Sets the restricted state fro all selected axes		Restrict all selected axes	
Clears the restricted state fro all selected axes		UnRestrict all selected axes	
Allows motion for Restricted axes		Allow Motion for Restricted Axes	
Locks the currently selected axes from other users		System Lock Selected Axes	
Unlocks the currently selected axes to the othe users		System UnLock Selected Axes	
All locks on axes are removed		Break System Lock for All Selected Axes	
Reload the System Lock File		Reload System Lock File	

VIEW MENU

Shows/Hides Toolbar	<input checked="" type="checkbox"/>	Toolbar
Shows/Hides Command Bar	<input checked="" type="checkbox"/>	Command Bar
Shows/Hides Workspace	<input checked="" type="checkbox"/>	Workspace
Shows/Hides Control Bar	<input type="checkbox"/>	Control Bar
Shows/Hides Status Bar	<input checked="" type="checkbox"/>	Status Bar
Shows/Hides Tab Bar	<input checked="" type="checkbox"/>	Tab Bar
Gives the user the option to change the application skin		Application Look ▶
Opens view Properties window		View properties ...
Change font for current view		Change font...
Refreshes current window		Refresh

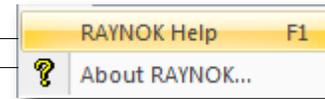
WINDOW MENU

- Arrange all open windows in cascade pattern —
- Arrange all open windows using regularly spaced horizontal distances —
- Arrange all open windows using regularly spaced vertical distances —
- Arranges icons in vertical line by type and name —
- Shows all open windows, allows selection of a window to bring to front —

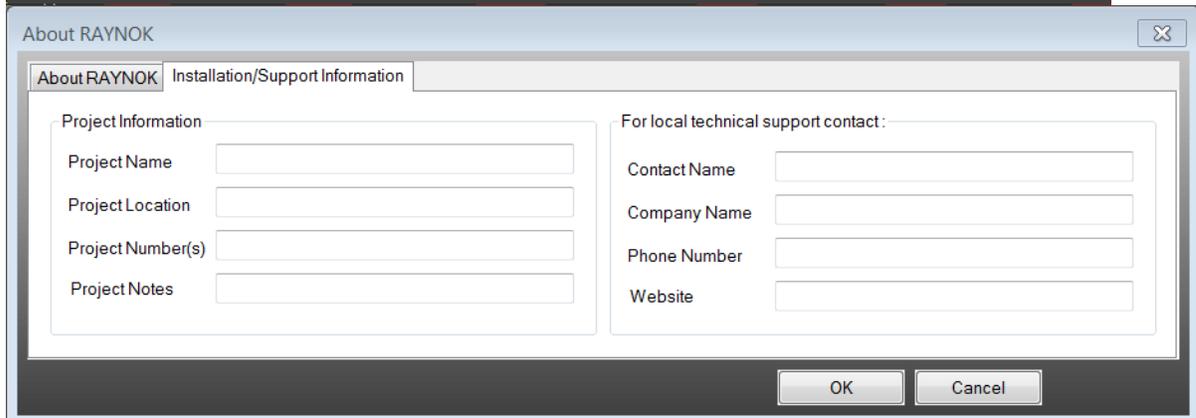
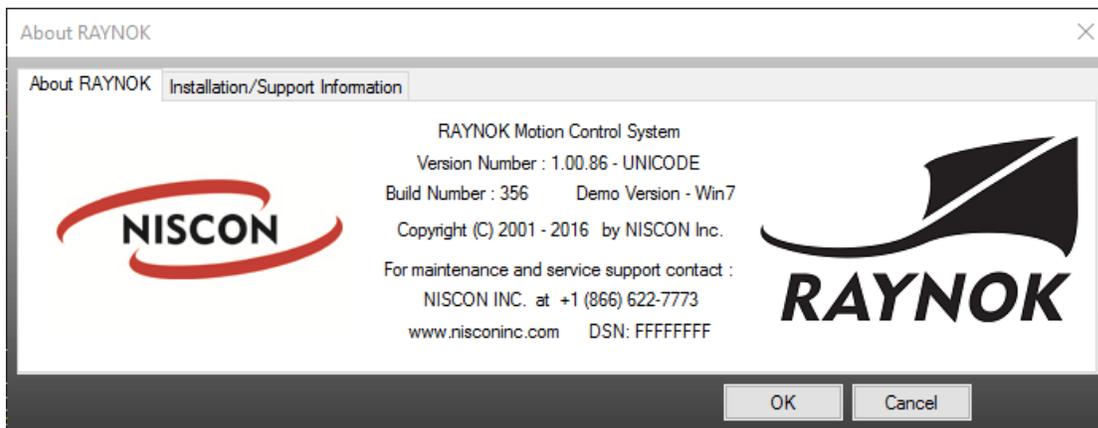


HELP MENU

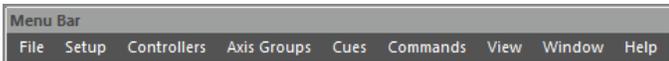
- Loads the help file for the **RAYNOK** Software —
- Brings up Information on **RAYNOK** (version) —



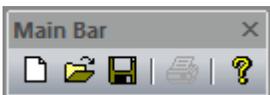
The about screen will look similar to the screen below. It contains information about the version number, build number, and general contact info and copyright information, along with the vendor contacts. Clicking on 'Installation/Support Information' will show a screen similar to the second image below, where the user can input more specific information about the installation and project notes, etc.



TOOLBARS



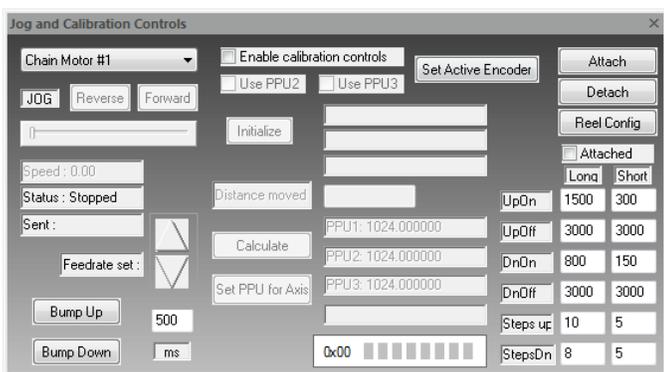
Contains all program related menus.



Contains major file related commands.

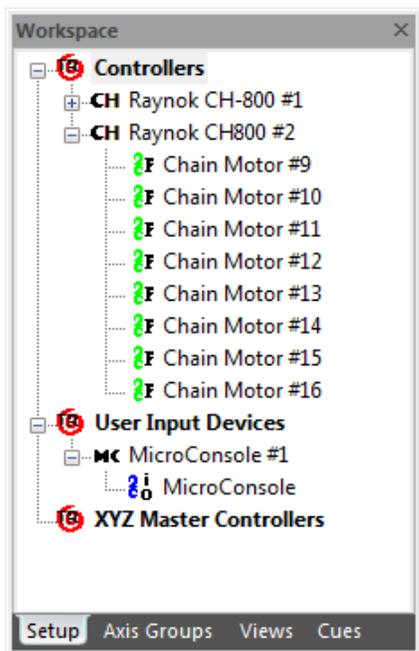


Contains cue related commands.



Contains jog, calibration and move execution commands.

WORKSPACE WINDOW



Main information window used to setup hardware, axes, views, and cues.

This is the main window you should be using when navigating through **RAYNOK**, with its tabbed design it is ideal for creating axis groups, views, and cues.

Clicking on a tab will change the contents inside the window to correspond with the selected tab.

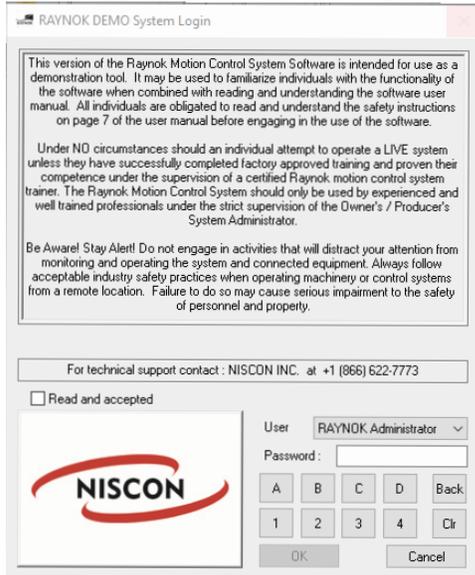
Setup: Contains the physical hardware layout of added controllers and their axes.

Axis Groups: Contains two sections, axis list and axis groups. The axis list is a default list of all the axes in the system, while axis groups contains groups listed according to the type they belong to along with user-created lists.

Views: Contains all the default view windows as well as user-created custom views

Cues: A list of Scenes and Cues in your system.

GETTING STARTED



USER LOGIN

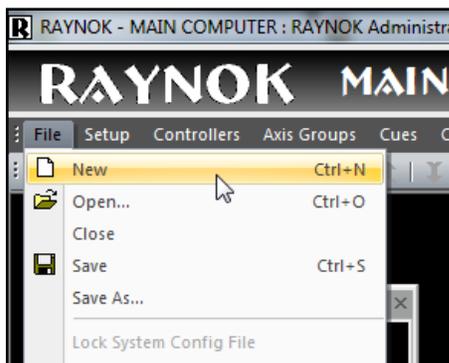
The first screen displayed is the *User Login dialog box*.

Read the User Agreement carefully. It contains important information that the end user should be aware of. Click the 'Read and accepted' box once the user agreement has been read. The 'OK' button will be greyed out until this box has been clicked.

Once this step is completed, a user ID may be selected from the *Username pull down menu*, and a password must be entered to match the *user ID*.

Default login information will be provided by NISCON Inc.

OPENING A SHOW FILE

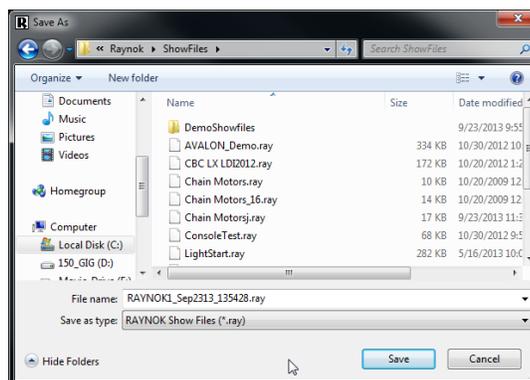


In order to open a show file, *click on Open* from the *File Menu*. Choose the file assigned by the **RAYNOK ADMINISTRATOR**.

Niscon Inc. usually creates the Show File during the system installation and commissioning to make sure all the system information is setup properly and is ready to run.

SAVING A SHOW FILE

Remember to save your work - select *Save As* from the *File menu*, and enter a name for your show/configuration. *Click OK* when you're done.



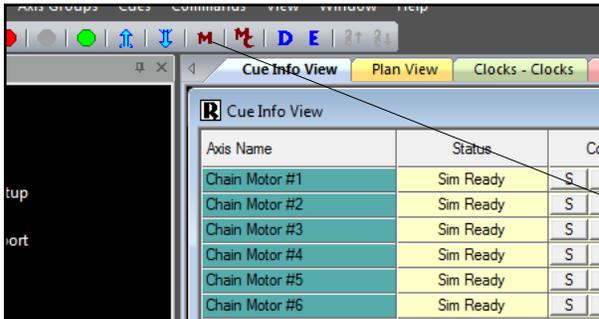
CUES

There are several different types of cues, which can be written in **RAYNOK**: Basic motion cues, digital axis cues, Manual Move cues, Complex and Wave profile cues, Command cues, and Autofollow cues. Each cue type serves a slightly different application.

MANUAL MOVE CUES

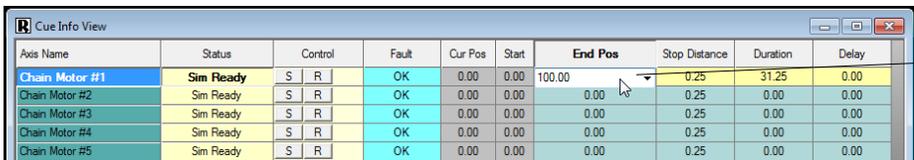
Manual Move cues are the only cues that do not need to be written from within the *Workspace cues tab*, as they are not saved to the cue sheet. *Manual cues* are used most often when resetting scenery, or setting up a look. There are three basic types of *Manual Moves*: *Standard Manual Moves*, *Manual Moves to the start of a cue*, and *jogged moves*. *Manual Move cues* are the type of cue you are most likely going to encounter before any others.

STANDARD MANUAL MOVES



Select *Manual Move* from the *Commands toolbar* to go into *Manual Cue Mode*, and make sure **RAYNOK** is *Online*.

Click on the axis name you wish to control in the *Axis View window*. The *Axis name field* will change colours. If the axis name's background is not a different colour, then the axis will not move. This colour (and several others) can be set in *Application Options - GUI Options*. You can select more than one axis to move by using the standard Windows™ methods for selecting multiple list items. (*shift* or *ctrl* key + *Left-Click*)



Enter the destination position for each axis by *Clicking* on the *End Position field* and typing in a position.

NOTE: The unit's starting position is listed in the *Cur Pos field*.

Axis Name	Status	Control	Fault	Cur Pos	Start	End Pos	Duration	Velocity	Accel/SZ	Decel/SD	Delay
Main Curtain	Sim R...	S R	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00
Electric #LX1 - 2	Sim R...	S R	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00
Shell #SH1 - VERTICAL	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00
General Purpose #GP1 - 4	Sim R...	S R	OK	0.00	0.00	560.00	112.00	5.00	5.00	2.00	4.00
General Purpose #GP2 - 5	Sim R...	S R	OK	0.00	0.00	600.00	60.00	10.00	5.00	1.00	0.00

NOTE: When entering *Manual Cue Mode* the value listed in the *Start Pos* field is reset to match the *Cur Pos* field.

NOTE: The *duration*, *velocity*, *acceleration*, and *deceleration* fields are automatically filled in with the default values that were set in the *Axis Properties Move Defaults* tab.

NOTE: The background of the *axis move parameters fields* will change colour once a value is entered in *Velocity* or *Duration*. By default, positive value moves fill in backgrounds with yellow and negative moves fill in the background with a blue colour. This colour (and several others) can be set in *Application Options - GUI Options*.

Click on the values in the *duration*, *velocity*, *acceleration*, *deceleration*, and *delay* fields if you wish to change them.

Axis Name	Status	Control	Fault	Cur Pos	Start	End Pos	Duration	Velocity	Accel/SZ	Decel/SD	Delay
Main Curtain	Sim R...	S R	OK	0.00	0.00	360.00	36.00	10.00	1.00	1.00	0.00
Electric #LX1 - 2	Sim R...	S R	OK	0.00	0.00	60.00	6.00	10.00	1.00	1.00	0.00
Shell #SH1 - VERTICAL	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00
General Purpose #GP1 - 4	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00
General Purpose #GP2 - 5	Sim ...	S R	OK	100.00	100...	50.00	5.00	10.00	1.00	1.00	0.00
Electric #LX2 - 6	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00
General Purpose #GP3 - 7	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00
Shell #SH2 - VERTICAL	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00
General Purpose #GP4 - 9	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00
General Purpose #GP5 - 10	Sim R...	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00

NOTE: The *velocity* field is by default filled in with a darker shade than the rest of the fields. This means that the cue fills in the *duration* based on the *acceleration*, *deceleration*, and *velocity*. It is a velocity-based move. If you enter a value in the *duration* field, it will override the *velocity* and recalculate the cue based on *acceleration*, *deceleration*, and *duration*. It will be a *duration-based* move, and the *duration* field will fill with a darker shade.

If you enter values, and they do not seem to be accepted, check to make sure that you are not limiting yourself by your *acceleration* and *deceleration* values, as they do not override in the same way *velocity* can override *duration*. If your *acceleration* and *deceleration* are set adequately, make sure that you are not limiting yourself by the *maximum movement* values which were set for that axis in the *Axis Properties Move Defaults* tab. Entering a *delay* value in seconds will tell that axis to wait that length of time after receiving a GO command to initiate a move for that axis.

Duration	Velocity	Accel/SZ	Decel/SD	Delay	Fee
36.00	10.00	1.00	1.00	0.00	10
6.00	10.00	1.00	1.00	0.00	10
0.00	10.00	1.00	1.00	1.00	10
0.00	10.00	1.00	1.00	2.00	10
5.00	10.00	1.00	1.00	5.00	10
0.00	10.00	1.00	1.00	10.00	10
0.00	10.00	1.00	1.00	20.00	10
0.00	10.00	1.00	1.00	0.00	10

Digital axes are treated slightly differently, as fields such as *velocity*, *acceleration* and *deceleration* do not apply. The axis name needs to be *highlighted* in the same manner servo axes names need to be *highlighted*. In the *end position field*, select the state you wish the digital axis to execute. Leave the duration value at zero if you want to execute the state for an undetermined amount of time. The digital axis will remain in a state until another cue sends it a different state. Entering a value in seconds will tell the digital axis to execute a state for the duration value entered, after which a stop state will be sent to the axis. Delay for digital axes works in the same manner as delay for servo axes.

Modifiers When Entering Values

When entering values into fields such as EndPos, Velocity, Acceleration, Deceleration, and Delay, the following modifiers can be used:

- >2.00 — Adds given value (2.00) to current value
- <2.00 — Subtracts given value (2.00) from current value
- *2.00 — Multiplies current value by given value (2.00)
- /2.00 — Divides current value by given value (2.00)

The same modifiers can be used when setting Macro Button commands.

Control	Fault	Cur Pos	Start
S R	OK	0.00	0.00
S R	OK	0.00	0.00
S R	OK	0.00	0.00
S R	OK	0.00	0.00
S R	OK	0.00	0.00

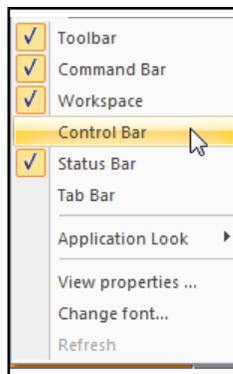
The controls column allows for immediate stopping and resetting of an axis. Click the 'S' button to stop all motion in an axis. Click the 'R' button to reset the axis.

Once you have entered the values for the Manual Move, pressing the GO button or selecting GO from the *Command menu* or *Command toolbar* will execute that move. Execution of the Manual Move works basically the same way as execution of other cue types, as described in the Executing Cues section. The only difference being that axes need to be selected in order to execute while in Manual Cue Mode.

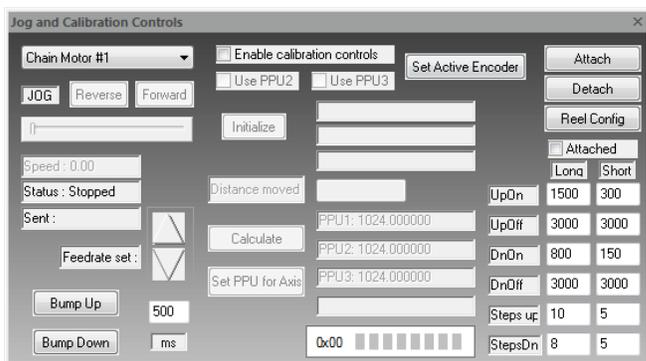
NOTE: In some systems, execution of on-screen commands may be disabled. If this is a case, you can execute all the cues by pressing the GO button on your MiniConsole.

MANUAL MOVES - JOG

Jog moves do not need to be executed within *Manual Cue Mode*, but you do need to be *Online*. Jog moves are not technically Manual Move cues, however, they are functionally treated as Manual Moves. They are executed from the *Control bar - Jog and calibration controls tab*, which can be brought up from the *View menu*.



Select the axis you wish to jog from the drop down menu. Make sure the 'Enable Calibration Controls' is disabled before using the jog.



NOTE: You cannot jog a digital axis.

Set the *Velocity* you wish the axis to move at with the slider.

NOTE: If you have a MiniConsole, or similar external device with a speed pot/jog control, it will override mouse control of the slider.

Click and hold the *Reverse* button to make the piece execute a negative move, or on the *Forward* button to make the piece execute a positive move.

The Mouse button will act as a dead man switch. As soon as you let go of the button, the axis will stop.

NOTE: F-Series Controllers usually only have one fixed speed. If you have a modified drive that allows a set amount of speeds, the axis will switch between those speeds as you move the speed slider.

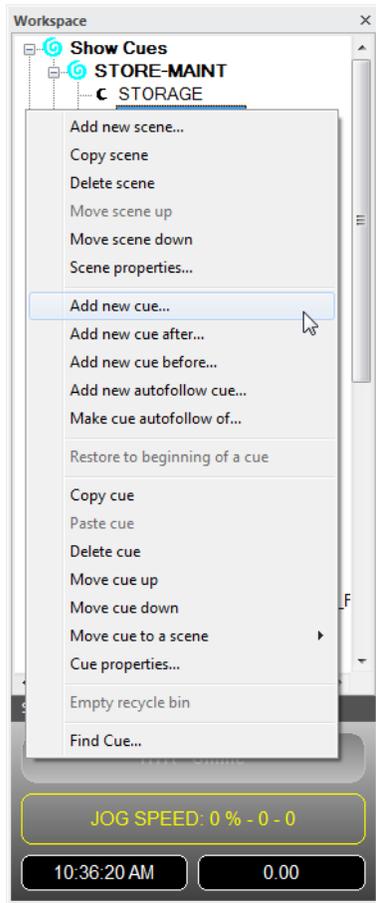
MANUAL MOVE TO THE START OF A CUE

Highlight the cue you wish to set up for in the *Cues tab* of the *Workspace*, and Click on the *Manual Move to the start of a cue icon* on the *Commands toolbar*. This will setup a Manual Move with the profiles needed to bring all axes to the position they would be at the beginning of your *highlighted* cue. See *Executing Cues* for cue execution details.



SIMPLE MOTION PROFILE CUES

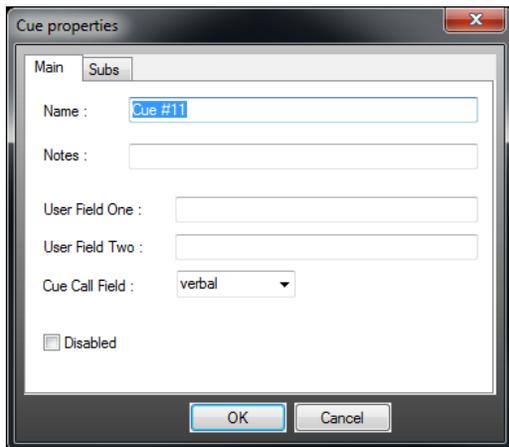
Simple Motion Cues resemble Manual Move cues, but they have the added capability of being strung together in a sequence and saved. They are entered by first adding a cue in the *Workspace Cues tab*. This can be done in either *Offline mode* or *Edit Mode*.



The *Cues tab* of the *Workspace* lists all of the cues written for the show under the *Show Cues* section, with an additional section labeled *System Cues* available for other cue types (including Manual Move).

Under the *Show Cues* heading you may wish to add your own sub headings, such as "Preshow" or "Act 1". This is done by *highlighting* the *Show Cues* section heading then *Right-clicking* and selecting *Add New Scene* from the *context sensitive pop-up menu*.

To add a new cue, *highlight* the scene you wish to add the cue to, *Right-Click* to bring up the *context sensitive pop-up menu*, and select *Add New Cue*. This will bring up the *Cue Properties dialog box*.



Name: Enter the name for the cue. The name can be anything, it does not need to be numbered sequentially as the cues are based on their relative positions to each other, not their names.

Notes: Any notes you wish to enter for that cue. These will appear at the end of the text in **RAYNOK's** Title Bar.

User Field 1: Another field for extra notes. This text will not appear in **RAYNOK's** Title Bar.

User Field 2: Yet another field for extra notes. This text will not appear in **RAYNOK's** Title Bar.

Cue Call Field: Specify the call-light colour the stage manager is cuing with, or choose *Verbal* if they are calling the cues by name/number.

Click OK when done entering cue information.

Control	Fault	Cur Pos	Start	End Pos	Duration
S R	OK	0.00	600...	800.00	20.00
S R	OK	0.00	600...	INTRIM	0.00
S R	OK	0.00	240...	OUTTRIM	0.00
S R	OK	0.00	560...	48.00	0.00
S R	OK	0.00	600...	72.00	0.00
S R	OK	0.00	600...	200.00	0.00
S R	OK	0.00	600...	300.00	0.00
S R	OK	0.00	600...	400.00	0.00
S R	OK	0.00	600...	500.00	0.00

Make sure the cue you wish to build is *highlighted* in the *cue list*, and begin entering your move profile information in the same way you would enter profile information for Manual Move cues.

Unlike Manual Move cues, it is not necessary to *Click* on the axis names you wish to move. The axes do not need to be *highlighted* in order for their profiles to execute in Simple Motion cues.

Enter the destination position you want each axis to move to by *Clicking* on the *End Position* field and typing in a position. Alternatively, if the target database has targets specified, the appropriate targets can be selected from the *drop-down box* by clicking the down arrow.

NOTE: The unit's starting position is listed in the *Start Pos* field. This position is tracked through the cue list from the previous cue. If you are compiling the first cue, the value is taken from the show start position field in the homing tab of that axis' *Axis Properties* window.

NOTE: The *duration*, *velocity*, *acceleration*, and *deceleration* fields are automatically filled in with the default values which were set in the *Axis Properties* move defaults tab.

NOTE: The background of the axis move parameters fields will change colour once a value is entered in *Velocity* or *Duration*. Positive value moves fill in backgrounds with yellow and negative moves fill in the background with a blue colour. This colour (and several others) can be set in *Application Options - GUI Options*.

Click on the values in the *duration*, *velocity*, *acceleration*, *deceleration*, and *delay* fields if you wish to change them.

Cur Pos	Start	End Pos	Duration	Velocity	Accel/SZ	Decel/SD	Delay
0.00	600...	360.00	24.00	10.00	1.00	1.00	0.00
0.00	600...	600.00	0.00	10.00	1.00	1.00	0.00
0.00	240...	240.00	0.00	10.00	1.00	1.00	0.00
0.00	560...	560.00	0.00	10.00	1.00	1.00	0.00

NOTE: The *velocity* field is by default filled in with a darker shade than the rest of the fields. This means that the cue fills in the *duration* based on the *acceleration*, *deceleration*, and *velocity*. It is a velocity-based move. If you enter a value in the *duration* field, it will override the *velocity* and recalculate the cue based on *acceleration*, *deceleration*, and *duration*. It will be a *duration-based* move, and the *duration* field will fill with a darker shade.

If you type in values, and they do not seem to be accepted, check to make sure that you are not limiting yourself by your *acceleration* and *deceleration* values, as they do not override themselves the same way velocity can override duration. If your acceleration and deceleration are set adequately, make sure that you are not limiting yourself by the maximum movement values which were set for that axis in the *Axis Properties Move Defaults* tab.

Entering a delay value in seconds will tell that axis to wait that length of time after receiving a GO command to actually move that axis.

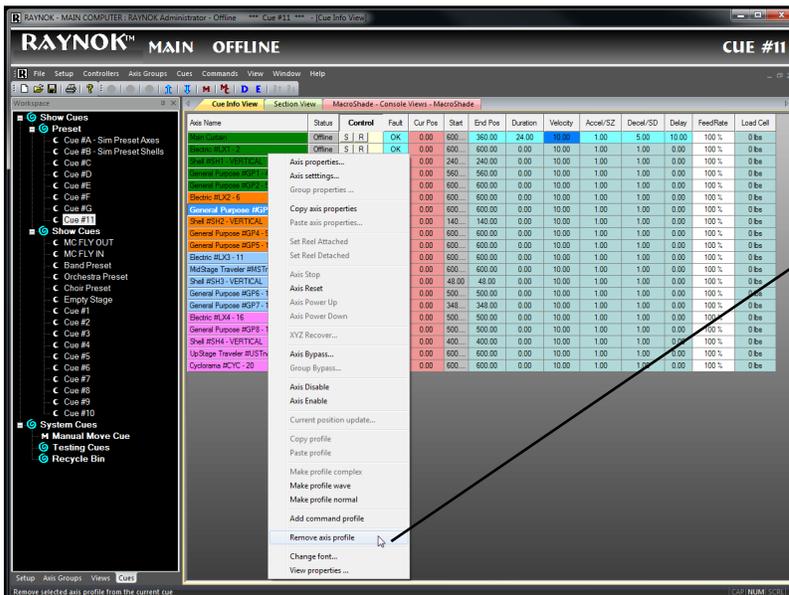
Cur Pos	Start	End Pos	Duration	Velocity	Accel/SZ	Decel/SD	Delay	F
0.00	600....	360.00	24.00	10.00	1.00	5.00	10.00	
0.00	600....	600.00	0.00	10.00	1.00	1.00	0.00	
0.00	240....	240.00	0.00	10.00	1.00	1.00	0.00	
0.00	560....	560.00	0.00	10.00	1.00	1.00	0.00	
0.00	600....	600.00	0.00	10.00	1.00	1.00	0.00	
0.00	600....	600.00	0.00	10.00	1.00	1.00	0.00	

F-series axes generally have the same headings as servo axes. The only difference is that the Accel and Decel fields will apply to Slow zone and Stop Distance instead. These fields should already be named Accel/Slow Zone and Decel/Stop Distance by default.

Digital axes are treated slightly differently, as fields such as *velocity*, *acceleration* and *deceleration* do not apply. In the *End Position field*, select the state you wish the digital axis to execute. Leave the duration value at zero if you want to execute the state for an undetermined amount of time. The digital axis will remain in that state until another cue sends it another state or a stop is executed. Entering a value in seconds will tell the digital axis to execute that state for the duration value entered, after which a stop state will be sent to that axis. Delay for digital axes works in the same manner as delay for servo axes.

Once you have entered the values for the cue, pressing the GO button or selecting GO from the Command menu or Command toolbar will execute that cue. Execution of the cue is described in the Executing Cues section.

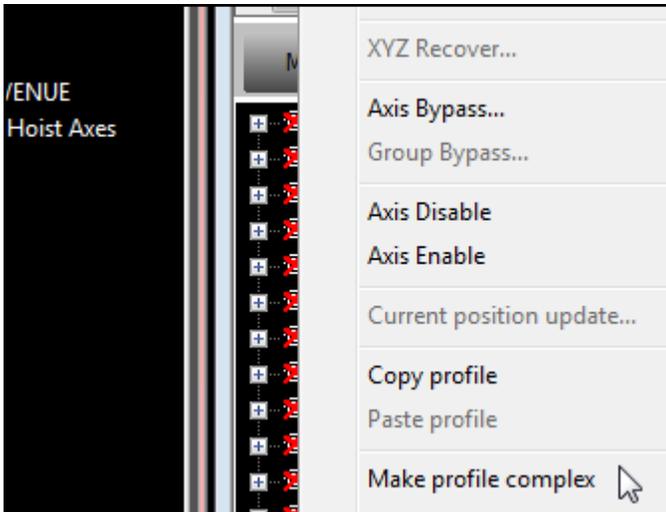
Additional cues can now be added. Using the *Right-Click context sensitive pop-up menu*, you can add cues before or after the *highlighted* cue using the corresponding command. Alternatively, add a cue to the end of your scene by *highlighting* the scene, bringing up the *Right-Click context sensitive pop-up menu*, and selecting *Add New Cue*.



To remove a simple profile, *highlight* the axis name, *Right-Click* to bring up the *context sensitive pop-up menu*, and select *Remove Axis Profile*.

COMPLEX CUE PROFILES

In some cases, a cue with a Complex motion profile is required.

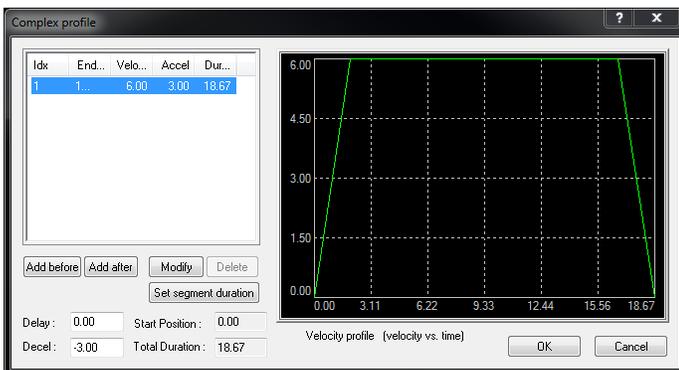


A Complex motion profile is one where an axis accelerates until it reaches a velocity, then accelerates or decelerates to another velocity without stopping and powering the drive down and up again. This cue can be broken down into its component segments.

In order to build a Complex cue, you first need to start with a simple Motion cue. It's best to start with a Simple Motion cue that will end up as the first segment of the Complex cue. Enter the simple motion profile as described in the previous section. *Highlight* the axis you wish to make Complex and then *Right-Click* on it to bring up the *context sensitive pop-up menu*. Select *Make Profile Complex*.

NOTE: the *velocity*, *acceleration*, and *deceleration* fields are now labeled Complex. The *duration* field will report the total duration of the move, and the delay field will still specify the delay between the GO command and motion of the axis.

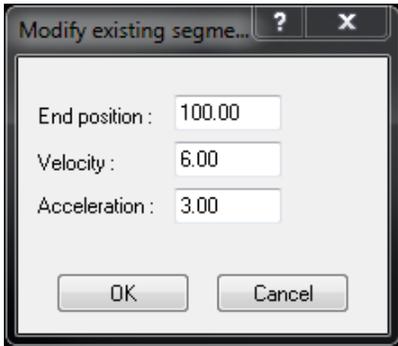
Double-Click on any complex profile field to open the *Complex profile window*.



The prominent portion of this window is the velocity profile, which is a graphical representation of the profile you are creating. When you first open the window, it will contain the simple profile you entered before making the profile Complex. On the left side of the window is a list containing the segments making up the profile. When you first open the window, it lists the *End Pos*, *velocity*, *acceleration*, and *deceleration* of the data you entered before making the profile Complex.

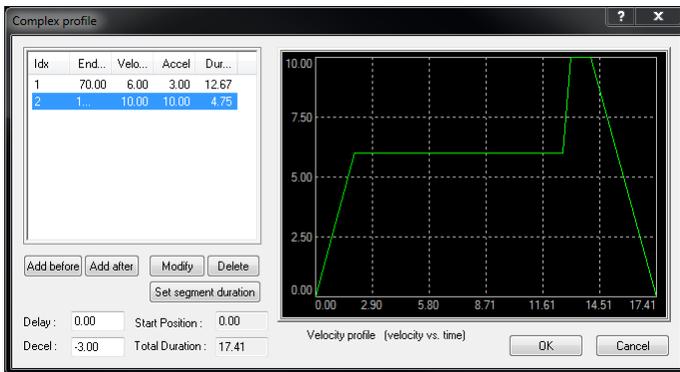
Complex profiles can only move axes in one direction; if you start with a positive velocity, you need to continue with a positive velocity. It's easiest to begin by adding a profile segment after your initial one.

If the profile you initially entered is not exactly as you would like it for the first segment profile, don't worry because you can modify it at any time.



Click the *Add After* button to add a move profile after the *highlighted* profile. This will bring up a new segment window where you can add an End Pos, velocity and acceleration for the new segment.

Click *OK* when you're done.



If you have entered valid values, you will notice that the velocity profile has updated with your new segment. Make sure you are using positive and negative values correctly.

You can re-enter the values for any segment by *highlighting* it and *Clicking* on the *Modify* button.

You can make a segment duration based by *highlighting* it and *Clicking* on the *Set Segment Duration* button.

Delete a segment by *highlighting* it and *Clicking* on the *Delete* button.

You can add as many segments as you like using the *Add Before* and *Add After* buttons.

Delay: Delay before cue execution; it serves the same function as *Delay* in the *Axis view window*.

Deceleration: Final deceleration rate for cue.

Start Position: Start position for cue.

Total Duration: Continually updates with the total duration for the cue.

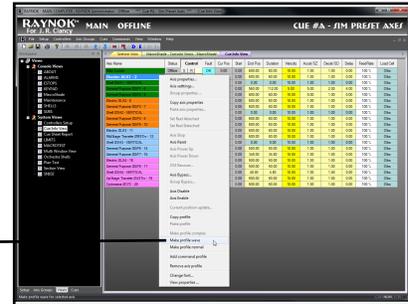
When you are satisfied with your Complex profile, *Click OK*.

WAVE PROFILE CUES

In cases where you need the axis to move in both positive and negative velocities, you need to use a Wave profile.

A Wave profile can move an axis in positive as well as negative directions within a single profile. However, unlike Complex profiles, each segment of a Wave profile must decelerate to zero between each move.

Wave profiles are created in much the same way Complex profiles are created. Begin by entering a Simple Move profile for an axis. *Highlight* that axis' name, and *Right-Click* to bring up the *context sensitive pop-up menu*. Select *Make Profile Wave*. You'll notice that similarly to Complex profiles, the *velocity*, *acceleration*, and *deceleration fields* have been replaced with the word "Wave". *Double-Click* on any profile field to bring up the *Wave profile window*.



The *Wave profile window* starts with the Simple profile you entered in order to create the cue. Additional segments are added by *Clicking* on the *Add profile button*. The added profile defaults by creating a negative image of the previous profile. Once the number of segments you wish the cue to contain have been entered, all of the values in the fields for each segment can be edited in the same way Simple profiles are edited. *Click* on the field you wish to change and enter a new value. The *delete profile button* will delete the last profile in the list.

Loop motion from profile: Click this checkbox if you want the profile to loop indefinitely. Choose which profile number to begin the loop from.

NOTE: You do not need to change directions every other segment; any values valid for Simple Motion profiles are valid in Wave profiles.

Delay: Stored initial delay for the cue.

Total duration: Reports the total duration for the cue.

Click OK when finished editing the Wave profile

If you have created a Complex or Wave profile, you can always make it a Simple profile again by *highlighting* the axis name, *Right-Clicking* to bring up the *context sensitive pop-up menu*, and selecting *Make Profile Normal*. This will fill in the profile with the values in the first segment of your Complex profile, or in the first segment of your Wave profile.

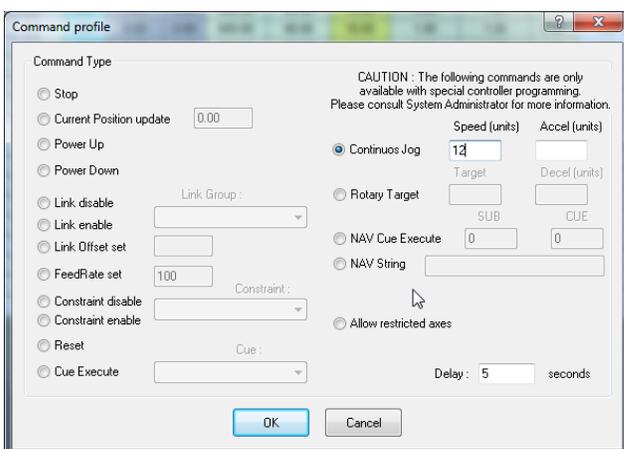
COMMAND PROFILE CUES

There are several commands that can be cued and sent to servo axes.

Highlight an axis name to which you would send a command - it should not have a motion profile entered. *Right-Click* to bring up the *context sensitive pop-up menu*, and select *Add Command Profile*. Again you will notice that the values in velocity, acceleration and deceleration are replaced by the word "Command". (Similar to the Wave and Complex profile functions)

Start	End Pos	Duration	Velocity	Accel/SZ	Decel/SD	Delay	FeedRate
0.00	600.00	60.00	10.00	1.00	1.00	0.00	100 %
0.00	600.00	168.00	Wave	Wave	Wave	0.00	100 %
	STOP		Comm	Comm	Comm	0.00	100 %
0.00	560.00	112.00	5.00	5.00	2.00	4.00	100 %
0.00	600.00	60.00	10.00	5.00	1.00	0.00	100 %

Double-Click on any profile field to bring up the *Command profile window*.



Command type: Determines what kind of command will be sent to the axis.

Stop: Sends a stop command to the axis. Same as hitting the *stop button*, but localized to that axis.

Current Position Update: Will update the axis' current position to a value you enter. This is most useful for axes that need to begin each move from a zero position.

CAUTION: The **Current Position** command might not be appropriate for your current hardware setup. **Check with your System Administrator.**

Power Up: Will send a power up command to the axis. The axis will power up and hold under torque, eliminating the delay between depressing the GO button and seeing motion. See *Standby* in the *Cue Commands* section for more information.

Power Down: Will send a power down with command to an Axis. See *Standby* in the *Cue Commands* section for more information.

Link Disable: Will disable the link group selected in the link group pull down list.

Link Enable: Will enable the link group selected in the link group pull down list.

Link Offset set: Will set the link offset distance of the selected slave axis from the master axis.

FeedRate set: Will set the feedrate for the axis at the rate set in the box.

Reset: Sends an axis reset command.

Cue Execute: Will allow you to pre-select a cue to execute.

Continuous Jog and **Rotary Target** are used for rotational axes. The **Continuous Jog** can be used to set the axis in continuous rotation. Enter a positive value for speed to run clockwise and a negative value to run counter-clockwise. The **Rotary Target** can be set from 0 to 360 degrees and **RAYNOK** will calculate the **Deceleration** to stop at the required angle regardless of it's current speed.

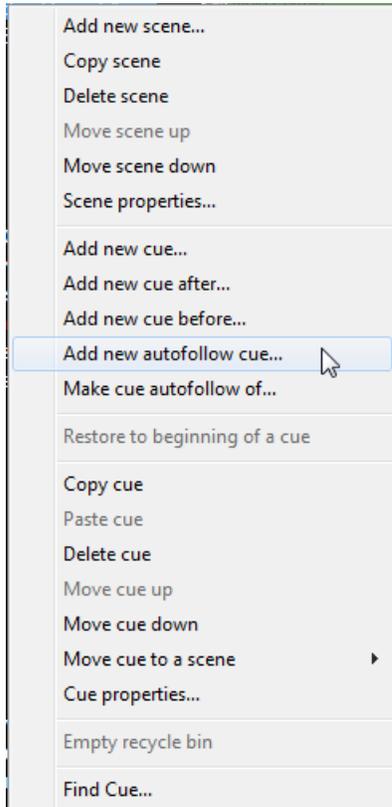
Delay: Specifies the length of time between pressing **GO**, and the command executing.

Click **OK** when you're done entering your **Command profile**.

To remove a Command profile, *highlight* the axis name, *Right-Click* to bring up the *context sensitive pop-up menu*, and select *Remove Axis Profile*.

AUTOFOLLOW CUES

Cue sequences can be made to trigger off various events in your show. These cues are called Autofollows, because they automatically trigger once a specific condition is met. Any type of profile can be made into an *Autofollow cue*. There are two ways of creating *Autofollow cues*. Both of them involve selecting an existing cue in the Cues tab of the *Workspace*, and *Right-Clicking* to bring up the *context sensitive pop-up menu*. *Add new Autofollow cue* and *make cue Autofollow of* will both create *Autofollow cues*.

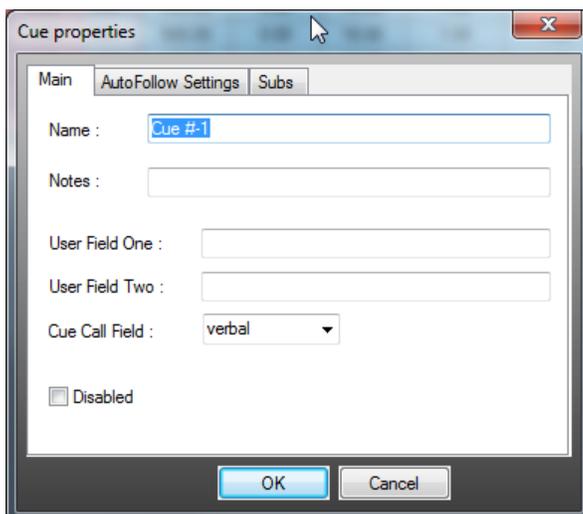


Add new Autofollow cue:

This will add a cue as a sub cue of the one you have *highlighted*, and open the *Cue properties dialog box*.

Make cue Autofollow of:

This will bring up a window with a list of all the cues in the show, select the one you wish your highlighted cue to become an *Autofollow of*. *Click OK* when you have made your selection. You will need to bring up the Cue Properties dialog box by *Double-Clicking* on the *Autofollow cue* to enter Autofollow parameters.



Name: Enter the name for the cue. The name can be anything. Cues do not need to be numbered sequentially as they are positioned relative to each other, not according to their names.

Notes: Any notes you wish to enter for that cue. These will appear at the end of the text in **RAYNOK's** Title Bar

User Field 1: Another field for extra notes. This text will not appear in **RAYNOK's** Title Bar.

User Field 2: Yet another field for extra notes. This text will not appear in **RAYNOK's** Title Bar.

Cue Call Field: Specify the call-light colour the stage manager is cuing with, or *Verbal* if they are calling the cues by name/number.

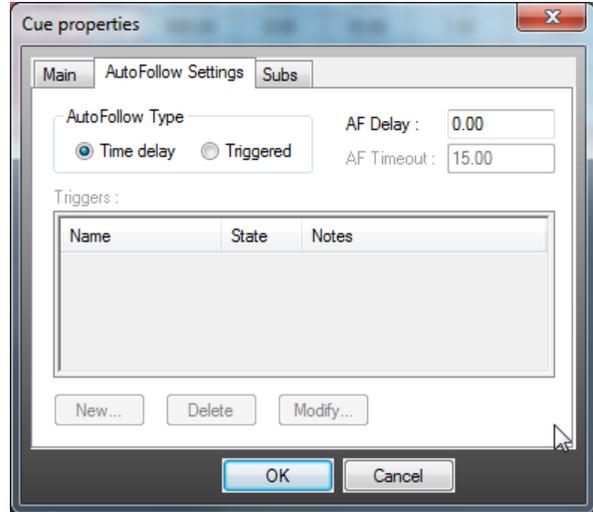
Autofollow Type: There are two ways an *Autofollow cue* is executed. Select a radio button appropriate to the *Autofollow* type you wish to execute.

Time delay: Will wait the number of seconds entered in the *AF Delay* field from the time the previous cue executed - including previous *Autofollow cues* - before executing the *Autofollow*.

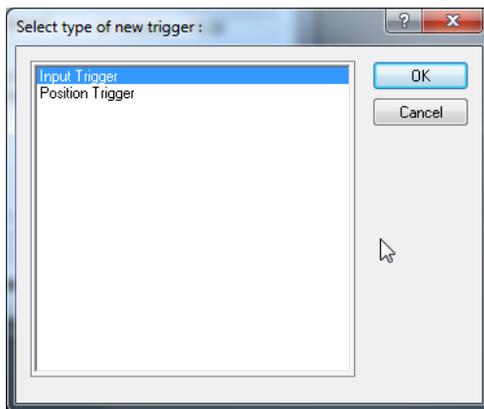
Time delayed *Autofollow cues* need a value entered in *AF Delay*.

Click *OK* to exit cue properties.

Triggered: Triggered *Autofollow cues* involve several more steps to setup than time delayed *Autofollow cues*, however they allow a great deal of flexibility in specifying an event to trigger an *Autofollow*. Upon selecting the triggered radio button, the *triggers list* and *New* button become accessible. Select the trigger you wish to use from the list, or click on the *Next* button to create a new one.



Clicking on *New* will bring up a list of possible trigger types:

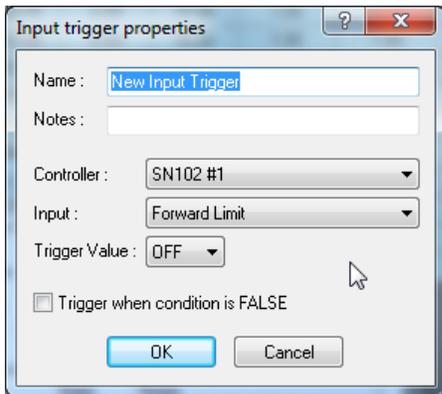


Input trigger: Will trigger the *Autofollow* with specific states of a digital IO.

Position Trigger: Will trigger the *Autofollow* based on the position of a servo axis..

Click *OK* when you have *highlighted* the trigger type.

This will add the trigger type to your triggers list in the *Cue Properties - Autofollow settings tab*. *Double-Click* on the trigger in the triggers list to edit its properties. The list will contain the trigger name, the trigger's current state, and any notes you may have entered for that trigger. A *Position* or *Input trigger properties dialog box* will appear depending on the trigger type you selected.



Name: Enter a name for the *Input trigger*.

Notes: Add any notes pertinent to the *Input trigger*.

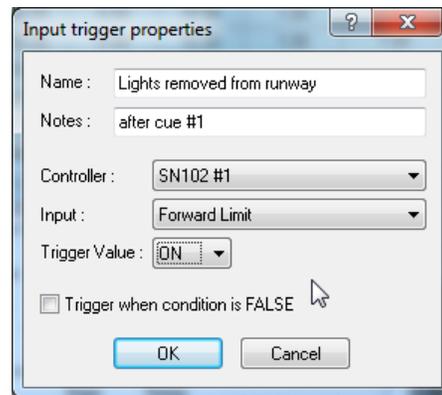
Controller: Pick a controller the *Input trigger* is going to be generated from.

Input: Choose the *Input* from the controller that will act as the *Input trigger* for the *Autofollow cue*.

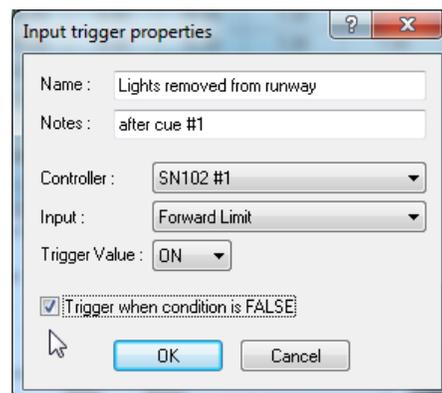
Trigger Value: Select the value of the *Input* you want determining if the *Autofollow* should be triggered. (ON/OFF)

The value of an *Input* at any time is going to be either TRUE or FALSE.

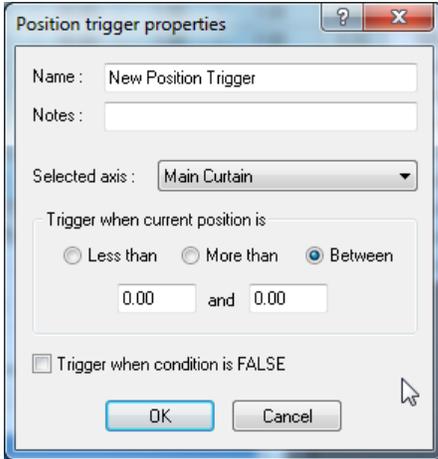
(Default) If the *Trigger when condition is false* box is left unchecked, then the *Autofollow* will trigger when the *Input trigger* value state is TRUE.



If you check the *Trigger when condition is false* box, then the *Autofollow* will trigger when the *Input trigger* value state is FALSE.



Click *OK* when done entering *Input trigger* properties.



Name: Enter a name for the *Position trigger*.

Notes: Enter notes you may have concerning the *Position trigger*.

Selected Axis: Select the servo axis from the list you wish to take the *Position trigger* from.

Less than: The *Autofollow* will trigger when the selected axis' current position is less than the value contained in the *Current Position field*.

More than: The *Autofollow* will trigger when the selected axis' current position is more than the value contained in the *Current Position field*.

Between: The *Autofollow* will trigger when the selected axis' current position is bounded by the two values contained in the *Position fields*.

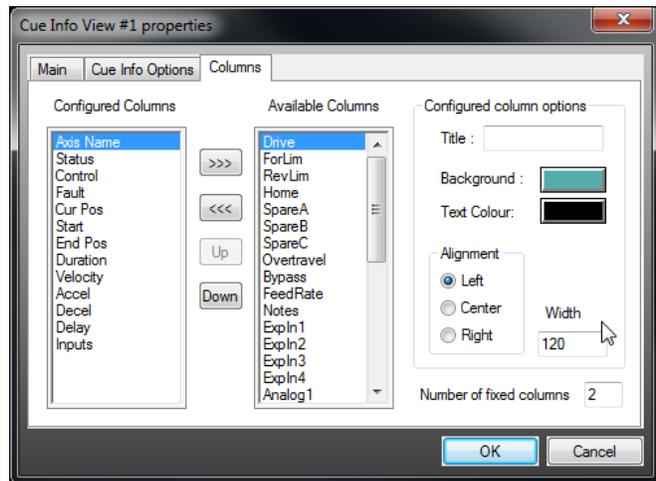
(Default) If the *Trigger when condition is false* box is left unchecked, then the *Autofollow* will trigger when the *Position trigger* value state is TRUE.

If you check the *Trigger when condition is false* box, then the *Autofollow* will trigger when the *Position trigger* value state is FALSE.

Click OK when you're satisfied with the *Position trigger properties*.

AF Timeout: If left with a zero value, the cue has no limit in the amount of time it can take to execute. If there is a period after which you do not want the *Autofollow* to execute (for safety, or show timing reasons), enter that number in the *AF Timeout field*.

NOTE: If you enter a value less than the time it normally takes to execute the *Autofollow*, the *Autofollow* will never execute.



Make sure the *Autofollow trigger* you wish to use is *highlighted* in the *triggers list box*, and Click OK when you're done entering *Autofollow* information.

Click OK when you're done entering cue information.

DELETING CUES

Cues can be deleted by *highlighting* the cue you wish to delete in the Cues tab of the *Workspace*, *Right-Clicking* to bring up the *context sensitive pop-up menu*, and selecting *Delete Cue*. Deleted cues are moved to the recycle bin. If you wish to permanently delete the cue, there are two available options. Highlight the cue in the recycle bin, *Right-Click* to bring up the *context sensitive pop-up menu* and select *Delete Cue*. Alternately, select *Empty Recycle Bin* to permanently delete all cues contained in the recycle bin.

EXECUTING CUES

There are several commands specific to the operation and execution of cues. Make sure you know what mode the software is in before you begin execution of cues.

Offline mode

- Used for editing cues and setting up hardware and show information.
- Offline mode does not require any hardware to be present.
- Cues will not execute.



Simulation mode

RAYNOK simulates the Online environment in a simulation. This option can be selected from the Setup - Simulation Mode. Menu. When selected no axes will move in the live setting, but if the users chooses 'Live Mode', the axes will moved based on their current locations.



Online mode

RAYNOK talks via Ethernet to call controllers in this mode - hardware is required. Online mode can be subdivided into the following categories:

Show mode

- User cannot edit any cue information.
- Cues can be run normally.



Edit mode

- User can edit cue information.
- Cues can be run normally.



Manual Cue mode

Use Manual Cue Mode to execute temporary profiles. Once Manual Cue Mode is exited, profiles information is cleared.



Estop Reset Mode

If enabled, **RAYNOK** will automatically enter this mode when the Estop system is activated. This mode is the same as Manual Cue Mode, except the speeds for all axes are limited to an assigned percentage of the axis maximum speed. While in this command, The user can use the *Restore To Beginning Of A Cue* command to move (restore) all required axes to their proper positions. Once all faults are cleared, positions restored, and Estop system reset, you can use Exit Estop Reset Mode command from the Setup Menu to return to normal operation modes.

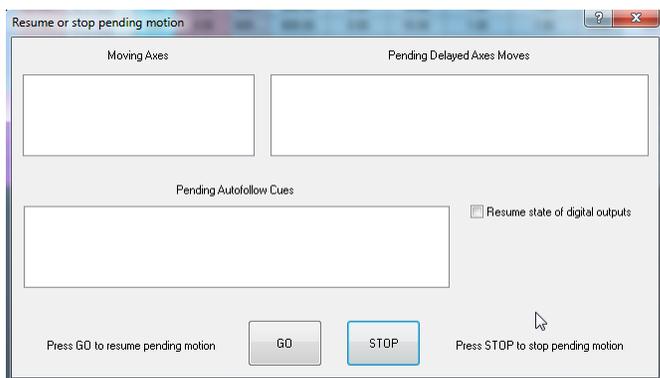


NOTE: FAILING TO FOLLOW OR DEVELOP SAFETY PROTOCOLS AND PROCEDURES COULD RESULT IN SERIOUS INJURY OR DEATH.

CUE COMMANDS

GO: Will execute the current cue. If the motors are not powered up (on standby), there will be an estimated 1.5 second delay between pressing GO and sign of motion on stage, as the axis powers up. This is not true for digital axes, as the delay when executing their cues is negligible. It is recommended using a MiniConsole or other hardware to start the Cues rather than from software. Follow any safety procedures and protocols you have put in place for your particular system before executing any cue.

STOP: Stop motion of all axes using the extreme deceleration profiles set in **RAYNOK** Controller hardware for each axis. Upon stopping motion, a pause/resume dialog box will appear if it is enabled in the *Application Properties window - Optional Features tab*.



Moving Axis: Lists all axes that were halted by the stop command, and hence would resume motion, if GO were selected. Axes may be selected/deselected if you wish to exclude certain axis from further motion, but continue the cue sequence. If you exclude an axis that was to trigger an *Autofollow*, the *Autofollow* will not trigger.

PENDING DELAYED AXIS MOVES: Lists all axes that are waiting to execute and their remaining delay times. These axes can also be selected/deselected if you wish to exclude certain axes from further motion, but continue the cue sequence. If you exclude an axis that was to trigger an *Autofollow*, the *Autofollow* will not trigger.

PENDING AUTOFOLLOW CUES: Lists any *Autofollow cues* pending execution. These can be selected/deselected if you wish to exclude them from further motion, but continue the cue sequence. If you exclude an *Autofollow cue* that was to trigger additional *Autofollow cues*, the subsequent *Autofollow cues* will not trigger.

Check the *Resume State of Digital Outputs* box if you wish to resume the state of digital outputs.

Click GO If you want to resume the cue sequence.

Click Stop If you want to stop the cue sequence.

STANDBY: Powers up all axes with active profiles in current cue.

NEXT CUE: Used to navigate down the cue list.

PREVIOUS CUE: Used to navigate up the cue list.

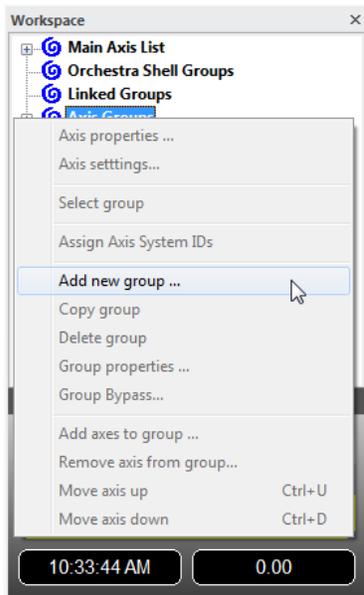
DISABLE AUTOFOLLOW: When checked it skips all *Autofollow cues* in the cue sequence.

NOTE: If you wish to disable all *autofollow cues* from execution, you can do so by selecting *disable autofollows* from the Commands menu.

MANUAL MOVE TO THE START OF CUE: With a cue *Highlighted*, clicking on the *MC button* will put you into Manual Cue Mode already set up with move profiles which will bring all axes to a completed state at the beginning of the *Highlighted* cue.

AXIS GROUPS AND LINKING

Clicking on the *Axis Groups* tab in the *Workspace* will bring up a list of the axis you have entered, under the section *Main Axis* list.



Servo and IO axes are controlled in a different manner, with different fields of information having importance. They form the basis for the two dominant groups you can define. Additional axis groups may be added and organized in any way you wish.

Highlight the *Axis groups* section heading in the *Workspace Axis* tab, and *Right-Click* to bring up the *context sensitive pop-up menu*. Select *Add New Group* from the list, and a dialog box will appear asking you to name the new axis list, add any notes you may have, and provide linking information.

Link Properties: These options allow an axis group to be linked with another one, so if an action is made it effects all the other axes at the same time.

Linked Group: Lets **RAYNOK** know that this group will be linked. If a group is linked only the Master Axis is modifiable within the *Cue Info View*.

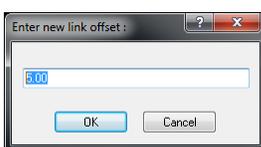
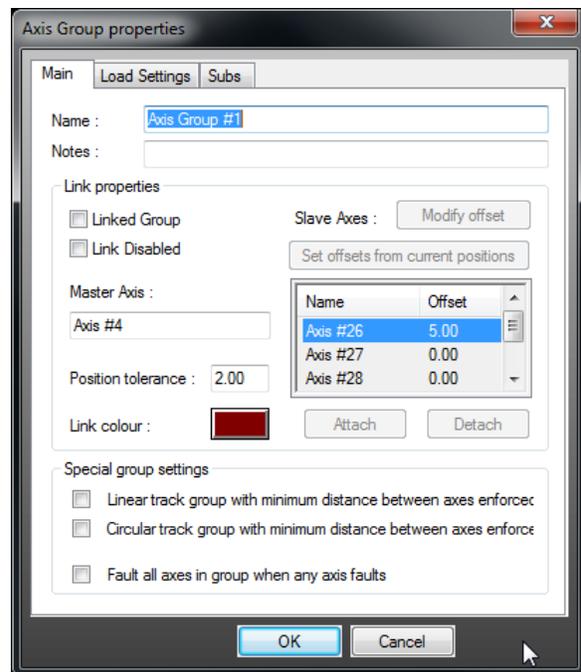
Link Disabled: Link can be disabled in order to allow the axis to move independently.

Position Tolerance: Distance slave axis can be from the master axis. ie, if an offset is 20" and the tolerance is set at 2.00", the offset has to remain between 18.00" and 22.00" or else the system will halt. Default is 2.00" for linear axes, 0.5° for rotational axes.

Link Colour: When a group is linked all axes linked will show up as this colour in the *Cue Info View*.

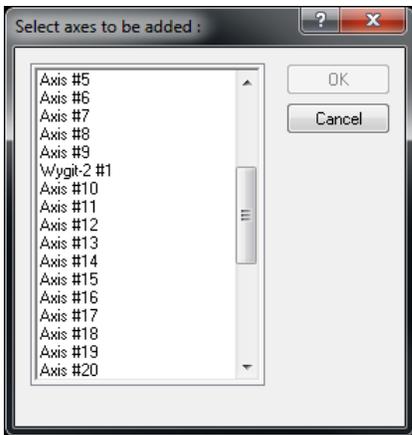
Master Axis: This is always the top axis in the Axis Group List. If you want to change this *right-click* to bring up the *context sensitive pop-up menu* over the axis and select *Move Axis Up* or *Move Axis Down* to re-arrange it.

Slave Axes: These are the remaining axes in the list. The 'Offset' lets you modify the offset distance between the *Slave Axis* and the *Master Axis*.



Offsets: Click *modify* to change the offsets the slave axes have to the master axis. The default is 0.00. Picking 'set offsets from current positions' will calculate offsets from the current positions automatically.

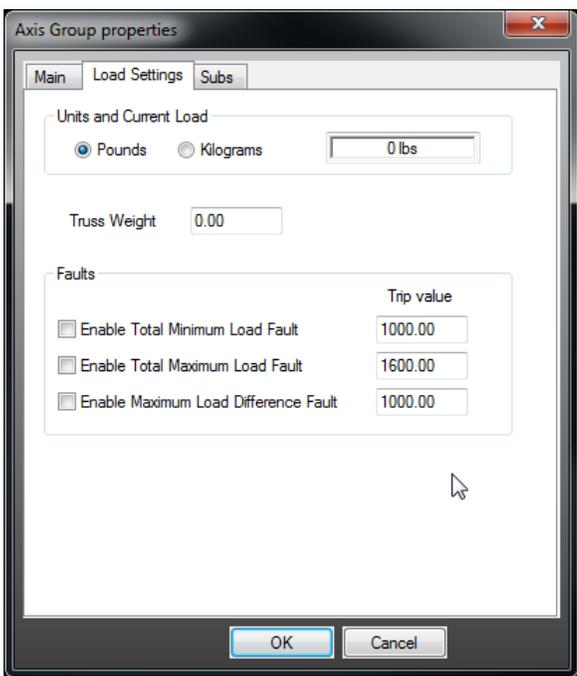
The new axis group will appear as a sub heading of the *Axis Groups* section in the *Axis Groups* tab of the *Workspace*. Highlight the new axis group you have created, and *Right-Click* to bring up the *context sensitive pop-up menu*. Select *Add Axis to group*, and a list of all available axis will appear. Highlight any axes you wish to add to the list and *Click OK*.



CAUTION: When linking axes make sure their settings including min/max positions and move parameters are the same.

Total load: This is the accumulated amount of weight for all axes in this axis group. Weight can be displayed in Pounds, Kilograms or Disabled.

The next step is to create views for these groups.



Load Settings

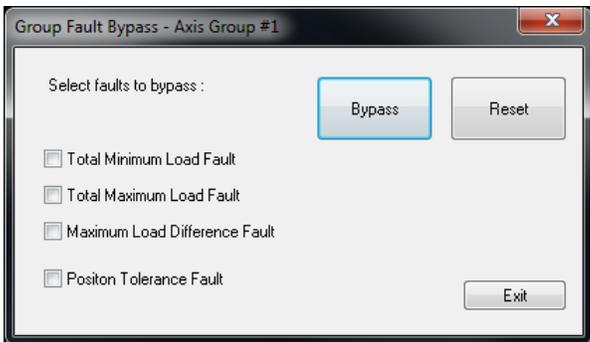
When these settings are enabled for linked axes, the system will stop on designated load faults. Ensure all trip values are within the limits of the load cells before committing changes to the controller.

Units and Current Load: Choose imperial or metric measurement. The current load on the load cell is indicated in the box.

Enable Total Minimum Load Fault: Can be a negative value. When this box is checked, the linked group will fault if it detects a measurement below this value. The measurement is a combined value of all the linked axes' load cells added together.

Enable Total Maximum Load Fault: When this box is checked, the linked group will fault if it detects a measurement above this value. The measurement is a combined value of all the linked axes' load cells added together.

Enable Load Difference Fault: When this box is checked, the linked group will fault if it detects a measurement above this value. The measurement is a difference between all the linked axes' load cell measurements added together.



Group Fault Bypass

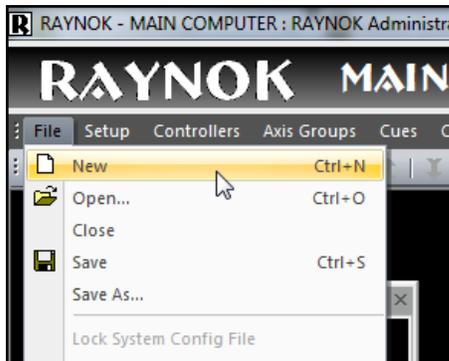
Highlight the Axis group in the Cue Info View and Right-Click to bring up the context sensitive pop-up menu. Choose Group Bypass. A dialog box will appear asking you what faults you want to bypass.

The bypass will only occur for 5 minutes. After 5 minutes has passed, the faults will be active again.

To disable the Fault Bypass, open up the dialog again and leave all check boxes unclicked. Press 'Bypass' and then exit to disable the bypass.

SHOW CONFIGURATION

CREATING A SHOW FILE

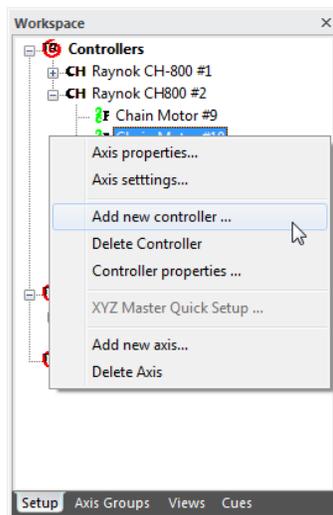


In order to create a new show file, you need to *Click* on *New* from the *File Menu*.

After starting a new show, all hardware devices in your system need to be set up. In case your system is used for many different productions, such as in a television studio, you may wish to save a show file containing only the hardware setup as a template for future use.

Nicon Inc. usually creates the hardware template file during the system installation and commissioning to make sure all the system information is setup properly and is ready to run.

ADDING CONTROLLERS



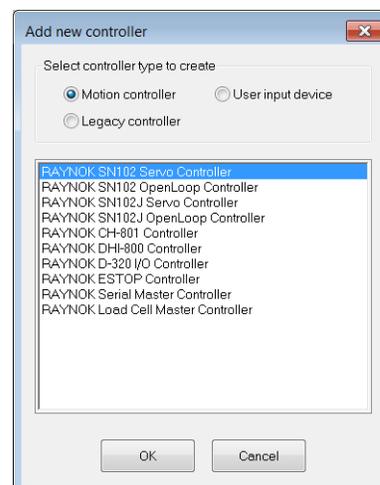
The first step in setting up your hardware is adding controllers. This is done through the *Setup* tab of the *Workspace* window. *Click* on the *Workspace* window (the controllers section heading should highlight) then *Right-Click* within the *Workspace*, and select *Add New Controller* from the *context sensitive pop-up menu*. This performs the same function as selecting *Add New Controller* from the *Controllers* menu.

Note: Whenever available, *Right-Click* commands will be used throughout this document instead of their menu driven equivalents, as you become familiar with **RAYNOK** you may access commands in the manner with which you feel most comfortable.

A window will appear with the equipment types available to you. The image on the right lists all the possible Motion controller choices. User Input Devices and Legacy Controllers are also available if the relevant radio buttons are selected.

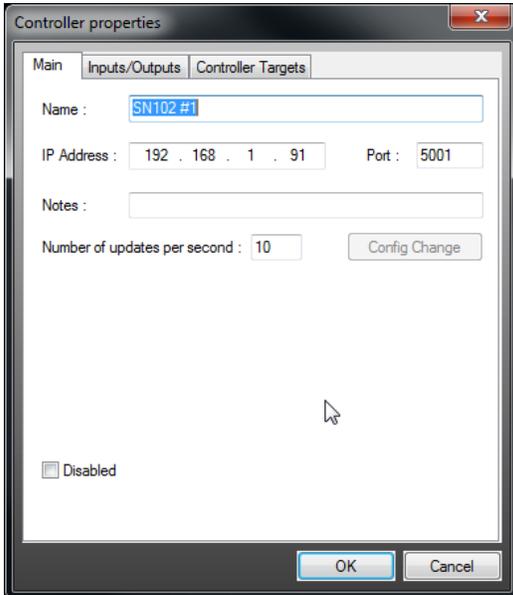
Highlight the unit you would like to add within the list and *Click OK*. Controller descriptions are described in the subsequent pages.

Note: Some configurations do not include certain Controllers. This is determined by the version of **RAYNOK** and the Dongle type inserted.



RAYNOK SERVO MOTION CONTROLLER

Selecting **RAYNOK** Servo-400 or SN101/SN102 Servo Controller from the list adds a sub section heading labeled Controller #1 or SN101/SN02 #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** Servo Motion Controller. Make sure the name is unique.

IP Address: Enter the IP address for the controller. This address is unique to every element in the system. Each **RAYNOK** Controller unit will be labeled with its IP address, and will display that address upon boot up (if it has a screen).

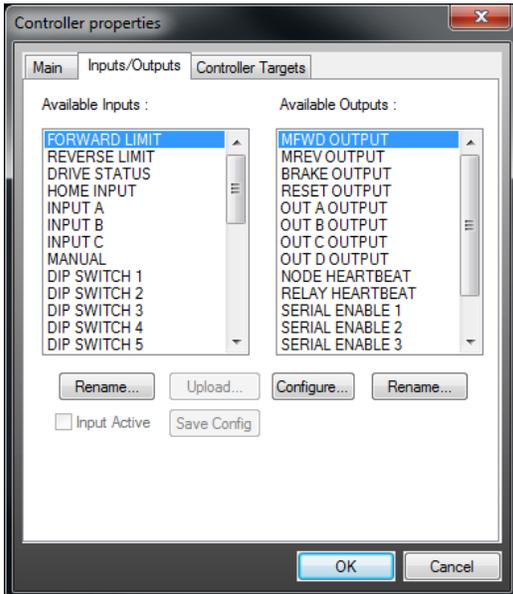
Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller’s IP address. A confirmation will appear after the IP address has been changed successfully.

Disabled: Check the box if you wish to disable the **RAYNOK** Controller unit from all activity. The unit will not respond to any commands!



The **RAYNOK** Servo Motion Controller supports 16-32 digital input and output devices. If you know what devices are being assigned to each Input or Output, you may label them for easy reference by *highlighting* said Input or Output. *Click* on their *Rename* button, enter a new name in the dialog box which appears, and *Click* OK.

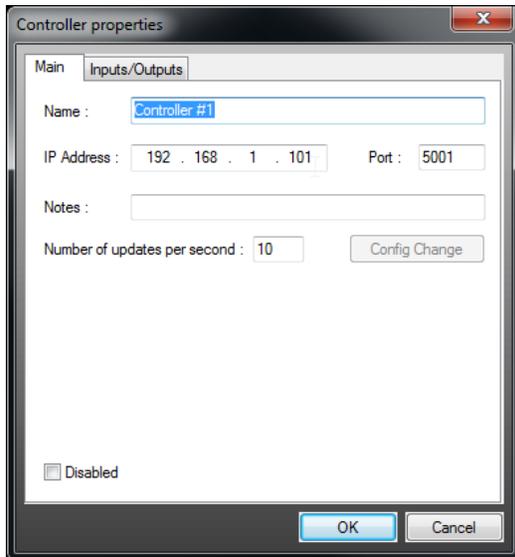
The Configure button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller’s internal configuration.

Click OK when you're done configuring that device.

This process is repeated for any additional **RAYNOK** Servo Motion Controllers in your system.

RAYNOK F-SERIES CONTROLLER

Selecting **RAYNOK** F-1600 or SN101/SN102 Open Loop Controller from the list adds a sub section heading labeled Controller #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** F-Series Controller. Make sure the name is unique.

IP Address: Enter the IP address for the controller. This address is unique to every element in the system. Each **RAYNOK** Controller unit will be labeled with its IP address, and will display that address upon boot up.

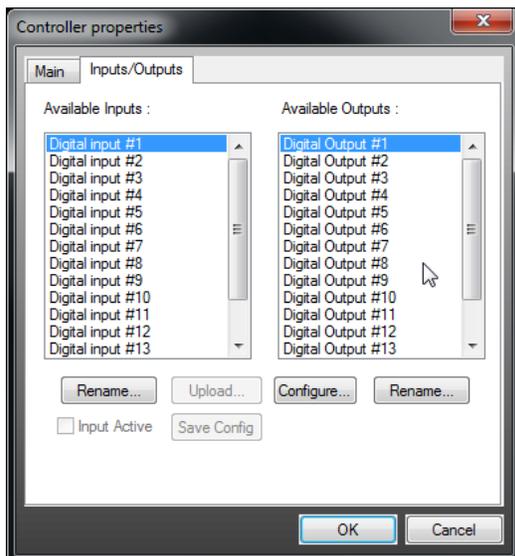
Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Disabled: Check the box if you wish to disable the **RAYNOK** Controller unit from all activity. The unit will not respond to any commands!



The **RAYNOK** F-Series Controller supports 8 to 16 digital input and output devices. If you know what devices are being assigned to each Input or Output, you may label them for easy reference by *highlighting* said Input or Output. *Click* on their *Rename* button, enter a new name in the dialog box which appears, and *Click* OK.

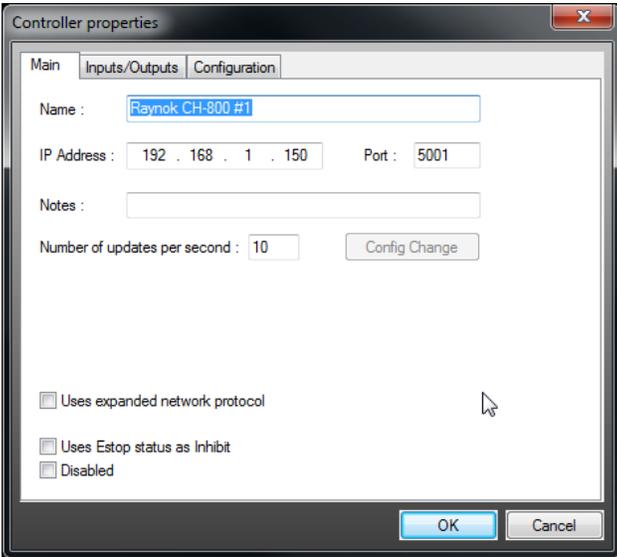
The **Configure** button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

Click OK when you're done configuring that device.

This process is repeated for any additional **RAYNOK** F-Series Controllers in your system.

RAYNOK CHAIN HOIST CONTROLLER

Selecting **RAYNOK** CH-800 or CH-801 Controller from the list adds a sub section heading labeled CH-800/CH-801 #1 under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device. The **RAYNOK** CH-800/CH-801 is preset with 8 chain hoist axes. There are no additional inputs and outputs, but there is an additional tab for *Configuration* which will be described further on below.



Name: Enter the name you wish to appear for the **RAYNOK** Chain Hoist Controller. Make sure the name is unique.

IP Address: Enter the IP address for the controller. This address is unique to every element in the system. Each **RAYNOK** Controller unit will be labeled with its IP address, and will display that address upon boot up.

Port: If not already present enter 5001.

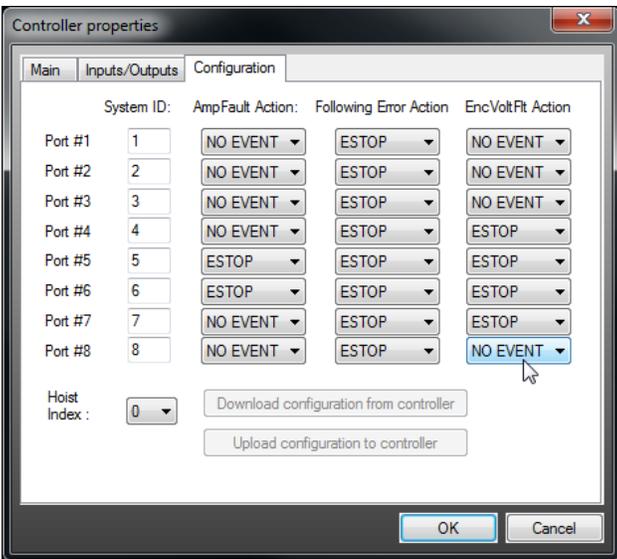
Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Uses expanded network protocol: Check this if the Chain Hoist Controller is set up to read encoder and load cell information through a serial link

Disabled: Check the box if you wish to disable the **RAYNOK** Controller unit from all activity. The unit will not respond to any commands!



The *Configuration Tab* is used to configure specific axis properties of the Chain Hoist. Each of the 8 axes can be assigned a system ID, ampfault action, and following error action.

System ID: Enter a numerical axis System ID. These IDs are used depending on the system configuration and may not be applicable in certain circumstances.

AmpFault Action: Event to trigger when an amp fault is detected. Choose between ESTOP and NO EVENT if you wish the controller to ignore this fault.

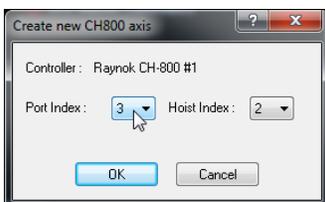
Following Error Action: Event to trigger when a following error is detected. Choose between ESTOP and NO EVENT if you wish the controller to ignore this fault.

Download configuration from controller: The current settings will be downloaded from the controller to the fields.

Upload configuration from controller: The current settings will be uploaded to the controller from the fields. A configuration message will display when the setting have been uploaded.

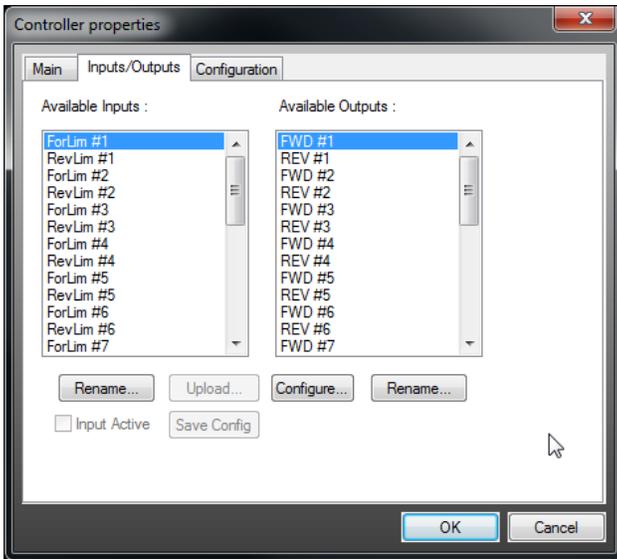
Chain Hoist Controllers can support multiple (up to 4) hoists per port configuration. When a hoist with identification is plugged in, the hoist calibration and per axis settings are automatically selected and corresponding hoist is enabled.

When a new axis is added to Chain Hoist Controller, the port and hoist index is selected using the dialog box depicted on the left.



RAYNOK DHI-800 CONTROLLER

Selecting **RAYNOK** DHI-800 Controller from the list adds a sub section heading labeled DHI-800 #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device. The 'Main' tab is the same as all the previous controllers. The Unique features will be discussed on this page.

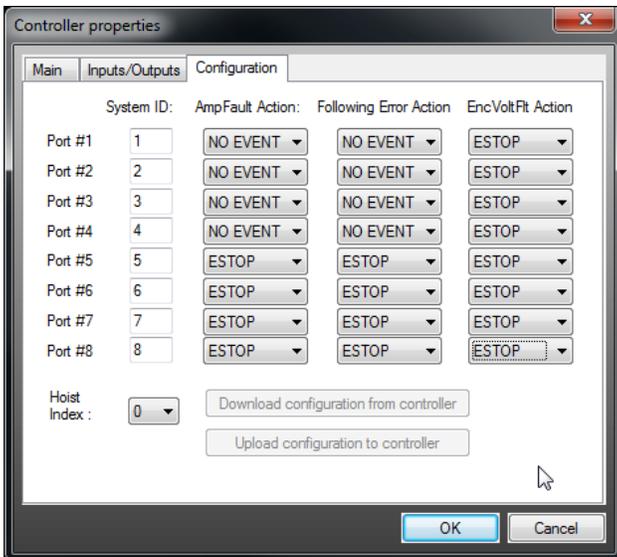


The **RAYNOK** DHI-800 Controller supports 8 fixed axes that can be configured with or without an encoder interface. If you know what devices are being assigned to each Input or Output, you may label them for easy reference by *highlighting* said Input or Output. *Click* on their *Rename* button, enter a new name in the dialog box which appears, and *Click* OK.

The Configure button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

Click OK when you're done configuring that device.

This process is repeated for any additional **RAYNOK** DHI-800 Controllers in your system.



The *Configuration Tab* is used to configure specific axis properties of the DHI-800. Each of the 8 axes can be assigned a system ID, ampfault action, and following error action.

System ID: Enter a numerical axis System ID. These IDs are used depending on the system configuration and may not be applicable in certain circumstances.

AmpFault Action: Event to trigger when an amp fault is detected. Choose between ESTOP and NO EVENT if you wish the controller to ignore this fault.

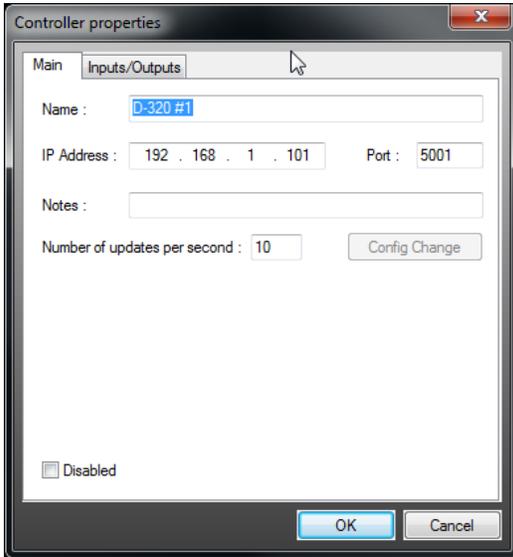
Following Error Action: Event to trigger when a following error is detected. Choose between ESTOP and NO EVENT if you wish the controller to ignore this fault.

Download configuration from controller: The current settings will be downloaded from the controller to the fields.

Upload configuration from controller: The current settings will be uploaded to the controller from the fields. A configuration message will display when the setting have been uploaded.

RAYNOK D-320 I/O CONTROLLER

Selecting **RAYNOK** D-320 I/O Controller from the list adds a sub section heading labeled D-320 #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** D-320 I/O Controller. Make sure the name is unique.

IP Address: Enter the IP address for the controller. This address is unique to every element in the system. Each **RAYNOK** Controller unit will be labeled with its IP address, and will display that address upon boot up.

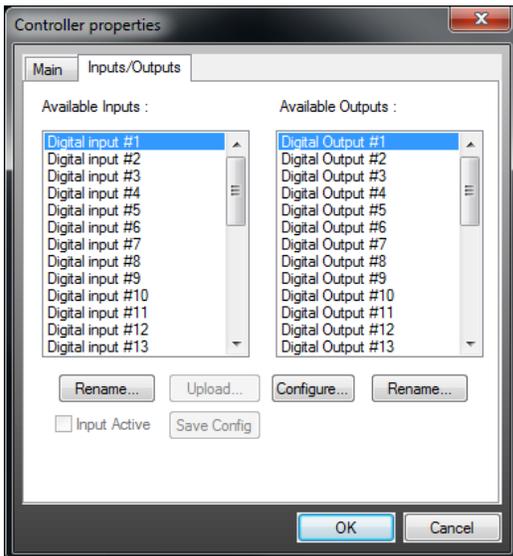
Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller’s IP address. A confirmation will appear after the IP address has been changed successfully.

Disabled: Check the box if you wish to disable the **RAYNOK** Controller unit from all activity. The unit will not respond to any commands!



The **RAYNOK** D-320 I/O Controller supports 32 Digital input and output devices. If you know what devices are being assigned to each Input or Output, you may label them for easy reference by *highlighting* said Input or Output. *Click* on their *Rename* button, enter a new name in the dialog box which appears, and *Click* OK.

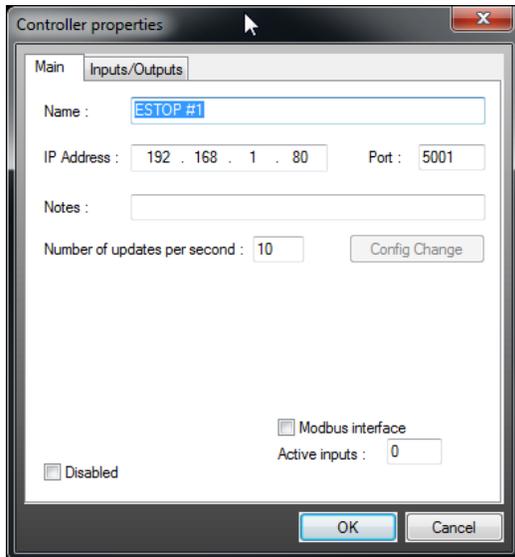
The **Configure** button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller’s internal configuration.

Click OK when you're done configuring that device.

This process is repeated for any additional **RAYNOK** D-320 I/O Controllers in your system.

RAYNOK E-STOP CONTROLLER

Selecting **RAYNOK** E-Stop Controller from the list adds a sub section heading labeled ESTOP #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** E-Stop controller. Make sure the name is unique.

IP Address: Enter the IP address for the controller. This address is unique to every element in the system. Each **RAYNOK** Controller unit will be labeled with its IP address, and will display that address upon boot up.

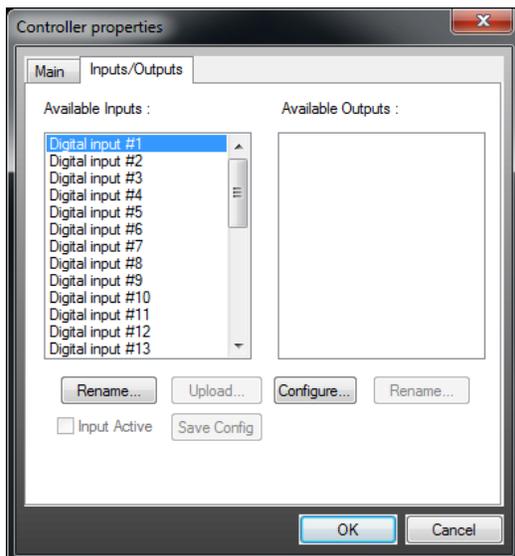
Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Disabled: Check the box if you wish to disable the **RAYNOK** Controller unit from all activity. The unit will not respond to any commands!



This tab works the same way as the Inputs/Outputs tab for other **RAYNOK** controllers, except that this controller does not have outputs. Depending on system setup this controller can have up to 64 inputs. The Inputs are renamed to coincide with the E-Stop stations you have installed in your system, and therefore provide active E-Stop station reporting for the whole system.

Rename: *Highlight* the Input you wish to re-name, click the *Rename* button, enter a new name in the dialog box that appears, and *Click* OK.

Upload: Uploads the names to the controller.

Configure: This button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

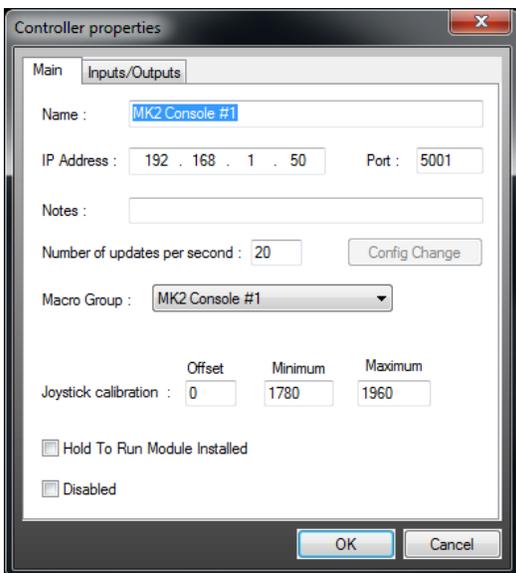
Input Active: *Highlight* the Input you wish activate/deactivate, and click the checkbox to make the input active. Without a checkmark the input won't be active in the system.

Save Config: Saves the active inputs and names to the controller's flash memory.

Click OK when configuring of the device is complete, and repeat the process for any additional **RAYNOK** E-Stop Controllers in the system.

RAYNOK MK2 CONSOLE

Selecting **RAYNOK** Mk2 Console from the list adds a sub section heading labeled MK2 Console #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the Controller Properties window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** MK2 Console. Make sure the name is unique.

IP Address: Enter the IP address for the MK2 Console. The **RAYNOK** MK2 Console is programmed with a unique IP address, and should have a label attached with the IP address. Contact Niscon Inc. if this is not the case.

Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

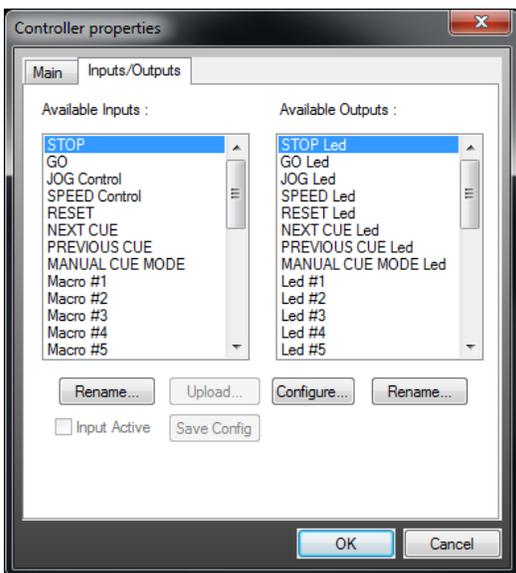
Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Macro Group: Select which Macro Group the Controller is going to be assigned to within **RAYNOK**.

Joystick Calibration: Joystick calibration values are set by the **RAYNOK** ADMINISTRATOR during the system start up. Do not change these values without consulting with Niscon Inc.

Hold to Run Module Installed: Check this box if the MK2 has a Hold to Run (HTR) module installed

Disabled: Check the box if you wish to disable the **RAYNOK** MK2 Console from all activity. The unit will not respond to any commands!



This section works in the same manner as the other Inputs/Outputs tabs, as it allows you to re-name Inputs and Outputs for the MK2 Console. The first eight inputs are reserved for the eight command buttons on the MK2 Console; the last 24 are designed as programmable macro buttons (see macro groups for creating groups and assigning macro functions). One function which may be useful is to name one of your digital axes "MK2 Console Reporting", and list it in your *I/O Axis Views* (see Adding and Configuring Digital Axes) This will enable you to see the operational status of your MK2 Console at all times. In any case, *highlight* the Input or Output you wish to re-name, *Click* the *Rename* button, and enter a new name in the dialog box that appears, and *Click* OK.

The Configure button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

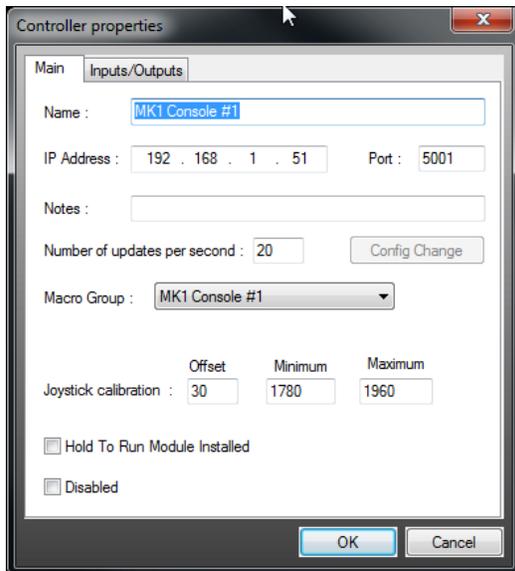
See **RAYNOK** MK2 Console User Guide for more information.

Click OK when done configuring the device.

This process is repeated for any additional **RAYNOK** MK2 Consoles in the system.

RAYNOK MK1 CONSOLE

Selecting **RAYNOK** Mk1 Console from the list adds a sub section heading labeled MK1 Console #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the Controller Properties window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** MK1 Console. Make sure the name is unique.

IP Address: Enter the IP address for the MK1 Console. The **RAYNOK** MK1 Console is programmed with a unique IP address, and should have a label attached with the IP address. Contact Niscon Inc. if this is not the case.

Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

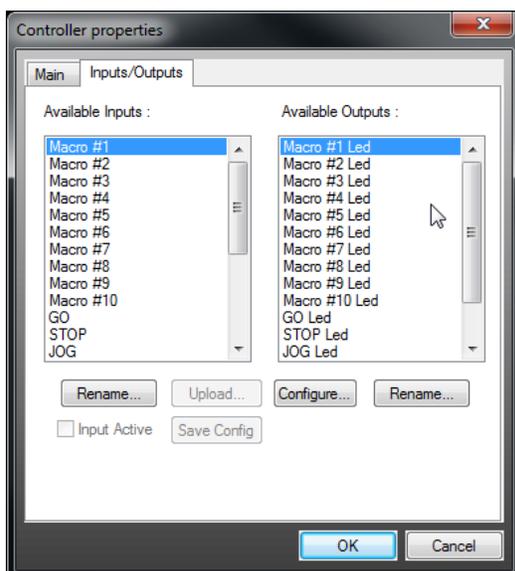
Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Macro Group: Select which Macro Group the Controller is going to be assigned to within **RAYNOK**.

Joystick Calibration: Joystick calibration values are set by the **RAYNOK** ADMINISTRATOR during the system start up. Do not change these values without consulting with Niscon Inc.

Hold to Run Module Installed: Check this box if the MK1 has a Hold to Run (HTR) module installed

Disabled: Check the box if you wish to disable the **RAYNOK** MK1 Console from all activity. The unit will not respond to any commands!



This section works in the same manner as the other Inputs/Outputs tabs, as it allows you to re-name Inputs and Outputs for the MK1 Console. The 'STOP' and 'GO' inputs are reserved for the two command buttons on the MK1 Console; the first 10 are designed as programmable macro buttons (see macro groups for creating groups and assigning macro functions). One function which may be useful is to name one of your digital axes "MK1 Console Reporting", and list it in your *I/O Axis Views* (see Adding and Configuring Digital Axes) This will enable you to see the operational status of your MK1 Console at all times. In any case, *highlight* the Input or Output you wish to re-name, *Click* the *Rename* button, and enter a new name in the dialog box that appears, and *Click* OK.

The Configure button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

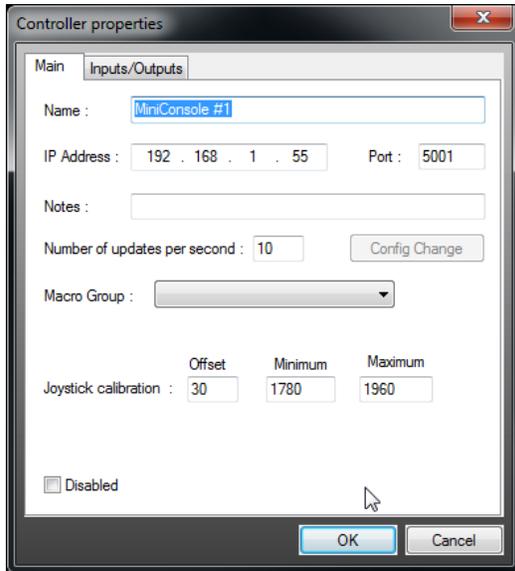
See **RAYNOK** MK1 Console User Guide for more information.

Click OK when the configuring of the device is complete.

This process is repeated for any additional **RAYNOK** MK1 Consoles in the system.

RAYNOK MINIConsole

Selecting **RAYNOK** MiniConsole from the list adds a sub section heading labeled MiniConsole #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** MiniConsole. Make sure the name is unique.

IP Address: Enter the IP address for the MiniConsole. The **RAYNOK** MiniConsole is programmed with a unique IP address, and should have a label attached with the IP address. Contact Niscon Inc. if this is not the case.

Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

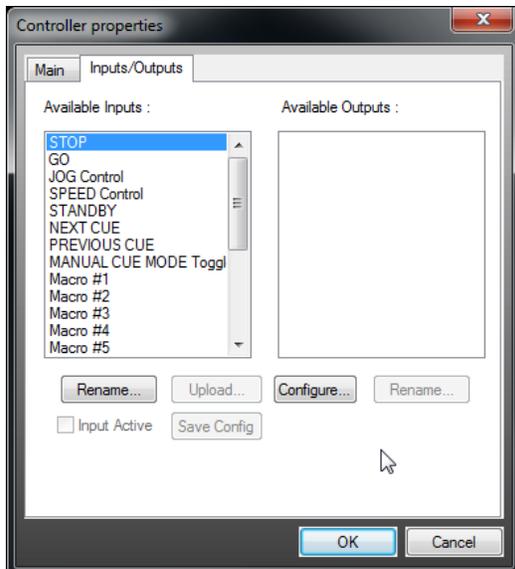
Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Macro Group: Select which Macro Group the Controller is going to be assigned to within **RAYNOK**.

Joystick Calibration: Joystick calibration values are set by the **RAYNOK** ADMINISTRATOR during the system start up. Do not change these values without consulting with Niscon Inc.

Disabled: Check the box if you wish to disable the **RAYNOK** MiniConsole unit from all activity. The unit will not respond to any commands!



This section works in the same manner as the other Inputs/Outputs tabs, as it allows you to re-name Inputs and Outputs for the MiniConsole. The first eight inputs are reserved for the eight command buttons on the MiniConsole; the last 16 are designed as programmable macro buttons (see macro groups for creating groups and assigning macro functions). One function which may be useful is to name one of your digital axes "MiniConsole Reporting", and list it in your *I/O Axis Views* (see Adding and Configuring Digital Axes) This will enable you to see the operational status of your MiniConsole at all times. In any case, *highlight* the Input or Output you wish to re-name, *Click* the *Rename* button, and enter a new name in the dialog box that appears, and *Click* OK.

The *Configure* button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

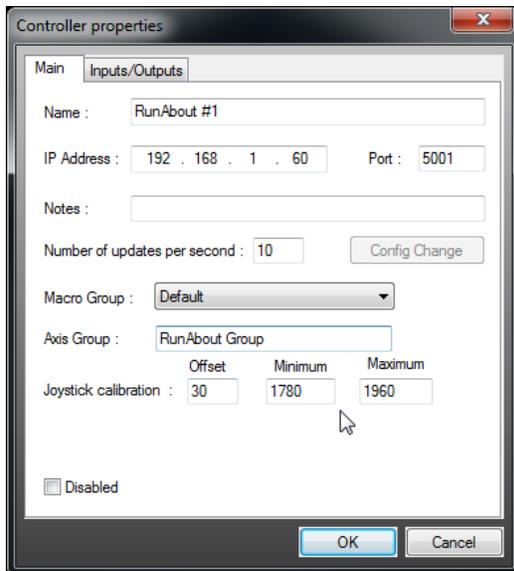
See **RAYNOK** MiniConsole User Guide for more information.

Click OK when done configuring the device.

This process is repeated for any additional **RAYNOK** MiniConsoles in your system.

RAYNOK RUNABOUT

Selecting **RAYNOK** RunAbout from the list adds a sub section heading labeled RunAbout #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device.



Name: Enter any unique name for the **RAYNOK** RunAbout

IP Address: Enter the IP address for the RunAbout. The **RAYNOK** RunAbout is programmed with a unique IP address and will display that address upon boot up. If this is not the case, contact a **RAYNOK** ADMINISTRATOR.

Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

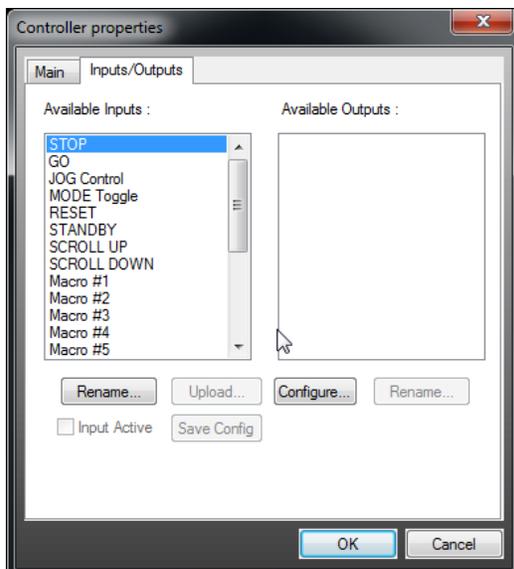
Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Macro Group: Select which Macro Group the Controller is going to be assigned to within **RAYNOK**.

Axis Group: Select which Axis Group the Controller is going to be assigned to within **RAYNOK**.

Joystick Calibration: Joystick calibration values are set by the **RAYNOK** ADMINISTRATOR during the system start up. Do not change these values before consulting with Niscon Inc.

Disabled: Check the box if you wish to disable the **RAYNOK** Runabout unit from all activity. The unit will not respond to any commands!



This section works in the same manner as the other Inputs/Outputs tabs, as it allows you to re-name Inputs and Outputs for the RunAbout. The first eight inputs are reserved for the eight command buttons on the RunAbout; the last 8 are designed as programmable macro buttons (see macro groups for creating groups and assigning macro functions). One function which may be useful is to name one of your digital axes "RunAbout Reporting", and list it in your *I/O Axis Views* (see Adding and Configuring Digital Axes) This will enable you to see the operational status of your RunAbout at all times. In any case, *highlight* the Input or Output you wish to re-name, *Click* the *Rename* button, and enter a new name in the dialog box that appears, and *Click* OK.

The Configure button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

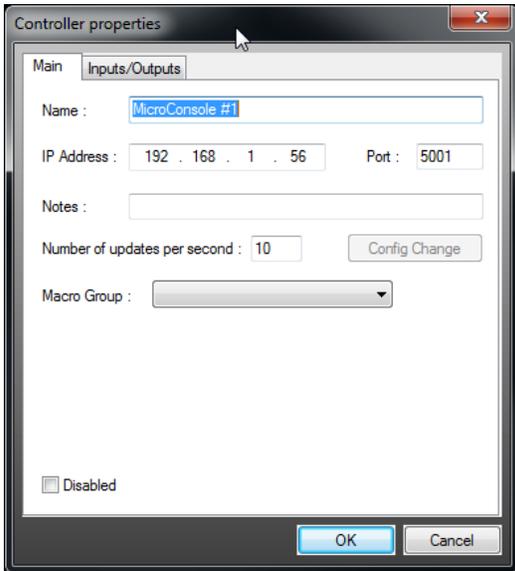
See **RAYNOK** RunAbout User Guide for more information.

Click OK when configuring of the device is complete.

This process is repeated for any additional **RAYNOK** RunAbouts in your system.

RAYNOK MICROCONSOLE

Selecting **RAYNOK** MicroConsole from the list adds a sub section heading labeled MicroConsole #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device.



Name: Enter the name you wish to appear for the **RAYNOK** MicroConsole. Make sure the name is unique.

IP Address: Enter the IP address for the MicroConsole. The **RAYNOK** MicroConsole is programmed with a unique IP address, and should have a label attached with the IP address. Contact Niscon Inc. if this is not the case.

Port: If not already present enter 5001.

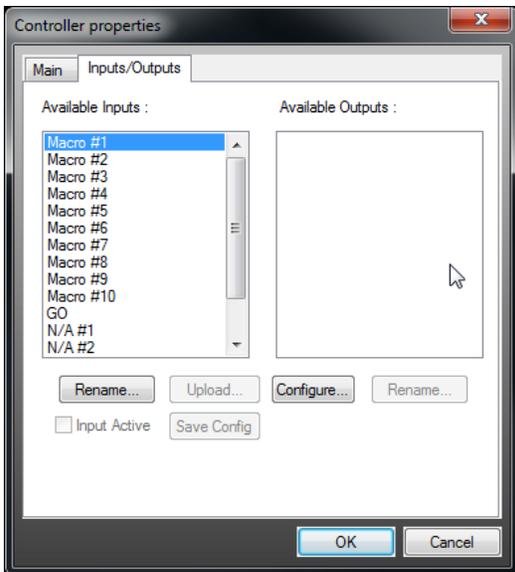
Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller’s IP address. A confirmation will appear after the IP address has been changed successfully.

Macro Group: Select which Macro Group the Controller is going to be assigned to within **RAYNOK**.

Disabled: Check the box if you wish to disable the **RAYNOK** MicroConsole unit from all activity. The unit will not respond to any commands!



This section works in the same manner as the other Inputs/Outputs tabs, as it allows you to re-name Inputs and Outputs for the MicroConsole. There are 10 programmable macro buttons (see macro groups for creating groups and assigning macro functions), and one reserved input (the GO button).

Highlight the Input or Output you wish to re-name, *Click* the *Rename* button, and enter a new name in the dialog box that appears, and *Click* OK.

The Configure button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller’s internal configuration.

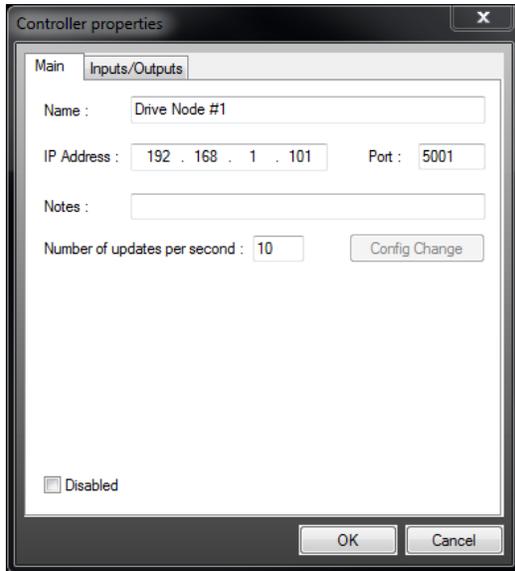
See **RAYNOK** MicroConsole User Guide for more information.

Click OK when you're done configuring that device.

This process is repeated for any additional **RAYNOK** MicroConsoles in your system.

RAYNOK NODE CONTROLLER

Selecting **RAYNOK S-100 Node** or **RAYNOK F-100 Node** from the list adds a sub section heading labeled **Drive Node #1** (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device. These Controllers only have one axis available.



Name: Enter the name you wish to appear for the **RAYNOK** Node. Make sure the name is unique.

IP Address: Enter the IP address for the Node Controller. The **RAYNOK** Node is programmed with a unique IP address, and should have a label attached with the IP address. Contact Niscon Inc. if this is not the case.

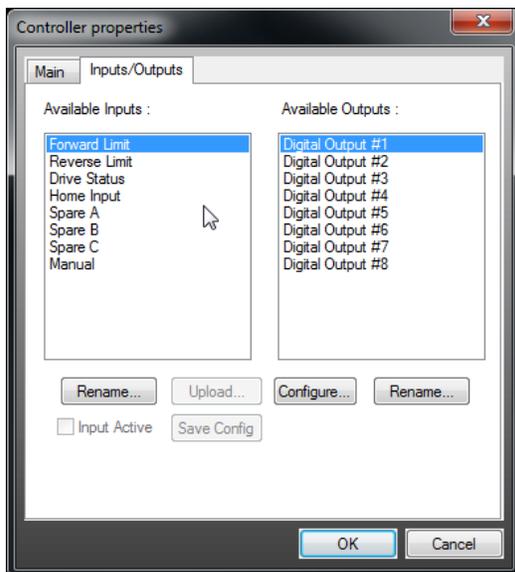
Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Disabled: Check the box if you wish to disable the **RAYNOK** Node unit from all activity. The unit will not respond to any commands!



The **RAYNOK S-100** and **F-100** support 8 Inputs and Outputs. All Inputs are reserved by the hardware, but can be renamed to the user's liking. If you know what devices are being assigned to each Input or Output, you may label them for easy reference by *highlighting* said Input or Output. *Click* on their *Rename* button, enter a new name in the dialog box which appears, and *Click* OK.

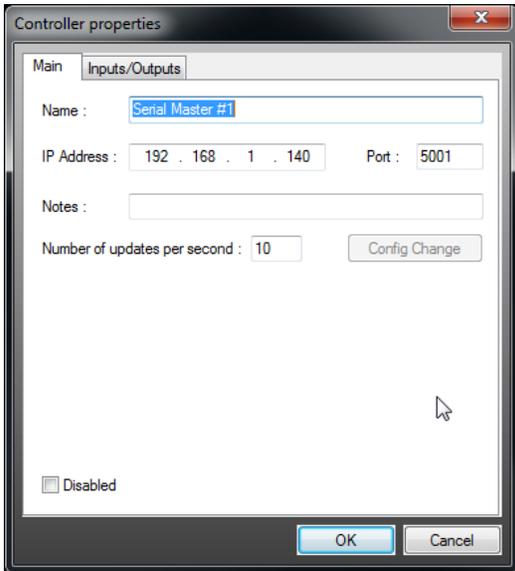
The **Configure** button is used by the **RAYNOK ADMINISTRATOR** during the system start up to set up the controller's internal configuration.

Click OK when complete configuring the device.

This process is repeated for any additional **RAYNOK** Nodes in the system.

RAYNOK SERIAL MASTER CONTROLLER

Selecting **RAYNOK** Serial Master Controller from the list adds a sub section heading labeled Serial Master#1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device. The **RAYNOK** Serial Master is preset with 8 axes. Axes can be deleted if there are less than 8 serial nodes in the chain.



Name: Enter the name you wish to appear for the **RAYNOK** Serial Master. Make sure the name is unique.

IP Address: Enter the IP address for the Serial Master Controller. The **RAYNOK** Serial Master is programmed with a unique IP address, and should have a label attached with the IP address. Contact Niscon Inc. if this is not the case.

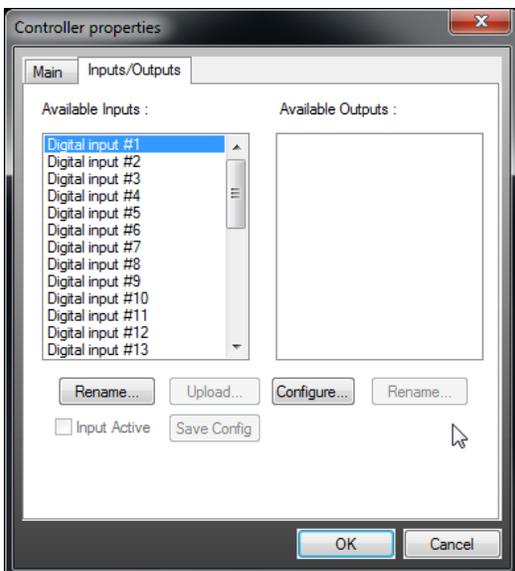
Port: If not already present enter 5001.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Config Change: Enter a new IP address and click this button to change the controller's IP address. A confirmation will appear after the IP address has been changed successfully.

Disabled: Check the box if you wish to disable the **RAYNOK** Serial Master unit from all activity. The unit will not respond to any commands!



The **RAYNOK** Serial Master Controller supports 32 digital input devices. If you know what devices are being assigned to each Input, you may label them for easy reference by *highlighting* said Input or Output. *Click* on their *Rename* button, enter a new name in the dialog box which appears, and *Click* OK.

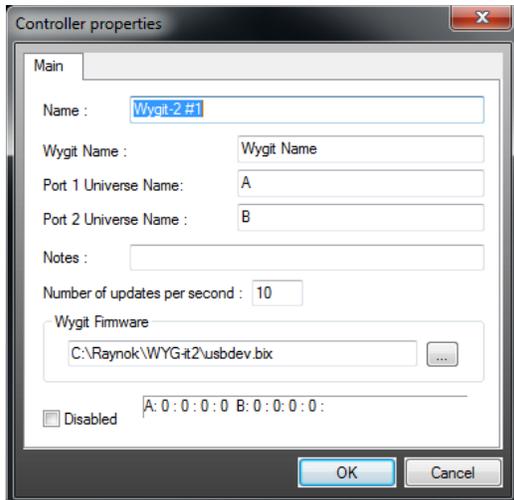
The **Configure** button is used by the **RAYNOK** ADMINISTRATOR during the system start up to set up the controller's internal configuration.

Click OK when you're done configuring that device.

This process is repeated for any additional **RAYNOK** Serial Masters in your system.

RAYNOK WYGIT-2 CONTROLLER

Selecting **RAYNOK** Wygit-2 Controller from the list adds a sub section heading labeled Wygit-2 #1 (numbered sequentially for additional units) under *Controllers* in the *Workspace Setup* tab. It also opens the *Controller Properties* window for that device. The **RAYNOK** Wygit-2 Controller provides means for **RAYNOK** to receive DMX control signals.



Name: Enter the name you wish to appear for the **RAYNOK** Wygit-2 Controller. Make sure the name is unique.

Wygit-2 Name: Enter the name of Wygit-2 box. This name is used in the connection process.

Port 1 Universe Name: Enter the name of first DMX Universe

Port 2 Universe Name: Enter the name of the second DMX Universe.

Notes: Enter any reminders you would like concerning the **RAYNOK** Controller unit.

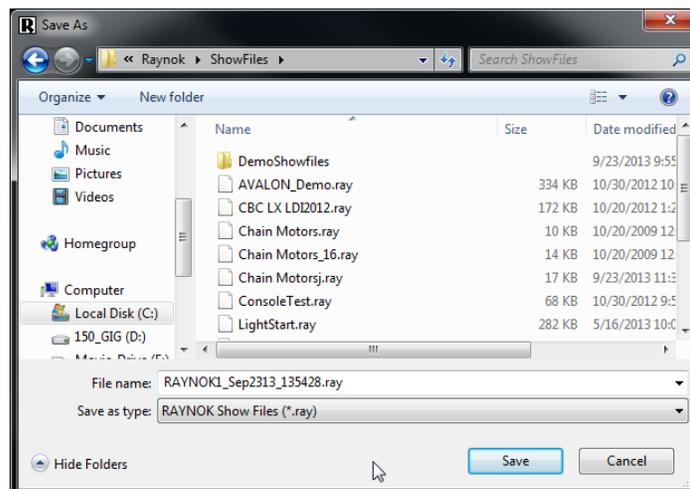
Number of updates per second: The number entered determines the number of times per second the unit is polled by **RAYNOK**. Do not change this value without consulting with Niscon Inc.

Wygit-2 Firmware: Enter a path and file name of the Wygit-2 firmware.

Disabled: Check the box if you wish to disable the **RAYNOK** Wygit-2 Controller unit from all activity. The unit will not respond to any commands and no DMX will be received.

SAVING A SHOW FILE

Remember to save your work - select *Save As* from the *File menu*, and enter a name for your show/configuration. *Click OK* when you're done.



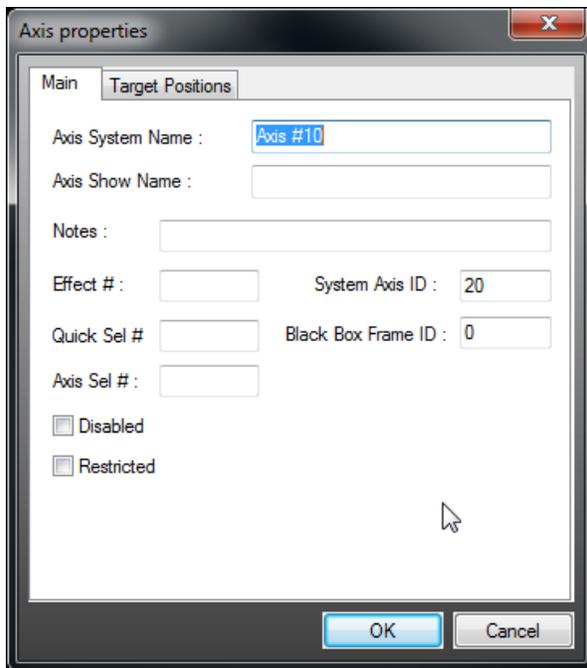
Once the controllers have been added, the axes they control can be configured. This is explained in the next section of the manual.

ADDING AND CONFIGURING SERVO AXES

When a Servo-400 Motion Controller has been added to your show, 4 servo axes are automatically added with it. SN102, SN101, and S-100 Controllers only have 1 axis set up as default. A good way of knowing if an axis is a servo or not is if the icon beside the axis is a red symbol as depicted in the following image:



Double-Clicking on a controller name in the *Workspace Setup* tab will expand the tree to show the axes controlled by that **RAYNOK** Controller unit. In order to make the calibration process easier, it's best to enter some basic information about the axis before beginning calibration. *Left-Click* on the servo axis' name to *highlight* it in the *Workspace Setup* tab, then *Right-Click* within the *Workspace* to bring up the *context sensitive pop-up menu* and select *Axis Properties*.



Name: Enter the name of the axis. (usually the name of the element it is controlling)

Notes: Enter any reminders you would like concerning the axis.

Effect #: Enter an effect number or ID, if your production has assigned one. This ID, if not empty, is used in the Plan and Section Views to identify this axis.

System Axis ID: Enter a unique ID that is different from any other axis in the system. **RAYNOK** will give an error message if a duplicate ID is found in the system.

Quick Sel #: Enter a number or string for quick selection when using the Quick Select Macro.

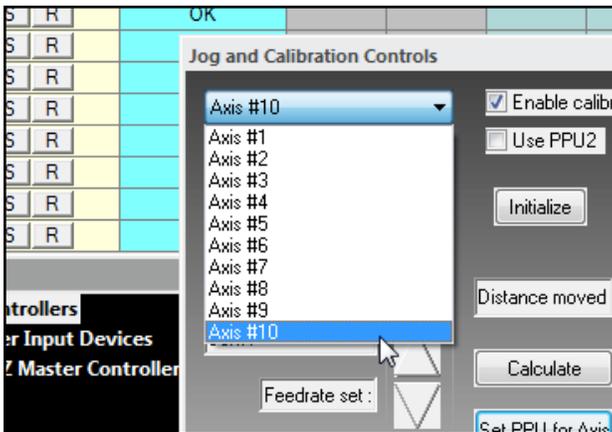
Disabled: Check the box if you wish to disable the axis from all activity. Note the other axes controlled by the same **RAYNOK** Controller unit will still function.

Restricted: Check the box if you wish to restrict the axis. In order to move restricted axes the “Motion for Restricted Axes” has to be enabled by either executing a command “Allow Motion for Restricted Axes” from the commands menu or “Allow Restricted Axes” macro.

Note: The enabling works for single execution of motion only and has to be re-enabled for the next move

Click OK to close the window. Repeat this process for all servo axes in your show.

CALIBRATING SERVO AXES



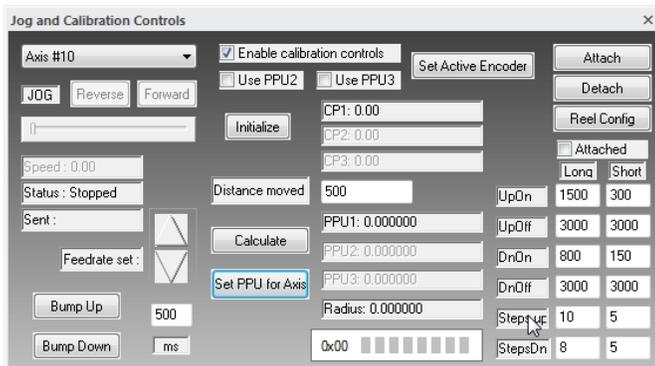
Open the *Control bar* from the *Views menu*, if it is not already open.

The *pull-down menu* will contain all servo axes. Select one you wish to calibrate.

NOTE: This process involves physically moving each axis; make sure all safety procedures are followed before proceeding.

NOTE: This process requires you to be in *Online mode*. To switch to *Online mode*, select *Go Online* from the *Setup menu*.

WARNING: You will be able to move axes from within **RAYNOK** - proceed with caution!



Under pendant control, move the axis to a point from which to take a measurement - for linesets, usually deck level, for other elements, any point a measurement can easily be taken from.

Select the *Enable Calibration Controls* checkbox.

Click the *Initialize* button to set a start position.

Under pendant control, move the unit a measured distance. The more exact your measurement and the longer the distance traveled the better.

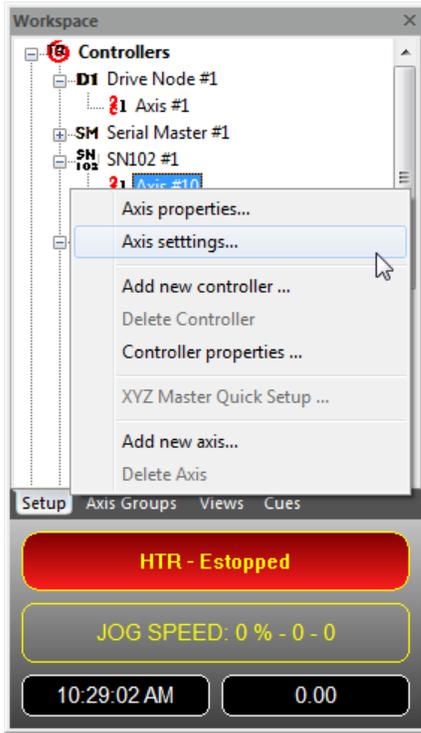
Enter the distance traveled in the *Distance moved* field. (Any units of measure may be used as long as you use them consistently throughout the software)

Click on the *Calculate* button to calculate the conversion from actual units of measure to encoder counts for that axis.

Click on *Set PPU for Axis* to set the calibration value for the axis.

Servo controllers have optional additional encoders on them. These PPU values can be obtained in the same manner as described above if the appropriate checkbox is clicked ('Use PPU2' or 'Use PPU3')

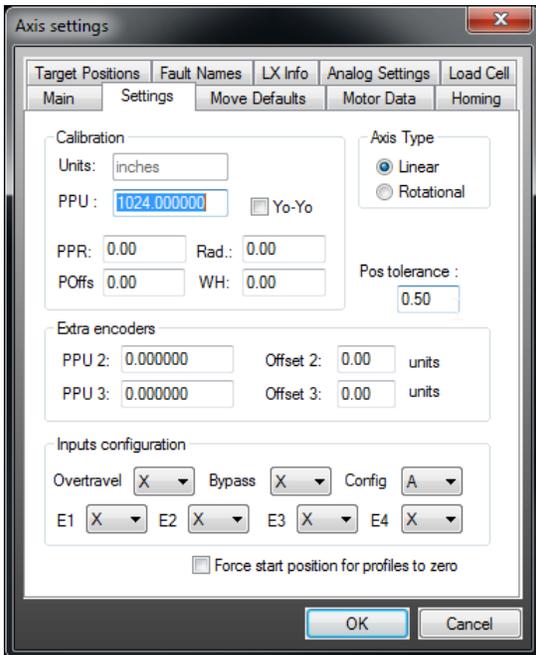
At this point, the axis should be moved and measured for accuracy under **RAYNOK** control. See the section *Manual Move cues*, for instructions on moving axes under **RAYNOK** control.



Once the axis is calibrated to satisfaction, move on to further configure the axis by again *highlighting* it in the *Workspace Setup* tab, and *Right-Clicking* to bring up the *context sensitive pop-up menu*. Select *Axis Settings*.

CAUTION!

Most of the axes settings are set up by the RAYNOK ADMINISTRATOR during system startup and should not be changed. Altering these values can result in undesired operation of the Control System and in doing so may result in serious injury or death.



Position Units: Enter the units of measure you used to calibrate the axis.

Encoder counts per position unit (PPU): This should contain the value calculated during the calibration procedure, if not, the axis calibration procedure needs to be repeated.

Linear - Used for winches, lifts, friction drives, etc. Positioning is based on a distance traveled.

Rotational - Used for turntables, wheels, etc. Position is based on degrees of rotation.

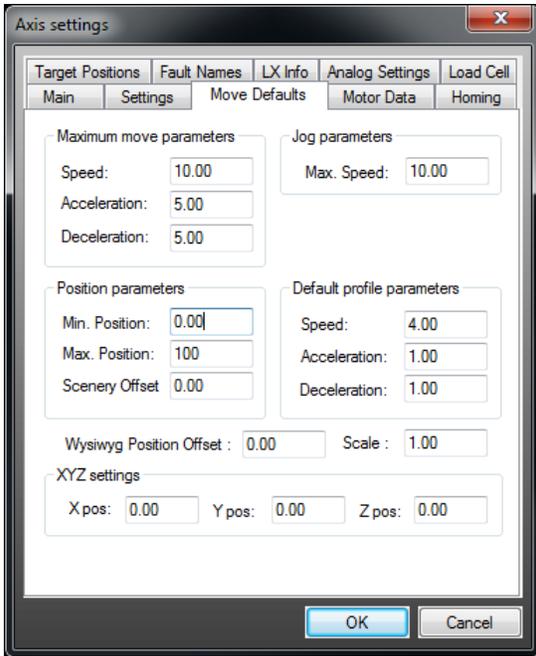
PPR, POffs, Rad, WH: Pulses Per Revolution, Position Offset, Radius, Wrap Height. These values should be set to zero unless the winch wraps the cable up (Yo-Yo option is checked). This type of winch will be set up by the **RAYNOK** ADMINISTRATORS during system setup.

Position Tolerance: Distance a piece can be from its intended target, but still be treated as if it has reached its target. Default is 1/2" for linear axes, 0.5° for rotational axes.

Extra Encoders: The values contained in the PPU2 and PPU3 fields should be what was obtained during the calibration procedure. Offset options are available if these encoders are measured from a different starting points than the main encoder.

Inputs configuration: These values are system dependent variables and are set up by **RAYNOK** ADMINISTRATORS during system startup.

Force Start position of profiles to zero: Check the box if you want your axis to automatically reference every move from a zero position, as opposed to a position tracked through cues.



Maximum Move Parameters: Enter the maximum values in units/second the axis can attain during regular cue execution. These values can be found in the system specifications.

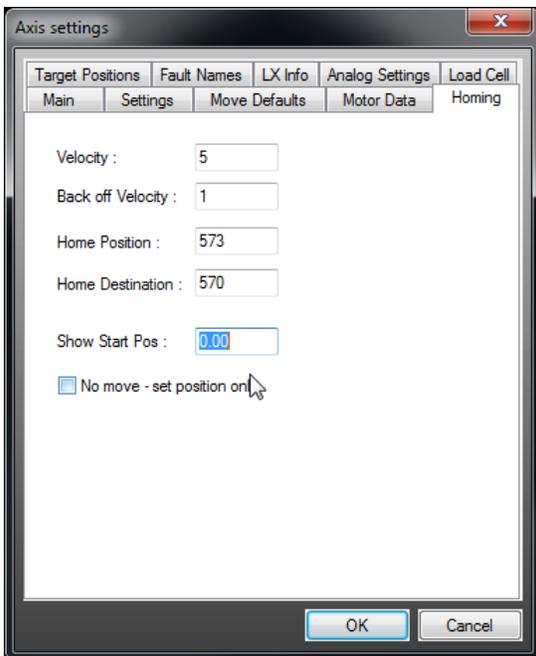
Note: The deceleration value does not affect deceleration when a stop is depressed. The stop deceleration value is set in the hardware.

Jog Parameters: Enter the maximum values in units/second that you wish the jog function be limited to. These values must be set before jog functions become available. Be cautious when setting the max jog speed, it is much easier to abruptly stop a piece while jogging.

Position Parameters: Enter the positions parameters (in units) the axis can attain while running Manual Moves and Cues. Some axes will have certain default positions that can not be exceeded when they are running, with a minimum and maximum position set by the operator. *Scenery Offset* is intended for a set or scenery piece that hangs from the top of the mechanical element, so this can be changed to the offset the piece has from the minimum position and the floor/stage.

Default Profile Parameters: Enter the default values the axis uses as default speed. When entering cues, Manual Moves, or Manual Moves to start of a cue, the lowest values will be defaulted. Use your best judgment when assigning these values. One half of the maximum velocity, acceleration, and deceleration is standard convention.

Wysiwyg Position Offset: Enter position offset and scale for the Wysiwyg unit here. These values are used to map axis position into the Wysiwyg 3D World when using **RAYNOK** to connect to Wysiwyg.



If position is lost on an axis, such as in the scenario where a **RAYNOK** Controller unit's power is interrupted, a *Homing Command* may be sent to the axis in order to re-establish its position.

When a *Homing Command* is executed the axis will move until it reaches a *limit* and turns around. The *limit switch* is a hardware level switch installed in a specified position on each axis. There is a natural delay between the unit reaching the *limit switch* and it's ability to stop.

Velocity: Sets the speed at which the axis will home.

Back Off Velocity: Speed at which the axis will come off the switch.

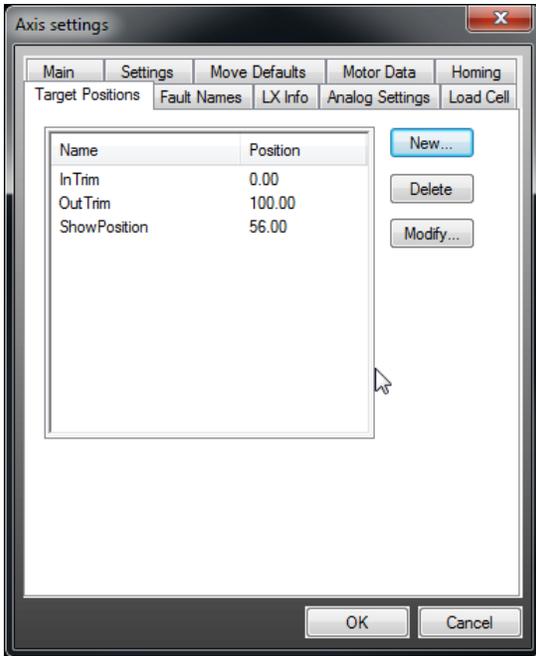
Home Position: The position where the *limit switch* clears. This value will be used to automatically update the axis' current position unless 0.00 is entered.

Home Destination: Used if a lineset is to be automatically moved to a specific position after the homing sequence is completed.

Show Start Pos: Sets the position at which the piece begins the show cue sequence.

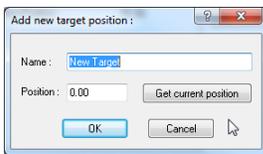
No Move - set position only: No movement will occur; the current position of the axis will be set to the value set in the *Home Position* field.

Note: Velocity values entered are in *units/second*, while positions are in *units*.



Target positions are named positions of the axis that are useful for the operator. The specified positions are given names so that they can be set within the *Cue Info View* for that particular axis. For example, if there are 3 positions on the axis that are used frequently, the operator can name these 3 positions with short names like *Intrim*, *ShowPos*, and *OutTrim* instead of typing the actual values in the *Cue Info View*. This speeds up the cueing process and ensures that there are no mistyped values when setting up gets hectic.

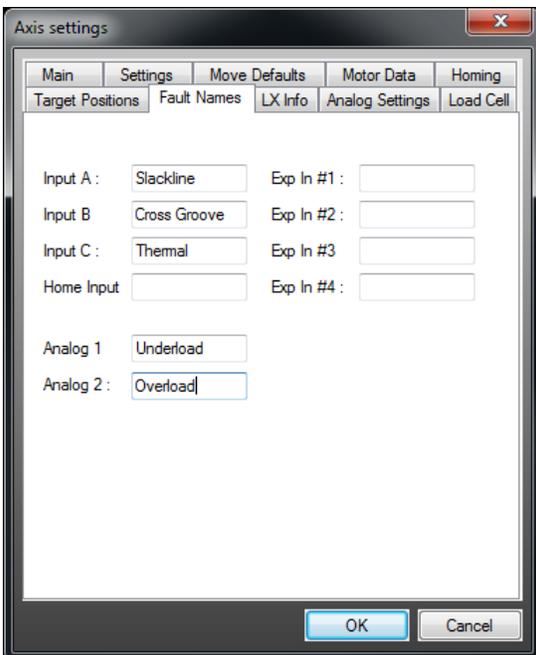
Note: If a target position is named the same as a *Global Value*, it will override that value for this particular axis. This is useful if an axis within an axis group is physically different from its counterparts and the group is selected, and don't want it going to the same position as the others.



This dialog shows up when a new target position is added. Enter a meaningful name and a position that is associated with the name. Click 'Get Current Position' to fill the Position field with the axis' current position.

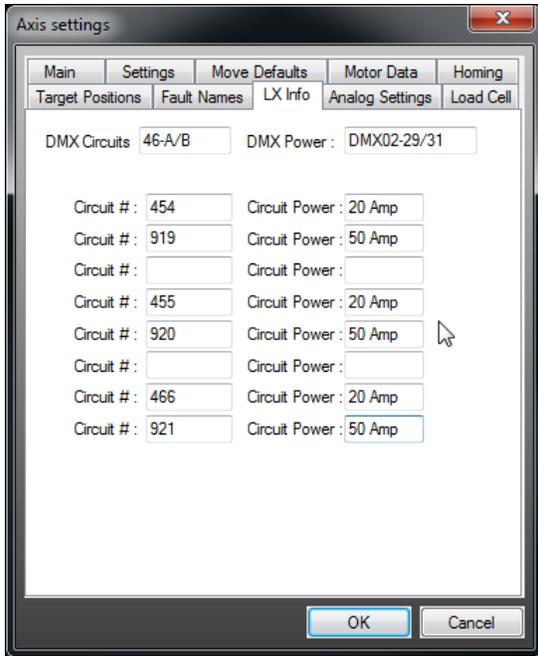
Note: Regarding *Target Positions*: the *Global Target Database* within the *Controllers Menu* contains target positions that can be used for every axis on your system. The setup is the same as for *Target Positions*.

Copying Axis Properties: Once you setup all the axis settings and you have axis in the system with similar configurations, you can use Copy and Paste Axis Properties command in Cue Info view to selectively copy and paste axis settings.



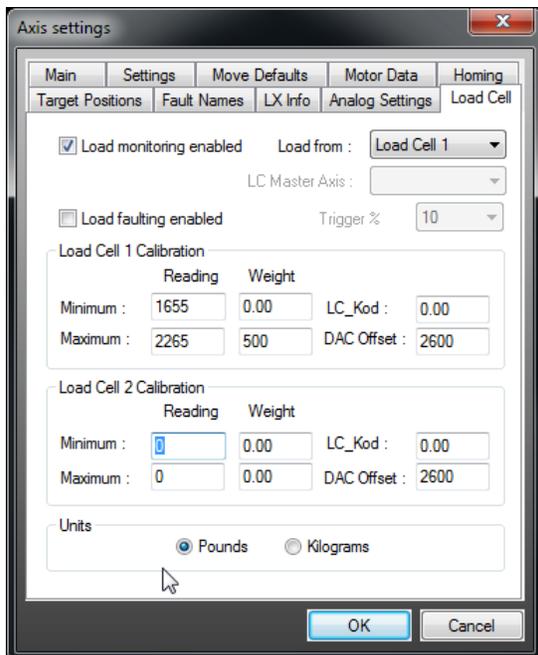
Axis Fault Names

Enter the names of specific sensors and interlocks that are connected to axis inputs. These are machine dependant.



LX Info

In some installations the axis is used as a lighting system batten. In these instances, DMX, circuit number and power information can be entered into the Show File. These values are then used and shown in the Axis Mimic dialog.

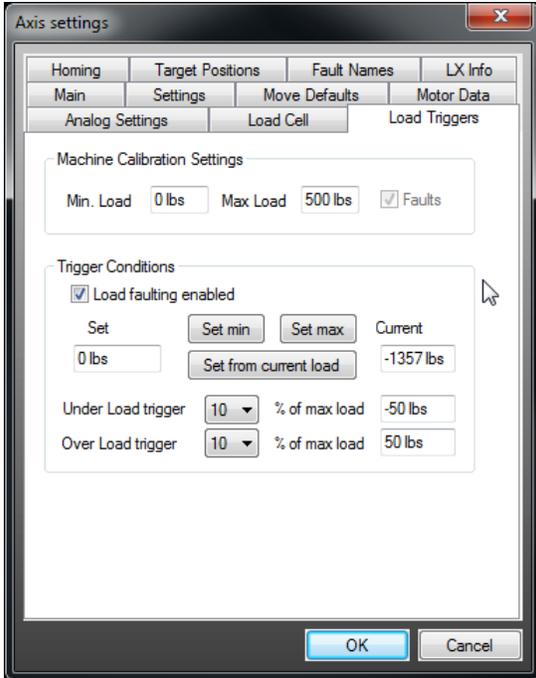


Load Cell

If the system is equipped with load cells, during the installation process the *Load Cell* settings will be entered for that axis.

Calibration: Minimum and Maximum calibration settings for the axis. These values are determined during the system setup by the **RAYNOK ADMINISTRATOR** and should not be changed.

Units: Choose pounds or kilograms. This will determine which unit **RAYNOK** shows in the *Cue Info View*.



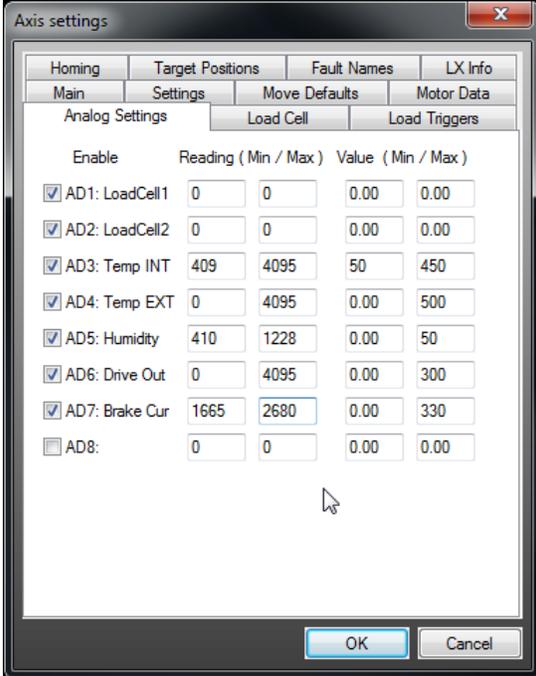
Load Triggers

If *Load monitoring and Load Faulting* is enabled in the *Load Cell* page then the following adjustments become active.

Machine Calibration Setting: Shows the Minimum and Maximum values.

Trigger Conditions: When the *Load faulting enabled* box is checked, the weight trigger of the load may be entered in the *Set Load* box or taken from the *Set from current load* button.

Under Load trigger and *Over Load trigger* percent values allow for setting of trigger points that if reached will trigger a fault and stop the axis.



Analog settings

Depending on the system configuration, a controller can have up to 8 analog channels. Each analog input on the controller must be calibrated and set up for its designated purpose. The controller unit is capable of reading load cells, temperature and humidity gauges, as well as drive output and brake current.

It is advisable that these settings are not changed. Consult a **RAYNOK** ADMINISTRATOR before attempting to configure these values.

ADDING AND CONFIGURING F-SERIES AXES

When an F-Series Controller has been added to your show, 8 (or 16, depending on the setup) axes are automatically added with it. If the controller added is an Open-Loop SN101 or SN102 Controller, or an F-100 Node Controller, only one single axis is available.

Double-Clicking on a controller name in the *Workspace Setup* tab will expand the tree to show the axes controlled by that **RAYNOK** Controller unit. In order to make the calibration process easier, it's best to enter some basic information about the axis before you begin calibration. *Left-Click* on the F-series axis' name to *highlight* it in the *Workspace Setup* tab, then *Right-Click* within the *Workspace* to bring up the *context sensitive pop-up menu* and select *Axis Properties*.

Name: Enter the name of the axis. (usually the name of the element it is controlling)

Notes: Enter any reminders you would like concerning the axis.

Effect #: Enter an effect number or ID, if your production has assigned one. This ID, if not empty, is used in the Plan and Section Views to identify this axis.

System Axis ID: Enter a unique ID that is different from any other axis in the system. **RAYNOK** will give an error message if a duplicate ID is found in the system.

Quick Sel #: Enter a number or string for quick selection when using the Quick Select Macro.

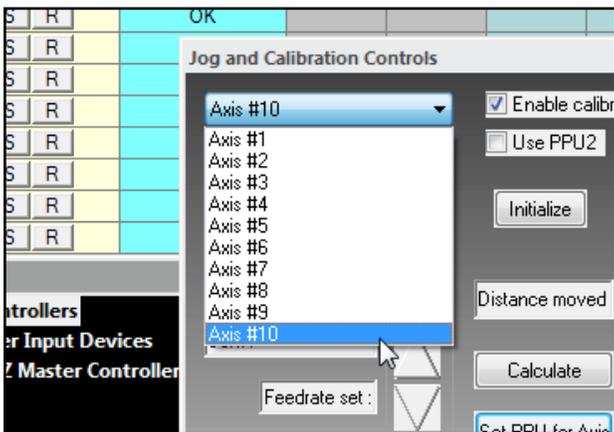
Disabled: Check the box if you wish to disable the axis from all activity; the other axes controlled by the same **RAYNOK** Controller unit will still function.

Restricted: Check the box if you wish to restrict the axis. In order to move restricted axes the "Motion for Restricted Axes" has to be enabled by either executing a command "Allow Motion for Restricted Axes" from the commands menu or "Allow Restricted Axes" macro.

Note: The enabling works for single execution of motion only and has to be re-enabled for the next move.

Click OK to close the window. Repeat this process for all F-Series axes in your show.

CALIBRATING F-SERIES AXES



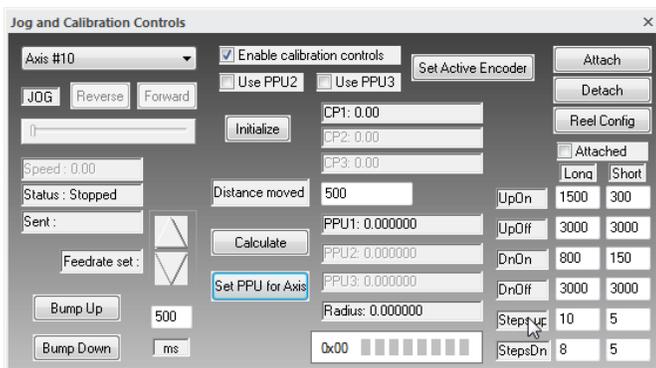
Open the *Control bar* from the *Views menu*, if it is not already open.

The *pull-down menu* will contain all f-series axes. Select one you wish to calibrate.

NOTE: This process involves physically moving each axis; make sure you follow all safety procedures before proceeding.

NOTE: This process requires you to be in *Online mode*. To switch to *Online mode*, select *Go Online* from the *Setup menu*.

WARNING: You will be able to move axes from within **RAYNOK** - proceed with caution!



Under pendant control, move the axis to a point from which to take a measurement - for linesets, usually deck level, for other elements, any point a measurement can easily be taken from.

Select the *Enable Calibration Controls* checkbox.

Click the *Initialize* button to set a start position.

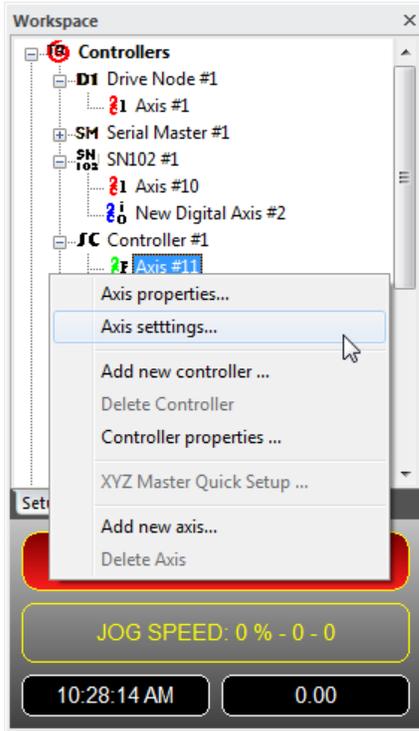
Under pendant control, move the unit a measured distance. The more exact your measurement and the longer the distance traveled the better.

Enter the distance traveled in the *Distance moved* field. (Any units of measure may be used as long as you use them consistently throughout the software)

Click on the *Calculate* button to calculate the conversion from actual units of measure to encoder counts for that axis.

Click on *Set PPU for Axis* to set the calibration value for the axis.

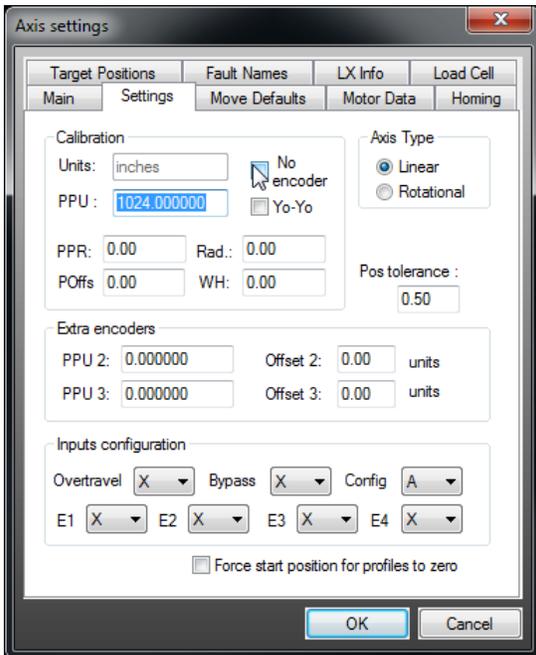
At this point, the axis should be moved and measured for accuracy under **RAYNOK** control. See the section *Manual Move cues*, for instructions on moving axes under **RAYNOK** control.



Once the axis is calibrated to your satisfaction, move on to further configure your axis by again *highlighting* it in the *Workspace Setup tab*, and *Right-Clicking* to bring up the *context sensitive pop-up menu*. Select *Axis Settings*.

CAUTION!

Most of the axes properties are set up by the RAYNOK ADMINISTRATOR during system startup and should not be changed. Altering these values can result in undesired operation of the Control System and in doing so may result in serious injury or death.



Position Units: Enter the units of measure you used to calibrate the axis.

Encoder counts per position unit: This should contain the value calculated during the calibration procedure, if not, the axis calibration procedure needs to be repeated.

Linear - Used for winches, lifts, friction drives, etc. Positioning is based on a distance traveled.

Rotational - Used for turntables, wheels, etc. Position is based on degrees of rotation.

PPR, POffs, Rad, WH: Pulses Per Revolution, Position Offset, Radius, Wrap Height. These values should be set to zero unless the winch wraps the cable up (Yo-Yo option is checked). This type of winch will be set up by the **RAYNOK ADMINISTRATORS** during system setup.

No encoder: Check this option if the equipment doesn't have an encoder on it.

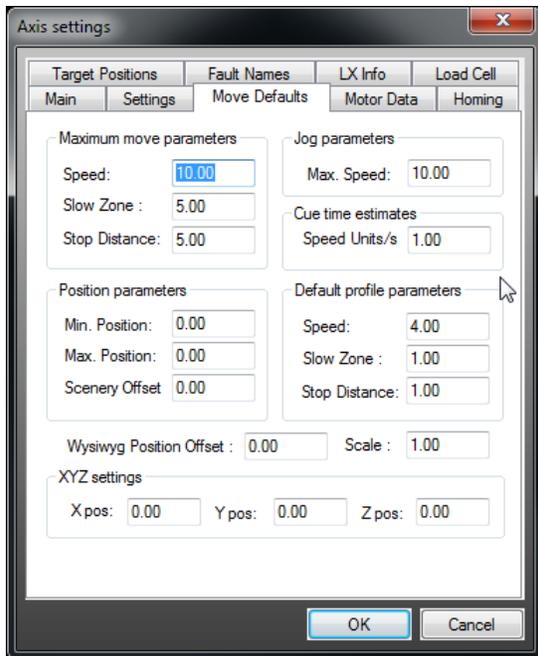
Position Tolerance: Distance a piece can be from its intended target, but still be treated as if it has reached its target. Default is 1/2" for linear axes, 0.5° for rotational axes.

Extra Encoders: The values contained in the PPU2 and

PPU3 fields should be what was obtained during the calibration procedure. Offset options are available if these encoders are measured from a different starting points than the main encoder.

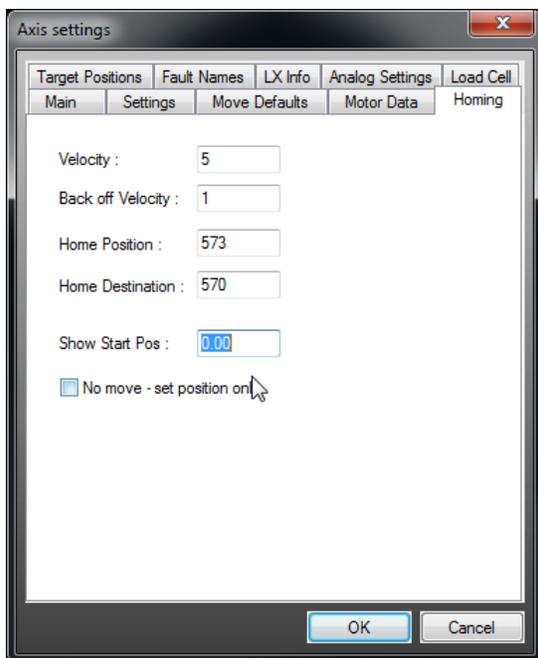
Inputs configuration: These values are system dependent variables and are set up by **RAYNOK ADMINISTRATORS** during system startup.

Force Start position of profiles to zero: Check the box if you want your axis to automatically reference every move from a zero position, as opposed to a position tracked through cues.



hangs from the top of the mechanical element, so this can be changed to the offset the piece has from the minimum position and the floor/stage.

Default Profile Parameters: Enter the default values the axis uses as default speed. When entering cues, Manual Moves, or Manual Moves to start of a cue, the lowest values will be defaulted. Use your best judgment when assigning these values. Standard convention is to use velocity 1.0 and the Slow Zone/Stop Distance determined during system startup.



Show Start Pos: Sets the position at which the piece begins the show cue sequence.

No Move - set position only: No movement will occur; the current position of the axis will be set to the value set in the *Home Position* field.

Note: Velocity values entered are in *units/second*, while positions are in *units*.

Maximum Move Parameters: Enter the maximum values the axis can attain during regular cue execution. These values can be found in the system specifications.

Slow Zone specifies the distance the axis takes to slow down from max. speed to speed 0.0 (i.e. crawl speed). *Stop Distance* is the distance it takes the axis to stop from crawl speed when a stop command is issued.

Jog Parameters: Enter the maximum values in units/second that you wish the jog function be limited to. These values must be set before jog functions become available. Be cautious when setting your max jog speed, it is much easier to abruptly stop a piece while jogging.

Cue Time Estimates: Enter the maximum speed this axis is moving - this value is used to determine time duration of a profile in a cue

Position Parameters: Enter the positions parameters (in units) the axis can attain while running Manual Moves and Cues. Some axes will have certain default positions that can not be exceeded when they are running, with a minimum and maximum position set by the operator. *Scenery Offset* is intended for a set or scenery piece that

If position is lost on an axis, such as in the scenario where a **RAYNOK** Controller unit's power is interrupted, a *Homing Command* may be sent to the axis in order to re-establish its position.

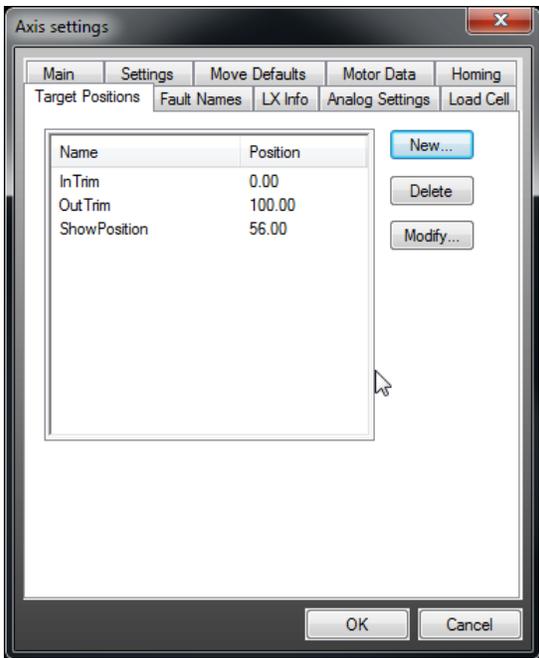
When a *Homing Command* is executed the axis will move until it reaches a *limit* and turns around. The *limit switch* is a hardware level switch installed in a specified position on each axis. There is a natural delay between the unit reaching the *limit switch* and it's ability to stop.

Velocity: Sets the speed at which the axis will home.

Stop Distance: Distance it takes the axis to stop from crawl speed when a stop command is issued (used when home destination move is executed).

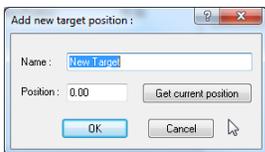
Home Position: The position where the *limit switch* clears. This value will be used to automatically update the axis current position unless 0.00 is entered.

Home Destination: Used if a lineset is to be automatically moved to a specific position after homing sequence is completed.



Target positions are named positions of the axis that are useful for the operator. The specified positions are given names so that they can be set within the *Cue Info View* for that particular axis. For example, if there are 3 positions on the axis that are used frequently, the operator can name these 3 positions with short names like *Intrim*, *ShowPos*, and *OutTrim* instead of typing the actual values in the *Cue Info View*. This speeds up the cueing process and ensures that there are no mistyped values when setting up gets hectic.

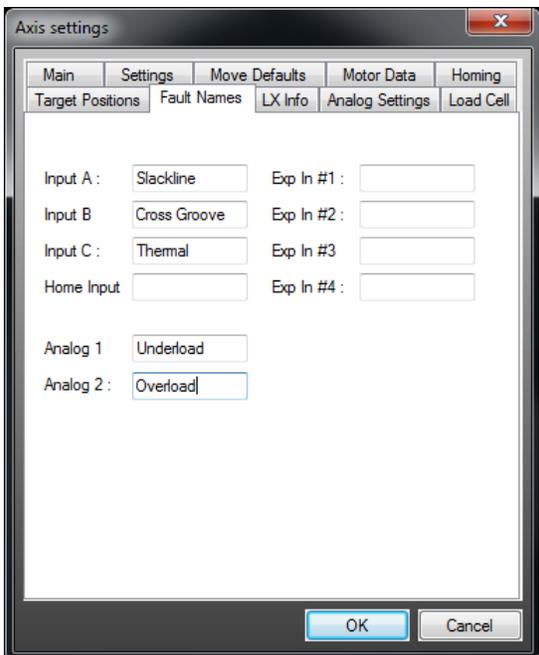
Note: If a target position is named the same as a *Global Value*, it will override that value for this particular axis. This is useful if an axis within an axis group is physically different from its counterparts and the group is selected, and don't want it going to the same position as the others.



This dialog shows up when a new target position is added. Enter a meaningful name and a position that is associated with the name. Click 'Get Current Position' to fill the Position field with the axis' current position.

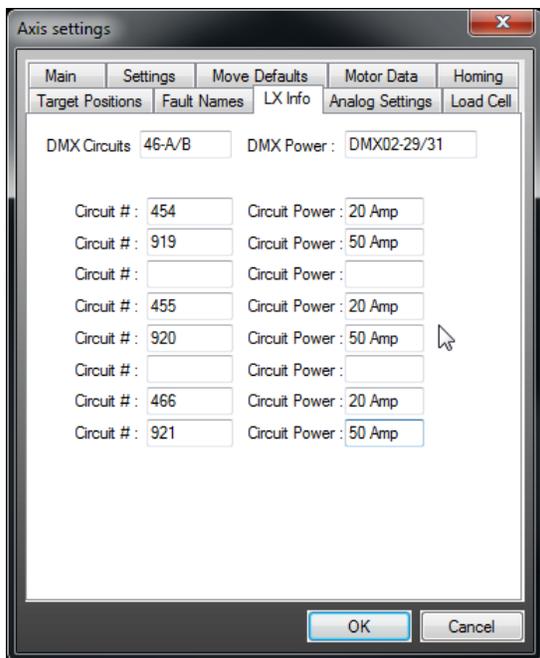
Note: Regarding *Target Positions*: the *Global Target Database* within the *Controllers Menu* contains target positions that can be used for every axis on your system. The setup is the same as for *Target Positions*.

Copying Axis Properties: Once you setup all the axis settings and you have axis in the system with similar configurations, you can use Copy and Paste Axis Properties command in Cue Info view to selectively copy and paste axis settings.



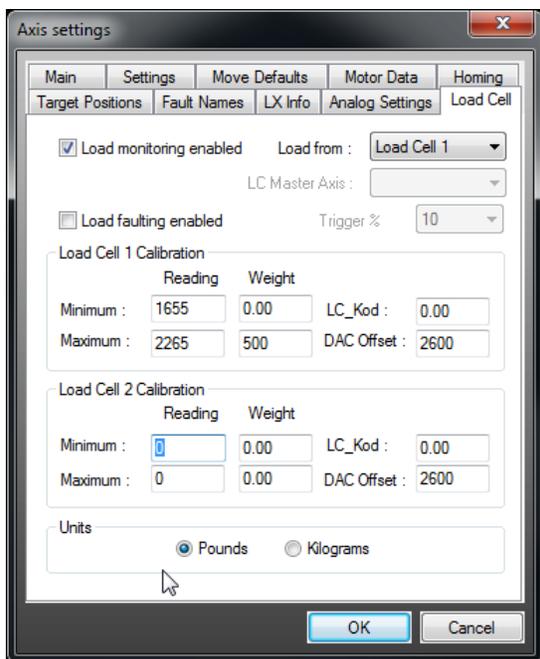
Axis Fault Names

Enter the names of specific sensors and interlocks that are connected to axis inputs. These are machine dependant.



LX Info

In some installations the axis is used as a lighting system batten. In these instances, DMX, circuit number and power information can be entered into the Show File. These values are then used and shown in the Axis Mimic dialog.

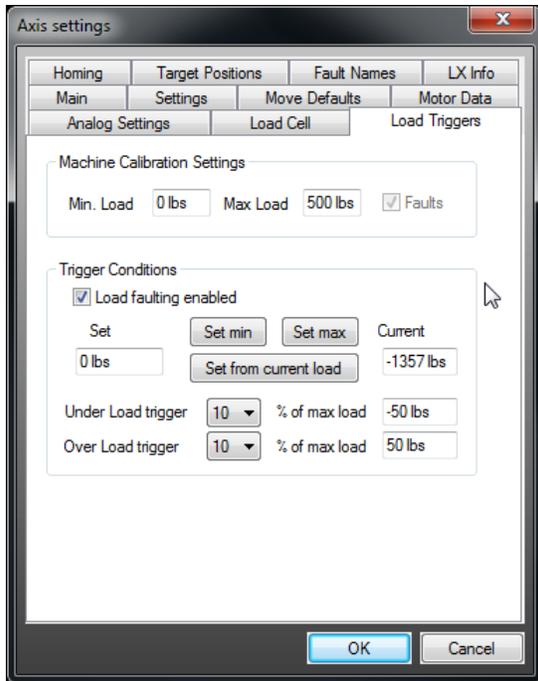


Load Cell

If the system is equipped with load cells, during the installation process the *Load Cell* settings will be entered for that axis.

Calibration: Minimum and Maximum calibration settings for the axis. These values are determined during the system setup by the **RAYNOK ADMINISTRATOR** and should not be changed.

Units: Choose pounds or kilograms. This will determine which unit **RAYNOK** shows in the *Cue Info View*.



Load Triggers

If *Load monitoring* is enabled in the *Load Cell* page then the following adjustments become active.

Machine Setting: Shows the Minimum and Maximum values.

Trigger Conditions: When the *Load faulting enabled* box is checked, the weight trigger of the load may be entered in the *Set Load* box or taken from the *Set from current load* button.

Under *Load trigger* and *Over Load trigger* percent values allow for setting of trigger points that if reached will trigger a fault and stop the axis.

CALIBRATING YO-YO DRUMS

Wind-up or Yo-Yo drums are calibrated in a different manner than regular cable hoists. In most cases, this type of winch will be set up by the **RAYNOK ADMINISTRATORS** during system setup. If for any reason this is not the case, follow the instructions below to set up your wind-up drums.

NOTE: This process involves physically moving each axis; make sure you follow all safety procedures before proceeding.

NOTE: This process requires you to be in *Online mode*. To switch to *Online mode*, select *Go Online* from the *Setup menu*.

WARNING: You will be able to move axes from within **RAYNOK** - proceed with caution!

Prior to calibrating the axis, take the following measurements on the drum:

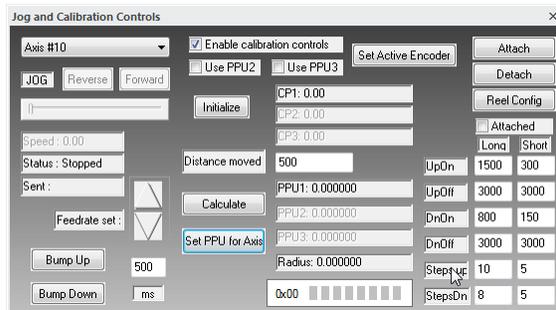
- 1) **Cable thickness:** Measure the thickness of the cable to within 3 decimal points.
- 2) **Slot Width:** Measure the width of the slot where the cable is located on the drum
- 3) **Gear Ratio:** Find this on the gear box of the motor.
- 4) **Encoder resolution:** obtain this from the encoder documentation. Typical resolution is 1024 slots.

When these values have been obtained, use the following calculations to determine the values to input into the *Axis Properties* of the axis.

WH (Wrap Height): $\text{sqrt}(\text{cable_thickness}^2 - (\text{slot_width} - \text{cable_thickness})^2)$

PPR: (Pulses per Revolution): $\text{enc_resolution} * \text{gear_ratio}$ (unitless result).

Insert these two values into the correct fields in the *Axis Properties* of this axis. POffs and Radius will be dealt with after calibration is completed. **Also make sure to check the 'Yo-Yo' checkbox before proceeding.**



Under pendant control, move the axis to a point from which to take a measurement - try to have the drum as unraveled as possible for the best calculation results. Ground offsets can be added later in the *Axis Properties* (*POffs* field).

Select the *Enable Calibration Controls* checkbox.

Click the *Initialize* button to set a start position.

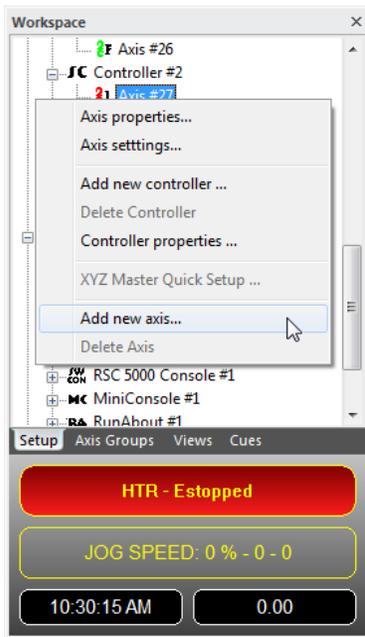
Under pendant control, move the unit a measured distance. The more exact your measurement and the longer the distance traveled the better.

Enter the distance traveled in the *Distance moved* field. (Any units of measure may be used as long as you use them consistently throughout the software)

Click on the *Calculate* button to calculate the conversion from actual units of measure to encoder counts for that axis. The *Radius* will also be calculated and displayed during this step.

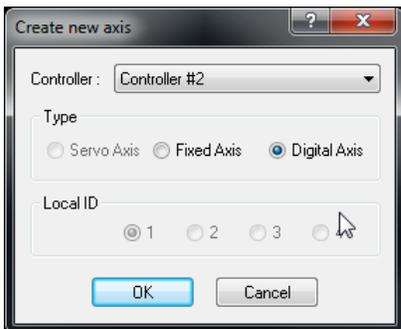
Click on *Set PPU for Axis* to set the calibration value for the axis. The radius will also be set during this step. Ensure that all the values are correct in the *Axis Properties* and note these values down for later reference. *Be sure to leave a paper trail of anything that is done in software!*

ADDING AND CONFIGURING DIGITAL AXES

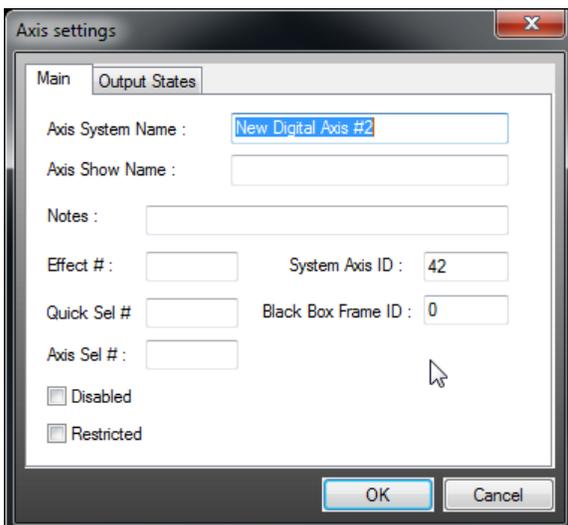


To add digital axes, in the *Workspace Setup* tab, *Left-Click* on the *Workspace Setup* tab to highlight it, then *Right-Click* in the *Workspace* to bring up the *context sensitive pop-up menu*, and select *Add New Axis*.

The *Create New Axis* dialog box will appear.



Select the controller you wish to add an axis to from the *drop down menu*, select the *Digital Axis* radio button, and *Click OK* to bring up the *Axis Properties* dialog box for your new digital axis.

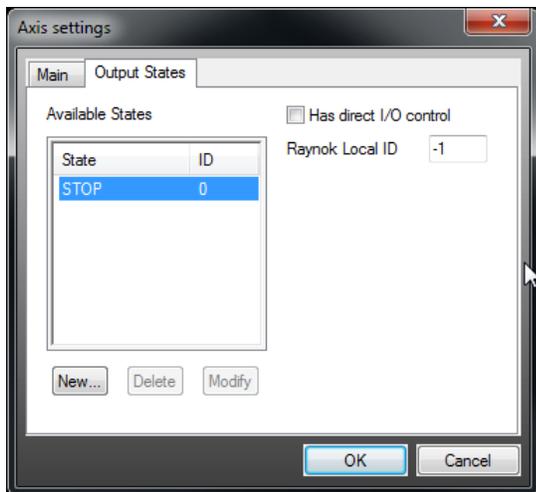


Name: Enter the name of the axis (usually the name of the element it is controlling).

Notes: Enter any reminders you would like concerning the axis.

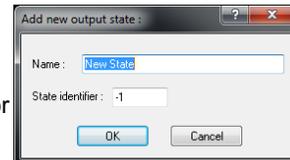
Effect #: Enter an effect number or ID, if your production has assigned one.

Disabled: Check the box if you wish to disable the axis from all activity. The other axes controlled by the same **RAYNOK** Controller unit will still function.

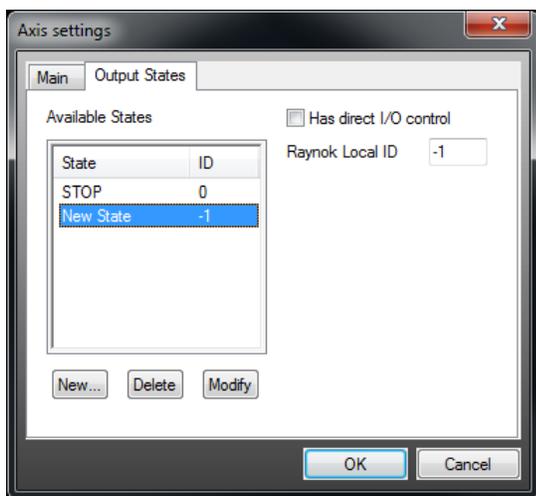


A digital axis can output values of on/off to more than one digital Output on the controller to which it is assigned. The *Available States List* lists the commands you are able to send to the digital axis, and their ID. The ID can be any unique number with the exception of zero, which is reserved for the default Stop command.

Click on the *New... button* to bring up a window that allows you to enter the name of a new state, and an ID for it. For simplicity's sake, you may wish to number the IDs sequentially as you add them.

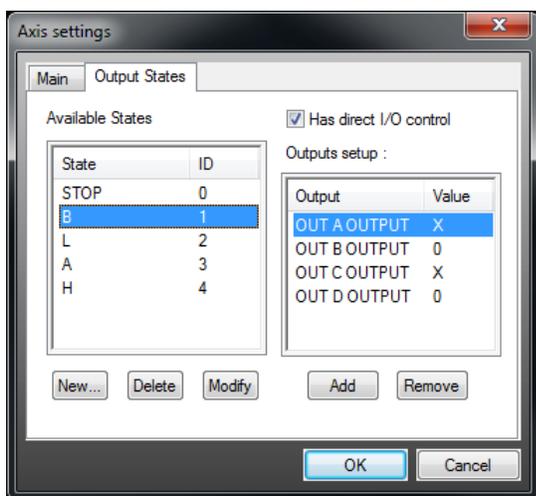
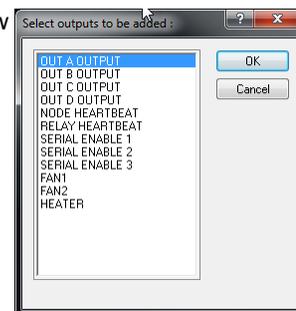


Click *OK* when you've entered a name and ID.



Clicking on the *Has Direct I/O Control checkbox* allows you to do the following:

Click on the *Add button* below IO setup to bring up a list of available Digital Outputs. Select any Digital Outputs you want controlled by the digital axis with *Shift-Click* or *Ctrl-Click* and *Click OK*. You now have two lists in front of you - one list with available states, and one list with Outputs.



The next step is to specify what bits are sent to the Output relays by an Output state. *Highlight* an output state, then *Double-Click* on an Output in the Output Setup List to change its state. Possible states are:

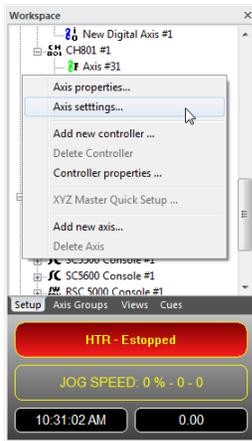
- 0 - Off:** internal relay is open, circuit is open
- 1 - On:** internal relay is closed, circuit is closed
- X - State of relay is not modified**

Once all your states are set, *Click OK* to close the dialog box. This process needs to be repeated for each digital axis in your show.

Digital devices, which require more than a simple on/off instruction to operate, can also be set up through this dialog box. Their specific instructions can be hard coded into the **RAYNOK** Controller. Contact Niscon Inc. in case you wish to add this type of device. If your system already incorporates one or more of these devices, they would have been assigned a specific **RAYNOK** Controller Local ID. This number may be entered while the *Has Direct I/O control checkbox* is left *unchecked*. The Available states, and their IDs will be pre-determined and available as a list from Niscon Inc. for every such digital axis.

CONFIGURING CHAIN MOTOR AXES

When an CH-800 Controller has been added to your show, 8 Chain Motor axes are automatically added with it. *Double-Clicking* on a controller name in the *Workspace Setup* tab will expand the tree to show the axes controlled by that **RAYNOK** Controller unit. Since there is a wide range of possible chain motor configurations that can be attached to an axis, every axis must be configured to correspond to the chain motor it is attached to.



Left-Click on the Chain Motor axis' name to *highlight* it in the *Workspace Setup* tab, then *Right-Click* within the *Workspace* to bring up the *context sensitive pop-up menu* and select *Axis Settings*.



Calibration: Select the chain motor that is attached to the axis. Pulses/inch and Vel will automatically be readjusted according to the configuration chosen. Alternatively, the “other” option can be selected and the motors can be calibrated as any other axis.

Homing: Enter the *Home Position* that would be used to set the hoist current position when “home” command is executed. Show Start Position sets the position at which the hoist begins the Show Cue Sequence.

Position Tolerance: Distance a piece can be from its intended target, but still be treated as if it has reached its target. Default is 0.50”.

Position parameters: Enter the positions parameters (in units) the axis can attain while running Manual Moves and Cues. Some axes will have certain default positions that can not be exceeded when they are running, with a minimum and maximum position set by the operator. *Scenery Offset* is intended for a set or scenery piece that hangs from the top of the mechanical element, so this can be changed to the offset the piece has from the minimum position and the floor/stage.

Default profile parameters: Enter the default values the axis uses as default speed. When entering cues, Manual Moves, or Manual Moves to start of a cue, the lowest values will be defaulted. Use your best judgment when assigning these values. Standard convention for fixed speed chain hoists is to use velocity 1.0 and the Slow Zone/Stop Distance determined during system startup.

Port and Hoist Index: These values are set to identify the connected hoist.

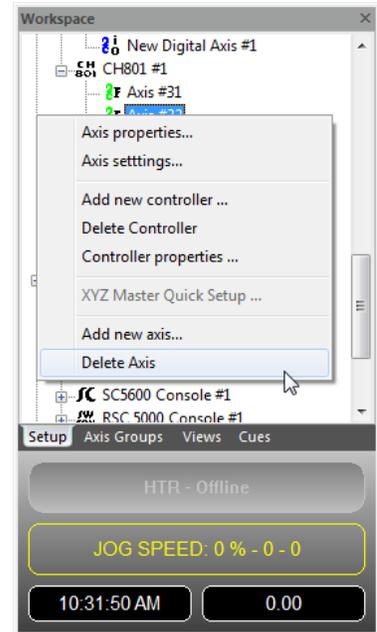
The next tab, *Target Positions*, is the same as for servo and fixed axes.

ADDING AND DELETING AXES

If you are using less than four servo axes on your **RAYNOK** Controller unit, you can delete unused axes by *highlighting* them, then *Right-Clicking* and selecting *Delete Axis* from the *context sensitive pop-up menu*. **THIS OPERATION IS ENABLED ONLY IN THE OFFLINE MODE.**

Servo axes can also be added in a similar fashion. *Left-Click* on the *Workspace Setup* tab to *highlight* it, *Right-Click*, and select *Add New Axis* from the *context sensitive pop-up menu*. Select the controller you wish to add an axis to from the *drop down menu*. Pick the *Servo Axis radio button*, and available Axis ID numbers will activate. Then select the one you wish to add and *Click OK* to bring up the *Axis Properties dialog box*.

F-Series and Digital axes are added and deleted in the same fashion.



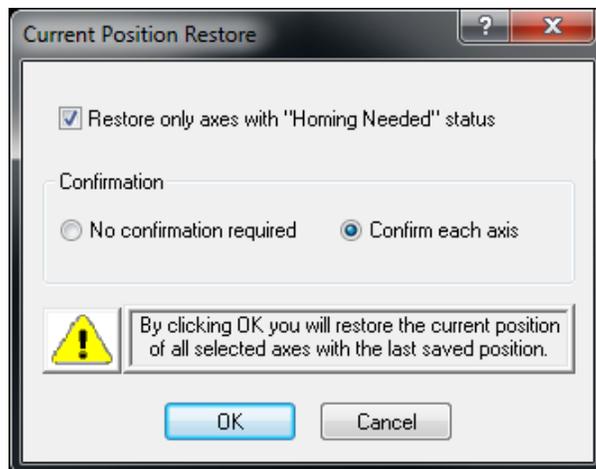
SAVING AND RESTORING POSITIONS

It is strongly advised to save current positions of axes intermittently throughout a show. A power failure for the controllers could potentially cause a reset of axis positions and would require a homing of axes. These positions can then be restored without the need of actually running the homing sequence.

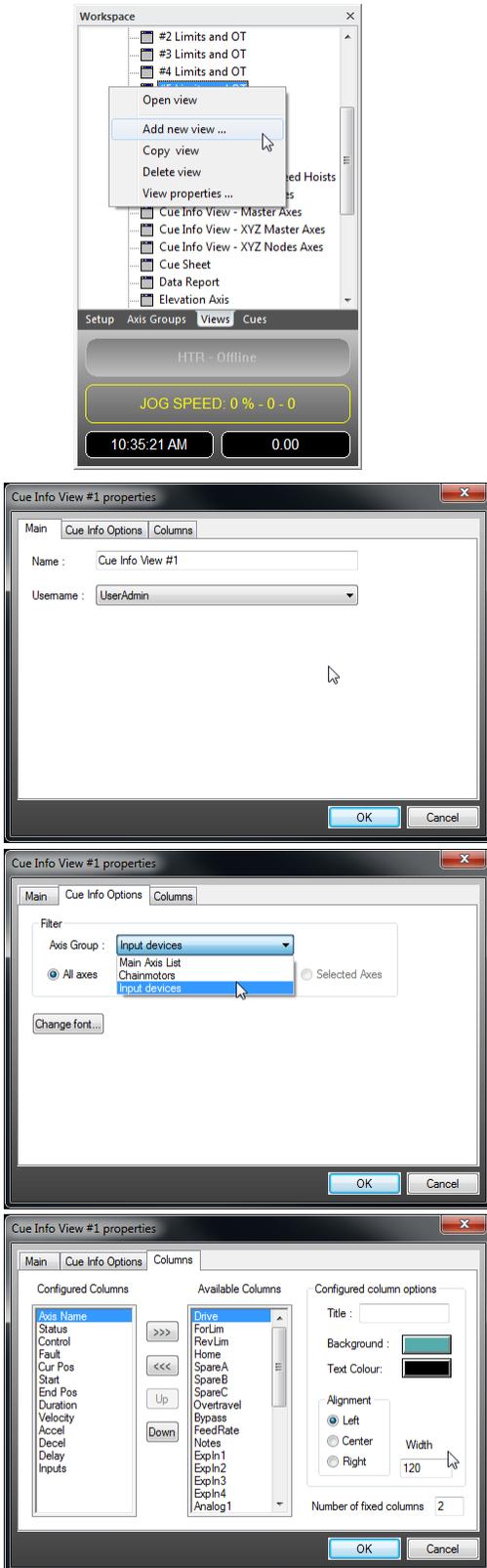
It is also good practice to save positions after a show so that the next operator using the software can restore positions at the beginning of the next work day if required.

To access saving and restoring positions, point to the *Controllers Menu* and choose the desired task at the bottom of the menu. To save positions, select the desired axes in a Cue Info View you wish to save positions for. Hold CTRL to add additional axes or use SHIFT to select a whole range.

To restore positions select axes you wish to restore and execute the "Restore current positions" command. The dialog shown below appears. The user can choose if a confirmation is required for each axis or not, and also the option of only restoring positions for axes that need homing. If the confirmation option is selected a dialog will appear for each axis as its position is restored, indicating time when it was last saved and confirmation question to restore the current position.



CONFIGURING VIEWS



Click on the *Views* tab of the *Workspace* window. You will see a list of several views under the *System views* section heading. Working with views will be described in the *Views* section.

You will notice that there is a window open named *Cue Info* view, which list all of your axes and their various properties/states. Once your two new views are created you can close this view, for now just minimize it.

Highlight the *System views* section heading, and *Right-Click* to bring up the *context sensitive pop-up menu*. Select *Add New View*, and a list of available view types will appear. Highlight *Cue Info* view and *Click OK*.

Name: Enter a meaningful name for your view.

Username: Allows you to associate the view with a specific user. This will be explored in more detail in the *Cue Info View*; for now select *System views* from the *drop down menu*.

Axis Group: This allows you to select an axis list to be displayed in this view. Remember, you should create separate views for servo and digital axes if applicable.

Radio buttons: Lets you further filter down the axis shown in the view, these will be discussed in *Cue Info View*. For now, keep *All Axes* selected.

Change font: This will bring up a familiar *Windows™* dialog box used to change font settings for the view.

The *Columns* tab allows you to modify the information displayed in your view. It will be discussed in detail in the *Cue Info* view section. For now, you can leave the default setup.

Repeat this process for all the views you wish to create, after which you should have a view for servo axes and a view for digital axes (as applicable).

Double-Click on the view names you created in the *Workspace Views* tab to bring them up on the screen.

With all of your hardware specified, configured, grouped, and views created, **RAYNOK** is now ready to move your scenery.

NOTE: Before you move any scenery make sure your E-Stop system is fully functional.

EXECUTING MULTIPLE CUES AT THE SAME TIME

The *Cue Multi Select Dialog Box* allows the user to select and execute multiple cues together or individually. The GO Commands are only available while **RAYNOK** is online. This Dialog box is accessible by the Macro Command *CUE Multi Select* (see Macro Views).



Select the *Automatically add cues as they are selected* check box to add cues as they are selected.

Add Cue: Adds the currently selected cue to the list - enabled when the above check box is cleared.

STOP - Stops all motion.

GO Selected Cue - Executes a GO command for the selected cue,

GO All Cues - Executes a GO command for all cues listed within the dialog box.

Remove Cue: Removes the selected cue from the list.

Click *Close* when you are done working with the *Cue Multi Select* Window.

KEYBOARD COMMANDS

- F1 - Help
- F2 - Stop everything that's running and turns all digital I/O off
- F3 - Toggle manual cue mode
- F4 - Standby power up all motors that are active in current cue
- F6 - Toggle Show/Edit Mode
- F7 - Previous cue
- F8 - Next cue
- F9 - GO

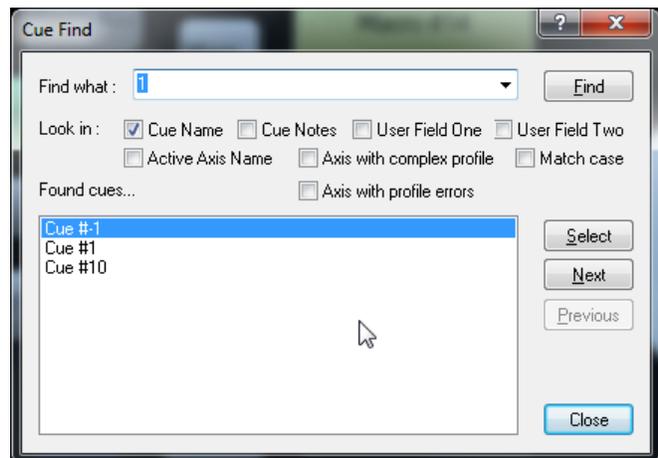
DEFINITIONS OF COMMON ACRONYMS

- F - Forward Limit
- R - Reverse Limit
- O - Overtravel
- B - Belt Detection
- S - Spool Detector
- SW - Bypass/Reset Switch
- L - Slack Line
- T - Thermal Sensor
- Link S - Link Slave Axis
- Link M - Link Master Axis

CUE FIND

The *Cue find window*, accessible through the *Cues menu*, can be a helpful tool for finding cue and axis information, especially when making global changes to cues (i.e. changing targets used in more than one cue).

Find What: Enter the information you wish to look for.



Look in: Check the boxes corresponding to the data fields you want searched. The functionality of this feature is directly affected by the significance of the data you enter in various fields. Keep the use of this function in mind, i.e. when filling in cue notes, user field one, and user field two.

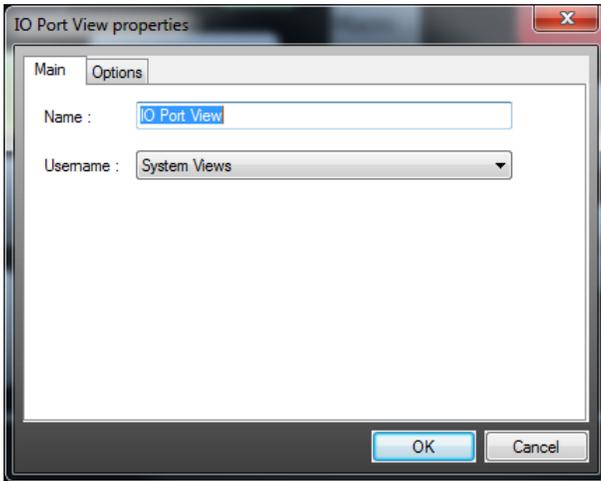
Use the *Select*, *Next*, and *Previous* buttons to select the various cues for editing or execution.

Click *Close* when you're done working with the *cue find* window.

VIEWS

One of the keys to getting the most out of **RAYNOK** is to understand the information being displayed through the various views. Most views are straight forward, however the IO ports viewer and signal viewer can be easily overlooked and will be given special attention in the following section. They are both extremely valuable tools for "at a glance" information regarding the present functional status of your various effects.

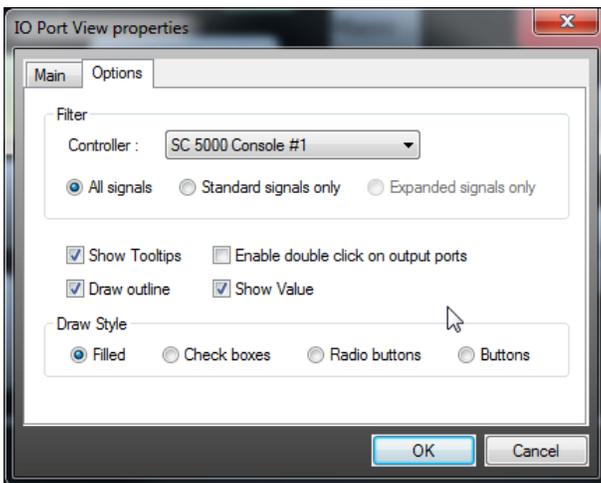
I/O PORTS VIEW



The IO port viewer can be opened from the *Views tab* of the *Workspace*. Click on *System views* to highlight it, then *Right-Click* to bring up the *context sensitive pop-up menu*. Select *Add New View*, and pick *IO View* from the list which appears. Then *Click OK*.

Name: Enter a meaningful name for your view.

Username: Allows you to associate the view with a specific user. This will be explored further in *Cue Info View*. For now select *System views* from the *drop down menu*.



Controller: Select the **RAYNOK** Controller you want included in the view.

All Signals: Will display all controller signals.

Standard Signals Only: Will display standard controller signals.

Show tool tips: Displays name or function of IO as a standard Windows™ tool tip (hold cursor over top of IO without clicking).

Enable double click on output ports: Used in **RAYNOK** Controller hardware communication testing. Leave disabled.

Draw outline: Draws a dotted line box around each IO Port.

Show Value: Shows or hides the input port value in hex notation.

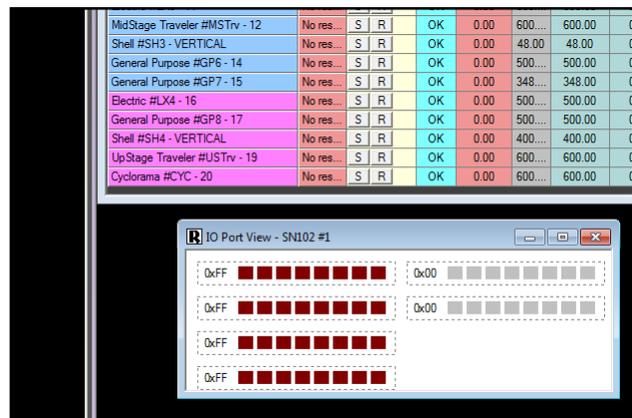
Filled: Displays the IO activity as a filled gray box (inactive) or filled red box. (active)

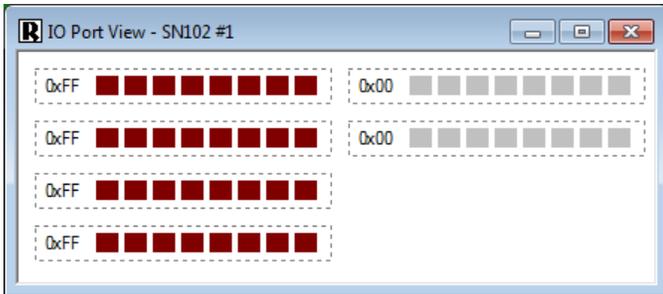
Check boxes: Displays a check in a box if the IO is active.

Radio buttons: Displays a filled radio button if IO is active.

Buttons: Displays the IO activity as a pushed gray button (inactive) or filled gray button. (active)

Click *OK* when you're done setting up your IO port view. *Double-Click* on the view name in the *Views tab* of the *Workspace* to bring it up on the screen.



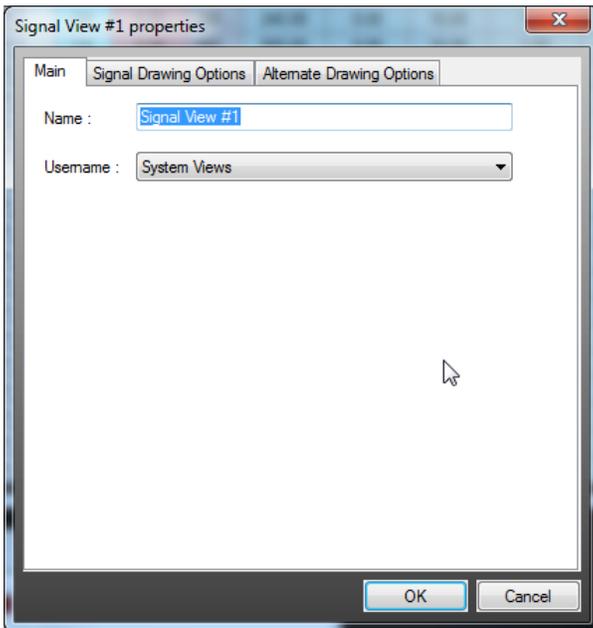
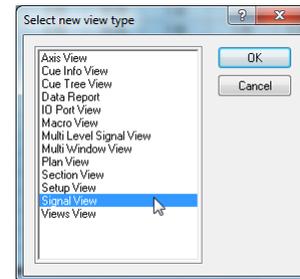


IO Port views represent the status LEDs on the **RAYNOK** Controllers. These views are most often used as a diagnostic tool in scenarios where an axis failed to execute a profile. The problem axis can be brought up in an *IO view* to verify that the **RAYNOK** Controller actually sent instructions to the axis' motor drive, or the digital axis' relay. The hex value of the axis or port can be displayed next to each row of status indicators. In cases when the status of digital axes needs to be monitored regularly, signal views can be set up and customized as a more intuitive way to view this information.

SIGNAL VIEW

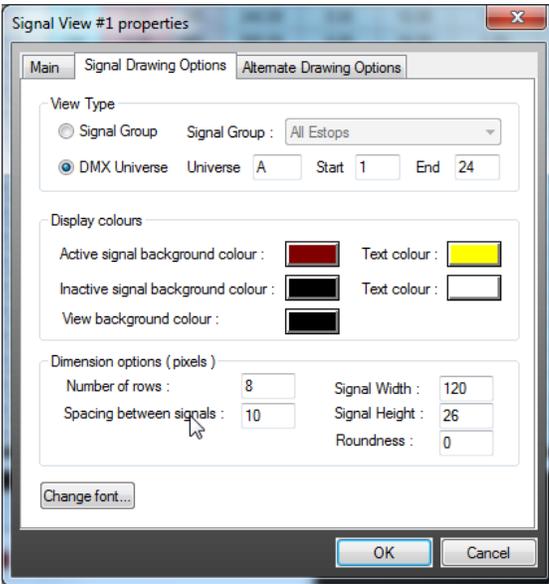
A Signal view can be created if you need to monitor the state of a digital axis, for example a locking mechanism, or accumulator charge.

A signal view is created within the *Workspace Views* tab by *Clicking* on *System views* to *highlight* it, then *Right-Clicking* to bring up the *context sensitive pop-up menu*. Select *Add New View*, and pick *Signal View* from the list that appears. *Click OK* to open the *Signal view properties window*.



Name: Enter a meaningful name for the view.

Username: Allows you to associate the view with a specific user. This will be explored further in *Cue Info View*. For now select *System views* from the *drop down menu*.



Signal Group: Select the signal group you want to display in the signal view.

DMX Universe: Select the *Universe*, *Start* and *End* channels to display.

Display colours: Click on the coloured boxes to select colours for your view. Try to keep the active and inactive signals contrasting colours for easy at a glance viewing.

Dimension options: Lets you customize the layout and specify the amount of space the signals will take up.

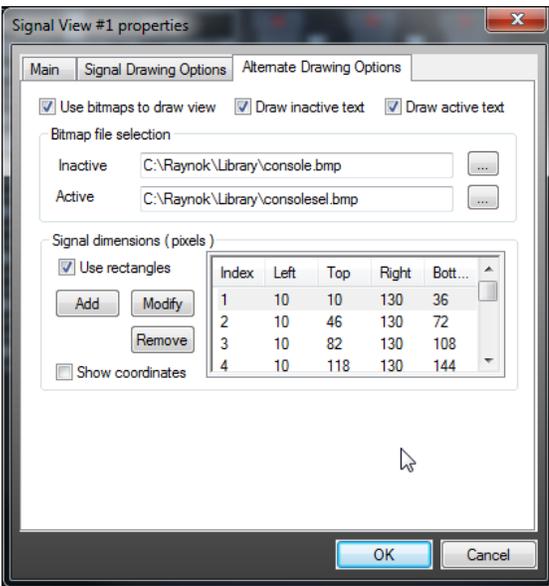
Number of rows: Sets the max number of rows the signals will take up.

Spacing between signals: Sets the number of pixels between each signal.

Signal width: Sets the width a signal takes up in pixels. (It will need to be adjusted depending on the signal name length)

Signal Height: Sets the height a signal takes up in pixels. (It will need to be adjusted depending on the signal name font size)

Roundness: Sets the amount of rounding the corners of the signals will have.



Use bitmaps to draw view: Lets the user choose a previously created bitmap for signal view buttons, both active and inactive

Draw inactive text: Inactive signals will be drawn on the screen.

Draw active text: Active signals will be drawn on the screen.

Bitmap file selection: Choose the bitmaps for the signal buttons using the *browse button*.

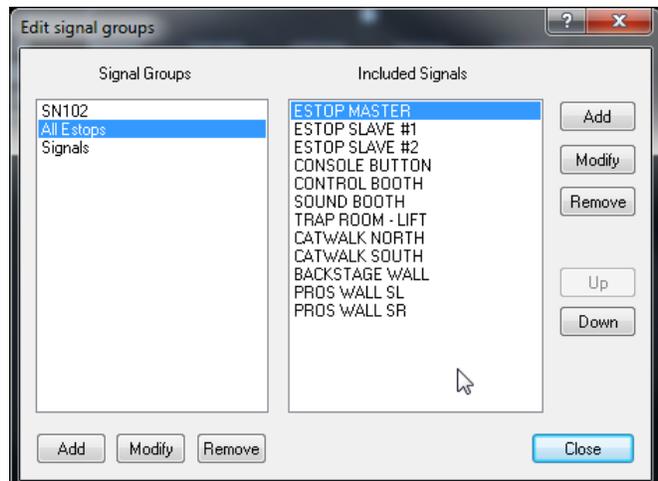
Use rectangles: *Add* will open up a dialog that lets the user input the 4 coordinates of a new rectangle signal box, while *modify* will let you change the coordinates of a chosen rectangle. *Remove* will delete a chosen rectangle.

Show coordinates: A real-time x-y coordinate display will show up in the bottom-left corner of the signal view when the mouse is passed over it. This is helpful when designing a custom signal view.

This window modifies the groups being displayed in the *Signal View*. It can be accessed from the *Controllers Menu* as well.

The signal groups portion contains a list of all available signal groups. Existing signal groups can be used and modified with the *Modify button*, or additional groups added by *Clicking* on the *Add button*. The *Remove button* will remove a *highlighted* signal group.

Once the signal group to be use is *highlighted*, a list of included signals appears in a portion of the window. If a new group is being used, that list will be empty. Signals can be added to the group by *Clicking* on the *Add button* on the right hand side of the window.



Controller: Select the controller from which you want to add signals. Only one controller's signals may be added at one time. *Highlight* the Inputs and/or Outputs you would like to include in the signal group from the lists, and *Click OK* when you're done. If you want a single Input or Output to trip two signals (an ON/OFF set of signals), then add that IO twice.

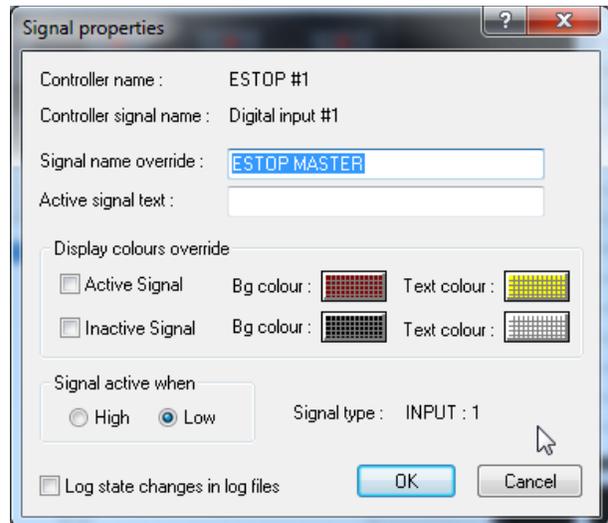
Once all the signals you want to include have been added, their individual properties can be set using the *Modify* button.



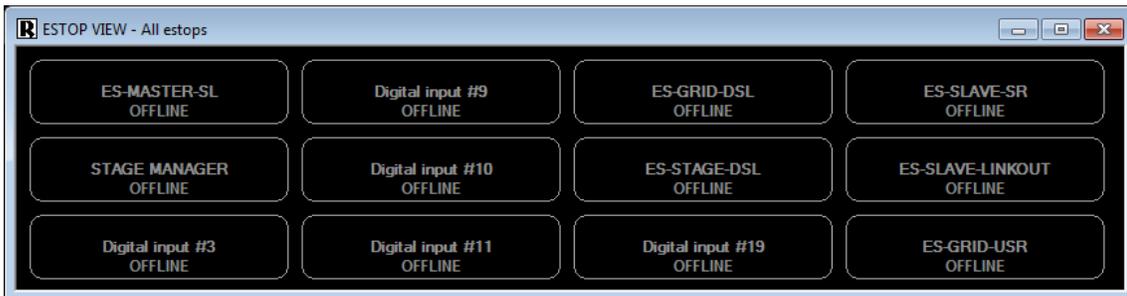
From this window, you can enter an override name for the signal. This overridden name will only display within the *Signal View window*. You can also set the active high/low properties for that signal. If you want one IO to trigger an ON as well as an OFF signal, set one of the signals to active high, and the other one to active low.

You can check the checkbox 'log state changes in log files' to make sure that the active state changes will be logged. This is useful, for example, when logging changes in signals that report active e-stop signal buttons.

Click OK when you're done.



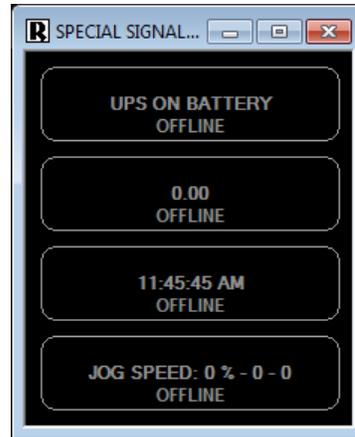
The order in which the signals appear can be changed within the signal view. This can be done by *highlighting* the included signal and *Clicking* either on the *Up* or *Down* buttons to move the signal up or down the list respectively. This feature will let you keep pairs of signals, such as ON/OFF for a lock, together.



Once satisfied with the view, *Click* the *Close* button.

SPECIAL SIGNALS

There are currently several special signals you can create by overriding a signal name with one of the following specific reserved signal names.



“SPECIAL CLOCK THINGY” - Will create a signal that contains the current system time.

“SPECIAL TIMER THINGY” - Will create a signal that contains the time left until the end of the current cue.

“UPS ON BATTERY” - If The UPS status signal is utilized by the system, using this signal will (if enabled) automatically save current positions of all axes approximately 10 seconds after the signal goes active. (see Application Options/Optional Features Page)

“SPECIAL AF THINGY” - Will create a signal that displays the current status of autofollows (enabled/disabled).

“SPECIAL JOYSTICK THINGY” - Will create a signal that displays the current percentage value of the speed control joystick active in the system.

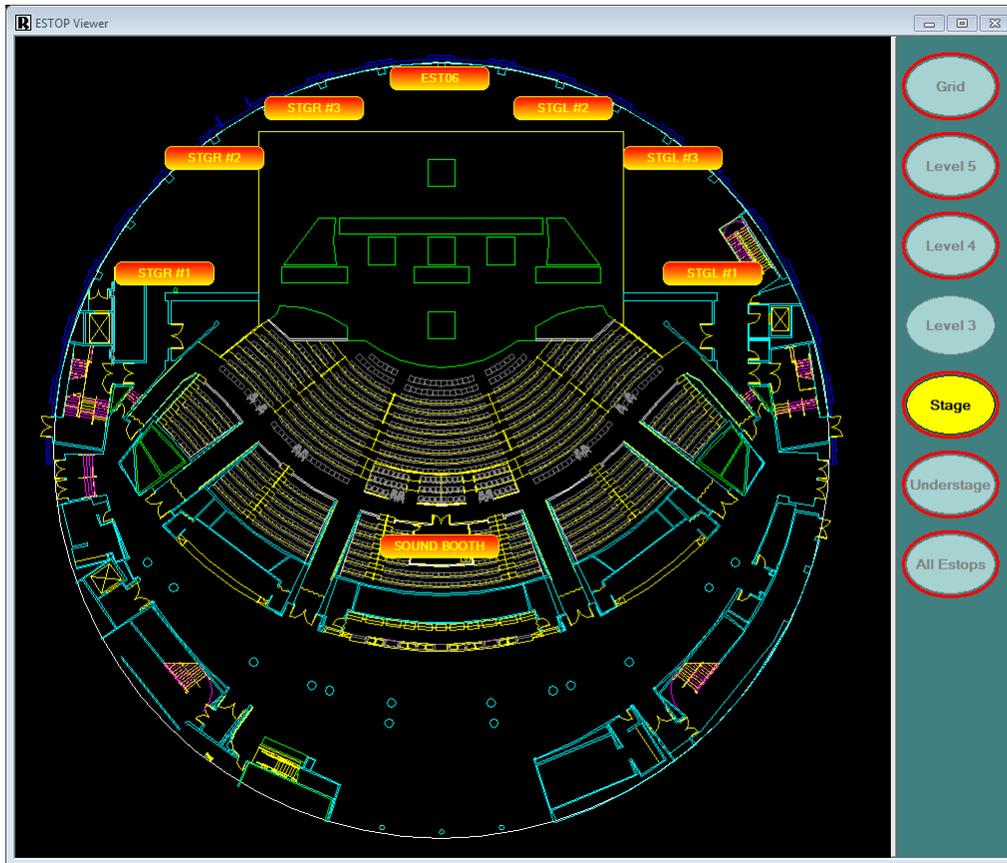
“SPECIAL DMXTRIG THINGY” - Will create a signal that will show status of DMX triggering for the DMX trigger manager. Possible text strings are:

```
DMXTRIG: ENABLED :CE:ON, DMXTRIG: DISABLED:CE:ON,
DMXTRIG: ENABLED :CE:OFF, DMXTRIG: DISABLED:CE:OFF
```

```
DMXTRIG: DISABLED and DMXTRIG: ENABLED specify current status of dmx triggering
CE:ON and CE:OFF specify current state of Cue Enable Channel
```

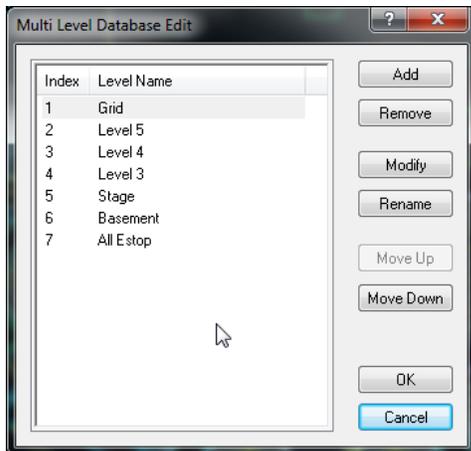
Note: *Draw Inactive Text* as well as *Draw Active Text* must be clicked in the *Alternate Drawing Options* to have the numbers showing in real time.

MULTI LEVEL SIGNAL VIEW



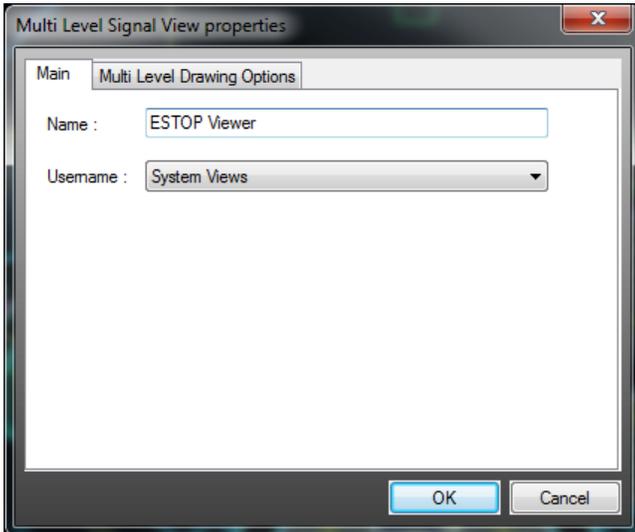
The Multi Level Signal viewer allows you to switch between individual levels of signal groups within the same window. Essentially each level within the Multi Level Signal view has the same functions and features as a single signal view. Each level can be accessed by selecting its relative button on the right of the Multi Level Signal Viewer -- only one layer can be displayed with in the viewer at a time.

See the Signal Views section for description of *Edit active level properties*, *Edit signal groups*, and *Edit signal properties* commands.



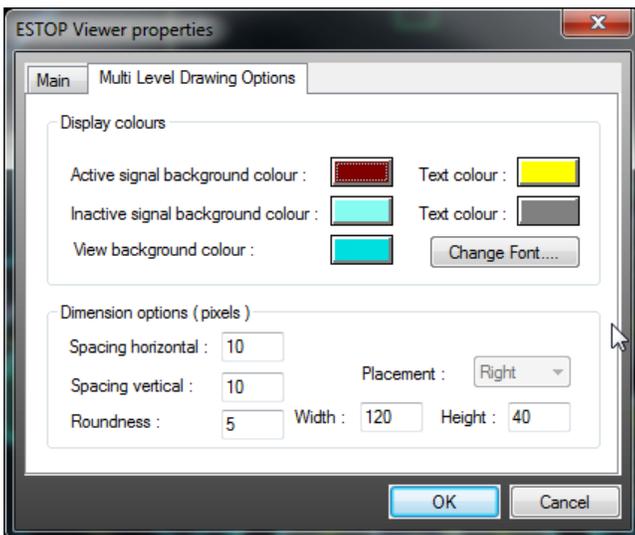
The Multi Level database Edit, which is accessed by the right click menu's *Edit Levels*, allows the user to *Add*, *Remove*, *Modify*, and *Rename* a level. The user can also alter the order by which they are listed in the viewer by using the *Move Up* or *Move Down* buttons.

The Multi Level Viewer Properties can be accessed through the right click menu.



Name: Enter a meaningful name for your view.

Username: Allows you to associate the view with a specific user. To make the view available for all users, select *System views* from the *drop down menu*.



Display colours: *Click* on the coloured boxes to select colours for your view. Try to keep the active and inactive button colours contrasting for easy at a glance viewing.

Dimension Options: Lets you customize the layout and specify the amount of space the buttons will take up.

Spacing horizontal: Sets the horizontal number of pixels between each level selector button.

Spacing vertical: Sets the vertical number of pixels between each level selector button.

Width: Sets the width a level selector button takes up in pixels. (It may need to be adjusted depending on the signal name length).

Height: Sets the height a selector button takes up in pixels. (It may need to be adjusted depending on the signal name font size).

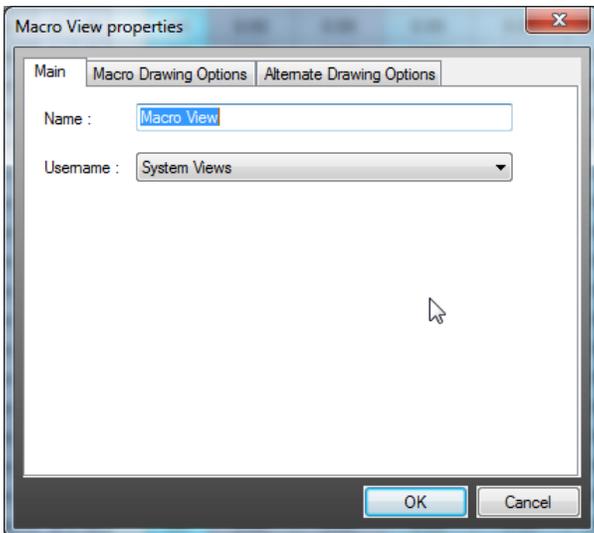
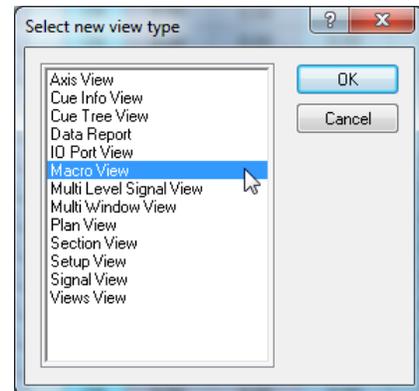
Roundness: Sets the amount of rounding the corners of the buttons will have.

Once satisfied with your viewer's properties *Click* the *OK* button.

MACRO VIEW

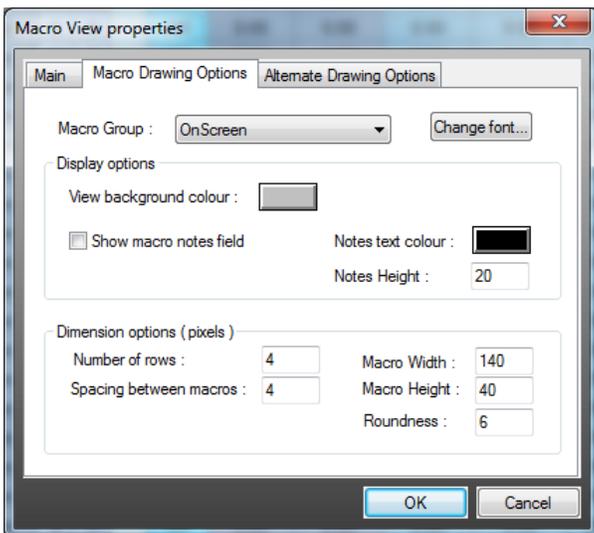
Macro views are used to provide additional control triggers in your interface. Macro views provide buttons which can trigger cues, stop axes, disable groups - basically anything which can be executed in **RAYNOK** can be executed from a macro button.

A Macro view is created within the *Workspace Views* tab by *Clicking on System views to highlight it*, then *Right-Clicking to bring up the context sensitive pop-up menu*. Select *Add New View*, and pick *Macro View* from the list that appears. *Click OK* to open the macro view properties window.



Name: Enter a meaningful name for your view.

Username: Allows you to associate the view with a specific user. To make the view available for all users, select *System views* from the *drop down menu*.



Macro Group: Select the macro group you want to display in the macro view.

Display options: *Click* on the coloured boxes to select colours for your view.

Show notes field: Shows notes added for a macro at the bottom of the macro view.

Notes Height: Sets the height of the notes field displayed at the bottom of the macro view.

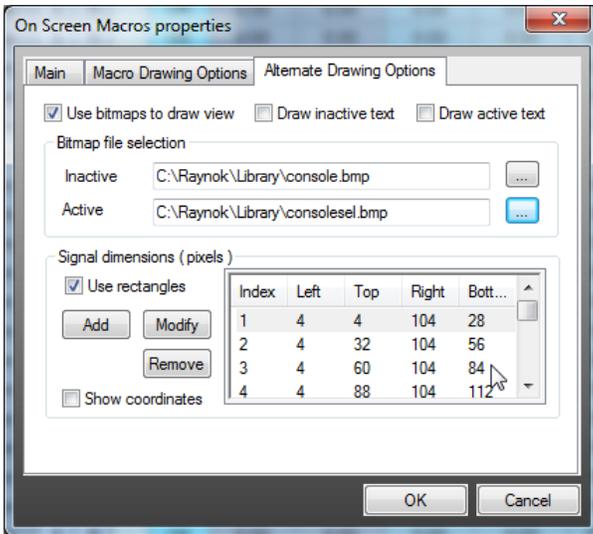
Dimension Options: Lets you customize the layout and specify the amount of space the macro will take up.

Number of rows: Sets the max number of rows the macros will take up.

Space between macros: Sets the number of pixels between each macro button.

Macro width: Sets the width a macro takes up in pixels. (It will need to be adjusted depending on the macro name length)

Macro Height: Sets the height a macro takes up in pixels. (It will need to be adjusted depending on the macro name font size)



Use Bitmaps to draw View: Lets the user choose a previously created bitmap for macro view buttons, both active and inactive.

Draw Inactive Text: Inactive signals will be drawn on the screen.

Draw Active Text: Active signals will be drawn on the screen.

Bitmap file selection: Choose the bitmaps for the macro buttons using the *browse button*.

Use Rectangles: *Add* will open up a dialog that lets the user input the 4 coordinates of a new rectangle, while *modify* will let you change the coordinates of a chosen rectangle. *Remove* will delete a chosen rectangle.

Show Coordinates: A real-time x-y coordinate display will show up in the bottom-left corner of the macro view when the mouse is passed over it. This is helpful when designing a custom signal view.

Click *OK* when you're done setting up the properties for the Macro view. *Double-Click* on your new view in the *Views tab* of the *Workspace* to bring it up on the screen.

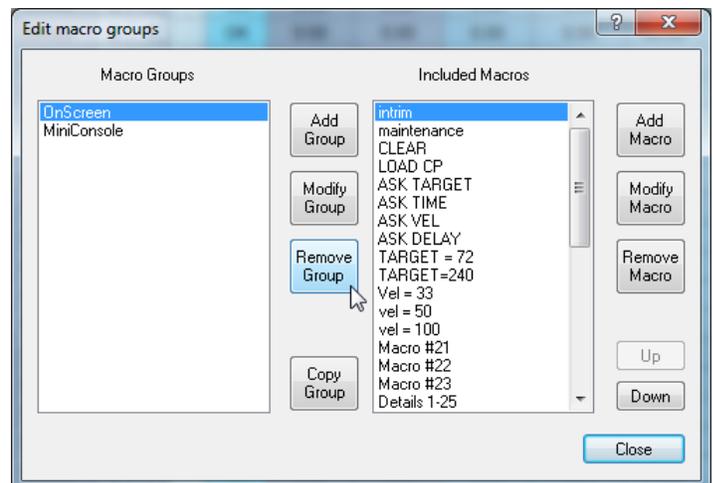
Right-Click within the Macro view to bring up the *context sensitive pop-up menu*, and select *Edit Macro Groups*.

This window lets you modify the groups being displayed in the Macro view.

The macro groups portion contains a list of all available macro groups. You can use existing macro groups and modify them with the *Modify button*, or add additional groups by *Clicking* on the *Add button*. The *Remove button* will remove a *high-lighted macro group*.

Once you have *highlighted* the macro group you want to use, a list of included macros appears in a portion of the window. If you are using a new group, that list will be empty. Macros can be added to the group by *Clicking* on the *Add button* on the right hand side of the window.

Once all the macros you want to include have been added, their individual properties can be set using the *Modify button*.



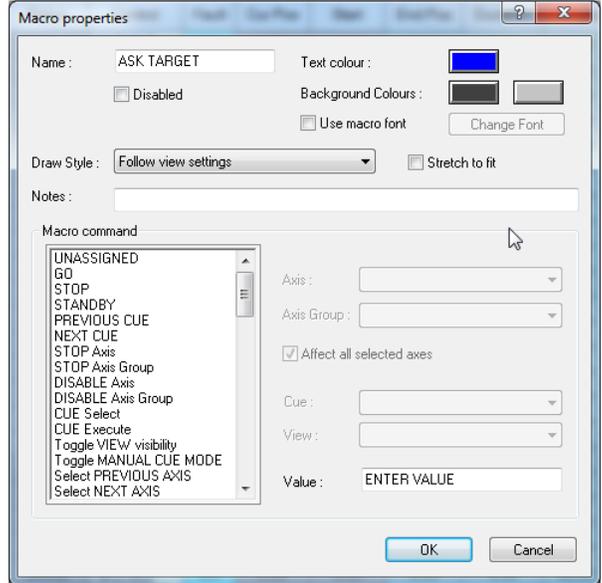
Macro Commands: Chose a command to be executed by the macro from the following list.

- Allow Restricted Axes** - allows motion of restricted axis
- Axis Mimic** - displays axis mimic dialog box
- Axis Properties** - displays axis properties dialog box
- Axis RESTRICT** - restricts an axis
- AXIS Select Dialog** - allows for axis selection by number
- COPY Profile** - copies all info from a selected profile
- CTRL/SHIFT Toggle** - toggles CTRL/SHIFT selection mode
- CUE Execute** - executes selected cue
- CUE Multi Select** - opens the Cue Multi Select window
- CUE Select** - jumps to a selected cue
- DISABLE Axis** - disables an axis
- DISABLE Axis group** - disables an axis group
- GO** - executes a "GO"
- Group Select Dialog** - allows for group section by number or name
- HOME** - executes homing sequence
- KEY ENTRY** - allows for creation of numeric keypad
- Move Axis Down** - moves axis down in axis group
- Move Axis Up** - moves axis up in axis group
- Move Cue DOWN** - moves currently selected cue down one position in cue list
- Multi Axis Quick Select** - selects all axes with same specified Quick Sel #
- NEW Cue** - creates a new cue
- NEXT CUE** - moves cue selection to "Next cue"
- PASTE Profile** - pastes all info to a selected profile
- PREVIOUS CUE** - moves cue selection to "Previous cue"
- REMOVE Profile** - removes profiles for all selected axes
- RESET Axis** - resets the axis
- RESET Axis group** - resets all axes in an Axis group
- RESET Current Cue** - resets all axes in current cue
- SELECT Axis** - selects the axis designated in the Axis Field
- SELECT Axis Group** - selects the axis group designated in the Axis Group Field
- Select NEXT Axis** - selects next axis within the group
- Select PREVIOUS AXIS** - selects previous axis within the group
- Set ACCEL** - enter an acceleration in the Value Field
- Set DECEL** - enter a deceleration in the Value Field
- Set DELAY** - set a delay in the Value Field
- Set DURATION** - enter a duration in the Value Field
- Set ENDPOS** - enter an end position in the Value Field
- Set Multi-Quick Select** - sets Quick Sel # for all selected axes
- Set VELOCITY** - enter a velocity in the Value Field
- STANDBY** - executes a "Standby"
- STOP** - executes a "Stop"
- STOP Axis** - executes a "Stop" for an axis
- STOP Axis group** - executes a "Stop" for an axis group
- Toggle MANUAL CUE MODE** - toggles manual cue mode
- Toggle VIEW visibility** - toggles visibility of a view

Name: Enter a short and meaningful name for your macro.

Text colour: Click on the box to select a text colour. Check the *disabled box* if you wish to completely disable the macro.

Notes: Enter any notes you wish to be displayed at the bottom of the Macro view when the *macro button* is *highlighted*.



After selecting your macro command from the list in the macro command window the *pull-down menus* will be enabled and you can select one of the following commands.

- Axis:** Select an axis from the pull-down menu.
- Axis Group:** Select an axis group from the *pull-down menu*.
- Cue:** Select a cue from the *pull-down menu*.
- View:** Select a view from the *pull-down menu*.
- Value:** The numeric/string value assigned if required by the command.

NOTE: *Pull-down menus* are not available for all macro commands.

Click OK when you've completed your Macro setup.



You can change the order the macros appear within the macro view.

Highlight the included macro and *Click* the *Up* or *Down* buttons to move the macro up or down.

Click the *Close* button to exit the macro view.

PLAN VIEW

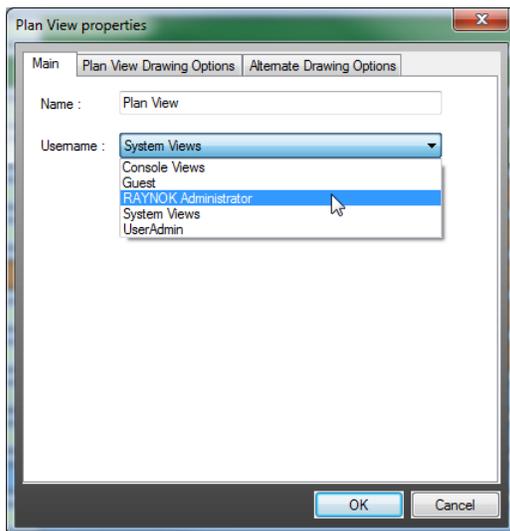


The *Plan View* is a good way of monitoring cues and controlling axes. This simple and informative layout is set up so that everything can be done effectively in a single space, without having to switch to different views. Each bar created represents an axis, partitioned into several blocks displaying axis condition, current position, and limit/interlock indicators. Different states of the axis are represented by simple word descriptions - such as “linked” or “disabled” - and colours.

The advantage of this view is the flexibility of it. If the rectangle drawing option is not favored, existing bitmaps can be used to represent the diagram if so desired. Rectangles can be drawn anywhere and in any dimensions.

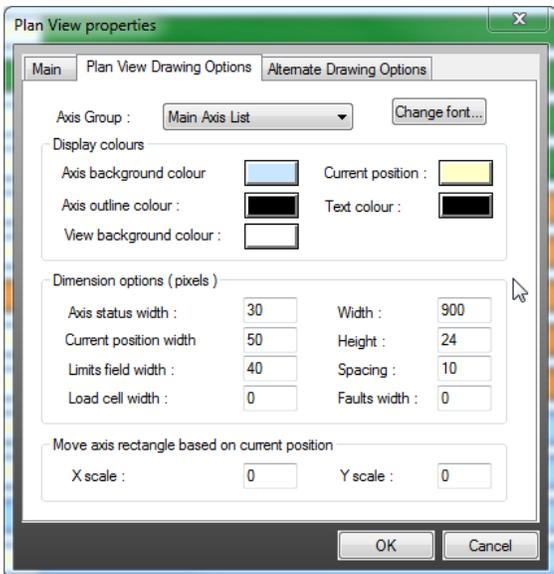
The *Plan View* is ideal for quickly selecting and identifying all axes as well as manually controlling them in a convenient space. Every change made in this view is reflected simultaneously in the original *Cue Info View* as well, so no information is conflicting. The advantage is flexibility and efficiency, and the following paragraphs will explain the view and options in greater detail.

Right-Click anywhere on the *Plan View* to bring up the *context-sensitive pop-up menu*, and pick *View Properties*.



Name: Enter a name that suits the *Plan View*, or just keep it the same.

Username: Allows you to associate the view with a specific user. To make the view available for all users, select *System views* from the *drop down menu*.



Axis Group: Select the desired axis group you want to display in this view.

Display options: Click on the coloured boxes to select colours for your view.

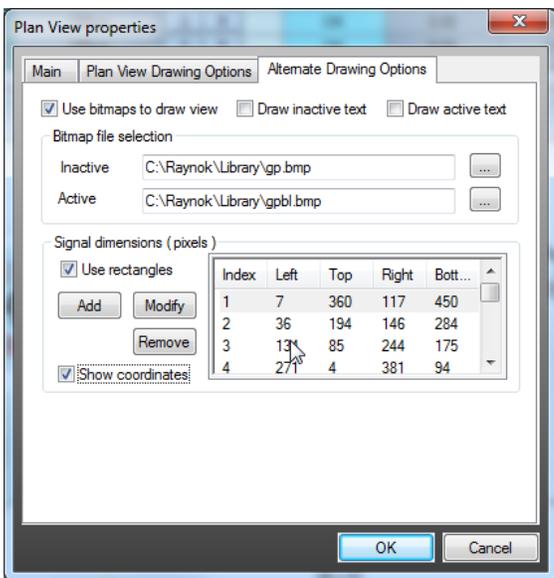
Dimension Options: Lets you customize the layout and specify the amount of space the bars will take up.

Axis status width: Sets the widths of the *Axis Status field*.

Cue target width: Sets the number of pixels between each axis bar.

Current position width: Sets up the width of the *Current Position field*

Limits field width: Sets the width of the *Limits field*



Use Bitmaps to draw View: lets the user choose a previously created bitmap to draw the view background. This is useful if you want to display the mechanical layout of the system created from other software.

Draw Inactive Text: Inactive text will be drawn on the screen

Draw Active Text: Active text will be drawn on the screen

Bitmap file selection: Specify filename and location of bitmap files.

Use Rectangles: Add will open up a dialog that lets the user input the 4 coordinates of a new rectangle, while modify will let you change the coordinates of a chosen rectangle. Remove will delete a chosen rectangle.

Show Coordinates: A real-time x-y coordinate display will show up in the bottom-left corner of the *Signal View* when the mouse is passed over it. This is helpful when designing a *Custom Plan View*



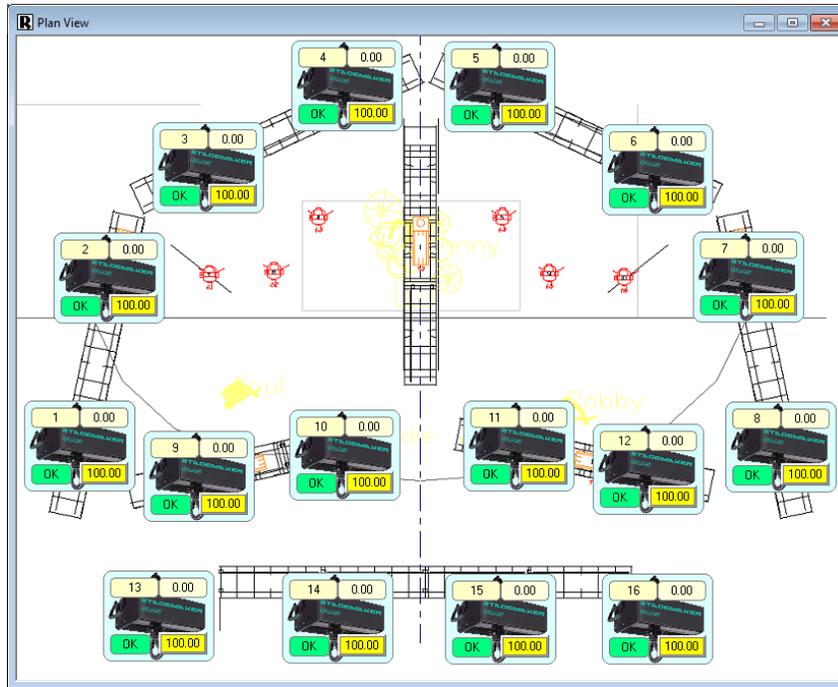
1st Field: Axis Status (shows **RAYNOK** status by colour and also the name of the axis)

2nd Field: Current Position. Can be negative or positive.

3rd Field: Different colours of this bar represent what state the axis is currently in. Sometimes text is displayed on this bar if it is a *Linked Slave Axis*, *Linked Master Axis*, or the axis is disabled.

4th Field: Shows the OT axis limits and interlocks, as well as their current states.

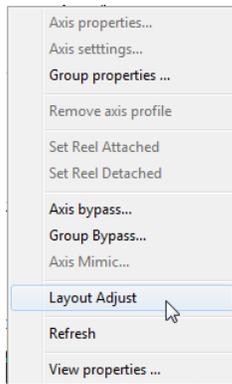
PLAN VIEW FOR CHAIN MOTORS



The *Plan View* needs to be configured in a specific way when **RAYNOK** is being used for a chain motor system. Although there is a premade showfile already configured for chain motors, it is still useful to know how the view can be made to look exactly like your specific setup.

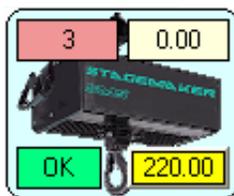
For this configuration, *Alternate Drawing Options | Use Rectangles* are used to represent the separate chain motors as active bitmaps. The inactive bitmap will most likely be the floor plan of the venue.

Rectangles for each chain motor are set up as 120x90 pixel boxes. To move the chain motor bitmaps around on the screen, enable *Layout Adjust* by right-clicking on the screen and choosing 'Layout Adjust' from the *context-sensitive popup menu*.



Once *Layout Adjust* is activated, the boxes representing the chain motors can be dragged around the screen. **RAYNOK** lets you know that you are in adjust mode on the top-left corner of the *Plan View*. Drag the boxes around by clicking and holding the red boxes that appear in the center of the rectangles.

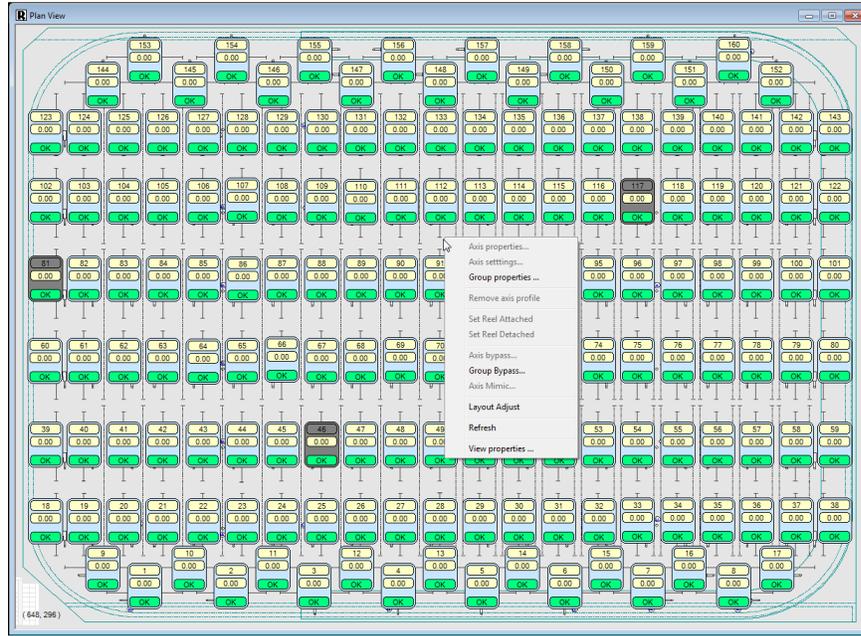
When all the chain motors are laid out accordingly, right-click on the screen and choose 'Layout Adjust' again to exit layout adjust mode.



Each corner of a rectangle has boxes representing information pertaining to a particular chain motor. The boxes represent (clockwise from top left):

1. Axis Number
2. Current Position
3. End Position (if in cue mode and a cue is set for that axis)
4. Limits

PLAN VIEW FOR LIGHTING BATTENS



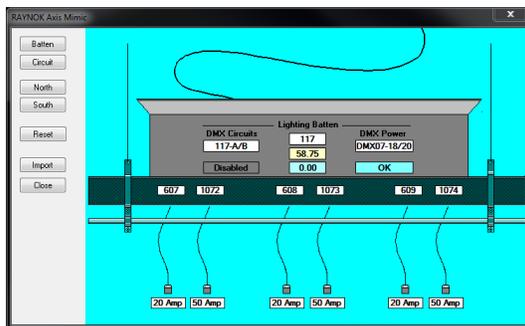
The *Plan View* needs to be configured in a specific way when **RAYNOK** is being used for lighting batten. Although there is a pre-made showfile already configured for lighting batten, it is still useful to know how the view can be made to look exactly like your specific setup.

For this configuration, *Alternate Drawing Options | Use Rectangles* are used to represent the separate lighting batten as active bitmaps. The inactive bitmap will most likely be the floor plan of the venue.

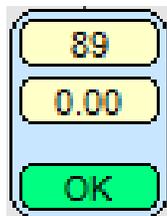
Rectangles for each lighting batten are set up as 50x66 pixel boxes. To move the lighting batten bitmaps around on the screen, enable *Layout Adjust* by right-clicking on the screen and choosing 'Layout Adjust' from the *context-sensitive popup menu*.

Once *Layout Adjust* is activated, the boxes representing the lighting batten can be dragged around the screen. **RAYNOK** lets you know that you are in adjust mode on the top-left corner of the *Plan View*. Drag the boxes around by clicking and holding the red boxes that appear in the center of the rectangles.

When all the lighting batten are laid out accordingly, right-click on the screen and choose 'Layout Adjust' again to exit layout adjust mode.



The *Axis Mimic* command opens up an *Axis Mimic* dialog that is used to view all the batten lighting information. The same dialog can be used to search the database for specific batten with a particular circuit number.

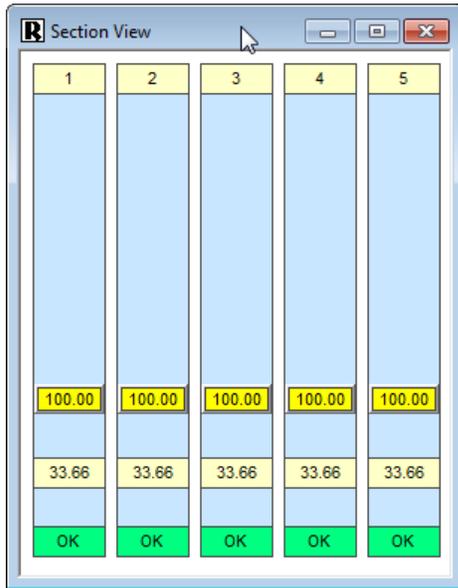


Each axis display rectangle has boxes representing information pertaining to a particular lighting batten.

The boxes represent (clockwise from top left)

1. Axis Number
2. Current Position
3. End Position (if in cue mode and a cue is set for that axis or Inputs Status Field)

SECTION VIEW



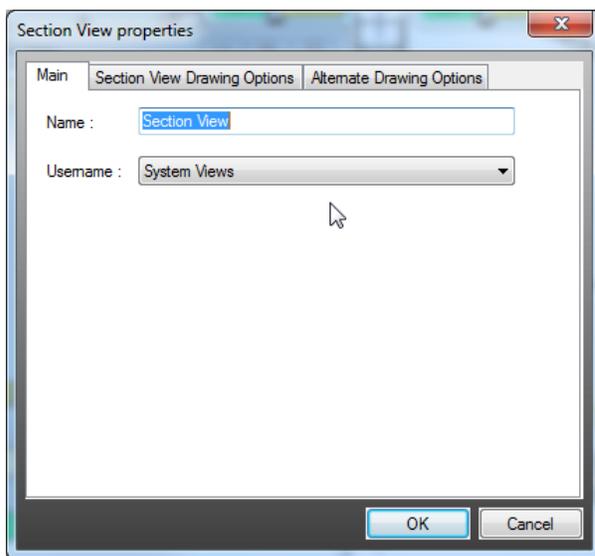
The *Section View* is a good way of monitoring cues and controlling axes. Each bar created represents an axis, partitioned into several blocks displaying axis condition, current position with location in travel range, limit/interlock indicators, and target position for the current cue. Different colours represent what state the axis is currently in, as well as notes on them to say if they are linked or disabled. With the correct user privileges and depending on the mode, target boxes can be moved with the arrow keys.

The advantage of this view is the flexibility of it. If the rectangle drawing option is not favored, existing bitmaps can be used to represent the diagram if so desired. Rectangles can be drawn anywhere and in any dimensions.

The *Section View* is ideal for quickly selecting and identifying all axes as well as manually controlling them in a convenient space. Every change made in this view is reflected simultaneously in the original *Cue Info View* as well, so no information is conflicting, with the added advantage of flexibility and efficiency.

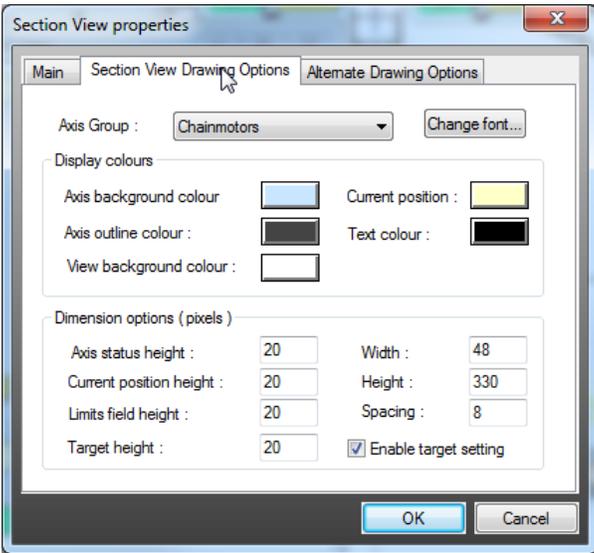
NOTE: The main difference between this and the Plan View is that Section View is looking at the setup from the side rather than the top. This allows the user to view axes as they move up and down in real time. When the current-position box overlaps a target box, it will stop. The top and bottom fields represent limits, so a current-position box will stop when it hits one of these.

Right-Click anywhere on the *Section View* to bring up the *context-sensitive pop-up menu*, and pick *View Properties*.



Name: enter a name that suits the Section View, or just keep it the same.

Username: Allows you to associate the view with a specific user. To make the view available for all users, select *System views* from the *drop down menu*.



Axis Group: Select the desired axis group you want to display in this view.

Display options: Click on the coloured boxes to select colours for your view.

Dimension Options: Lets you customize the layout and specify the amount of space the bars will take up.

Axis status height: Sets the height of the *Axis Status field*.

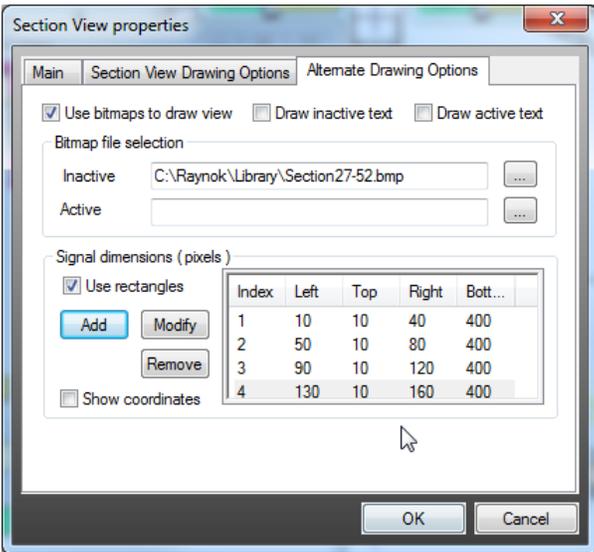
Current Position Height: Sets the height of the Current Position Marker.

Limits Field Height: Sets the height of the Limit Position Markers.

Target height: Sets the height of the Target Position Marker.

Width, Height, and Spacing: Sets the overall dimensions and spacing of each axis section.

Enable Target Setting: Check this setting to allow short-cut keys for setting targets.



Use Bitmaps to draw View: Lets the user choose a previously created bitmap to draw the view background. This is useful if you want to display the mechanical layout of the system created from other software.

Draw Inactive Text: Inactive text will be drawn on the screen

Draw Active Text: Active text will be drawn on the screen

Bitmap file selection: Specify filename and location of bitmap files.

Use Rectangles: Add will open up a dialog that lets the user input the 4 coordinates of a new rectangle signal box, while modify will let you change the coordinates of a chosen rectangle. Remove will delete a chosen rectangle.

Show Coordinates: A real-time x-y coordinate display will show up in the bottom-left corner of the *Signal View* when the mouse is passed over it. This is helpful when designing a *Custom Plan View*

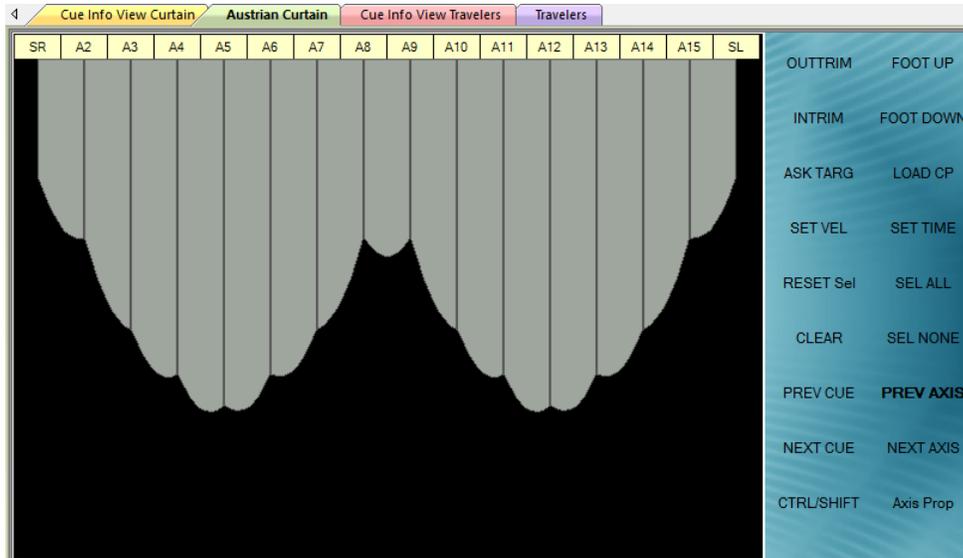


1st Field: Axis Status (shows **RAYNOK** status by colour and also the name of the axis).

2nd Field: Axis Range which can also contain the current position and target position for a selected cue. Different colours of this bar represent what state the axis is currently in. Sometimes text is displayed on this bar if it is a *Linked Slave Axis*, *Linked Master Axis*, or the axis is disabled.

3rd Field: Shows the OT axis limits and interlocks, as well as their current states.

AUSTRIAN CURTAIN MANAGER



Austrian Curtains can be set up in **RAYNOK**. The screen above is an example of what can be achieved with the software. To begin the setup, create a Section View, described on the preceding page. Next, select Austrian Curtain Manager from the Setup menu.

Enable the Austrian Curtain view by clicking on the 'Austrian Curtain Manager Enabled' checkbox.

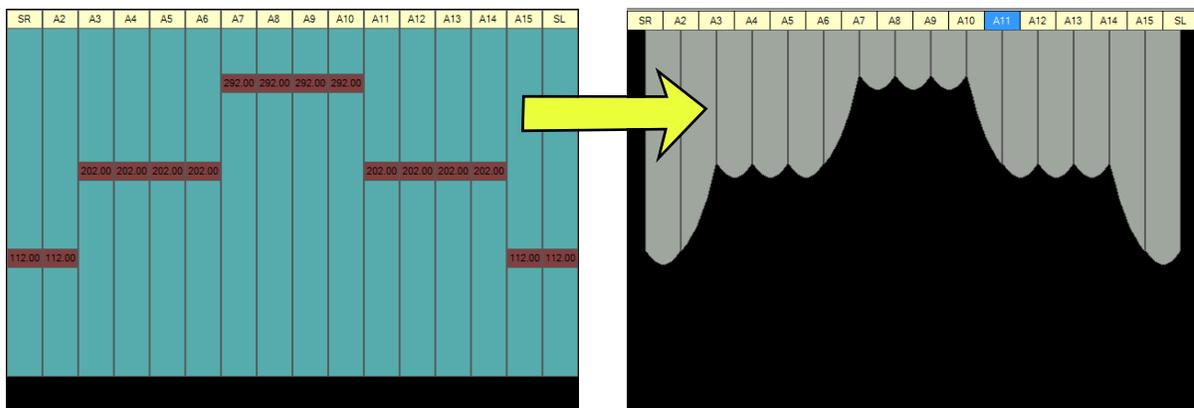
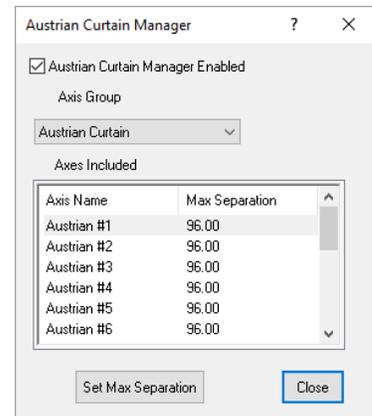
Next, select the Axis Group that contains the axes from the Austrian Curtain.

The list below will populate with all the axes in the group. Enable a max separation (the distance in units that each line can safely be separated without tearing occurring).

Click the 'Close' button, and the view will change to show curves connecting between the lines. The view must be refreshed by right-clicking in the view and selecting 'Refresh View' before the view above will be shown.

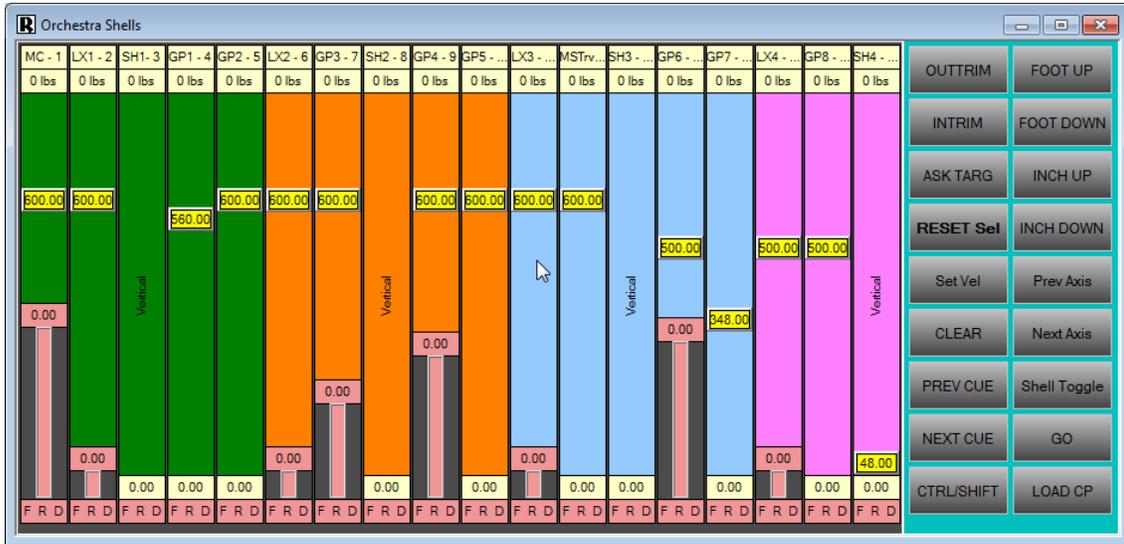
When a cue is created in this mode, Max Separation parameters will be enforced to ensure no cues are created that cannot exist in real lift.

Use Simulation Mode to view the various patterns created with the cues.



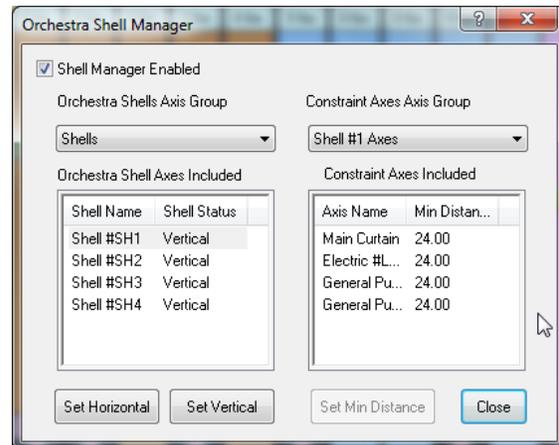
Before and After Screenshot of Austrian Curtain Manager in a Section View.

ORCHESTRA SHELLS MANAGER



Orchestra Shells Manager allows the user to manage and configure orchestra shells. A Multi Window View can be created as seen in the above screenshot to represent a shell’s range hanging across several linesets. The middle bar represents the shells, either vertical or horizontal. When shells are stored they are turned vertical and brought up out of sight. Using a combination of Axis Groups and the Shell Manager, it is possible to accurately display the venue shells and avoid horizontal shells from hitting scenery on surrounding linesets. Scenery offsets of surrounding linesets are displayed as bars hanging from position (top) boxes, because the main area is set up as a ‘Section View’. When a shell is brought into the horizontal position using the Manager, the wording on the bar changes from ‘vertical’ to ‘horizontal’ and a red horizontal bar is displayed across the linesets. The range of motion for linesets will change depending on if the shell is in the vertical or horizontal position.

To set up the shells manager, first create an Axis Group for the shells. In this example it is simply named ‘Shells’. Shells #1 to #4 are included, and they are simply axes from a digital IO controller (DIO). Next, choose ‘Orchestra Shells Manager’ from the ‘Setup’ Menu. The screen on the right will appear.

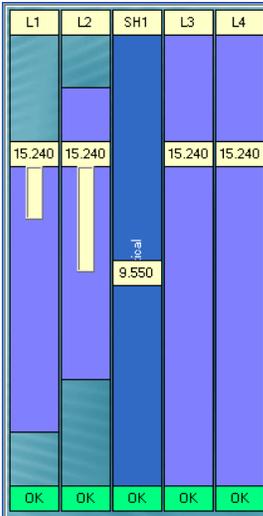


Select the ‘Shell Manager Enabled’ checkbox. This will allow all shells to be selected in the workspace as an axis group, and enable other shell-related functions within **RAYNOK**.

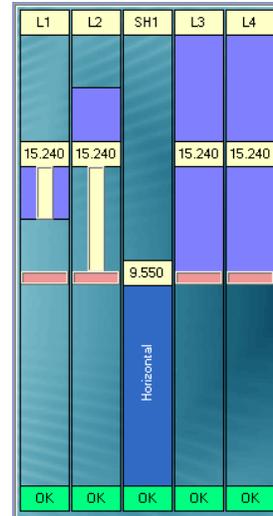
Pick the Orchestra Shells Axis Group using the pull-down menu and select ‘Shells’. All 4 shells from the group will be displayed.

Under ‘Orchestra Shell Axes Included’, the orientation of the shell can be controlled by selecting the shell axis and choosing either ‘set horizontal’ or ‘set vertical’. The results will show immediately in the View Window if it is set up.

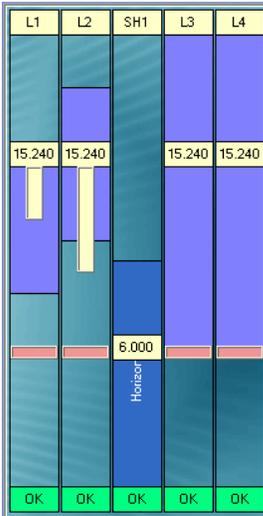
The ‘Constrain Axes Axis Group’ is an axis group that is located around the shell in question. For example, Shell #1 spans across L1, L2, L3, and L4. So this axis group must be created and can be added here. Minimum distance is the allowed distance of scenery above the orchestra shell when it is set up in a horizontal position.



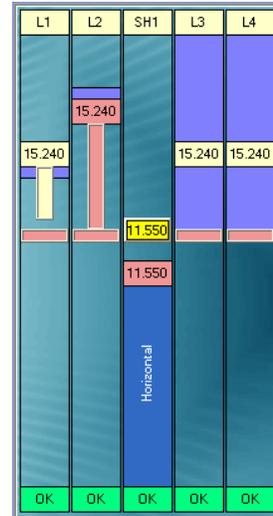
The screenshot to the left shows the shell 'SH1' in a stored, vertical position. The word 'vertical' is displayed, and the range of movement for L1, L2, L3, and L4 can be seen as full ranges for their scenery. L3 and L4 don't have scenery on them, as they don't have grey boxes hanging from them.



The screenshot to the right shows the shell 'SH2' in a working position, horizontal. As can be observed, the L2 scenery is just barely touching the top of the shell in this position, and the range of motion for linesets L1 to L4 have been reduced to only above where the shell is.



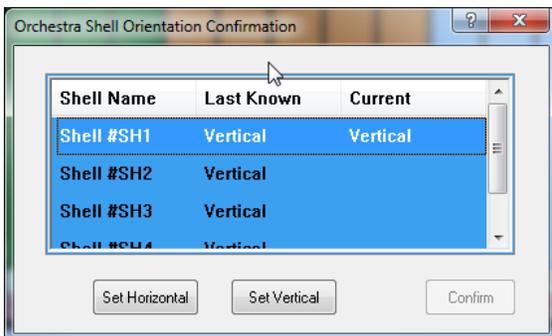
The screenshot to the left shows the shell 'SH1' in horizontal position lower. Compared to the previous screenshot, L1 and L2 have more range of motion than before because the shell is now lower than its previous state.



The screenshot on the right shows a conflict with L2. If the shell is going to be rotated to this position at this height, it will strike L2.

The Shells Manager allows the user to foresee situations like this and avoid them. Since different scenery is constantly being attached to the linesets, it is hard to have a hard-coded value for when the shells can be safely turned to horizontal position and move up and down safely.

Shells can also be managed (when they are set up) using the Shell Orientation Confirmation window. This option is useful during a setup situation where scenery and shells are changed constantly. To open the window, select 'Setup->Shell Orientation Confirm'.



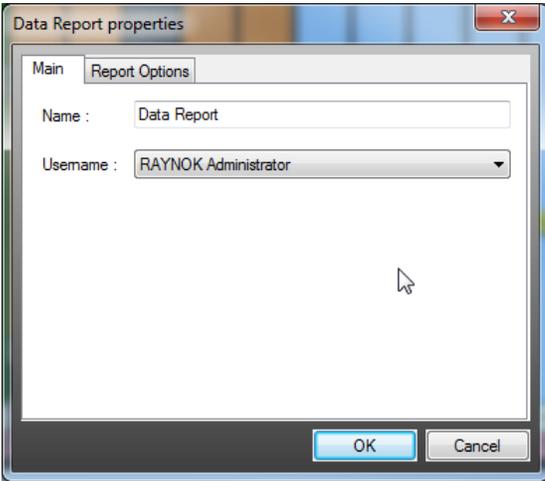
All four shells in the venue (or as many as are set up by the Manager) must be confirmed to exit this window! Choose a shell and either confirm it as horizontal or vertical using the buttons on the bottom left. The shell can also be double-clicked to change the orientation from vertical to horizontal and vice-versa.

Once all shells are confirmed, click on 'Confirm' to exit this window.

All shells in the section view will now orient themselves to what was specified in the confirmation screen.

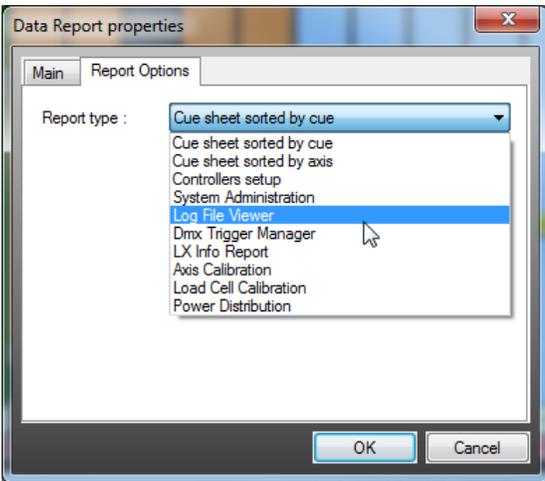
DATA REPORTS VIEWS

Data report views are used when creating *Axis Schedules*, *Cue lists*, or other such reports. They are created from the *Views* tab of the *Workspace*. Highlight *System views*, *Right-Click* to bring up the *context sensitive pop-up menu*, and select *Add view* from the list. Pick *Data Report* from the window that appears, and *Click OK* to bring up the *Data Report properties window*.



Name: Enter a meaningful name for your view.

Username: Allows you to associate the view with a specific user. To make the view available for all users, select *System views* from the *drop down menu*.



Report type: Select the report type you wish to create from the list.

Note: Any field within a report can be edited manually.

Cue sheet sorted by cue: Creates a cue sheet, sorted by the cue sequence in ascending order.

Cue sheet sorted by axis: Creates a cue sheet, sorted by axis in ascending order.

Controllers setup: Creates a list of controllers, their axes, and properties.

System Administration: Creates a list of administrative settings, including user per axis permissions.

Log File Viewer: Creates a report that can be used for viewing, printing and exporting of the log files. This is explained further in the *Log Files* section.

DMX Trigger Manager: Creates a report of all settings for DMX Trigger Manager. Including the enable channels and all triggers and cues.

LX Info Report: Creates a report of all LX Info Settings. Including all circuit numbers and associated power assignments.

Click *OK* when you are done configuring the properties for your data report.

Double-Click on the report name you've just created to bring it up on the screen.

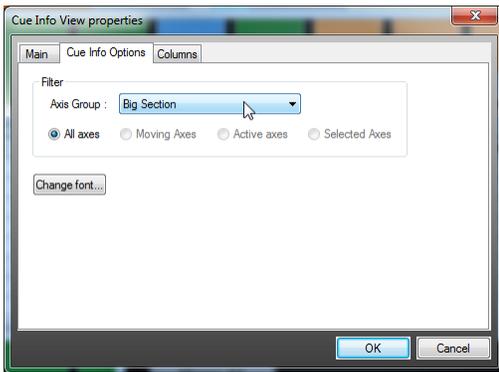
With the report open, the print functions within the *File menu* become available. See *Printing/Exporting*.

Cue Name	Cue Notes	Axis Name	Start	End Pos	Duration	Velocity	A
Cue #A - Sim Preset Axes							
		Main Curtain	0.00	600.00	60.00	10.00	1.0
		Electric #LX1 - 2	0.00	600.00	60.00	10.00	1.0
		General Purpose #GP1 - 4	0.00	560.00	112.00	5.00	5.0
		General Purpose #GP2 - 5	0.00	600.00	60.00	10.00	5.0
		Electric #LX2 - 6	0.00	600.00	60.00	10.00	1.0
		General Purpose #GP3 - 7	0.00	600.00	60.00	10.00	1.0
		General Purpose #GP4 - 9	0.00	600.00	60.00	10.00	1.0
		General Purpose #GP5 - 10	0.00	600.00	60.00	10.00	1.0
		Electric #LX3 - 11	0.00	600.00	60.00	10.00	1.0
		MidStage Traveler #MSTrv - 12	0.00	600.00	60.00	10.00	1.0
		General Purpose #GP6 - 14	0.00	500.00	50.00	10.00	1.0
		General Purpose #GP7 - 15	0.00	348.00	34.80	10.00	1.0
		Electric #LX4 - 16	0.00	500.00	50.00	10.00	1.0
		General Purpose #GP8 - 17	0.00	500.00	50.00	10.00	1.0
		UpStage Traveler #USTrv - 19	0.00	600.00	60.00	10.00	1.0
		Cyclorama #CYC - 20	0.00	600.00	60.00	10.00	1.0
		Shell #SH4	0.00	48.00	4.80	10.00	1.0
Cue #B - Sim Preset Shells							
		Shell #SH1	0.00	240.00	24.00	10.00	1.0
		Shell #SH2	0.00	140.00	14.00	10.00	1.0

CUE INFO VIEW

The information in the *Cue Info View* is organized into columns and rows. The rows are composed of axes sorted through the *Axis View Properties - Options tab* filter. The columns are composed of different data types, which can be added, removed or re-ordered through the *Axis View Properties - Columns tab*. These *view property tabs* have been examined already; however, their application in customizing the view as opposed to their functionality will now be examined.

Axis Name	Status	Control	Fault	Cur Pos	Start	End Pos	Duration	Velocity	Accel/SZ	Decel/SD	Delay	FeedRate	Load Cell
Electric #LX2 - 6	Offline	S, R, L	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00	100 %	0 lbs
Electric #LX2 - 5	Offline	S, R, L	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00	100 %	0 lbs
Electric #LX2 - 4	Offline	S, R, L	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00	100 %	0 lbs
Electric #LX2 - 3	Offline	S, R, L	OK	0.00	0.00	560.00	112.00	5.00	5.00	2.00	4.00	100 %	0 lbs
Electric #LX2 - 2	Offline	S, R, L	OK	0.00	0.00	600.00	60.00	10.00	5.00	1.00	0.00	100 %	0 lbs
Electric #LX2 - 1	Offline	S, R, L	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00	100 %	0 lbs



Radio button filters can be used to further hone your selected group.

All axes: Displays all axes available.

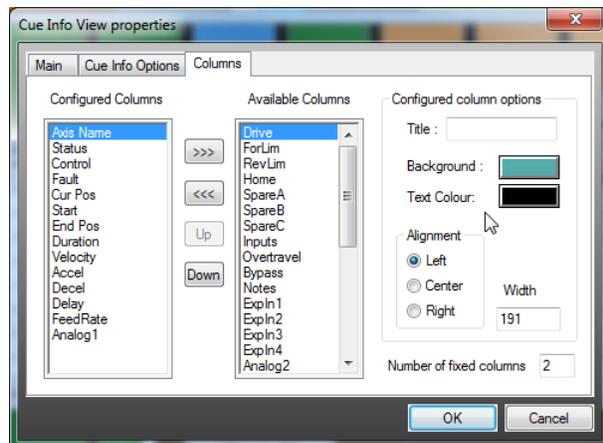
Moving Axes: Displays all moving axes.

Active Axes: Displays all axes in current cue.

Selected Axes: Displays selected axes only.

The columns of your *Cue Info View* can be composed of several kinds of data:

- Accel:** Acceleration of axis / Slow Zone (for F-Series)
- Analog1/Analog2:** State of analog inputs
- Axis Name:** Name of axis.
- Bypass:** Switch state.
- Control:** Allows stopping and resetting of an axis.
- Cur Pos:** Current position of axis.
- Decel:** Deceleration of axis / Stop Distance (for F-Series)
- Delay:** Delay between GO and axis move.
- Drive:** Drive status
- Duration:** Total duration of axis move.
- End Pos:** End position of axis move.
- Expln1/2/3/4:** Expansion port status
- Fault:** Shows if the axis is faulted or not
- Feedrate:** Current axis feed rate.
- ForLim:** Forward limit status.
- Home:** Home input indicator.
- Inputs:** Interlock/limit status.
- Locked:** Indicates if the axis is locked or not.
- Notes:** Extra notes the user can input for the axis
- Overtravel:** Switch state.
- RevLim:** Reverse limit status.
- SpareA/SpareB/SpareC:** Spare Inputs status
- Start:** Start position of axis.
- Status:** Status of axis - i.e. ready, E-Stop, etc.
- Velocity:** Target velocity of axis move.



With a data type *Highlighted* in the *Configured Columns list*, options such as Title [Overwrite], Background, Text Colour, Column Width, and Alignment can be entered under *Configured Column Options*

Data types contained in the *Configured Columns list* will appear in the view. Data types listed in the *Available Columns list* will not appear in the view, but are available to be put in the view. This is done by *Highlighting* the data type you would like to include in your view in the *Available Columns list*, and *Clicking* on the *Arrow button* pointing towards the *Configured Columns list*.

Axis Name	Status	Control	Fault	Cur Pos	Start	End Pos	Duration	Velocity	Accel/SZ	Decel/SD	Delay	FeedRate	Load Cell
Main Curtain	Offline	S R	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00	100 %	0 lbs
Electric #LX1 - 2	Offline	S R	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00	100 %	0 lbs
Shell #SH1 - VERTICAL	Offline	S R	OK	0.00	0.00	0.00	0.00	10.00	1.00	1.00	0.00	100 %	0 lbs
General Purpose #GP1 - 4	Offline	S R	OK	0.00	0.00	560.00	112.00	5.00	5.00	2.00	4.00	100 %	0 lbs
General Purpose #GP2 - 5	Offline	S R	OK	0.00	0.00	600.00	60.00	10.00	5.00	1.00	0.00	100 %	0 lbs
Electric #LX2 - 6	Offline	S R	OK	0.00	0.00	600.00	60.00	10.00	1.00	1.00	0.00	100 %	0 lbs

To remove a data type from your view, *Highlight* the data type you would like to remove in the *Configured Columns list*, and *Click* on the *Arrow button* pointing towards the *Available Columns list*.

To move a data type within the list, *Highlight* it in the *Configured Columns list*, and *Click* on the *Up* and *Down* buttons to move the data type up or down respectively.

The number you enter in the *Number of fixed columns box* will determine the number of fixed columns. Fixed columns cannot be edited, and clicking on a fixed column will result in change in currently selected axes.

Once you're done configuring your view, *Click OK*.

COMMANDS AVAILABLE IN CUE INFO VIEW

- Axis properties...
- Axis settings...
- Group properties ...
- Copy axis properties
- Paste axis properties...
- Set Reel Attached
- Set Reel Detached
- Axis Stop
- Axis Reset
- Axis Power Up
- Axis Power Down
- XYZ Recover...
- Axis Bypass...
- Group Bypass...
- Axis Disable
- Axis Enable
- Current position update...
- Copy profile
- Paste profile
- Make profile complex
- Make profile wave
- Make profile normal
- Add command profile
- Remove axis profile
- Change font...
- View properties ...

Axis properties: Opens Axis properties window.

Axis settings: Opens Axis settings window

Group properties: Opens Group Properties window.

Copy axis properties: Copies Selected Axis properties.

Paste axis properties: Pastes copied properties to selected axis or axes.

Axis Stop: Stops current axis.

Axis Reset: Resets current axis.

Axis Power Up: Power up the current axis.

Axis Power Down: Powers down the current axis.

Axis Bypass: Opens the Axis Bypass dialog, described later in the manual

Group Bypass: Opens the Group Bypass dialog, described in the axis groups section

Axis Disable: Disables current axis.

Axis Enable: Enables current axis.

Current position update...: Opens Current position update window.

Copy profile: Copies an axis motion profile.

Paste profile: Pastes a copied motion profile to current axis.

Make profile complex: Makes a motion profile complex.

Make profile wave: Makes a motion profile wave.

Make profile normal: Makes a complex or wave profile normal.

Add command profile: Adds a command profile.

Remove axis profile: Removes an axis profile.

Change font...: Opens Cue Info View Font Window.

View properties...: Opens Cue Info View Properties window.

ADDITIONAL INFORMATION

OPTIMIZING YOUR INTERFACE

RAYNOK displays a vast amount of data, which can vary greatly depending on the size and type of installation it is controlling. The efficiency and safety factor of an operator's performance is based on how well he/she can interpret and find information. A significant amount of time should be spent in customizing your interface and setting your specific user preferences. User management should also be set, in order to insure that these customizations are not lost or misused.

Make sure that if you are using a single monitor, you can at least run in a resolution of 1280x1042. You may need to keep IO port views hidden unless you absolutely need them in troubleshooting. Minimize the button sizes in *Signal views*, hide the *Control bar* when you're not using it, and reduce your font size. Running in a resolution of 1600x1200 will help.

Using a high-resolution letterbox shaped monitor will also help, as its shape is better suited for the type of data displayed.

In larger installations, which include many controllers, using two monitors and a dual monitor video card is the best configuration.

USER MANAGER WINDOW

The *User manager window* can be accessed from the *Setup menu*. The window will list all available usernames of operators, their full names, and descriptions. A new user can be added by *Clicking on the New User button*. The *Operator properties window* consists of three sections: *Main*, *Edit Permissions* and *Axis Permissions*.

Main User Manager Properties

Username: The Username that was input in the *New User dialog window*

Full Name: Enter the full name for an operator.

Description: Enter a description of the operator's function.

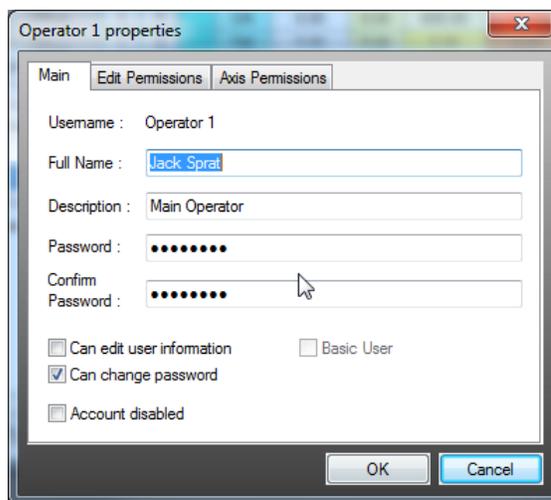
Password: Enter the password for an operator.

Confirm Password: Re-Enter the password (case sensitive).

Can edit user information: Enables the user to create/modify accounts.

Can change password: Enables the user to change their own password.

Account disabled: Will disable the user's account.



User Manager - Edit Permissions

Can edit setup data: allows access to *Setup* and *Axis* in the *Workspace*.

Can edit axis data: allows modification to axis data in the *Setup menu*.

Can edit cue database: allows modification of saved cues.

Can edit view configuration: allows adding or removing of views.

Can lock axes: allows the locking of axes

Can edit application options: allows editing of application options.

Can save setup file: allows access to saving a setup file

Can edit setup file: allows the saving of show data.

Can go online: allows user to be able to go online.

Can execute cues: allows execution of cues.

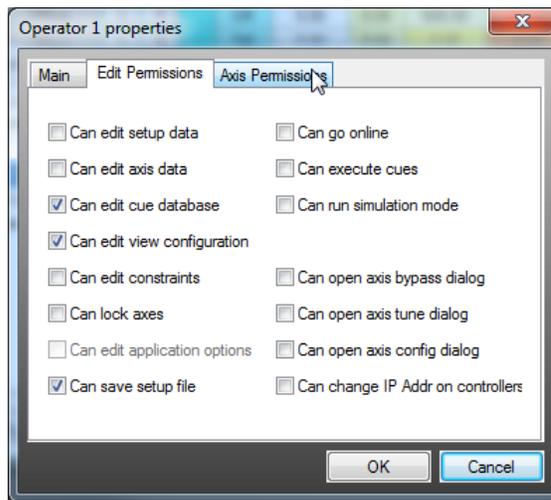
Can run simulation mode: allows running sim mode

Can open axis bypass dialog: allows access to the *axis bypass dialog*

Can open axis tune dialog: allows access to the *axis tune dialog*

Can open axis config dialog: allows access to the *axis config dialog*

Can change IP Address on controllers: allows access to the *Config Change* option in controller properties

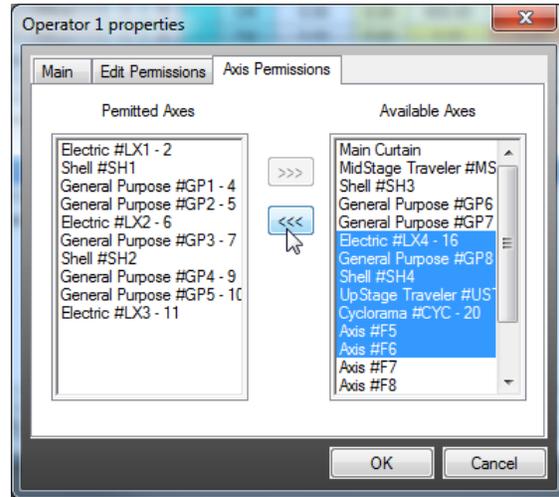


User Manager - Axis Permissions

This dialog box gives the operator permissions to use axes. Choose axes from the right pane by clicking on them while holding down the CTRL key. Holding down the SHIFT key will select all axes in between the previously selected axis.

Click the '<<<' arrows to shift the selected axes into the Permitted Axes column, or the '>>>' arrows to shift the permitted axes back into the other column.

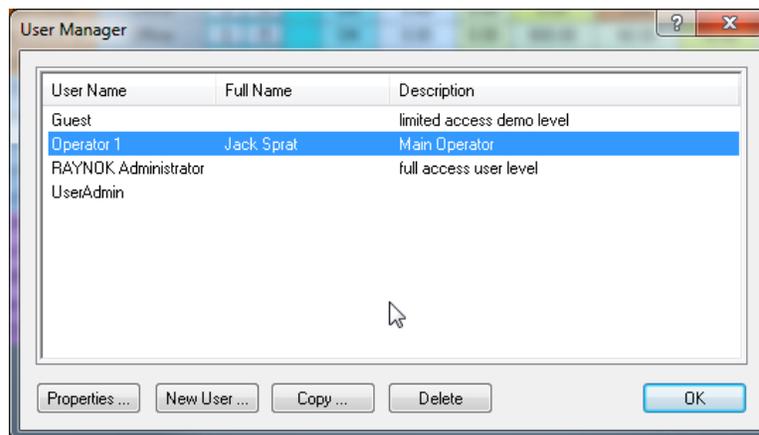
When changing Axis Permissions for a user, please make sure that you save the showfile afterwards.



Once a user is set up, click the OK button to add him or her to the list of Users.

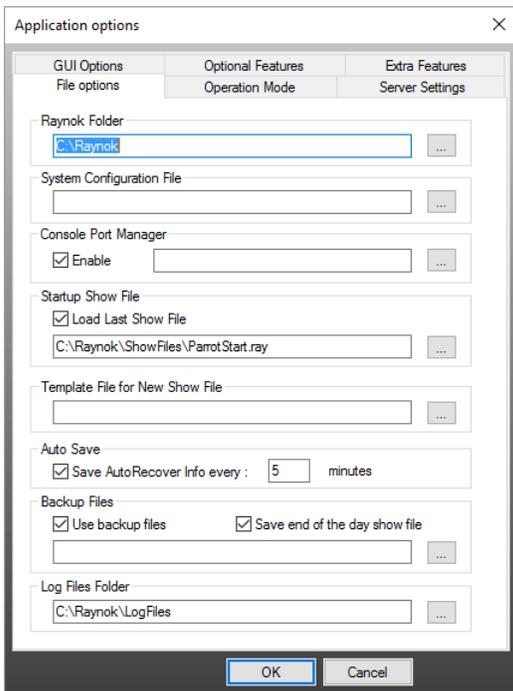
Highlight a name and *Click Modify* to modify any attributes of an existing user.

The *copy* and *delete* buttons can be used to copy or delete existing users, except for the Niskon Inc. ADMINISTRATOR.



APPLICATION OPTIONS

The *Application options window* can be accessed from the *Setup menu*. Usually these settings are modifiable only by **RAYNOK ADMINISTRATORS**.



RAYNOK folder: This is where the main software is installed.

System Configuration File: Choose a .RAY file that has the system configuration in it.

Console Port Manager: Enable the Console Port Manager. More is explained on Page 112

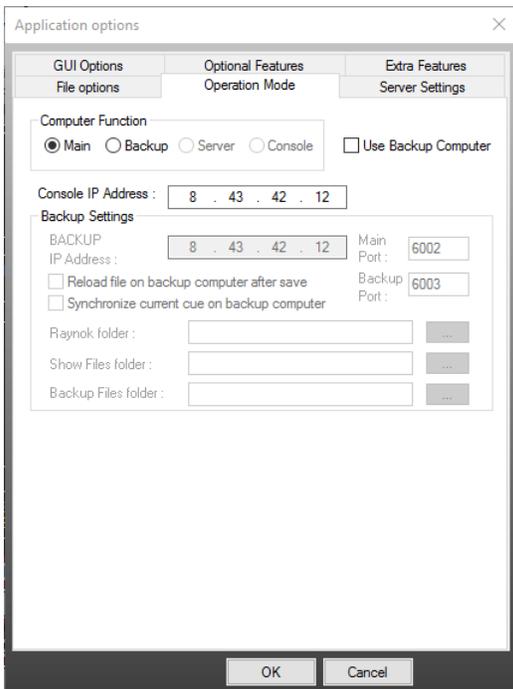
Startup show file: Select the file you would like **RAYNOK** to open upon startup. A specific show file or file that was opened last, can be selected.

Template File for New Show File: Select file that will be used as a basis for new show file when File/New command is selected.

Auto Save: Enable or Disable and Set Interval for the Auto Save feature.

Backup Files: Select options and directory where **RAYNOK** keeps backup files.

Log Files: **RAYNOK** logs all actions to a log file. Specify the directory where you would like the log files to be kept.



Specify whether the computer is functioning as the main or backup console.

Check the *use backup computer box* if you would like **RAYNOK** to actively use a backup console.

Input the Console IP Address

Under *Backup Settings*:

IP Address: Specify the IP address of the backup computer/console.

Main Port: Should be 6002.

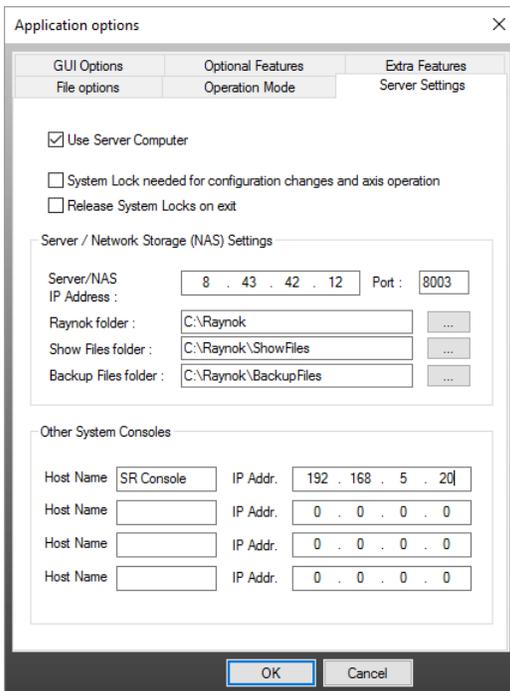
Backup Port: Should be 6003.

Show Files folder: Specify the folder where the showfiles reside.

Backup folder: Specify the folder where the show files are to be backed up on the backup computer/console.

Check *reload file on backup computer after save* if you want the backup computer to actively re-load the show after every save for faster switchover.

Check *synchronize current cue on backup computer* if you want the backup computer to remain on the same cue as the main computer for faster switchover.



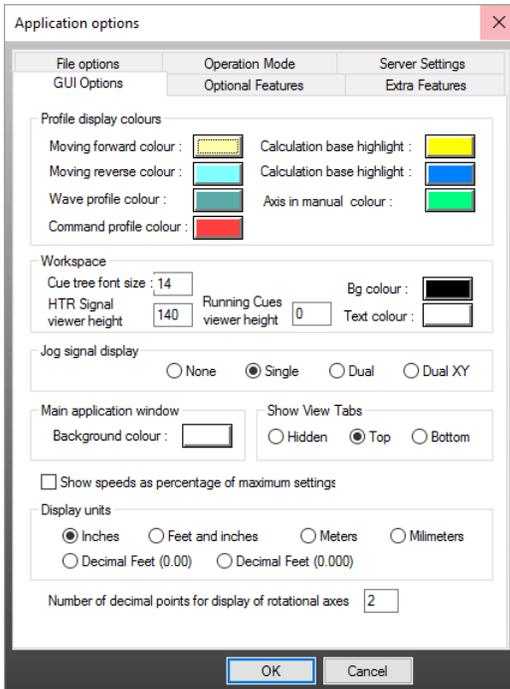
Use Server Computer: Check this box if the system uses a server computer.

System Lock: Check this box if the system should be locked while changing configurations and operating axes.

Release System Locks: Check this box if **RAYNOK** should release system logs on exit.

Server / Network Storage Settings : These IP addresses and folders are set up by the **RAYNOK** Administrator and should be left as is.

Other System Consoles: There can be up to 4 different consoles on one sub network. List the console names and their IP addresses. When a system lock is in place, these consoles will be notified.



Profile display colours: This section lets you set the colours used for different profile types and events globally in **RAYNOK**.

Cue tree font size: Allows you to change the font size used in the *Workspace Cues* tab.

HTR Signal viewer Height: Changes the height of the HTR (hold-to-run) signal height.

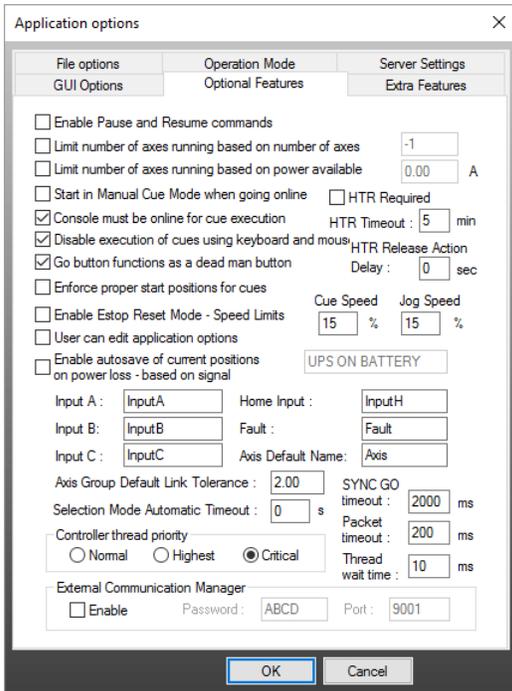
Background Colour / Text Colour: Change the Workspace background colour and Text.

Jog Signal Display: Change if the signal is displayed, if it is single, or if there are two.

Main Application Window: Change the main application background colour.

Show speeds as percentage of maximum settings: Displays Velocity, Accel and Decel, as a percentage value of their respective maximum settings.

Display units: Lets you select various common Metric or Imperial units for display of position information.



Enable Pause and Resume function: If disabled, the stop button will stop all movement without the possibility of a resume.

Limit number of axes running based on number of axes: Allows only the specified number of axes to run at the same time. -1 will allow all axes to run.

Limit number of axes running based on power available: Allows only the specified number of axes to run at the same time given a maximum current rating.

Start in Manual Cue Mode when going online: Check this box if **RAYNOK** should start in Manual Cue Mode when going online.

HTR Required: The hold-to-run (if installed) is enabled or disabled with this option. Choose a time in minutes for when the HTR will timeout and e-stop the system.

Console must be online for cue execution: Cues will not be executed if a console is not attached.

Disable executing of cues using keyboard and mouse: If this is checked, execution of cue commands is disabled on the screen and can only be executed with Console buttons.

Go button functions as dead man button: If this option is clicked, the Go button on the console will only run a command while the button is pressed and held down. Letting go will send a stop command to the active axes.

Enforce proper start positions on cues: When this is checked, **RAYNOK** will not enable a cue to start unless the axis is at the correct starting position.

Enable Estop Reset Mode: If checked the Estop Reset Mode is enabled. The fields next to this option specify percentage of maximum speed the axes are allowed to move.

User can edit application options: Enables the user to edit the application options.

Enable autosave of current positions on power loss: If enabled, the current positions will be saved approximately 10 seconds after the UPS goes on battery power.

Signal Name: The name of the signal that triggers the autosave when the UPS goes on battery.

The next 5 fields let you modify the labels of the *Home Input*, *Inputs A,B, and C*, and *Fault*. This can be useful if the given labels are too long and don't fit into a desired column width.

Controller thread priority, Packet timeout and Thread Wait time: These options are available for fine tuning network communication for larger systems. Please consult Niscon Inc. before changing these values.

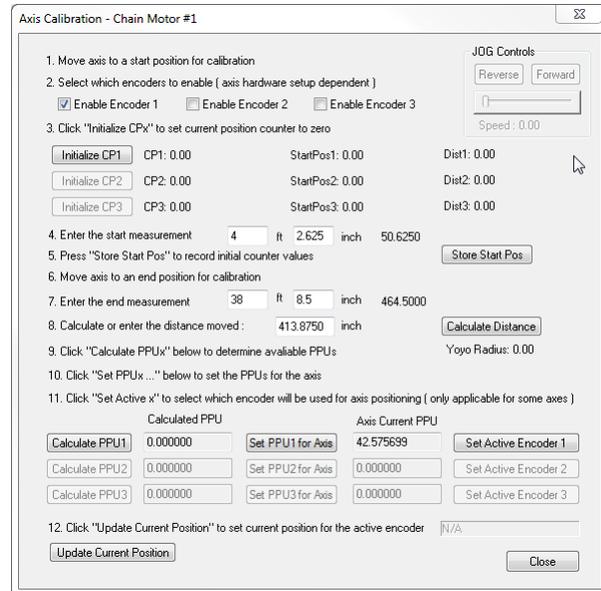
External Communication Manager: options can be used to enable this feature and set the password and communication port.

ADMINISTRATIVE TOOLS

The following dialogs can be accessed from the Setup Menu. These settings should only be modified by the **RAYNOK ADMINISTRATOR**. If the menus are greyed out, ensure that the axis is also selected in a *View*, not just in the Workspace axis list. Please be aware that any incorrect changes could result in erratic and dangerous behaviour from servo axes.

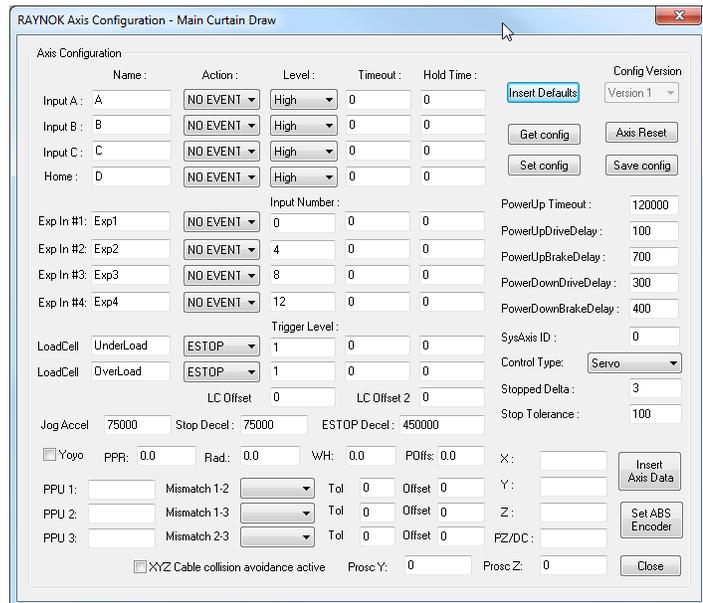
Axis Calibration

The *Axis Calibration dialog window* allows the **RAYNOK ADMINISTRATOR** to set the calibration for the axes as outlined in the Axis Calibration sections of the manual. This is an alternative method of calibrating axes and functions in the same manner as described in the aforementioned section.



Axis Configuration

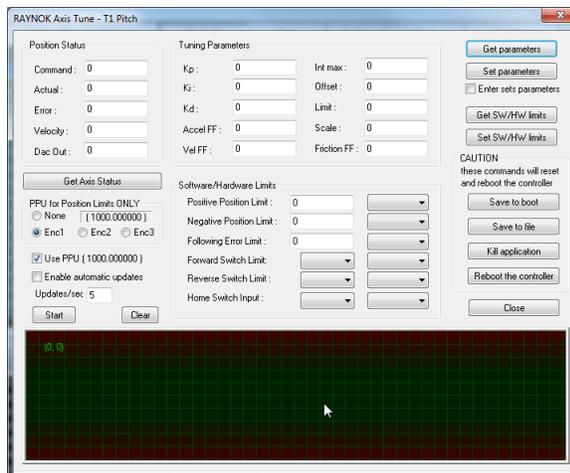
The *Axis Configuration dialog window* allows the **RAYNOK ADMINISTRATOR** to set the functions of the axis inputs, as well as powerup and stop command values for each controller in the system. Altering these values can result in disabling of the functionality of the safety systems and in doing so may result in serious injury or death.



Axis Tuning

The *Axis Tuning Dialog window* allows the **RAYNOK ADMINISTRATOR** to set configuration for each controller and axes configured in the system and set the functions of the Forward and Reverse Hardware and Software Limits. Altering these values can result in improper operation of axes and disabling of the functionality of the safety systems and in doing so may result in serious injury or death.

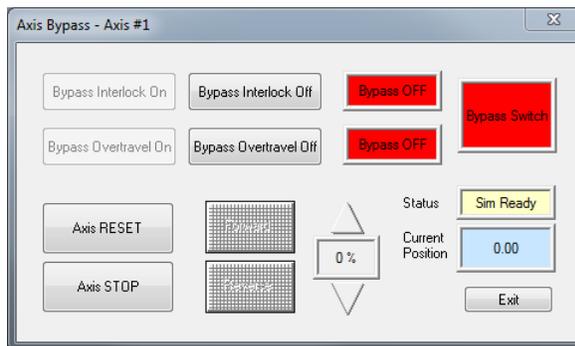
An additional feature is a graphic representation of set value vs actual value, with a red line representing actual, and green representing set. Once start is pressed, a graph will be mapped out in real time.



Axis Bypass

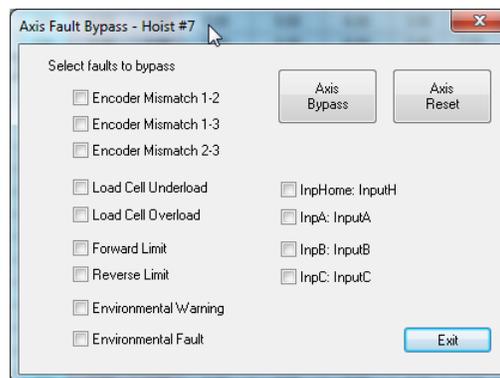
The *Axis Bypass dialog window* allows the user to bypass an Overtravel limit and bring an axis back into its proper operating range. Depending on the system configuration this may or may not be an applicable window.

To move an axis with the Bypass window the Bypass button must be held, shown by the indicator turning green. Depending on the fault type, turn on one of the Bypass relays, reset axis, then select direction by pressing either the forward or reverse button. Pressing the arrow buttons will increase or decrease the axis speed. When the fault is cleared, press Axis STOP and exit this window.



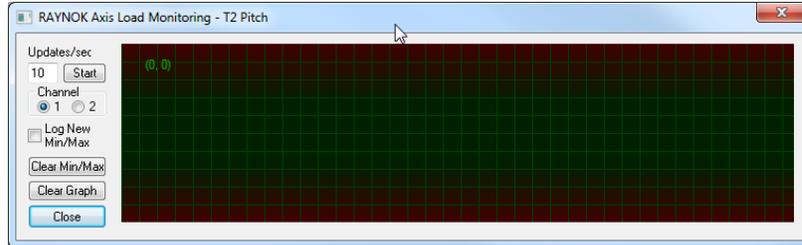
The method above represents an axis setup for a specific venue using S-400 Motion Controllers. The image on the right represents the default axis bypass dialog. Choose the faults you would like to bypass.

Bypassing faults will occur for only 5 minutes. Once 5 minutes have passed, faults will be active again. Once the dialog is exited, the axis will function bypassing the selected faults.



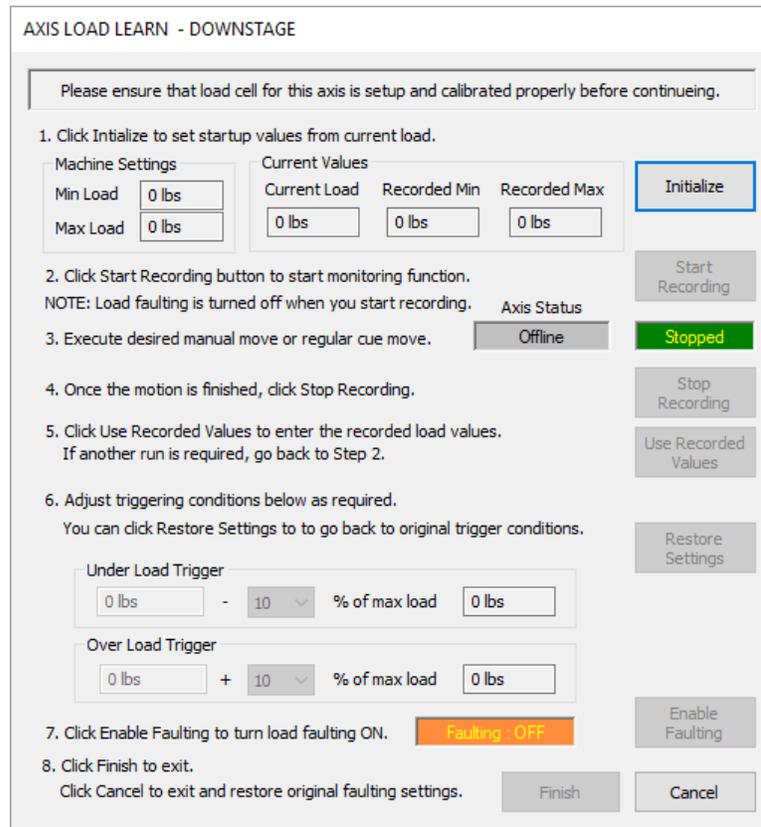
Axis Load Monitoring

The *Axis Load Monitoring dialog window* allows the user to view axis loads on two separate channels. Updates/sec resolution can be adjusted to allow finer or courser results. If an axis is set up with a load cell, a representation of the current loads will be displayed in real time after start is pressed.



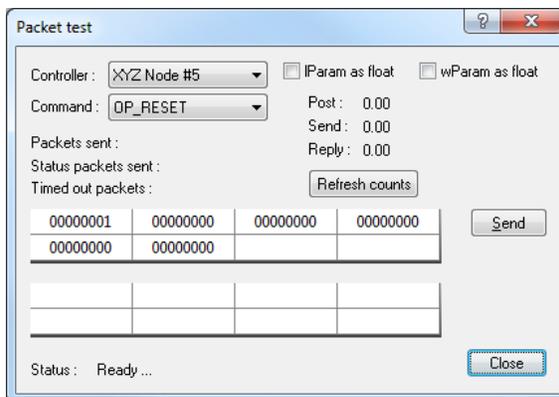
Axis Load Learn

The *Axis Load Learn Dialog* can train a load cell attached to an axis. Click on any axis in the *Cue Info View* and then on *Axis Load Learn*. The following dialog box will be displayed. Go through the steps listed in order. Ensure load cells for the axis are set up prior to initialization.



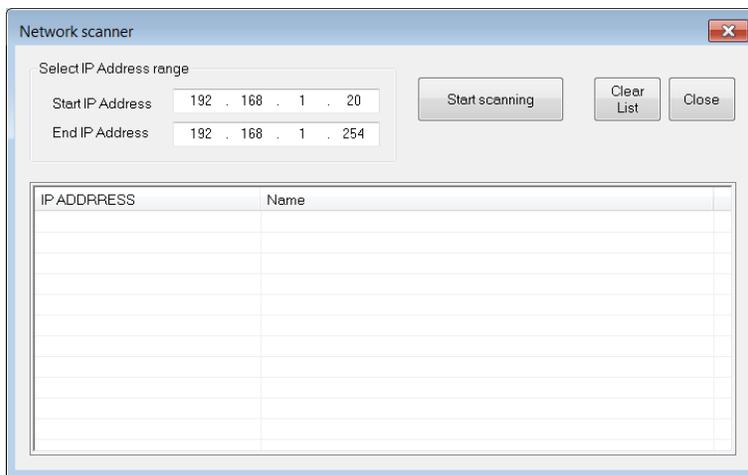
Packet Test

A Packet Test allows the user to send specific commands to a controller for the purpose of gauging its response time and ensuring a steady stream of status packets. This feature is usually reserved for **RAYNOK** ADMINISTRATORS, so extreme caution must be taken before considering sending potentially dangerous commands to controllers. **RAYNOK** will send a packet once Send is clicked, and the results will be displayed accordingly.



Network Scanner

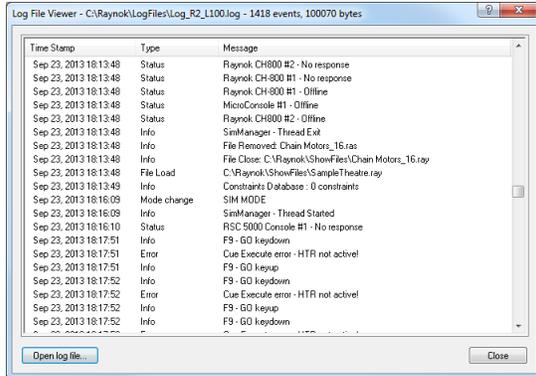
Network Scanner will scan the entire connected network for any devices belonging to the **RAYNOK** control system. Click on the 'Start scanning' button to initiate the process. All IP Addresses will be listed as they are found, within the given range. This process may take a while to complete, so be patient. It is not recommended to be running the motion controllers in a show setting while the network scan is going on, as it may cause motion controllers to miss their cues.



LOG FILES

Log files are an important part of troubleshooting problems, tracking security, and most importantly quickly eliminating the possibility of operator error from risk management. The log files can be accessed from the *Setup menu*.

LOG FILE VIEWER



The log file viewer time stamps any event that is logged with a date and time, identifies the event, and attaches a specific message to the event. Other log files can be opened and viewed with the *open log file button*. Click on a heading to sort a column by either time stamp, type, or message.

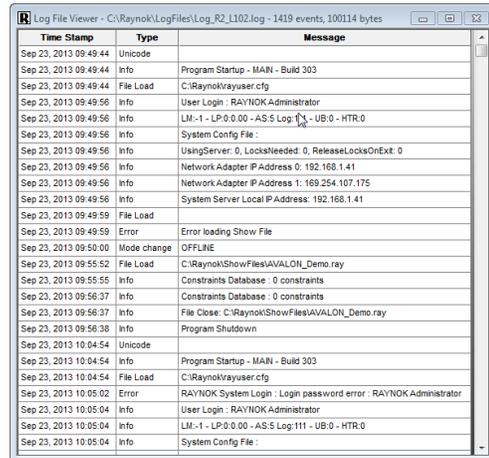
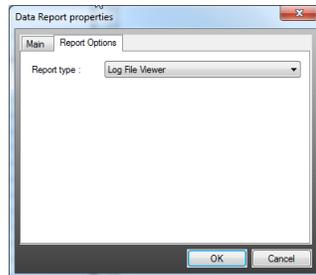


It is often useful to add notes to the log file after certain events. This can be done by selecting *Add a note for a logfile* in the *Setup menu*. A window will pop up for you to enter your note into, and upon *Clicking OK* it will be added into the log file with a time stamp.

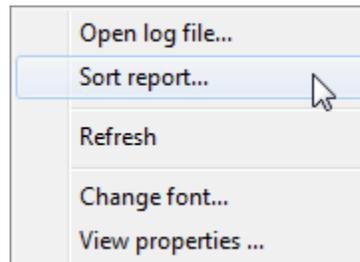
LOG FILE VIEWER DATA REPORT

Log files can also be view through data reports. While featuring the same options as the regular log file viewer, this mode allows for printing and the ability to view the log file or multiple log files (with extra views) while changing the current cue and going through the list at the same time

In the *Views pane* of the *Workspace Window*, right-click on the space and click *Add New View*. Choose *Data Report View*, and under *Report type*, select *Log File Viewer*.



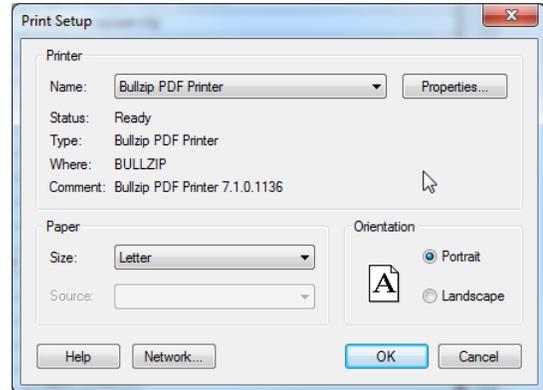
A right-click context-sensitive menu is available that allows the user to Refresh the page, View properties of a log file, change the font, and open additional log files. Sorting in this mode is based on a typical spreadsheet sorting method. Click the column to be sorted, right-click on the space to open up the menu, and select *Sort report*. The spread sheet will sort the values in ascending or descending order.



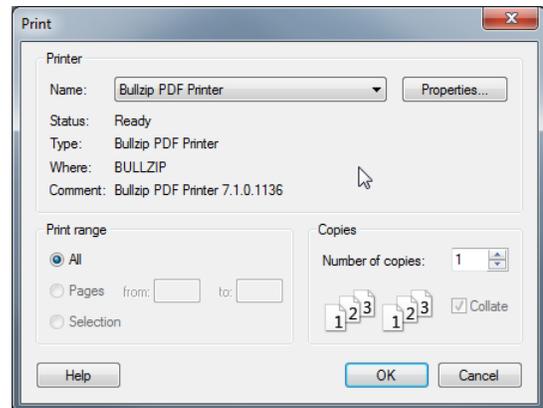
PRINTING / EXPORTING

RAYNOK provides basic printing and exporting features. These dialog boxes will be familiar to you from the standard Windows™ Operating System.

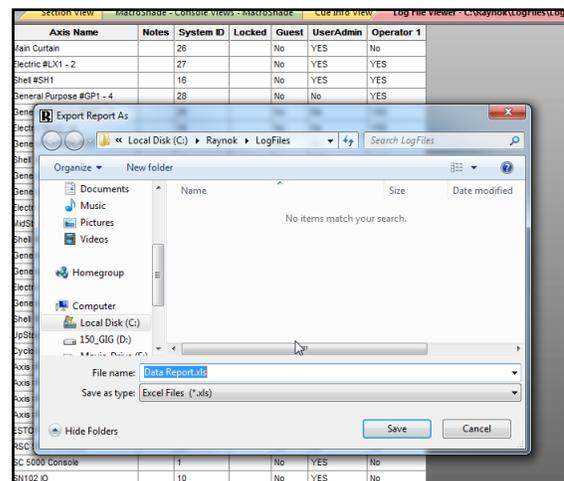
Print Setup: Brings up a standard printer *Setup Dialog Box*. It allows you to change your printer, page size, orientation, etc.



Print: Brings up a standard Windows™ *Print window*.



With a data report open, the Exporting option becomes available in the *File Menu*. You can export **RAYNOK** reports to almost any spreadsheet program by selecting the appropriate file type from the drop down menu.



BACKING UP YOUR FILES

Daily Backup: Files can become corrupted or damaged during cases of power loss or operator error. It is *strongly recommended* to backup your **RAYNOK** show files every day.

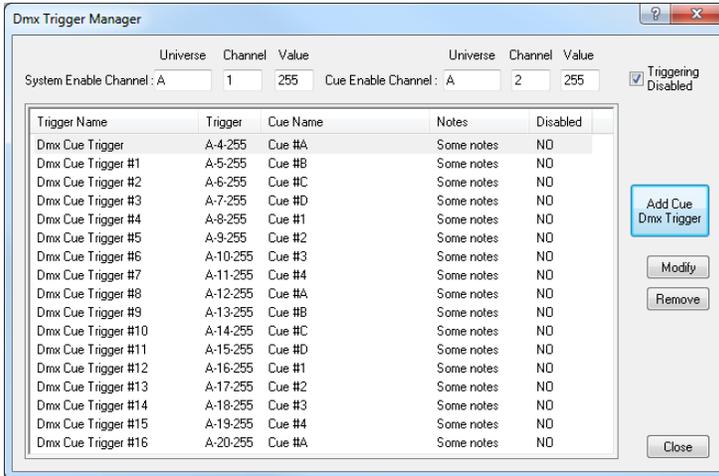
Set aside a USB flash/thumb stick and label it Showfile Backup (or a similar name).

DO NOT USE THE FLASH DRIVE ON A HOME COMPUTER, A VIRUS COULD END UP ON IT AND POSSIBLY CORRUPT RAYNOK AND/OR THE SHOWFILES ON THE SHOW COMPUTERS!

RAYNOK makes automatic backups while it is running. Autosaves and end of day show files are stored in the folders assigned by the user, as outlined in the *Application Options* section of the manual. Insert the USB stick into an available slot on the console or computer, and navigate to the backups folder with Windows Explorer. To make a backup, simply drag the folders to the USB stick folder. Backups and autosaves are named according to timestamps, so it is not necessary to create new folders on the USB stick. Keep the USB stick in a safe place after the copy procedure is complete.

DMX TRIGGER MANAGER

The **DMX Trigger Manager** provides a method to execute cues within the **RAYNOK Motion Control System Software** from an external source that utilizes DMX protocols. DMX is the standard communications protocol used by Entertainment Industry Lighting Equipment. In the **DMX Trigger Manager** window the user can add, view, modify or remove any existing DMX trigger information that has been highlighted.



Triggering Disabled: Check this box to disable the DMX Trigger Manager.

Add Cue DMX Trigger: Click on this button to add a new DMX trigger.

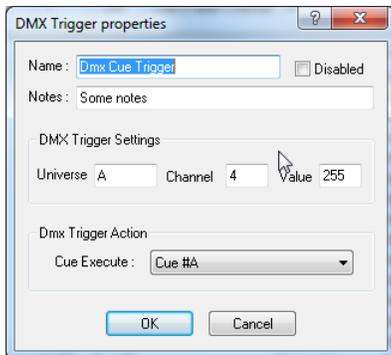
Modify: Click on this button to edit the highlighted DMX trigger in the pop-up **DMX Trigger properties** window.

Remove: Click on this button to delete the highlighted DMX trigger.

System Enable Channel: The channel that will instruct the **RAYNOK** Software to accept commands from an external source, essentially telling **RAYNOK** that the external source is ready to generate further commands. The recommended Universe, Channel and Trigger Value are shown above.

Cue Enable Channel: The channel which when set to trigger value will enable the DMX device to execute CUES within the **RAYNOK** Software. The recommended Universe, Channel and Trigger Value are shown above.

Close: Select this button to close the **DMX Trigger Manager** Window.



DMX Trigger Properties: This window is displayed by selecting the **Add Cue DMX Trigger** button or by highlighting an existing trigger and selecting the **Modify** button.

Name: Type a name for your trigger information.

Notes: Add any comments you require.

Disabled: Check this box if you wish to disable this trigger without deleting it.

DMX trigger settings: Input the required values in the Universe, Channel and Trigger Value fields.

DMX trigger settings: Select the cue to be executed in the combo box when this DMX trigger is activated.

OK: Click to save this information

Cancel: Click to close the box without saving any changes.

Consult the **RAYNOK** Control Interface specification - DMX Trigger Control document for more information.

CONSTRAINTS MANAGER

The **Constraints Manager** limits axis movement within constraints. For example, certain axes can't be moved if an orchestra shell is in the way. The manager allows the user to configure every axis in the system to have a constraint, or more than one if necessary. Constraints can triggered by inputs or positions. Note that constraints will most likely be set up by the **RAYNOK SYSTEM ADMINISTRATOR** on installation and will not need to be re-configured unless the system is subject to significant changes. The Manager and its setup and functionality is explained below.

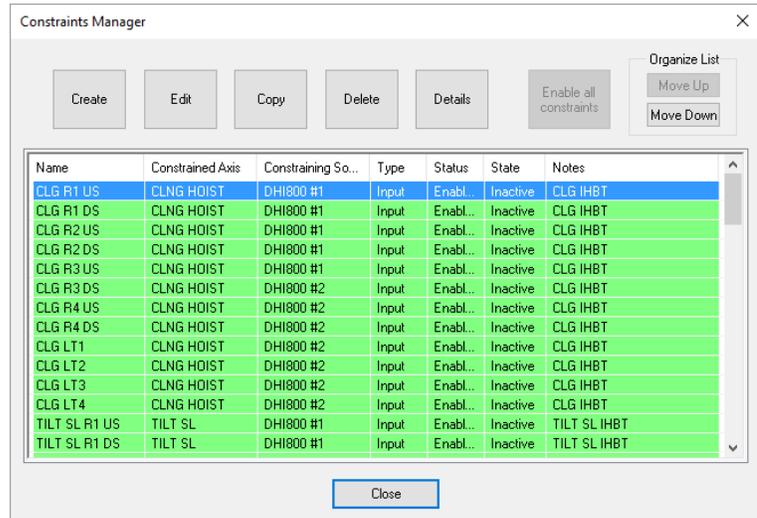
Create: Click this box to create a new constraint. Only Administrators may create new constraints. This will be explained below.

Edit: Edit the currently selected constraint. Currently selected constraint will be highlighted in blue. Only Administrators may edit constraints.

Copy: Copy the selected constraint. A dialog will appear and automatically name the constraint 'copy of'. The user can then edit any fields in the constraint. The copied constraint will appear at the bottom of the list.

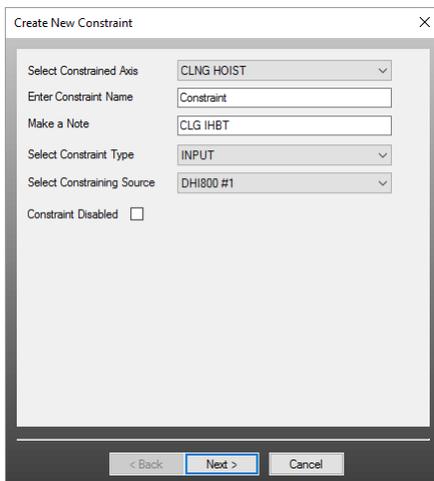
Delete: Click on this button to delete the highlighted constraint.

Details: View the selected constraint. Users with restricted permissions are limited to this option, as editing will be disabled for them.



Constraints Manager - Creating a New Constraint

Click the *Create Button* to create a new constraint. Only Administrators may create new constraints. The following dialog box will appear.



Select Constraint Axis: Use the *Pull-Down Menu* to select the axis to be constrained. In this example the ceiling hoist is selected.

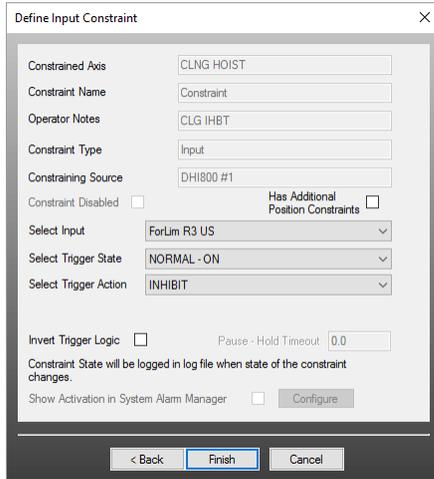
Enter Constraint Name: Enter a unique name for the constraint.

Note: Any useful information can be entered in this field. It does not have to be a unique identifier.

Constraint Type: Choose INPUT or POSITION. What type is chosen here will determine what the next dialog box is. Inputs are typically signals coming in from limits or 'READY' signals from other devices. Positions are values from the constraining source, such as a certain height, or a value between two positions.

Select Constraining Source: This is the source device that constrains the axis. This must be selected to advance to the next window.

Click the *Next Button* to advance to the next screen. Depending on what type of constraint was chosen, the following dialog box will appear. The image below is an INPUT constraint, while the next image described is a POSITION constraint.

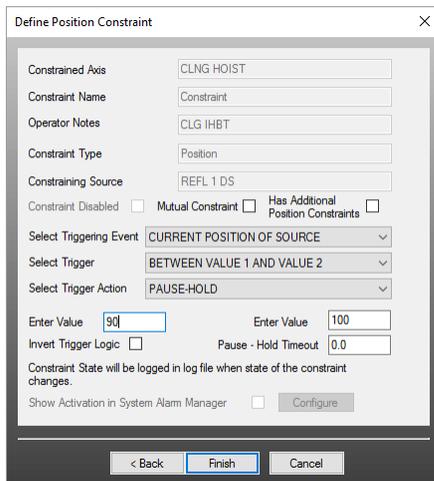


INPUT CONSTRAINT

Select Input: Use the *Pull-Down Menu* to select the input that will trigger this constraint. The example shows a forward limit input on an upstage limit.

Select Trigger State: Choose between the input being ON or OFF. This can be inverted as well using the 'Invert Trigger Logic' checkbox below.

Select Trigger Action: Choose what will happen to the constrained axis when the input is triggered. Typical actions are inhibit, stop, e-stop, or paused. If paused, a hold timeout can be set using the field below.



POSITION CONSTRAINT

Select Trigger Event: Use the *Pull-Down Menu* to select the position triggering event. It can either be 'current position of source', or 'difference between positions'

Select Trigger : Choose between 'Less than or equal to value 1', 'Greater than value 1', or 'Between value 1 and 2'. The first option will cause the action to occur if the value in the first box below is a value below the current position. The second option will cause the action to trigger if the value in the first box is above the value of the current position. The last option will cause the action to trigger if the value of the current position is between the values in the two boxes.

Select Trigger Action: Choose what will happen to the constrained axis when the position is triggered. Typical actions are inhibit, stop, e-stop, or paused. Options are as they are for Input

Constraints.

It is also possible to show constraints being triggered in System Alarms; consult the Stage Manager of the production to determine if this input needs to be in a system alarm or not.

Constraints Manager - Editing, Viewing, or Copying a Constraint

Editing, viewing, and copying constraints is self-explanatory. The same dialog boxes will appear as when creating a new constraint. Be careful not to delete constraints when in super-user mode, as there is no Undo Feature in **RAYNOK** (at the time of this writing). Everything will be logged as stated at the bottom of the window.

Always remember to save your showfile periodically to avoid such mishaps from occurring.

SYSTEM ALARMS MANAGER

The **System Alarms Manager** controls System Alarms. The manager allows the user to configure three levels of alarms for triggered by inputs or positions. Note that alarms will most likely be set up by the **RAYNOK SYSTEM ADMINISTRATOR** on installation and will not need to be re-configured unless the system is subject to significant changes. System alarms can be set up as a view in **RAYNOK**, and will pop-up as they occur. The Manager and its setup and functionality is explained below.

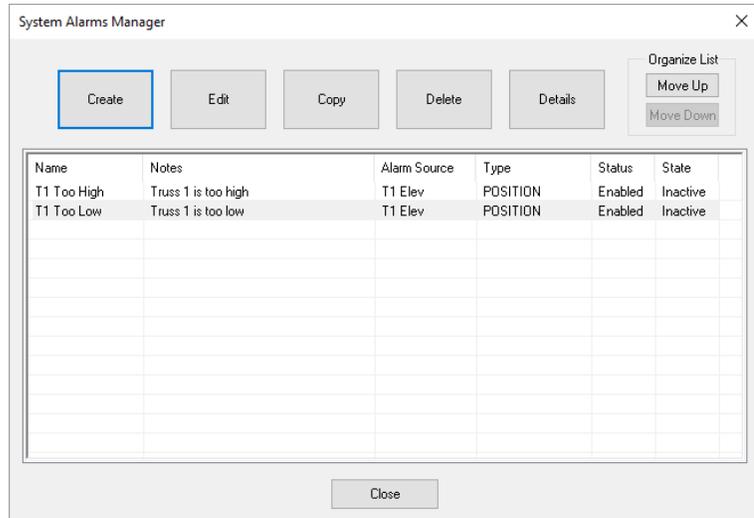
Create: Click this box to create a new alarm. Only Administrators may create new alarms. This will be explained below.

Edit: Edit the currently selected alarm. Currently selected alarm will be highlighted in blue. Only Administrators may edit alarms.

Copy: Copy the selected alarm. A dialog will appear and automatically name the alarm 'copy of'. The user can then edit any fields in the alarm. The copied alarm will appear at the bottom of the list.

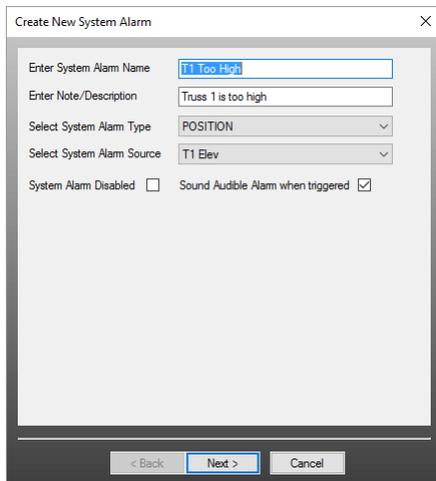
Delete: Click on this button to delete the highlighted alarm.

Details: View the selected alarm. Users with restricted permissions are limited to this option, as editing will be disabled for them.



System Alarms Manager - Creating a New Alarm

Click the *Create Button* to create a new system alarm. Only Administrators may create a new alarm. The following dialog box will appear.



Enter System Alarm Name: Enter a unique name for the system alarm. This name will appear when the alarm is triggered.

Note: Any useful information can be entered in this field. It does not have to be a unique identifier.

Select System Alarm Type: Choose between INPUT, OUTPUT, POSITION, FAULT, or AXIS GROUP. What is chosen here will determine what the next dialog box is. Inputs are typically signals coming in from limits or 'READY' signals from other devices. Outputs can be buzzers or lights from various devices. Positions are values from the system alarm source, such as a certain height, or a value between two positions. Faults will cause an alarm to trigger when any fault occurs on the alarm source. Axis Group can be when a linked group has a link disabled or has faulting disabled.

Select System Alarm Source: This is the source device that drives the system alarm. This must be selected to advance to the next window.

The checkboxes allow the user to disable the system alarm and to sound an audible alarm. Audible alarms are only possible if the system has a Helm devices, such as a **RAYNOK MK2**.

Click the *Next Button* to advance to the next screen. Depending on what type of system alarm was chosen, the following dialog boxes will appear. The image below is an INPUT alarm, while the next image described is a POSITION alarm. The other types of alarms are variations of two below.

INPUT SYSTEM ALARM

Select Input: Use the *Pull-Down Menu* to select the input that will trigger this alarm. The example shows a forward limit input.

Select Trigger State: Choose between the input being ON or OFF. This can be inverted as well using the 'Invert Trigger Logic' checkbox below.

Select Alarm Level (1, 2, 3): Three levels of alarms are possible for a system alarm. The first level, 'WARNING', will flash in grey. The second level, 'PRIORITY', will flash in yellow. The last level, 'URGENT', will flash in red. Choose any of these types and a delay time for each. The delay will count down from the chosen value once the alarm is acknowledged, and will re-occur if the source for the alarm has not been rectified within the given time limit. All alarms when triggered will be logged in a log file.

POSITION SYSTEM ALARM

System Alarm triggers when current position: Choose between 'Less than or equal to value 1', 'Greater than value 1', or 'Between value 1 and 2'. The first option will cause the action to occur if the value in the first box below is a value below the current position. The second option will cause the action to trigger if the value in the first box is above the value of the current position. The last option will cause the action to trigger if the value of the current position is between the values in the two boxes.

Select Alarm Level (1, 2, 3): Three levels of alarms are possible for a system alarm. The first level, 'WARNING', will flash in grey. The second level, 'PRIORITY', will flash in yellow. The last level, 'URGENT', will flash in red. Choose any of these types and a delay time for each.

System Alarms Manager - Editing, Viewing, or Copying a System Alarm

Editing, viewing, and copying System Alarms is self-explanatory. The same dialog boxes will appear as when creating a new System Alarm. Be careful not to delete system alarms when in super-user mode, as there is no Undo Feature in **RAYNOK** (at the time of this writing). Everything will be logged as stated at the bottom of the window.

Always remember to save your showfile periodically to avoid such mishaps from occurring.

DONGLE MANAGER

The **Dongle Manager** controls **RAYNOK** Dongles. Every **RAYNOK** Software used in a live system requires a USB Security Dongle device. These are installed and inserted in the Main Computer by the **RAYNOK** ADMINISTRATORS upon system commissioning. When the manager is opened, a dialog box will appear listing important information concerning the system. When troubleshooting **RAYNOK**, refer to this window and let the **RAYNOK** ADMINISTRATOR know the SERIAL and VERSION numbers.

RAYNOK DONGLE MANAGER

Dongle information

SERIAL NUMBER 79016706 VERSION 00010001

CONFIGURATION TITLE JC JOEL

WEBSITE www.jcjoel.com

SUPPORT PHONE NUMBER +44 (0)1422 833835

PROJECT NUMBER 16443

RAYNOK VERSION

Demo Demo R3D Standard R3D SuperRay

REFRESH INFO Stolen / Missing Dongle List EXIT

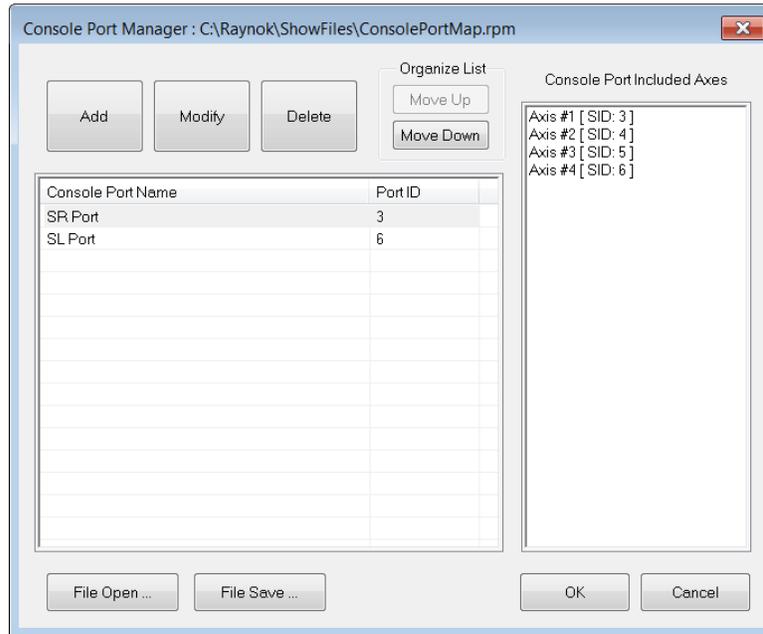
Refresh Info: Click this box to show the current Dongle information when a new Dongle has been installed.

Stolen / Missing Dongle List: Click on this box to show a list of currently missing or stolen Dongles.

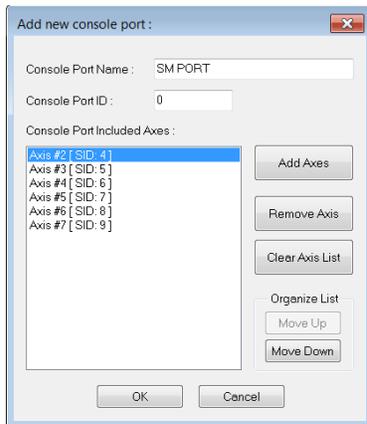
Exit: Click on this box to exit the manager.

CONSOLE PORT MANAGER

The **Console Port Manager** controls Console Ports in the system. A system with Console Ports will in most cases be set up by the **RAYNOK ADMINISTRATOR** when a system is installed, but a Super User can also Add, Modify, and Delete ports. The purpose of Console Ports is to have an easy way to identify console access points in a large system. The Console Port Manager is used to group axes together, so that they can only be controlled from specified consoles. A system with two or more consoles should not have an axis in one room controlled by a console in another room. Note that Console Port Manager must be enabled in Application Options - File Options for the Console Port Manager to be available.



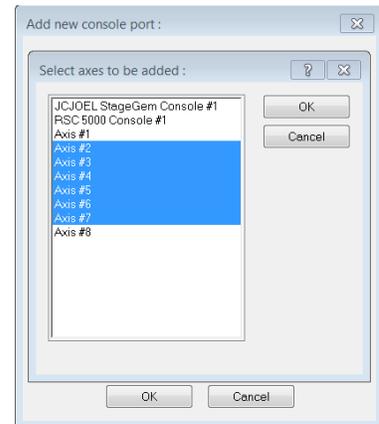
Console Port Manager - Adding New Console Port



Click this box to create a new console port. The dialog box pictured on the left will appear.

Console Port Name: Enter a name that describes the console port, such as its location in the venue or a nickname used by the operator.

Console Port ID: Choose a unique number. If a non-unique number is chosen, **RAYNOK** will display a dialog requesting the user to change to a unique number.



Add Axes: Click on this box to add axes to the console. Choose the axes that are to be controlled by this console only. The dialog box will look similar to the one on the right.

Remove Axes: Remove the selected axis from the list

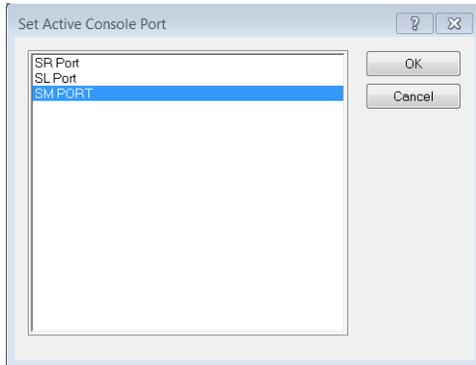
Clear Axis List: Remove all axes from the list

Console Port Manager - Modify and Delete

Modifying and Deleting Console Ports is self-explanatory. The same dialog boxes will appear as when creating a new Console Port. Be careful not to delete Console Port when in super-user mode, as there is no Undo Feature in **RAYNOK** (at the time of this writing). Everything will be logged as stated at the bottom of the window.

Always remember to save your showfile periodically to avoid such mishaps from occurring.

Console Port Manager - Set Active Console Port



Set Active Console Port can be found under Setup - Administrative Tools - Set Active Console Port.

Use this dialog box to choose the active console port. All other ports will be disabled while this one is active. This feature exists so that another user within a venue cannot control the same group of axes as the current user, as described in the previous page.

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