IQ₃

The **SKILMATIC**® Range
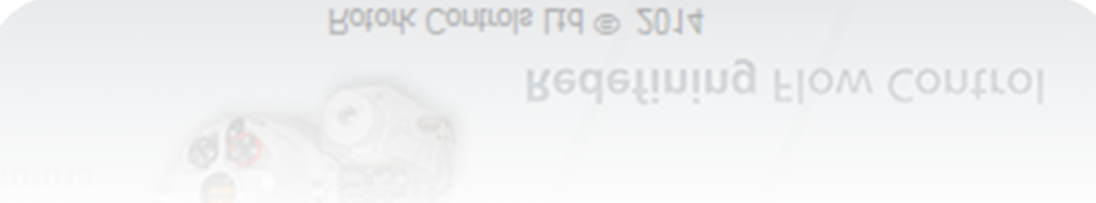
rotork®

Insight2

Loading ---

Redefining Flow Control

Rotork Controls Ltd © 2014

1.0 Introduction

1.1 Installing Insight 2

1.2 Uninstalling Insight 2

1.3 Updating Insight 2

1.1 Installing Insight 2

The Insight 2 program can be downloaded from the Insight 2 download page on:
www.rotork.com/en/support/index/downloads
You will be required to Log in with your Rotork Internet Portal Account to access this page.
(To register for a free Rotork Internet Portal Account click register and fill out the application form)
On the IQ Insight 2 download page you can view information about the software and the minimum PC operating requirements. It is worth noting down the program access passwords for future use. When you are satisfied that your machine is compatible with Insight 2, click Download IQ-Insight 2 Software for PC. This will begin the software package download for the latest version of Insight 2.

Once the download is complete, extract the install package to a user specified save location. Open the *Setup.exe* file to load the installation wizard and begin the program install process. Follow the on-screen prompts to install Insight 2.

1.2 Uninstalling Insight 2

To uninstall Insight 2 use the Uninstall Insight 2 start menu shortcut or proceed through the standard Windows software management feature. This can be found within the control panel.

For XP users use the "Add/Remove Programs" feature.
For Vista and 7 users use the "Uninstall a program" feature.
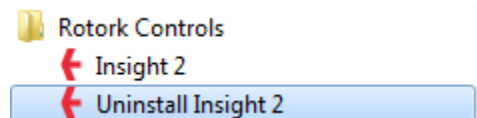
Select Insight 2 from the program list and select uninstall. Follow the onscreen wizard to complete the removal of Insight 2.

1.3 Updating Insight 2

Insight 2 will be updated periodically to add new features and increased compatibility with new Rotork actuators. To update your copy of Insight 2 please follow instructions detailed on the download page of the Rotork website *www.rotork.com/en/support/index/downloads*.

2.0 Logging In

2.1 Login Screen

Below is the login screen for Insight 2.
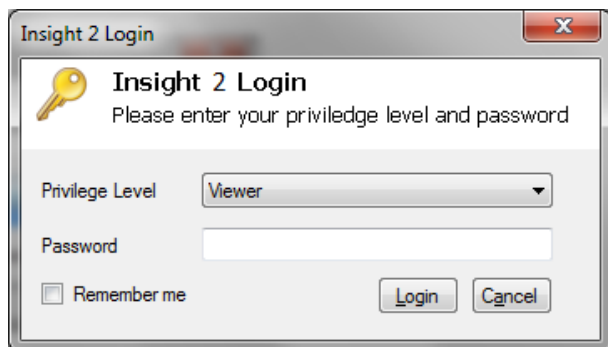
This screen provides the user with four access levels on a drop down menu that require the corresponding passwords to be entered. The check box in the bottom left allows Insight 2 to remember your login details for easy access to the program in the future.

2.2 User Levels

The Privilege Level drop down menu presents 4 selections.
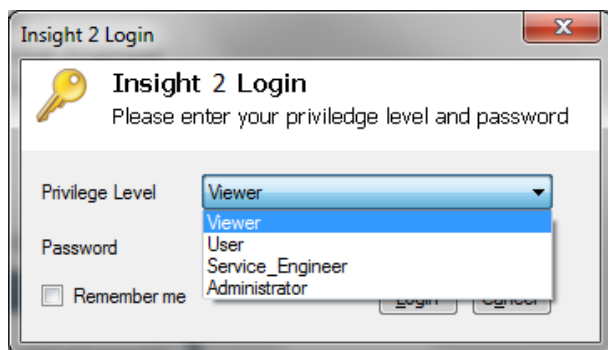
This selection will determine the available access levels visible when connecting to a Rotork Bluetooth device.

2.2.1 Viewer

As a Viewer you can connect to any Bluetooth equipped Rotork device. These include: IQ3, CVA, EH Pro, SI Pro and Rotork Bluetooth Setting Tool Pro. Viewer level prevents operators from modifying the settings of an actuator.

Default Insight 2 Viewer Password: **ROTORK**

2.2.2 User

As a User you can perform all the tasks of a Viewer with the ability to modify setting values. An actuator User login allows you to change some settings within the actuators configuration.

Default Insight 2 User Password: **ROTORK**

2.2.3 Service Engineer

This login is reserved for the use of Rotork Service Engineers.

2.2.4 Administrator

This Login is reserved for the use of Rotork Engineers.

3.0 Home Screen

3.1 Layout

3.2 Menu Bar

3.2.1 File
3.2.2 Connection
3.2.3 Security
3.2.4 Tools
3.2.5 Help

3.3 Icon Bar

3.3.1 Open Configuration
3.3.2 Save As
3.3.3 Save
3.3.4 Print
3.3.5 Send
3.3.6 Receive Configuration
3.3.7 Discard

3.4 Side Panel

3.4.1 Offline
3.4.2 Bluetooth

3.5 Range Panel

3.6 Presentation Window

3.7 Status Bar

3.7.1 Connection Status
3.7.2 Actuator Login level
3.7.3 Insight 2 Login Level

3.1 Layout

For the purpose of this manual the main Insight 2 screen has been split into six areas as shown below.
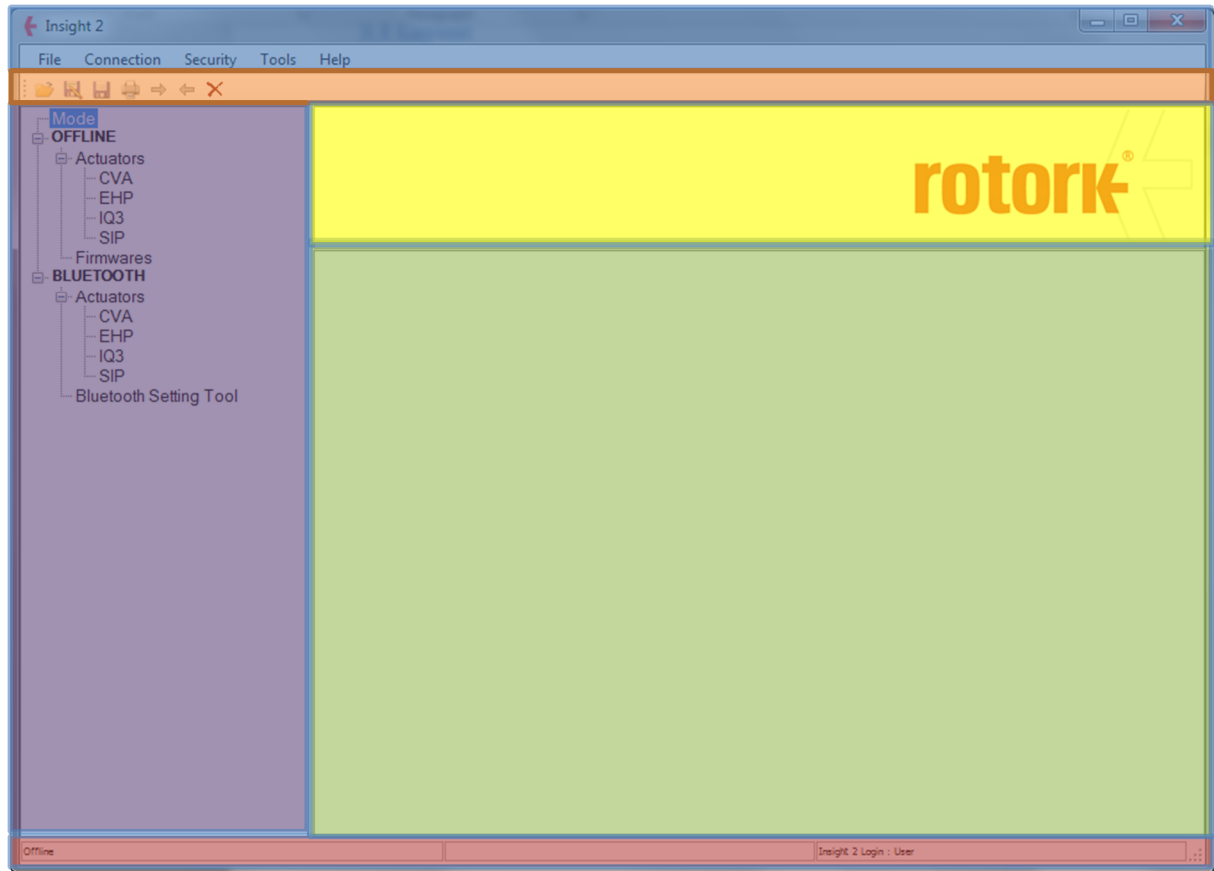
Description	Colour
Menu Bar	Blue
Icon bar	Orange
Side Panel	Purple
Range Panel	Yellow
Presentation Window	Green
Status Bar	Red

3.2 Menu Bar
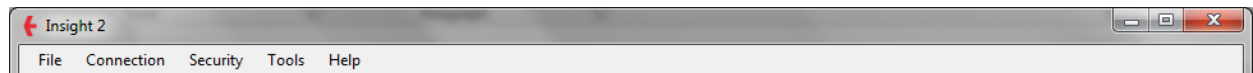
3.2.1 File
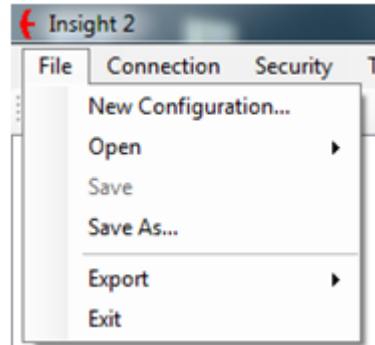
New Configuration
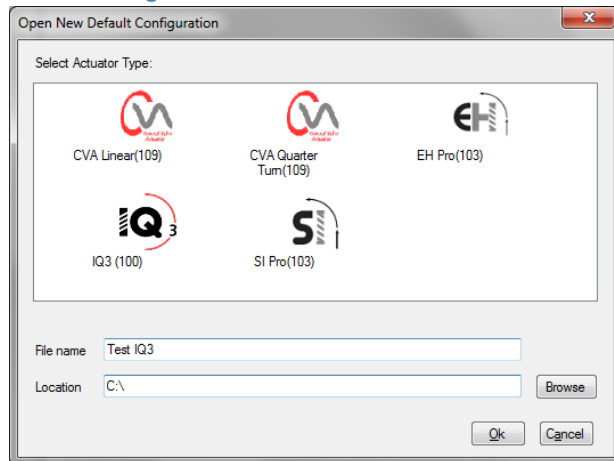
Use this function to create a new default configuration for a compatible Rotork product. There are 5 types of actuator that can be configured with Insight 2. The name and save location of the configuration can be modified appropriately if required.
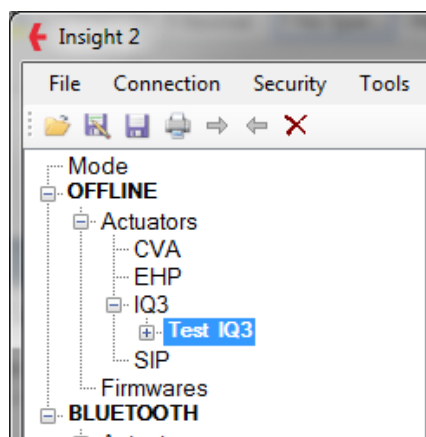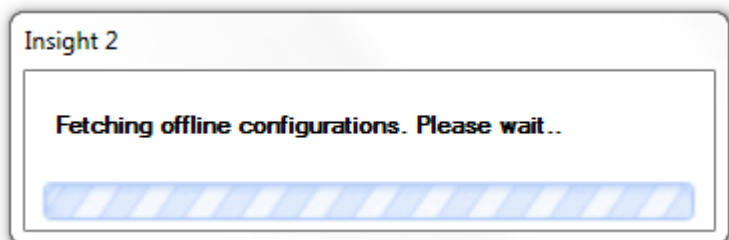
Once "Ok" is selected the loading screen will appear as Insight 2 prepares the new configuration. This will appear in the Offline section of the side menu (for side menu information see section 3.4.1) under the correct actuator type.

NOTE: using this function on a live actuator will clear any previous configuration. Ensure a copy of the existing configuration is saved before using this feature.

Open
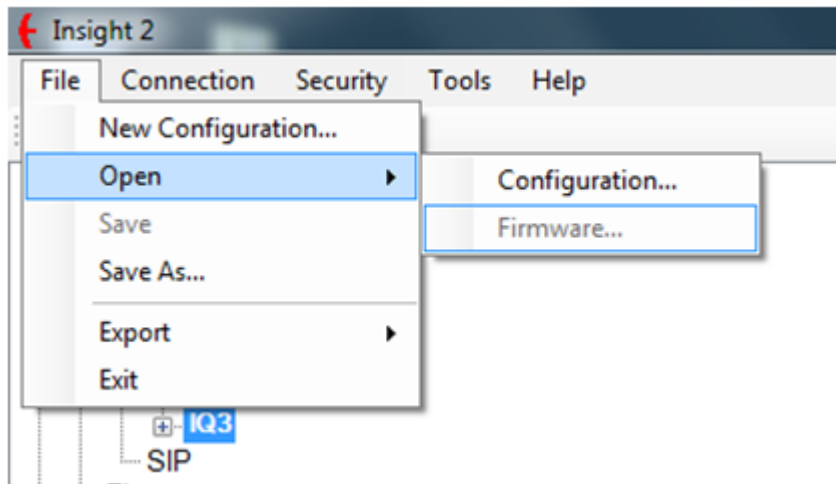
Configuration
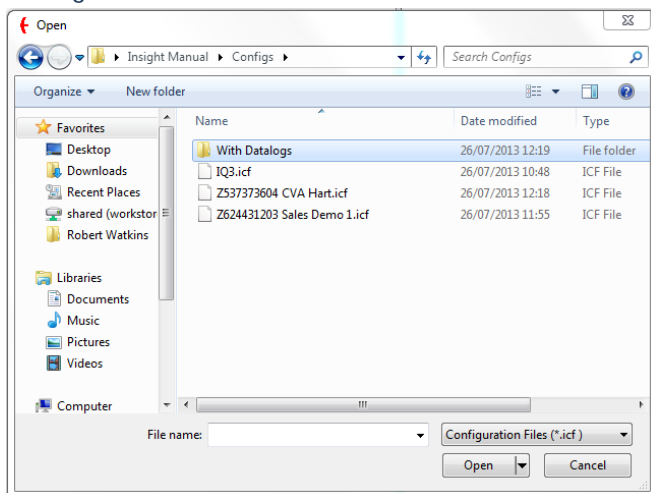
The configuration option allows the user to open saved configuration files. Opened files will be shown in the Offline section of the Side menu under the relevant actuator type.

Firmware

This function is only available for Rotork Service Engineers and Service centres.

Save
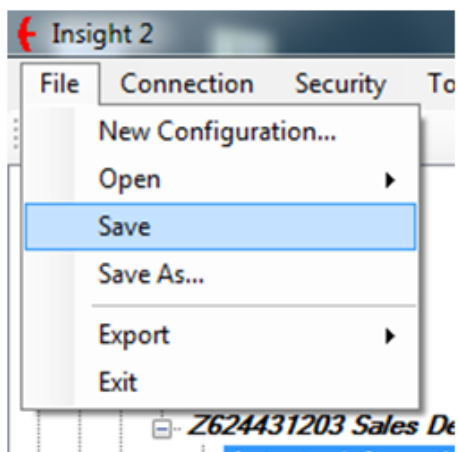
When a configuration in the Offline section is changed the user can save those changes.

Save As

This function enables the user to save configuration files from the Offline or Online sections of the side menu to a directory on the PC. These will be available for future offline use. This feature is to be used for saving the configuration and datalogger files in the format to be read by Insight 2. For other formats use the export feature.

Export

Configuration

This exports the current actuator configuration as either a Comma Separated Value (.csv) or a Text file (.txt)

Configuration and DataLogs

This exports the current actuator configuration and data log file as either a Comma Separated Value (.csv) or a Text file (.txt). The data log must be viewed within Insight 2 prior to exporting the data.

Exit

The Exit function will close Insight 2 and disconnect from any active Bluetooth device.

3.2.2 Connection
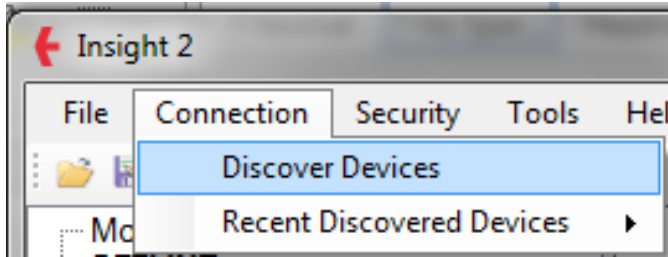
Discover Devices

This initialises a search for all Bluetooth enabled actuators* and setting tools within the Bluetooth adaptor range (setting tools can only be found whilst in slave mode, refer to the Bluetooth Setting Tool manual for more information).

Recent Discovered Devices

This provides a list of previously connected devices that the operator can connect to without requiring a Bluetooth search*.

*Actuators must be in a Bluetooth visible mode and within range of the Bluetooth adapter to be discovered with Insight 2.

3.2.3 Security
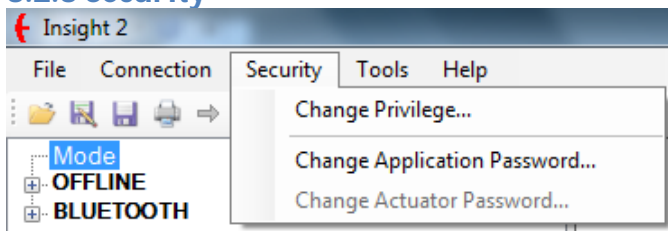
Change Privilege

This enables the user to change their privilege level within Insight 2 by re-opening the Login screen (see section 2 Logging In).

Change Application Password
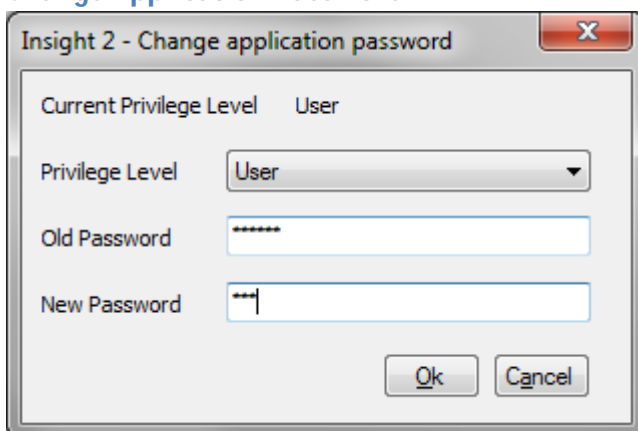
This function enables the current user to change the Insight 2 login passwords for the current privilege level and any lower privilege level.

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Change Actuator Password

This function is reserved for Rotork Service Engineer use only.

3.2.4 Tools
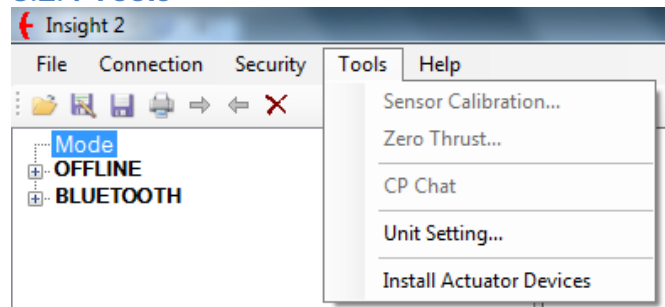
Sensor Calibration

This function is reserved for Rotork Service Engineer use only.

Zero Thrust

This function is reserved for Rotork Service Engineer use only.

CP Chat

This function is reserved for Rotork Service Engineer use only.

Unit Setting
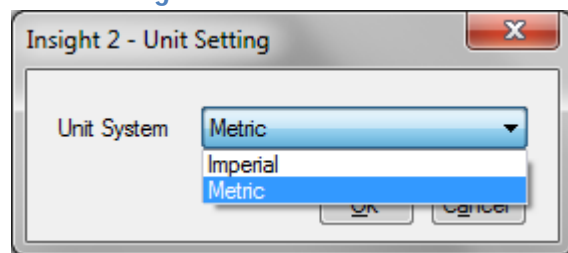
The units displayed within Insight 2 can be set to Metric or Imperial to suit various global markets (**Insight 2 default = Metric**).

Install Actuator Devices
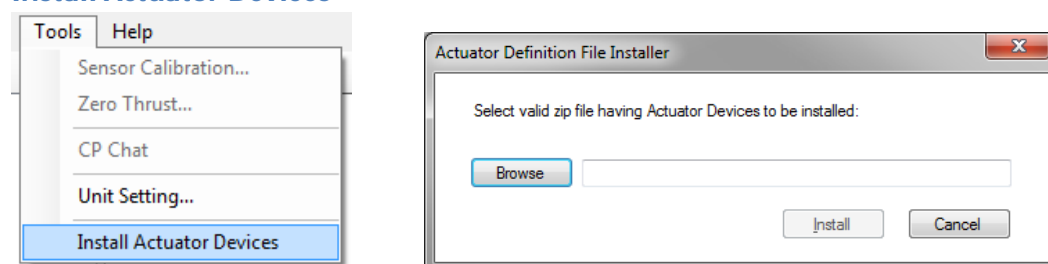
This function enables Insight 2 to be updated using a compressed ADF file package provided by Rotork. All future updates will be supported via this feature to ensure reliable compatibility with the continually expanding Rotork product offering.

To download the latest ADF file please visit the Insight 2 download page: http://www.rotork.com/customers/index/iqinsight2.

Save the ADF file to an accessible PC directory and then browse to the file through the Install Actuator Devices function.
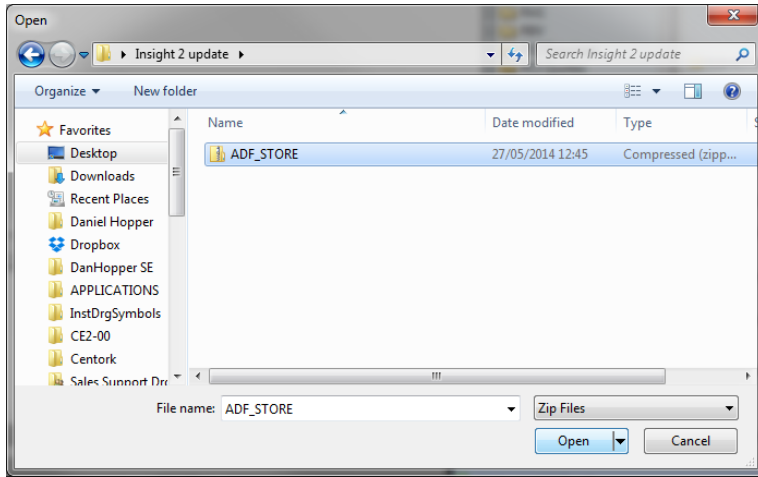
On successful installation of the update you will be requested to restart Insight 2.
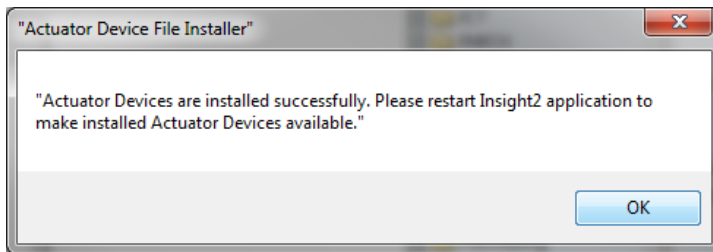
3.2.5 Help
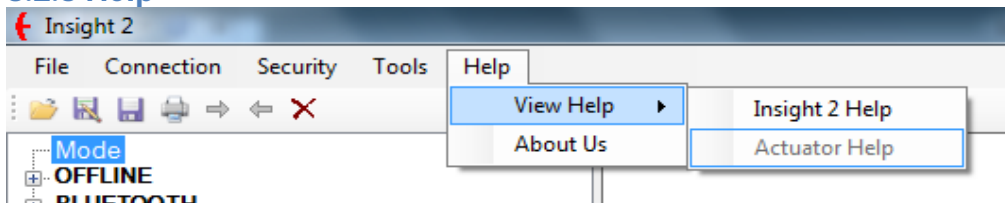
View Help

Insight 2 Help

This help file is currently under construction. Future releases will include information about various Insight 2 functions.

Actuator Help

This help file is currently under construction. Future releases will include information about various Rotork actuator functions relevant to the connected actuator type.

About Us

Shows the current version number of the Insight 2 program and contains a brief description about the purpose of Insight 2.

3.3 Icon Bar
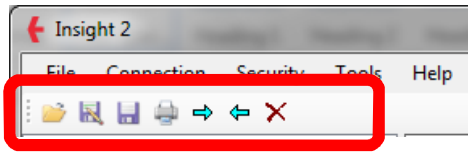
3.3.1 Open Configuration

This allows the user to open a saved Configuration file (.icf) from a PC directory in the Offline section of the Side panel.

3.3.2 Save As

This function enables configuration files from the Offline or Online sections of the side menu to be saved in a PC directory.

3.3.3 Save

When a configuration is open in the Offline Section, this function enables the user to save any modifications to the settings.

3.3.4 Print

This will print the current information in the presentation window as it is shown on the screen (only available when actuator information is displayed within the window).

3.3.5. Send Configuration

This function will send all visible configuration changes to the connected actuator. Send Configuration will only be possible when connected to a Bluetooth device.

3.3.6 Read Configuration

This function will read a device's current configuration. Read Configuration will only be possible when connected to a Bluetooth device.

3.3.7 Discard

Removes any unsaved configuration changes (highlighted yellow) displayed within the presentation window.

3.4 Side Panel
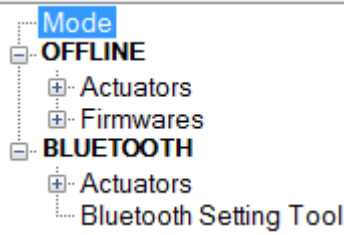
3.4.1 Offline

Actuators

All offline actuator configurations opened in Insight 2 are stored for the session under their respective actuator type (see Fig 1). Configurations can be edited and viewed (with the correct privilege level) from the expanded menu (See fig 2).

Fig 1	Fig 2
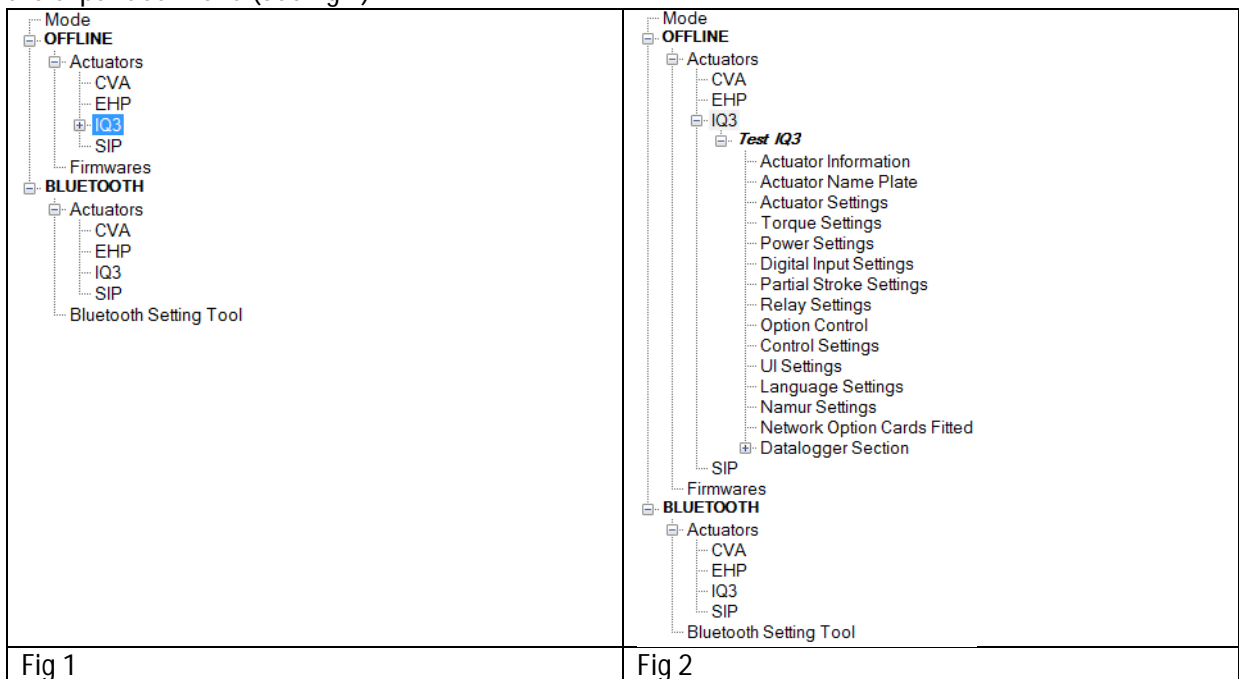
Firmware

This function is reserved for Rotork Service Engineer use only.

3.4.2 Bluetooth

Actuators

All actuators that have been found by after a Bluetooth search (see 1.0 and 4.0) will be visible here. The expanded menu can only be accessed once a connection to the device has been established.
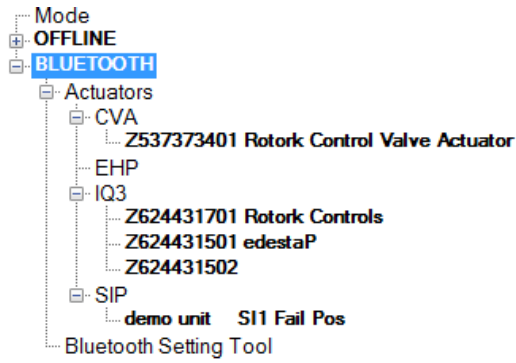
Bluetooth Setting Tool

All visible Bluetooth Setting Tools currently in slave mode and available for connection (See Bluetooth Setting Tool Manual for details) will be visible in this section. The expanded menu can only be accessed once a connection to the Bluetooth Setting Tool has been established.
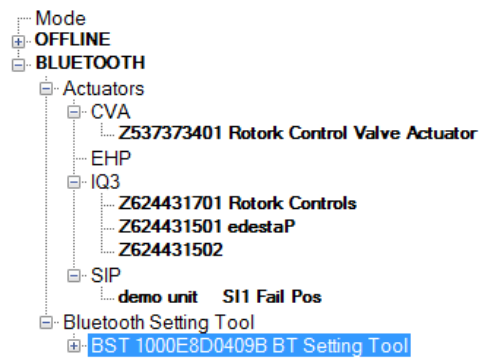
3.5 Range Panel

The Range Panel will indicate which actuator range the current configuration or data log belongs to. If the device is currently connected through Insight 2 the serial number and valve tag will also be displayed.
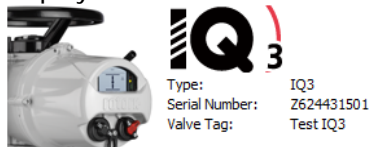
3.6 Presentation Window

The presentation window is where all configuration and data log information is displayed. Any setting entries that are shaded grey are non-editable at the current privilege level.

Actuator Information

Actuator User Information	
Valve label	Test IQ3
Actuator Serial Numbers	
Actuator	Z624431501
Main Controller	1226BX0160026803=107711
Position Sensor	1226BX0160022501=103311
Torque Sensor	2612493022006=101671
User Interface	1226BX0160003704=101131
Option 1	2112BX1820007601=108661
Option 2	
Option 3	
Option 4	
Power Board	1228BX0160048102=102251
DC Power Board (if fitted)	
Solid State Starter Board (if fitted)	
Actuator Manufacturing Information	
Date of Manufacture	20120829
Service Commission Date	28/02/12
Service Inspection Date	
Factory Acceptance Test Date	
Wiring Diagram	100K2000

3.7 Status Bar

Current status of actuator connection, actuator privilege level and Insight 2 privilege level are displayed at all times within the Insight 2 window.

Online : IQ3 Z624431701 Rotork Controls (via Bluetooth)	Actuator Login : User	Insight 2 Login : User

3.7.1 Connection Status

Connection status for Insight 2 is visible in the left portion of the status bar. An online connection will show the actuator Bluetooth tag or Bluetooth Setting Tool tag and the connection method. If a Bluetooth connection is not currently active an offline status will be displayed.

Online : CVA Z537373604 CVA Hart (via Bluetooth)	Offline

3.7.2 Actuator Login Level

Current actuator login level is shown in the middle portion of the status bar. There are three levels available: Viewer, User and Engineer.

Actuator Login : Viewer

3.7.3 Insight 2 Login Level

The current privilege level access for Insight 2 is displayed in the right portion of the status bar. To change access level, click on this part of the status bar or use the change privilege level option (See 3.2.3.1).

Insight 2 Login : Service Engineer
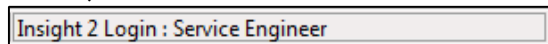
4.0 Connecting and Disconnecting Devices

4.1 Searching for Devices
4.2 Connecting to an Actuator
4.3 Connecting to a Bluetooth Setting Tool
4.4 Disconnecting from Devices

4.1 Searching for Devices

Use the Discover Devices function (as detailed in 3.2). This will begin a search for all Rotork Bluetooth enabled devices and setting tools within range of the Bluetooth adapter.
Please note only actuators with a Bluetooth Security setting of Medium or Low are visible within Insight 2. Bluetooth setting Tools have to be in slave mode to be found by Insight 2 (refer to the Bluetooth Setting Tool Manual for information on how to activate Slave Mode).

```
Mode
OFFLINE
BLUETOOTH
  Actuators
    CVA
      Z537373401 Rotork Control Valve Actuator
    EHP
    IQ3
      Z624431701 Rotork Controls
      Z624431501 edestaP
      Z624431502
    SIP
      demo unit    SI1 Fail Pos
  Bluetooth Setting Tool
    BST 1000E8D0409B BT Setting Tool
```
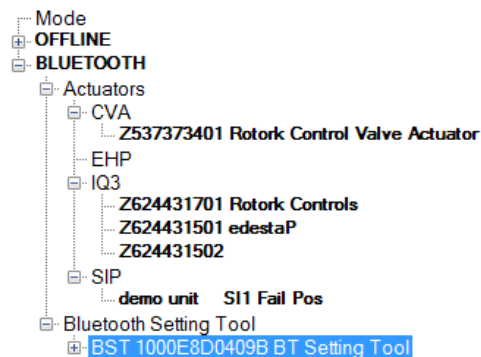
Once the search is complete, all actuators found will be displayed in the expanded menu under the relevant range heading. Each unit will be identified by Serial Number and Bluetooth Friendly Tag. Bluetooth Setting Tools will be identified by the acronym BST and the Bluetooth MAC address.

4.2 Connecting to an Actuator

To connect to an actuator, double click on the actuator name or right click on the actuator name and click Connect.
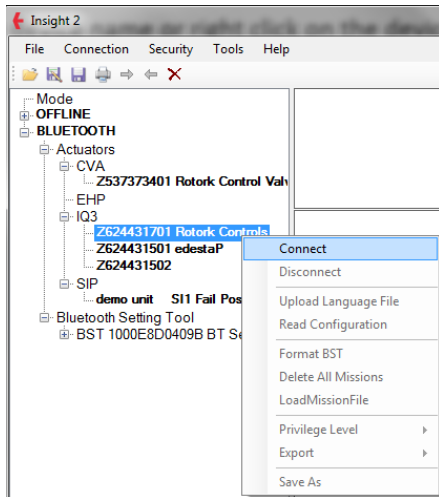
If you try to connect to more than one actuator the warning box below will be shown.
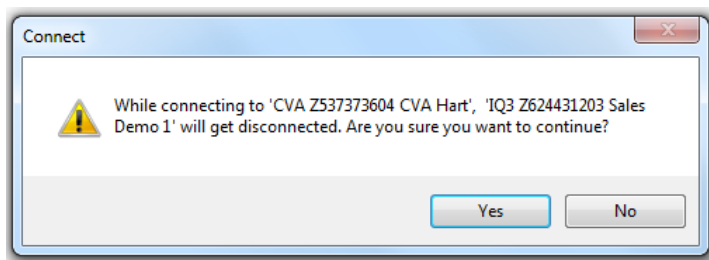
4.3 Connecting to a Bluetooth Setting Tool

Connecting to a Bluetooth Setting Tool is performed in the same manner as connecting to an actuator. Upon connection with Insight 2 the Setting Tool's Enter key will rapidly flash blue indicating a connection has been established. The connection privilege Level of the Bluetooth Setting Tool is dictated by the current Insight 2 Privilege Level.

4.4 Disconnecting from Devices

You can disconnect from a device by right clicking the device and selecting Disconnect from the drop down menu, this is applicable to all Bluetooth devices.

23
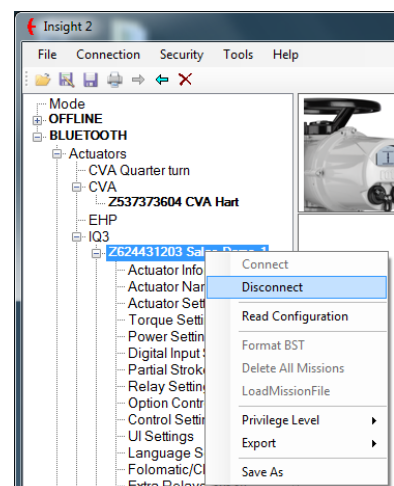
5. CVA

5.1 CVQ/CVL Device Information

5.1.1 Valve Tag
5.1.2 CVA/CVQ Type
5.1.3 CVA Main PCB Software Version
5.1.4 Manufacturing Data
5.1.5 Service Notes
5.1.6 Date of Manufacture
5.1.7 CVA Hardware
5.1.8 Main Controller Serial No.
5.1.9 UPS Controller Serial No.
5.1.10 Position Sensor Serial No
5.1.11 Motor Sensor Serial No.
5.1.12 Force Sensor Serial No.
5.1.13 User Interface Serial No.

5.2 Actuator Configuration - CVA Valve Setup

5.2.1 Valve Action Settings
5.2.2 MOVTag
5.2.3 Valve Action Settings
5.2.4 Input / Output Setup

5.3 Advanced Settings 1

5.3.1 Tight Shut Off
5.3.2 Obstruction Action Active
5.3.3 Obstruction Values Setup
5.3.4 Manual Test Knob Setup
5.3.5 CVA Status Relay Setup

5.4 Advanced Settings 2

5.4.1 Travel Alarm Thresholds
5.4.2 Bumpless Transfer Setup
5.4.3 Manual Test Knob Setup
5.4.4 CVA Status Relay Setup
5.4.5 Travel Alarm Thresholds
5.4.6 Bumpless Transfer Setup

5.5 UPS Configuration and Status

5.5.1 UPS Configuration
5.5.2 UPS Status Information

5.6 CVA Status

5.6.1 Actuator Position (%)
5.6.2 Actuator Torque/Thrust (%)
5.6.3 Analogue Demand Input (mA)
5.6.4 Analogue Position Feedback (mA)
5.6.5 ESD Input Status

5.7 CVA Data logger

5.1 CVQ/CVL Device Information

Please note that CVA actuators should be configured using dedicated Enlight support software. This is available to download free of charge from www.rotork.com.

5.1.1 Valve Tag
This is a user defined name for the actuator consisting of up to 32 alpha-numeric or symbolic characters. It is normally used by operators to specify a unique tag based on location or a description of the actuator. This setting is linked directly to the MOVTag in the CVA Valve Setup Menu (See Section 5.2.2).

5.1.2 CVA/CVQ Type
This displays the size of the actuator, along with any options fitted. Rotork Service Engineer use only.

5.1.3 CVA Main PCB Software Version
Shows the current Main PCB software version in the actuator. Rotork Service Engineer use only.

5.1.4 Manufacturing Data
Shows the manufacturing data for the actuator. Rotork Service Engineer use only.

5.1.5 Service Notes
This is where service notes can be entered and stored for future reference. This field accepts up to 64 characters. Rotork Service Engineer use only.

5.1.6 Date of Manufacture
Shows the date of manufacture in the format YYYY/MM/DD. Rotork Service Engineer use only.

5.1.7 CVA Hardware
Shows the current CVA Hardware Number. Rotork Service Engineer use only.

5.1.8 Main Controller Serial No.
This is where the Main Controller serial number can be entered and viewed. Rotork Service Engineer use only.

5.1.9 UPS Controller Serial No.
This is where the UPS Controller serial number can be entered and viewed. Rotork Service Engineer use only.

5.1.10 Position Sensor Serial No.
This is where the Position Sensor serial number can be entered and viewed. Rotork Service Engineer use only.

5.1.11 Motor Sensor Serial No.
This is where the Motor Sensor serial number can be entered and viewed. Rotork Service Engineer use only.

5.1.12 Force Sensor Serial No.

This is where the Force Sensor serial number can be entered and viewed. Rotork Service Engineer use only.

5.1.13 User Interface Serial No.

This is where the User Interface serial number can be entered and viewed. Rotork Service Engineer use only.

5.2 Actuator Configuration - CVA Valve Setup

CVA Valve Setup

Valve Action Settings		^
Valve Open Torque Setting (%)	⊖ ▢―――――|――――― ⊕	40
Valve Close Torque Settings (%)	⊖ ▢―――――|――――― ⊕	40
MOV Tag		^
Valve Tag	Rotork Control Valve Actuator	
Valve Action Settings		^
Shaft Action	◉ Clockwise to Close ○ Clockwise to Open	
Open Stop Action	◉ Limit ○ Torque	
Close Stop Action	○ Limit ◉ Torque	
Input / Output Setup		^
Demand Deadband (%)	⊖ ▢―――――|――――― ⊕	0.1
Demand Damping Clockwise(secs)	⊖ ▢―――――|――――― ⊕	0
Demand Damping Anti-Clockwise(secs)	⊖ ▢―――――|――――― ⊕	0
4-20mA Output	◉ Valve Position ○ Valve Torque	

5.2.1 Valve Action Settings

Valve Open Torque/Thrust Setting (%)

The slider sets the percentage of rated torque/thrust the actuator will be limited to during operation in the open direction. This is adjustable between 40% and 100%.

Valve Close Torque/Thrust Setting (%)

The slider sets the percentage of rated torque/thrust the actuator will be limited to during operation in the closed direction. This is adjustable between 40% and 100%.

5.2.2 MOV Tag

Valve Tag

This is a user defined name for the actuator consisting of up to 32 alpha-numeric or symbolic characters. It is normally used by operators to specify a unique tag based on location or a description of the actuator. This setting is linked directly to the Valve Tag in the CVQ/CVL Device Information Menu (See Section 5.1.1).

5.2.3 Valve Action Settings

Shaft Action

Specify the output direction of the actuator. CVL actuators can be configured for extend to close or extend to open operation. CVQ actuators can be configured for clockwise to close or anti-clockwise to close.

Open Stop Action
The actuator can be set to stop in the open direction when it reaches the open position limit or when it reaches the defined open torque/thrust setting value (see section 5.2.1).

Close Stop Action
The actuator can be set to stop in the close direction when it reaches the close position limit or when it reaches the defined close torque/thrust setting value (see section 5.2.1).

5.2.4 Input / Output Setup

Demand Deadband (%)
The demand deadband sets the expected positioning accuracy of the actuator and is dependent on various factors including actuator output speed, number of turns and valve torque. The actuator will run until it reaches a position within the demanded deadband. The actuator will not restart until the demanded position exceeds the extent of the deadband.

Demand Damping Clockwise (secs)
Setting a value greater than 0 will apply a delay in the clockwise direction, temporarily inhibiting movement when a change to the set point signal occurs.

Demand Damping Anti-Clockwise (secs)
Setting a value greater than 0 will apply a delay in the anti-clockwise direction, temporarily inhibiting movement when a change to the set point signal occurs.

4-20mA Output
Specify whether the 4-20mA output provides feedback for Valve Position or Valve Torque/Thrust.

5.3 Advanced Settings 1

Advanced Settings 1

Tight Shut Off		^
Valve Tight Shut Off Open Position (%)	⊖ —————————|⊕	99.5
Valve Tight Shut Off Closed Position (%)	⊖|———————— ⊕	0
Obstruction Action Setup		^
Obstruction Action Active	◯ Disabled ◉ Enabled	
Obstruction Values Setup		^
Backoff Distance (%)	⊖ —|———————— ⊕	10
Backoff Time (sec)	⊖ —|———————— ⊕	1
Manual Test Knob Setup		^
Manual Test Knob Active	Enabled	▼

5.3.1 Tight Shut Off

Valve tight shut off Open position (%)
This is the minimum position required to fully open (tight shut off) the valve.

Valve tight shut off Closed position (%)
This is the maximum position required to fully close (tight shut off) the valve.

5.3.2 Obstruction Action Active
If enabled, the actuator will back off movement if the maximum torque/thrust is exceeded during travel. The actuator will make 3 attempts to back off and return to the set point. If disabled, the

actuator will remain stationary until a request to move in the opposite direction is received or the obstruction is removed. To set up obstruction settings see section 5.3.3.

5.3.3 Obstruction Values Setup

Backoff Distance (%)
The distance the actuator will back off as a percentage of total travel.

Backoff Time (Sec)
The time in seconds before a back off command is executed.

5.3.4 Manual Test Knob Setup

Manual Test Knob Active
Enables or disables the Manual Test knob option provided it is fitted to the actuator.

5.4 Advanced Settings 2

Advanced Settings 2

Travel Alarm Thresholds		
Direction Change Threshold Distance (%)	⊖ 🮲 ─── ⊕	0.25
Total Direction Changes Threshold (1000s)	⊖ ── 🮲 ─── ⊕	10000
Total Travel Distance Threshold (%)	⊖ ───── 🮲⊕	100
Bumpless Transfer Setup		
Bumpless Transfer Distance (%)	⊖ ───── 🮲⊕	100
Bumpless Transfer Speed (%)	⊖ ───── 🮲⊕	100

5.4.1 Travel Alarm Thresholds

Direction Change Threshold Distance (%)
The distance the actuator must move (as a percentage of full travel) before a direction change is registered by the data logger as a start. The default setting is 0.25%.

Total Direction Changes Threshold (1000s)
This can be used to generate a Travel Alarm when a set number of direction changes have been performed by the actuator.

Total Travel Distance Threshold (%)
This can be used to generate a Travel Alarm when a set distance has been travelled by the actuator.

5.4.2 Bumpless Transfer Setup

Bumpless Transfer Distance (%)
This is the percentage of position error that will reduce the actuator speed to the Bumpless Transfer Speed.

Bumpless Transfer Speed (%)
This is the speed that the actuator will revert to if the bumpless transfer distance is exceeded. It is measured as a percentage of rated maximum speed and the default setting is 40%.

5.5 UPS Configuration and Status

UPS Configuration and Status

UPS Configuration		
Action on Loss of Power	Closed Limit	▼
Position CVA Travels To On Loss of Power (%)	⊖ ━━━━━◻━━━◻━━━ ⊕	30
Power Failure Delay (sec)	⊖ ━━━━━━◻━━━━━ ⊕	5
Speed of Operation During UPS Action Rated (%)	⊖ ━━━━━━━━━◻ ⊕	100

UPS Status Information	
UPS Status Data (Raw decimal value)	35456
UPS Supply Voltage (V)	242.78
UPS Capacitor 1 Voltage (V)	1.723
UPS Capacitor 2 Voltage (V)	1.699
UPS Capacitor 3 Voltage (V)	1.635
UPS Capacitor 4 Voltage (V)	1.724
UPS Temperature Sensor value (°)	0.38
UPS Capacitor 1 Value (Farads)	291.213
UPS Capacitor 2 Value (Farads)	296.304
UPS Capacitor 3 Value (Farads)	290.495
UPS Capacitor 4 Value (Farads)	281.186
UPS Capacitor 1 Discharge Voltage (V)	1.747
UPS Capacitor 2 Discharge Voltage (V)	1.732
UPS Capacitor 3 Discharge Voltage (V)	1.732
UPS Capacitor 4 Discharge Voltage (V)	1.756
UPS Capacitor 1 End Discharge Voltage (V)	1.545
UPS Capacitor 2 End Discharge Voltage (V)	1.53
UPS Capacitor 3 End Discharge Voltage (V)	1.53
UPS Capacitor 4 End Discharge Voltage (V)	1.554
UPS Capacitor 1 Discharge Time (sec)	
UPS Capacitor 2 Discharge Time (sec)	
UPS Capacitor 3 Discharge Time (sec)	
UPS Capacitor 4 Discharge Time (sec)	

5.5.1 UPS Configuration

Action on Loss of Power
The actuator can be configured to perform four different actions on loss of power. These are:

Closed Limit: The actuator will move to the closed limit.
Open Limit: The actuator will move to the open limit.
Stayput: The actuator will remain at the current position (Default Setting).
Go To Position: The actuator will move to a pre-determined position.

Position CVA travels to on Loss of Power (%)
The position the actuator will travel to on Loss of power, provided the Power Loss Action is set for Go To Position. The position is a percentage of the full stroke and can be configured in increments of 0.1%.

Powerloss Action Delay timeout (sec)
The delay in seconds before the Power Loss Action is executed. The maximum allowable delay to guarantee a failsafe action will perform is 10 seconds.

Speed of Operation during UPS action rated (%)
The speed of operation during the UPS action can be adjusted as a percentage of normal operating speed.

5.5.2 UPS Status Information

UPS Status Data (Raw Decimal Value)
For indication only, shows the raw decimal value that the UPS supplies to the actuator.

UPS Supply Voltage (V)
For indication only, shows the UPS supply voltage received by the actuator.

UPS Capacitor Voltages (V)
For indication only, shows the charge stored by each capacitor.

UPS Temperature Sensor Value (°C)
For indication only, shows the temperature measured at the UPS.

UPS Capacitor Values (Farads)
For indication only, shows the UPS capacitor values for all fitted capacitors.

UPS Capacitor Discharge Voltages (V)
For indication only, shows the separate discharge voltage for all fitted capacitors.

UPS End Discharge Voltage (V)
For indication only, shows the separate end discharge voltage for all fitted capacitors.

UPS Discharge Time (sec)
For indication only, shows the separate discharge time for each of the fitted capacitors.

5.6 CVA Status

CVA Status

Status Information		
Actuator Position (%)	44.96	
Actuator Torque (%)	5.8	
Analogue Demand Input (mA)	20	
Analogue Position Feedback (mA)	15.596	
ESD Input Status	◉ ESD Input not Active	○ ESD Input Active

5.6.1 Actuator Position (%)
For indication only, shows the position of the actuator as a percentage of full travel.

5.6.2 Actuator Torque (%)
For indication only, shows the percentage of rated torque currently measured through the actuator drive train.

5.6.3 Analogue Demand Input (mA)
For indication only, shows the analogue input signal being received by the actuator.

5.6.4 Analogue Position Feedback (mA)
For indication only, shows the output signal being transmitted by the actuator with reference to position or force (see 5.2.4).

5.6.5 ESD Input Status
For indication only, denotes whether the actuator ESD input is presently active or not.

5.7 CVA Main Datalogger

The size of the Insight 2 window can be adjusted to expand or retract the visible range on graphical screens for increased or decreased detail.

5.7.1 Event Logger

The Event Logger will store information related to actuator actions and condition changes. All events are date and time stamped to accurately assess the actuator operations.

Event Logger

Current Record	1023	Event Date	20/05/2014	Event Time	14:48:11.500

The top scroll bar can be used to navigate from the first recorded event (far left) to the most recent event (far right). The recorded event number is shown with the event date and event time above the navigation bar.

Time Line

The Time Line display style provides the user with a visual indication of active conditions for the specific event selected with the top scroll bar. An active condition is indicated by a checked box. The dropdown menu is included to apply a filter. The Prev and Next actions buttons chronologically skip to the next recorded event for the chosen condition.
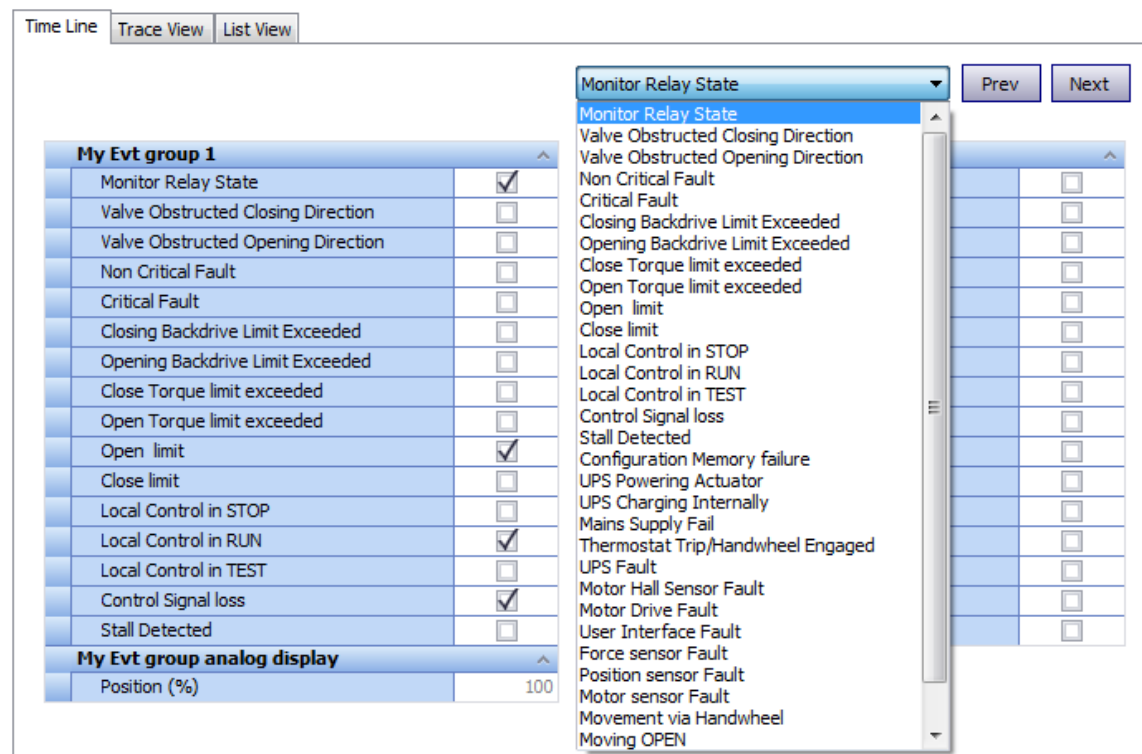
Trace View

The trace view provides a comparison between various event triggers during each period between events. The Position (%) trace is an analogue recorded value whilst other event conditions can be configured as Digital Traces.
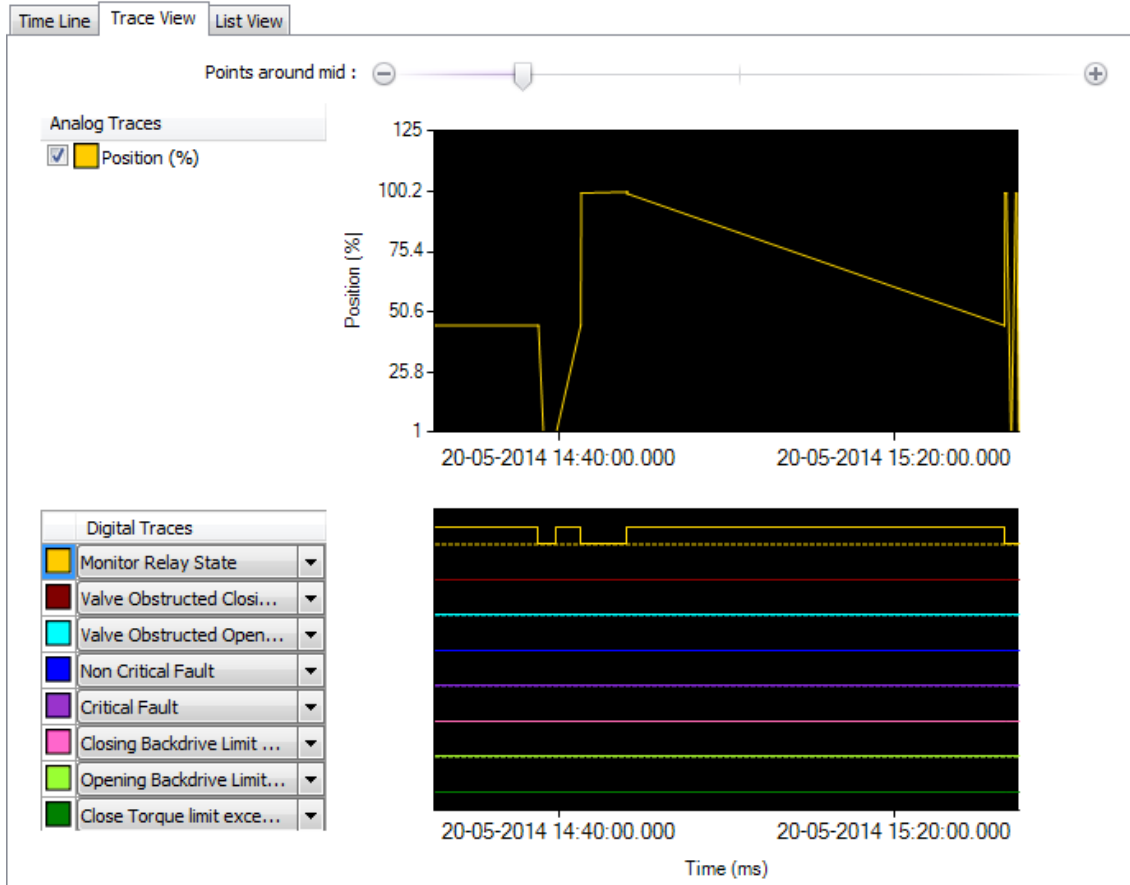
The top scroll bar can be used to navigate through various events. There is also an additional scroll bar within the Trace view window. This can be used to adjust the scaling of both traces for more detailed analysis.
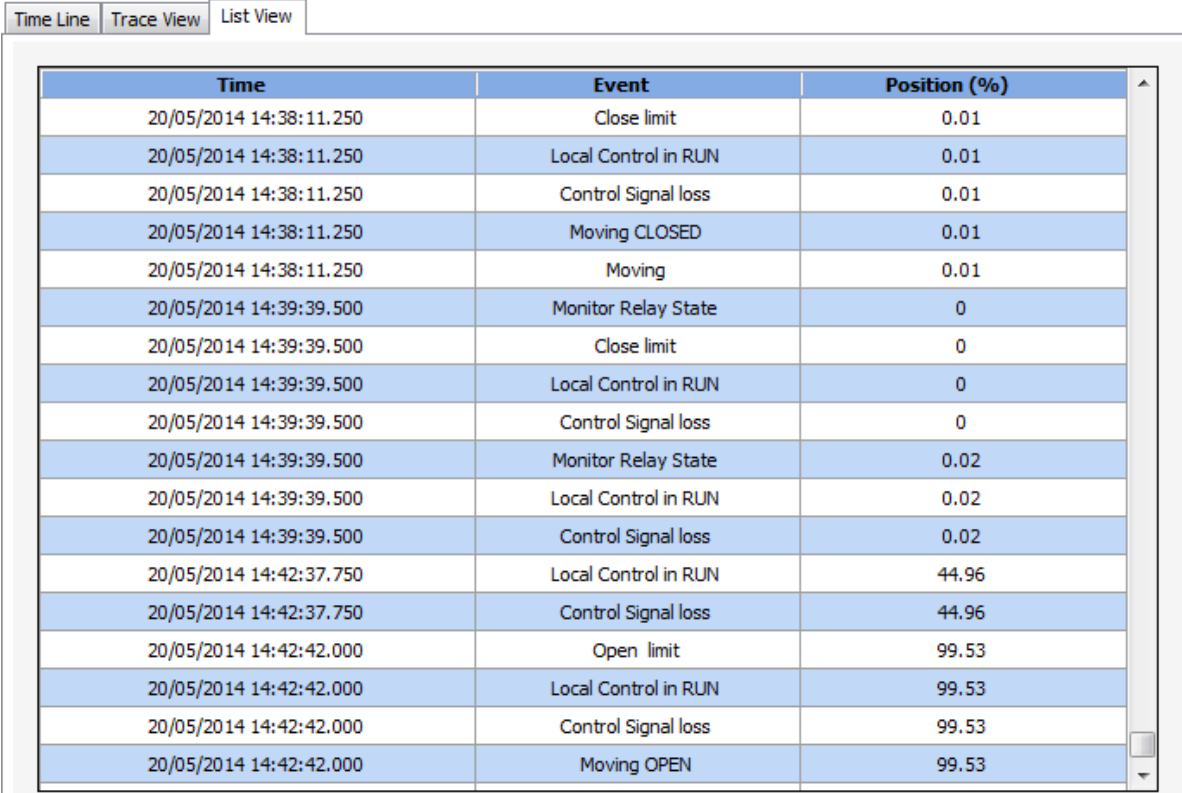
Each digital trace can be allocated a different function by opening the associated drop down menu and selecting the required condition.
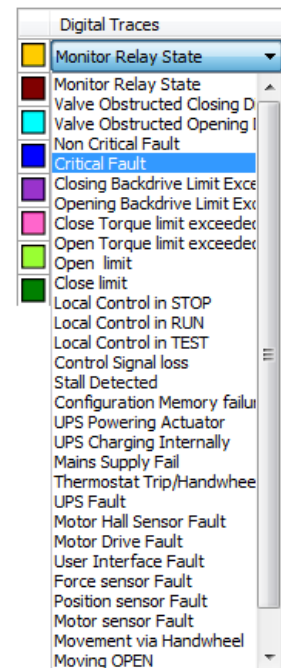
List View

This type of display depicts the Data Log of the CVA in tabular format as a chronological series of events.

| Time Line | Trace View | **List View** |

Time	Event	Position (%)
20/05/2014 14:38:11.250	Close limit	0.01
20/05/2014 14:38:11.250	Local Control in RUN	0.01
20/05/2014 14:38:11.250	Control Signal loss	0.01
20/05/2014 14:38:11.250	Moving CLOSED	0.01
20/05/2014 14:38:11.250	Moving	0.01
20/05/2014 14:39:39.500	Monitor Relay State	0
20/05/2014 14:39:39.500	Close limit	0
20/05/2014 14:39:39.500	Local Control in RUN	0
20/05/2014 14:39:39.500	Control Signal loss	0
20/05/2014 14:39:39.500	Monitor Relay State	0.02
20/05/2014 14:39:39.500	Local Control in RUN	0.02
20/05/2014 14:39:39.500	Control Signal loss	0.02
20/05/2014 14:42:37.750	Local Control in RUN	44.96
20/05/2014 14:42:37.750	Control Signal loss	44.96
20/05/2014 14:42:42.000	Open limit	99.53
20/05/2014 14:42:42.000	Local Control in RUN	99.53
20/05/2014 14:42:42.000	Control Signal loss	99.53
20/05/2014 14:42:42.000	Moving OPEN	99.53

The top slider bar can be used to navigate through all available events currently in the data log. Alternatively the scroll bar on the right side of the event information can be used to navigate events in the same fashion.

5.7.2 CVA Dwell Log

The Dwell Log Graph indicates the amount of time spent at each position between the limits of travel. The graph range extends 25% beyond both limits to account for any actions closing or opening on torque/thrust beyond the set limits.
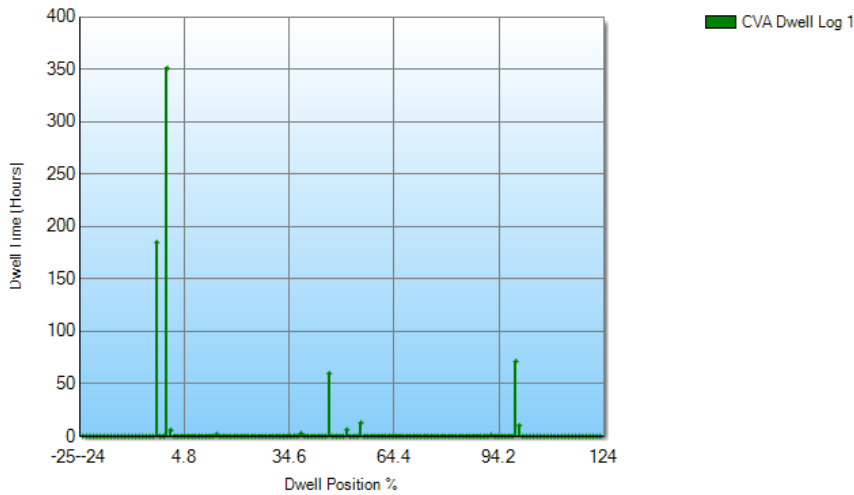
Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized graph of that area.

5.7.3 CVA Torque Logs

The torque profile graphs show various traces of torque experienced by the actuator across a full stroke. The torque reference is a saved stroke trace that is configured during the auto-setup stage when commissioning the unit. These graphs will display thrust profiles for CVL actuators.
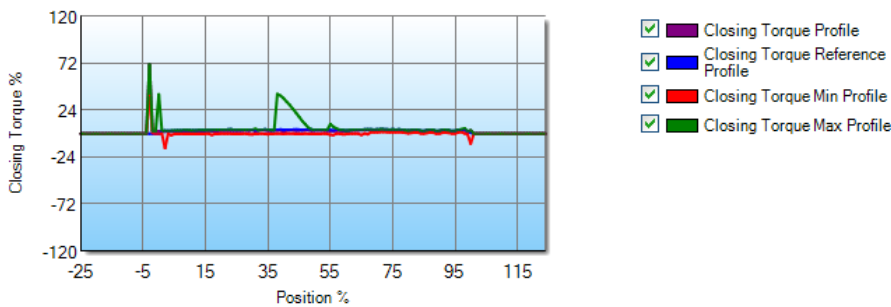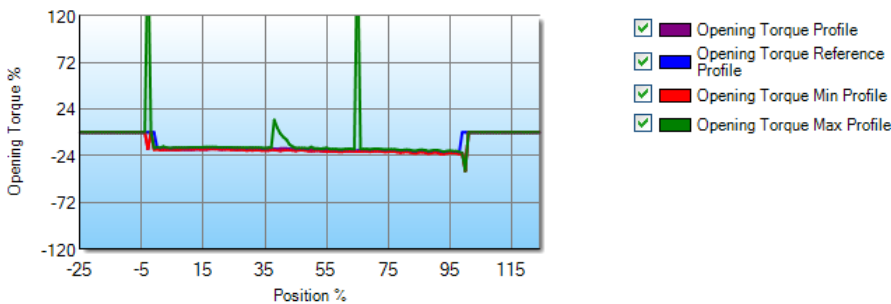
Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized representation of that area. All traces can be selected/deselected to provide bespoke comparisons.

5.7.4 CVA Movement Log

The movement profile graph displays the actuator position and the demanded position of the CVA. This will include all controlling actions and any failsafe action under UPS power.

CVA Movement Log

Movement Profile
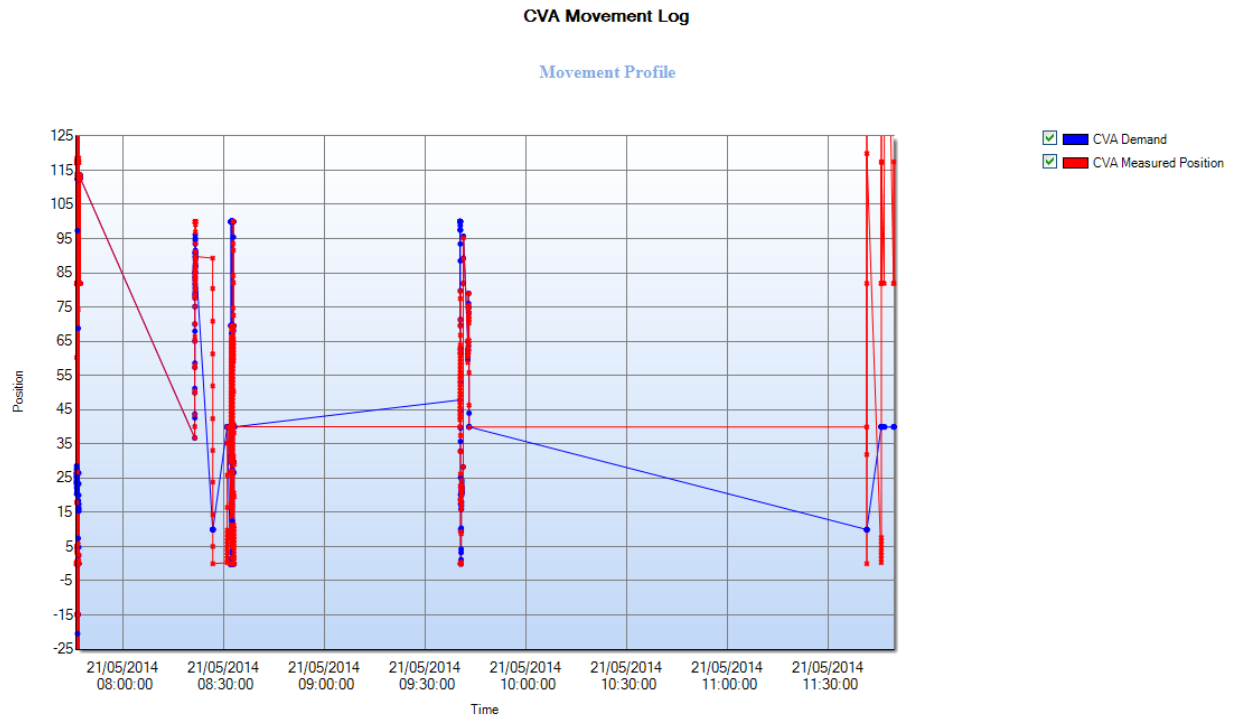
6.0 IQ3 Settings

6.1 Actuator Information

6.1.1 Actuator User Information
6.1.2 Actuator Serial Numbers
6.1.3 Actuator Manufacturing Information
6.1.4 Actuator Software Information

6.2 Actuator Name Plate

6.2.1 Actuator Name Plate Info
6.2.2 Valve Manufacturing Information
6.2.3 Gearbox Manufacturing Information

6.3 Actuator Settings

6.3.1 Basic Settings
6.3.2 ESD Configuration
6.3.3 Remote Configuration
6.3.4 Local Configuration
6.3.5 Special Mode Configuration

6.4 Torque Settings

6.4.1 Current Torque Readings
6.4.2 Actuator Torque Settings
6.4.3 Torque Engineering Settings
6.4.4 Torque Advanced Settings
6.4.5 Torque Profile Settings

6.5 Power Settings

6.5.1 Power Type
6.5.2 Battery Settings

6.6 Digital Input Settings

6.6.1 DI Function
6.6.2 DI Input Type

6.7 Partial Stroke Settings

6.7.1 Partial Stroke Enable
6.7.2 Partial Stroke Initial Position
6.7.3 Partial Stroke Position (%)
6.7.4 Partial Stroke Time to Position (sec)
6.7.5 Partial Stroke Time to Limit (sec)

6.8 Relay Settings

6.8.1 Monitor Relay Function
6.8.2 Relay Settings

6.9 Option Control

6.9.1 Option Source Selection
6.9.2 Auxiliary Mask Configuration
6.9.3 Option 1-4 Configuration

6.10 Control Settings

6.10.1 Position Calibration
6.10.2 Position Settings
6.10.3 Movement Settings
6.10.4 Interrupter Timer

6.11 UI Settings

6.11.1 Indication Configuration
6.11.2 Communication Configuration

6.12 Language Settings

6.12.1 Display Language
6.12.2 Language Option Details

6.13 AMS Encoder

6.13.1 Position Encoder Absolute Position
6.13.2 Position Encoder Status

6.1 Actuator Information

The Actuator Information comprises of technical information about the actuator that will help to identify spare parts and important test dates.

Actuator Information

Actuator User Information	
Valve label	Main Isolating 2712
Actuator Serial Numbers	
Actuator	Z624431203
Main Controller	1226BX0160004503=107711
Position Sensor	1226BX0160023601=103311
Torque Sensor	2612503022006=101671
User Interface	1226BX0160001504=101131
Option 1	1227BX0160002901=103041
Option 2	
Option 3	
Option 4	
Power Board	1226BX0160004902=102391
DC Power Board (if fitted)	
Solid State Starter Board (if fitted)	
Actuator Manufacturing Information	
Date of Manufacture	20120829
Service Commission Date	
Service Inspection Date	
Factory Acceptance Test Date	
Wiring Diagram	123B0000

6.1.1 Actuator User Information

Valve Label

This is a user defined description of up to 32 Characters long. It is normally used to denote the function or location of the actuator or valve.

6.1.2 Actuator Serial Numbers

Actuator

Shows the serial number of the connected actuator.

Main Controller

For indication only, shows the serial number of the main controller board.

Position Sensor

For indication only, shows the serial number of the Position Sensor.

Torque Sensor

For indication only, shows the serial number of the Torque Sensor.

User Interface

For indication only, shows the serial number of the User Interface.

Option 1

For indication only, shows the serial number of Option card 1 (if fitted).

Option 2

For indication only, shows the serial number of Option card 2 (if fitted).

Option 3

For indication only, shows the serial number of Option card 3 (if fitted).

Option 4

For indication only, shows the serial number of Option card 4 (if fitted).

DC Power board

For indication only, shows the serial number of the DC power board (for DC only).

Power Board

For indication only, shows the serial number of the power board (for AC only).

Solid State Starter board

For indication only, shows the serial number for the Solid State Starter board (if fitted).

6.1.3 Actuator Manufacturing Information

Date of Manufacture

For indication only, shows the manufacture date of the actuator.

Service Commission Date

Shows the date the actuator was commissioned by a Rotork Engineer.

For indication only, shows Inspection Date

For indication only, shows when the actuator is due its next inspection.

Factory Acceptance Test Date

For indication only, shows when the actuator was factory tested by Rotork.

Wiring Diagram

For indication only, shows the wiring diagram number for the actuator.

6.2 Actuator Name Plate

This menu replicates the physical name plate information visible on the actuator gear case. Should the nameplate become damaged, the correct information will still be retained in this section.

Actuator Name Plate

Actuator Name Plate Info	
Actuator Rated Torque (lb ft)	60
Actuator Voltage	240
Actuator Frequency	50
Actuator Wiring Diagram	123B0000
Actuator Wiring Diagram Issue	-1
Actuator Size	IQS12
Actuator Speed	24
Actuator Base	F10
Actuator Coupling	A
Actuator Enclosure	ExdIIBT4
Actuator GearBox	N
Valve Manufacturing Information	
Valve Tag	PD1032
Valve Serial Number	D121205
Valve Type	Wedge Gate
Valve Size	6"
Valve Class	150
Valve Manufacturer	Crane
Valve Service Fluid	JetA1
Valve Service Temperature	20
Valve Location	Pump1032
Valve Installation Date	230913
Gearbox Manufacturing Information	
Gearbox Serial Number	GearSerial
Gearbox Mechanical Advantage	MechAdv
Gearbox Ratio	GearRati

6.2.1 Actuator Name Plate Info

Actuator Rated Torque
For indication only, shows the rated output torque of the actuator.

Actuator Voltage
For indication only, shows the supply voltage the actuator is configured to receive.

Actuator Frequency
For indication only, shows the actuator supply voltage frequency (Hz).

Actuator Wiring Diagram
For indication only, shows the actuator wiring diagram number which determines the specific internal wiring of the actuator.

Actuator Wiring Diagram Issue
For indication only, shows the issue number of the wiring diagram upon installation. This is important as the wiring diagram may have been superseded at a later date.

Actuator Size
For indication only, shows the actuator size and type. For example an IQS12 is a single phase IQ12.

Actuator Speed

For indication only, shows the speed of the actuator in revolutions per minute (RPM).

Actuator Base

For indication only, shows what size base flange is fitted to the actuator.

Actuator Coupling

For indication only, shows what size coupling the actuator is fitted with.

Actuator Enclosure

For indication only, shows what enclosure type the actuator has.

Actuator Gearbox

For indication only, shows what gearbox is attached to the actuator. If there is no gearbox is fitted to the actuator this will be listed as N.

6.2.2 Valve Manufacturing Information

Valve Tag

This is similar to the actuator valve label (see section 6.1.1). A user defined label consisting of 16 alpha-numeric or symbolic characters. It is normally used to denote valve location or function.

Valve Serial Number

Input for the serial number of the attached valve. 10 alpha-numeric or symbolic characters are available to input the valve serial number.

Valve Type

Input for the type of the attached valve. 10 alpha-numeric or symbolic characters are available to input the valve type.

Valve Size

Input for the size of the attached valve. 10 alpha-numeric or symbolic characters are available to input the valve size.

Valve Class

Input for the valve classification. 10 alpha-numeric or symbolic characters are available to input the valve classification.

Valve Manufacturer

Input for detail of the valve manufacturer. 10 alpha-numeric or symbolic characters are available to input the valve classification.

Valve Service Fluid

Input for the fluid flowing through the valve. 10 alpha-numeric or symbolic characters are available to input the valve classification.

Valve Service Temperature

Input for the maximum operating temperature of the valve before requiring a service. 5 alpha-numeric or symbolic characters are available to input the valve classification.

Valve Location

Input for detail of the valve's location. 10 alpha-numeric or symbolic characters are available to input the valve location.

Valve Installation Date

Record for when the valve was installed. 8 alpha-numeric or symbolic characters are available to input the valve installation date.

6.2.3 Gearbox Manufacturing Information

Gearbox Serial Number

Record for the serial number of the actuator gearbox. If no gearbox is fitted the default value will be blank or GearSerial.

Gearbox Mechanical Advantage

Record for the mechanical advantage of the gearbox. If no gearbox is fitted the default value will be blank or MechAdv.

Gearbox Ratio

Record for the internal gear ratio of the gearbox. If no gearbox is fitted the default value will be blank or GearRati.

6.3 Actuator Settings

This screen displays the current actuator settings. These settings are all relevant to standard actuator control functions.

Actuator Settings

Basic Settings			˄
Close Action	◯ Position	◉ Torque	
Open Action	◉ Position	◯ Torque	
Direction to Close	◉ Clockwise	◯ Anti-Clockwise	
ESD Configuration			˄
ESD Action	ESD Stop		▼
ESD Contact Type	◯ Normally Closed	◉ Normally Open	
ESD Override Interlock	◉ No	◯ Yes	
ESD Override Local Stop	◉ No	◯ Yes	
ESD Override Thermostat	◉ No	◯ Yes	
ESD Override Interrupter Timer	◉ No	◯ Yes	
ESD Input Function	◉ ESD	◯ Network Control Disable	
Remote Configuration			˄
Two Wire Priority	Stop Priority		▼
Interlock Mode	Disabled		▼
Fast Remotes (DC Only)	◉ Disabled	◯ Enabled	
Push to Run Past Limit	◉ Disabled	◯ Enabled	
Local Configuration			˄
Local Push to Run	◉ Disabled	◯ Enabled	
Local Close Dominant Mode	◉ Disabled	◯ Enabled	
Setting Tool Local Control	◯ Disabled	◉ Enabled	
Vandal Resist Mode	Vandal Resist Off		▼
Local Control Special Modes	Special Modes Off		▼
Local Qualification Time (sec)	⊖▯———————┃——————— ⊕	0.1	
Local Controls Action on Network Comms Loss	After Comms loss action no change of mode		▼
Local Controls Selector Control	Local Controls Selector Disabled		▼
Aux 1 indicates Local Controls Selector in Remote	Disabled		▼
Special Mode Configuration			˄
Special Mode Setup	Special Modes Disabled		▼
Velan Switch Compensation	⊖▯———————┃——————— ⊕	0	

6.3.1 Basic Settings

Close Action
The actuator can be configured to close on torque for seating valve types or limit for non-seating valve types. Limit means the actuator will stop moving once it reaches the set closed travel limit. Torque means the actuator will stop when it reaches the set closed torque limit (**Default 40% of Rated**).

Open Action
The actuator can be configured to open on torque for back-seating valve types or limit for non-back-seating valve types. Limit means the actuator will stop moving once it reaches the set open travel limit. Torque means the actuator will stop when it reaches the set open torque limit (**Default 40% of Rated**).

Direction to Close
This sets the direction of rotation for the actuator to perform a close operation to the valve. There are two available settings; clockwise and anti-clockwise. A close command will always operate in the set direction; therefore a reversal of controls is not required when changing the operating direction to suit the valve.

6.3.2 ESD Configuration

ESD Action

This function sets the emergency shutdown action. There are four options.
ESD CLOSE: Upon receiving an ESD signal this setting will cause the actuator to close using the action set in the 'Close Action' screen. See section 6.3.1.
ESD Stop: Upon receiving an ESD signal this option will cause the actuator to stop.
ESD Open: Upon receiving an ESD signal this option will cause the actuator open using the action set in the 'Open Action' screen. See section 6.3.1.
ESD OFF: The ESD function has been disabled. Applying an ESD signal will not affect the actuator operation.

ESD Normally Closed

This setting dictates if the ESD action will be performed when a signal is applied (normally open) or removed (normally closed).

ESD Override interlock

This setting specifies if the ESD action should override an active interlock. (**Default Setting: No**)

ESD Override Local stop

This setting specifies if the ESD action should override a local stop command. The local control selector has to be in the stop position to actively apply a local stop command. (**Default Setting: No**)

ESD Override Thermostat

This setting specifies if the ESD action should override an active thermostat trip. (**Default Setting: No**)

ESD Override Interrupter Timer

This setting specifies if the ESD action should override the interrupter timer function. (**Default Setting: No**)

ESD Input Function

The function of the ESD input can be configured in two different ways.
ESD: When an ESD signal is received by the actuator it will perform its ESD action taking into account any override settings.
Network Control Disable: When an ESD signal is received by the actuator it will disable all network control inputs until the ESD signal is removed. During this period the actuator can only be controlled via hardwired remote inputs determined by the auxiliary mask setting.

6.3.3 Remote Configuration

Two Wire Priority

This sets the action the actuator will take when a close and open signal are applied simultaneously.
Open Priority: The actuator will run open if both signals are applied.
Stop Priority: The actuator will stay put or stop moving if both signals are applied.
Close Priority: The actuator will run closed if both signals are applied.

Interlock Mode

This sets the mode for the interlock inputs. Refer to the actuator wiring diagram for installation details. To operate the actuator when an interlock mode is enabled, an interlock signal must be applied in the appropriate direction whilst providing a control signal.
Disabled: The interlock inputs are disabled.
Interlocks Enabled: Interlocks are enabled for local and remote operation.
Conditional Control Enabled: Interlocks are enabled in remote control only.
Partial Stroke On Open Interlock Enabled: The open interlock will act as a remote input to initiate a partial stroke test.

Fast Remotes (DC Only)

For indication only, this setting reduces the minimum required control signal pulse length. **(Default Setting: Disabled)** Rotork Service Engineer use only.

Push to run past limit

This function will cause the actuator control signal to be Maintained once the actuator limit setting has been passed. **(Default: Enabled)**

6.3.4 Local Configuration

Local Push to Run

When enabled this changes the local open/close control knob function to a push to run operation. The knob position must be manually maintained for the actuator to run, upon removal of the signal the actuator will stop.

Local Close Dominant Mode

For indication only, this setting means that when a local close control command is applied it will override all other types of control. **(Default: Disabled)** Rotork Service Engineer use only.

Setting Tool Local Control

This setting enables the actuator to be controlled using the open, close and stop commands on the setting tool.

Vandal Resist Mode

The vandal resist mode is aimed at preventing unauthorised actuator operation. There are four options available.
Vandal Resist Off: All control knobs are active and the actuator will respond to all inputs, providing the unit is in the correct control mode. **(Default)**
Vandal Resist Local: In this mode the local and remote controls are disabled. The actuator can only be controlled by the open, close and stop commands on the setting tool.
Vandal Resist Remote: In this mode all local controls, including the setting tool, are disabled. The actuator can only be controlled by remote inputs.
Vandal Resist Local/Remote Switch: Ignore this option as it is currently not a valid setting in the IQ software.

Local Control Special Modes

There are various special local control modes that can be configured for the IQ3 actuator. Rotork Service Engineer use only.

External Local\Remote Switch: An external local/remote switch will be used to switch modes instead of the local control knob.

Allow Remote Commands In Local: This allows remote controls to operate the actuator whilst it is in local control mode.

Allow Remote Commands In Local Plus External Local\Remote Switch: Remote control commands can operate the actuator whilst it is in local control mode. To switch between local and remote modes an external local/remote switch will be used instead of the local control knob selector.

Remote selection of Remote/Local via Relays DO5 and DO6 write.

Local Qualification time (sec)

This is where the local qualification time in seconds can be viewed and set. The local qualification time of the actuator is how long a local control signal must be present before the actuator will accept that signal and respond accordingly. Rotork Service Engineer use only.

Local Controls Action on Network Comms Loss

This setting specifies the reaction of the actuator during a network communications loss condition. Rotork Service Engineer use only.

Local Controls Selector Control

This setting specifies the local control selector controlling element. Rotork Service Engineer use only.

Aux1 Indicates Local Controls Selector in Remote

This setting reassigns Aux1 as remote indication of the local controls selector state. Rotork Service Engineer use only.

6.3.5 Special Mode Configuration

Special Mode Setup

Refer to the full IQ3 configuration manual for more information on special operating modes. Rotork Service Engineer use only. The special modes available are:

Special Modes Disabled: This setting is for standard operation and feedback. **(Default)**

Fetterolf Mode Enabled: This enables the Fetterolf operating mode.

Velan Mode Enabled: This enables the Velan operating mode.

Velan Mode with Reset Enabled: This enables the Velan operating mode with the reset function available (must be used in conjunction with the optional Digital Input / Output card).

Velan Switch Compensation

Adjust the Velan switch compensation function when Velan reset is enabled. Rotork Service Engineer use only.

6.4 Torque Settings

This section shows all the information and settings relevant to actuator torque.

Torque Settings

Current Torque Readings			
Current Torque Value (%)	82		
Actuator Torque Settings			
Close Torque Percentage	⊖————————⊕	100	
Open Torque Percentage	⊖————————⊕	40	
Torque Advanced Settings			
Torque Boost Open Direction	◉ Disabled	○ Enabled	
Torque Boost Close Direction	◉ Disabled	○ Enabled	
Boost Level	◉ 150% Rated Torque	○ Stall Torque	
Torque Boost Open Position (%)	⊖————————⊕	5	
Torque Boost Close Position (%)	⊖————————⊕	95	
Torque Profile Settings			
Torque Profile Open	◉ Disabled	○ Enabled	
Torque Profile Close	◉ Disabled	○ Enabled	

6.4.1 Current Torque Readings

Current Torque Value (%)

For indication only, shows the current torque value as a percentage of rated torque.

6.4.2 Actuator Torque Settings

Torque percent close

The percentage of rated torque permitted to close the valve. This is configurable between 40% - 100%. **(Default = 40%)**

Torque percent open

The percentage of rated torque permitted to open the valve. This is configurable between 40% -100%. (**Default = 40%**)

6.4.3 Torque Advanced Settings

Torque Boost Open Direction

Gives the option to enable or disable the torque boost function in the open direction.

Torque Boost Close Direction

Gives the option to enable or disable the torque boost function in the closed direction.

Boost Level

This enables the user to choose the percentage of rated torque the actuator will output when performing a boost function. The options are:
150% Rated Torque: This allows the actuator to output 150% of rated torque. **(Default)**
Stall Torque: This allows the actuator to apply between 140% and 200% of rated torque.

Torque Boost Open Position (%)

This option allows the user to set the position from which the torque boost will activate in the open direction. This is shown as a percentage of total travel. (**Default: 5%**)

Torque Boost Close Position (%)

This option allows the user to set the position from which torque boost will activate in the close direction. This is shown as a percentage of total travel. (**Default: 5%**)

6.4.4 Torque Profile Settings

Torque Profile Open

Allows the plotting of the torque profile in the open direction to be enabled or disabled.

Torque Profile Close

Allows the plotting of the torque profile in the close direction to be enabled or disabled.

6.5 Power Settings

This menu displays power settings relating to the actuator type and battery.

Power Settings

Power Type			
Power Supply Type	Single-Phase		
Solid State Starter Brake	Brake Off		
Modulating Actuator	◉ Isolating	○ Modulating	

6.5.1 Power Type

Power Type

For indication only, shows the power type of the actuator. The power type options are:
Three Phase Standard: For three phase supply actuators which are not built to modulating specification.
Single Phase: For single phase supply actuators.
DC: For direct current supply actuators.
Three Phase Modulating: For three phase supply actuators which are built to a modulating specification.

Solid State Starter Brake

The Solid State Starter brake injects a DC voltage into the motor in order to slow the magnetising of the fields and bring the motor to a halt. In this setting, the option for the Solid State Starter brake is viewed and set, **only available for actuators with a Solid State Starter fitted.** The options available are;
Brake Off: The Solid State Starter brake is off.
Brake Open: The brake is active in the open direction only.
Brake Close: The brake is active in the close direction only.
Brake Open and Close: The brake is active in both the open and close direction.

Modulating Actuator

For indication only, shows whether the actuator is built for Isolating or Modulating duty.

6.6 Digital Input Settings

The following settings are applicable to Digital Inputs 7-14.

Digital Input Settings

Digital Input 7			^
DI 7 Function	Disabled		▼
DI7 Input Type	◉ Normally Open	○ Normally Closed	
Digital Input 8			^
DI 8 Function	Disabled		▼
DI8 Input Type	◉ Normally Open	○ Normally Closed	
Digital Input 9			^
DI 9 Function	Disabled		▼
DI9 Input Type	◉ Normally Open	○ Normally Closed	
Digital Input 10			^
DI 10 Function	Disabled		▼
DI10 Input Type	◉ Normally Open	○ Normally Closed	
Digital Input 11			^
DI 11 Function	Disabled		▼
DI11 Input Type	◉ Normally Open	○ Normally Closed	
Digital Input 12			^
DI 12 Function	Disabled		▼
DI12 Input Type	◉ Normally Open	○ Normally Closed	
Digital Input 13			^
DI 13 Function	Disabled		▼
DI13 Input Type	◉ Normally Open	○ Normally Closed	
Digital Input 14			^
DI 14 Function	Disabled		▼
DI14 Input Type	◉ Normally Open	○ Normally Closed	

6.6.1 DI Function

This is where the function of a digital input can be viewed and set. The available options are:

Disabled: The selected digital input is disabled.

Remote Open: The digital input will trigger a remote open signal.

Remote Close: The digital input will trigger a remote close signal.

Remote Maintain: The digital input will trigger a remote maintain signal.

Remote ESD: The digital input will trigger a remote ESD signal.

Open Interlock: The digital input will trigger an open interlock signal (local and remote).

Close Interlock: The digital input will trigger a close interlock signal (local and remote).

Network Disable: The digital input will disable network control.

Partial Stroke: The digital input will trigger a partial stroke test.

Hand / Auto: The digital input will switch between hand and auto mode (H/W control and Analogue control)

Velan Reset: The digital input will perform a Velan reset.

Conditional Open: The digital input will trigger an open interlock signal (remote only)

Conditional Close: The digital input will trigger an Close interlock signal (remote only)

Local / Remote Switch: The digital input will toggle between Local/ Remote producing the relevant signals.

6.6.2 DI Input Type

Here the digital input can be configured to Normally Open or Normally Closed contact type.

6.7 Partial Stroke Settings

Partial Stroke Settings

Partial Stroke		
Partial Stroke Enable	◉ Disabled	○ Enabled
Partial Stroke Initial Position	◉ Open Limit	○ Closed Limit
Partial Stroke Position (%)	⊖ ━━━━━━━━━━━━━ ⊕	95
Partial Stroke Time to Position (sec)	⊖ ━━━━━━━━━━━━━ ⊕	60
Partial Stroke Time to Limit (sec)	⊖ ━━━━━━━━━━━━━ ⊕	60

6.7.1 Partial Stroke Enable
This specifies whether partial stroke is enabled or disabled.

6.7.2 Partial Stroke Initial Position
The position that the actuator must be in before it will perform a partial stroke test. This can be set to either the open or closed limit.

6.7.3 Partial Stroke Position (%)
The position the actuator will run to during the partial stroke test.

6.7.4 Partial Stroke Time to Position (sec)
The maximum allowable time the actuator can take to run from the initial position to the partial stroke position. If the actuator fails to perform this part of the partial stroke test in the specified time an alarm will trigger for partial stroke test failure.

6.7.5 Partial Stroke Time to Limit (sec)
The maximum allowable time the actuator can take to run from the partial stroke position back to its initial position. If the actuator fails to perform this part of the partial stroke test in the specified time and alarm will trigger for partial stroke test failure.

6.8 Relay Settings

Relay Settings

Monitor Relay		
Monitor Relay Function	Available	▼
Relay S1 Settings		
Relay S1 Function	Intermediate Position	▼
Relay S1 Control Value (%)	⊖ ——▯———— ⊕ 21	
Relay S1 Contact Type	◉ Normally Open ○ Normally Closed	
Relay S2 Settings		
Relay S2 function	Open Limit	▼
Relay S2 control value (%)	⊖ ▯—————— ⊕ 0	
Relay S2 Contact Type	◉ Normally Open ○ Normally Closed	
Relay S3 Settings		
Relay S3 Function	Phase Loss	▼
Relay S3 Control Value (%)	⊖ ▯—————— ⊕ 0	
Relay S3 Contact Type	○ Normally Open ◉ Normally Closed	
Relay S4 Settings		
Relay S4 Function	None	▼
Relay S4 Control Value (%)	⊖ ▯—————— ⊕ 0	
Relay S4 Contact Type	○ Normally Open ◉ Normally Closed	
Relay S5 Settings		
Relay S5 Function	Phase Loss	▼
Relay S5 Control Value (%)	⊖ ▯—————— ⊕ 0	
Relay S5 Contact Type	○ Normally Open ◉ Normally Closed	
Relay S6 Settings		
Relay S6 function	None	▼
Relay S6 control value (%)	⊖ ▯—————— ⊕ 0	
Relay S6 contact type	◉ Normally Open ○ Normally Closed	
Relay S7 Settings		
Relay S7 function	None	▼
Relay S7 Control Value (%)	⊖ ▯—————— ⊕ 0	
Relay S7 Contact Type	◉ Normally Open ○ Normally Closed	
Relay S8 Settings		
Relay S8 Function	None	▼

6.8.1 Monitor Relay Function

Denotes the function of the monitor relay. This can be set to either Available or Fault. In Available mode the relay is active when the actuator is ready and available for remote control. In fault mode the relay will be active when the actuator has an active fault condition and will ignore the status of the local / remote selector.

6.8.2 Relay Settings
The following settings are applicable to Relays S1-S12

Relay Function

IQ3 Function	Insight 2 Function
Disabled	None
Closed Limit	Closed Limit
Open Limit	Open Limit
End Position	End Position
Pos % open	Intermediate Position
Mid Travel	Actuator Mid Travel
Motor Running	Motor Running
Closing	Closing
Opening	Opening
Moving	Moving
Handwheel	Manual Override Switch
Blinker	Blinker
Valve Alarm	Valve Alarm
Torque Trip CL	Torque Trip Close
Torque Trip OP	Torque Trip Open
Torque Trip	Torque Trip
Torque Trip Mid	Torque Trip Mid-Travel
Motor Stall	Stall (any Position)
Mid Travel Stall	Stall (Mid-Travel)
Stop Selected	Stop Selected
Local Selected	Local Selected
Remote Selected	Remote Selected
Control Alarm	Control Alarm
Monitor	Monitor Output
ESD Active	ESD Active

IQ3 Function	Insight 2
Open Interlock Active	Open Interlock
Close Interlock Active	Close Interlock
Interlock Active	Interlock
Actuator Alarm	Actuator Alarm
Lost Phase	Phase Loss
24v Supply Fail	Customer 24V Fail
P Stroke Active	Partial Stroke Active
P Stroke Fail	Partial Stroke Fail
P Stroke Pass	Partial Stroke Pass
Bluetooth	*Bluetooth* Connected
Battery Low	Battery Low
Battery Discharged	Battery Flat
Digital Output	S1-12 Digital Output (Number depends on relay number)
Maintenance	Maintenance Required
Hi Torque Alarm	Hi Torque Alarm Active
Hi Hi Torque Alarm	Hi Hi Torque Alarm Active
Option Source 1 Comms Loss	Option Source 1 Comms Loss
Option Source 2 Comms Loss	Option Source 2 Comms Loss
Namur Maintenance Level	Namur Maintenance Level
Namur Out of Specification level	Namur Out of Specification level
Namur Function Check Level	Namur Function Check Level
Namur Failure level	Namur Failure level

For descriptions of the various relay function please refer to the IQ3 Full Configuration Manual

Relay Control Value (%)
This is used for relevant positional relay functions and is configurable from 0% to 100% in increments of 0.1%.

Relay Contact Type
This allows the relays contact type to be configured for normally open or normally closed operation.

6.9 Option Control

Option Control

Option Source Selection		
Source 1 Control Type	Analogue	▼
Source 2 Control Type	None	▼
Remote Source Selection	Hardwired Switched Source 1 Control	▼

Auxiliary Mask Configuration		
Digital Input 1 Type	◉ Digital Input	○ Remote Open
Digital Input 1 Active State	◉ Normally Open	○ Normally Closed
Digital Input 2 Type	◉ Digital Input	○ Remote Close
Digital Input 2 Active State	◉ Normally Open	○ Normally Closed
Digital Input 3 Type	◉ Digital Input	○ Remote Maintain
Digital Input 3 Active State	◉ Normally Open	○ Normally Closed
Digital Input 4 Type	○ Digital Input	◉ Remote ESD
Digital Input 4 Active State	◉ Normally Open	○ Normally Closed

Option 1 Configuration		
Option 1 Type	Analogue	▼
Option 1 Communications Loss Action	Stop Action	▼
Option 1 Communications Loss Time	⊖ ▯—————————— ⊕	0
Comms Loss Timeout Scale	Milliseconds	▼
Option 1 Communications Loss Position (%)	⊖ ▯—————————— ⊕	0

Option 2 Configuration		
Option 2 Type	Extra Relay S5-S8 Board	▼
Option 2 Communications Loss Action	Stop Action	▼
Option 2 Communications Loss Time	⊖ ▯—————————— ⊕	0
Comms Loss Timeout Scale	Milliseconds	▼
Option 2 Communications Loss Position (%)	⊖ ▯—————————— ⊕	0

Option 3 Configuration		
Option 3 Type	None	▼
Option 3 Communications Loss Action	Off	▼
Option 3 Communications Loss Time	⊖ ——▯———————— ⊕	10000
Comms Loss Timeout Scale	Milliseconds	▼
Option 3 Communications Loss Position (%)	⊖ —————▯————— ⊕	50

6.9.1 Option Source Selection

Source 1 Control Type

Configure the source 1 control type from a list of fitted control options.

Source 2 Control Type

Configure the source 2 control type from a list of fitted control options.

Remote Source Selection

This is where the source for remote control is selected. The options for source selection are:
Hardwired Control: The actuator can be controlled by hardwired remote controls.
Source 1 Option Control: The actuator is controlled by the network selected in Source 1.
Hardwired Switched Source 1 Control: The actuator can be controlled by either hardwired remote controls or Source 1. A remote switch must be used to change between control sources.
Source 1 Switched Source 2 Control: The actuator can be controlled by either network selected in source 1 and source 2. A remote switch must be used to change between control sources.
Remote Control Disabled: The actuator will not respond to remote controls.

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6.9.2 Auxiliary Mask Configuration

Digital Input 1 Type
Configure Digital Input 1 to either Digital Input or Remote Open.

Digital Input 1 Active State
The user can configure Digital Input 1 to a normally open or normally closed digital contact.

Digital Input 2 Type
Configure Digital Input2 to either Digital Input or Remote Close.

Digital Input 2 Active State
The user can configure Digital Input 2 to a normally open or normally closed digital contact.

Digital Input 3 Type
Configure Digital Input 3 to either Digital Input or Remote Maintain.

Digital Input 3 Active State
The user can configure Digital Input 3 to a normally open or normally closed digital contact.

Digital Input 4 Type
Configure Digital Input 4 to either Digital Input or Remote ESD.

Digital Input 4 Active State
 The user can configure Digital Input 4 to a normally open or normally closed digital contact.

6.9.3 Option 1-4 Configuration

Option Type
This is where option card slots 1 – 4 can be configured to recognise the following option cards:
Profibus
Pakscan
Modbus
Folomatic
Foundation Fieldbus
Hart
None
Extra Relay board
Digital IO Board
Folomatic Board Two
Foundation Fieldbus Board Two
Modbus Board Two
Pakscan Board Two
Extra Relay Board Two
Profibus Board Two
Digital IO Board Two
Hart Board 2

Option Communication Loss Action

Configure how the actuator will respond to a loss of option communication. The available actions are:
Off: The communication loss action is turned off.
Open Action: The actuator will run to the open limit.
Close Action: The actuator will run to the closed limit.
Stop Action: The actuator will stop.
Go To Position Action: The actuator will run to a predetermined position.

Option Communication Loss Time

The user can specify the amount of time before a loss of communications is recognised as an alarm. This is configurable between 0 and 65.

Coms Loss Timeout Scale

The units for Option Communication Loss Time can be adjusted from Milliseconds to Seconds to suit the specific application.

Option Communications Loss Position (%)

Upon loss of communication to the option card, the actuator will move to this position. This is only applicable if the actuator is configured to Go To Position on loss of communications. Position is shown as a percentage of total travel.

6.10 Control Settings

Control Settings

Set Limits		
Set Open Limit	Click Here to Set Open Limit	
Set Closed Limit	Click Here to Set Closed Limit	
Position Settings		
Min Span Position (%)	⊖ ⬜————————⊕	0
Max Span Position (%)	⊖————————⬜⊕	100
Deadband (%)	⊖——⬜————⊕	5
Hysteresis Band (%)	⊖—⬜—————⊕	2
Motion Inhibit Time (sec)	⊖⬜————————⊕	2
Interrupter Timer		
Interrupter Timer Enable	◯ Disabled	◉ Enabled
Interrupter Timer Close Position (%)	⊖——⬜————⊕	20
Interrupter Timer Open Position (%)	⊖————⬜——⊕	50
Interrupter Timer On Time (sec)	⊖⬜————————⊕	2
Interrupter Timer Off Time (sec)	⊖⬜————————⊕	2

6.10.1 Set Limits

Set Open Limit

This sets the open limit at the current position of the actuator.

Set Closed Limit

This sets the closed limit at the current position of the actuator.

6.10.2 Position Settings

Min Span Position (%)

This setting can restrict the minimum allowable travel position without adjusting the set limits.

Max Span Position (%)

This setting can restrict the maximum allowable travel position without adjusting the set limits.

Deadband (%)

Shows the Deadband setting for the actuator. Refer to the IQ3 Full Configuration Manual for Details.

Hysteresis Band (%)

Shows the Hysteresis Band setting for the actuator. Refer to the IQ3 Full Configuration Manual for Details.

Motion Inhibit Time (Sec)

This is the amount of time the actuator will not respond to a control signal after moving to a new position. This is configurable from 0 – 1000 seconds.

6.10.3 Interrupter Timer

Interrupter Timer Enable

For indication only, shows whether the interrupter timer is enabled or disabled.

Interrupter Timer Close Position (%)

This is the position the interrupter timer will activate when running in the closed direction. Setting this to 0% will result in non-interrupted travel.

Interrupter Timer Open Position (%)

This is the position the interrupter timer will activate when running in the open direction. Setting this to 100% will result in non-interrupted travel.

Interrupter Timer On Time (sec)

The time the interrupter timer will be active for before turning off. This is the pause length while the interrupter timer acting on a movement.

Interrupter Timer Off Time (sec)

The time the interrupter timer will be inactive for before turning on. This is the period of movement between each interruption.

6.11 UI Settings

UI Settings

Indication Configuration			⌃
Home Screen	Position		▾
Mid-Travel LED Function	Enabled		▾
Alarm LED Setting	Disabled		▾
Close Limit LED Colour	◉ Green	○ Red	
LED Luminosity Level (%)	⊖ ———————————▢⊕		100
Display Language	English		▾
BackLight Timeout On Mains (0 = Always ON) (sec)	⊖ ▢————————⊕		0
Communication Configuration			⌃
Bluetooth Enabled	○ Disabled	◉ Enabled	
Bluetooth Security Level	Low - Discover Always		▾

6.11.1 Indication Configuration

Home Screen

There are four different home screen options:
Position: This shows the position of the actuator as a percentage.
Torque Analogue Plus Position: This shows the position of the actuator and an analogue torque meter.
Torque Digital Plus Position: This shows the position of the actuator and a digital torque readout in Nm.
Positioner: This shows a digital and analogue readout of position and demand. Demand will only be shown when the actuator is controlled by a network or a 4-20mA signal.

Mid Travel LED Function

Shows the current function of the Mid Travel LED, the functions available are:
Disabled: The LED will be off.
Enabled: The LED will be active when the actuator is not at its limits.
Blinker: The yellow lights will blink when the actuator is travelling and will remain on when the actuator is stopped.
LED Blinks When Alarm present: The yellow lights are on during mid-travel and will blink alternately when an alarm is present.
LED ON when Alarm present: The yellow lights will only come on blinking alternately when an alarm is present.

Alarm LED Setting

Shows the current setting for the Alarm LED.
No Alarms Indicated: The yellow lights will not indicate an active alarm.
Active on any Alarm: The LED will be active when an actuator or valve alarm is present if the appropriate option is set above.
Active on any Service alarm: The LED will be active when a Service alarm is present if the appropriate option is set. A service alarm indicates the actuator requires service, due to set duty parameters being met.
Active on any Service or Alarm: The yellow lights indicate active alarms and active service alarms if the appropriate option is set above. A service alarm indicates the actuator requires service due to set duty parameters being met.

Close Limit LED Colour

The colour of the close limit LED can be set, either red or green. The open limit LED will be the inverse of the close limit setting.

LED Luminosity Level (%)
Shows the LED luminosity as a percentage of maximum luminosity.

Display Language
Shows the language currently used on the display. This is linked to Display Language Section 6.12.1.

Backlight Timeout on Mains (0 = Always ON) (sec)
Specify a period of time before the backlight is turned off whilst on mains power supply.

6.11.2 Communication Configuration

Bluetooth Enabled
Specify whether the actuator *Bluetooth* is enabled or disabled. **Do not disable the internal Bluetooth without prior authority from Rotork.**

Bluetooth Access Mode
The available options are:

Very High Security – Infra Red Only: All *Bluetooth* communication is disabled. Communication is by infrared commands from the Setting Tool only.

High Security – Infra Red Initiation Only: The actuator is not available for *Bluetooth* communication using a PC running Insight 2. Communication with the *Bluetooth* Setting Tool is available by holding the ⬇ key to initiate the *Bluetooth* connection using the Infrared initiation.

Discover in Local and Stop: The actuator is available for *Bluetooth* communication when it is in local or stop using the red selector. Connection is unavailable in Remote. The Local/Stop/Remote selector can be padlocked in all three positions. Communication with the *Bluetooth* Setting Tool is available.

Discover Always: The actuator is available for *Bluetooth* communication at all times using the Insight 2 PC software. This setting provides convenient connection when Insight 2 is used. Communication with the *Bluetooth* Setting Tool is available.

6.12 Language Settings

Language Settings

Language Configuration	
Display Language	English
Language Option 1 details	
Language	French
Language Option 2 details	
Language	Spanish
Language Option 3 details	
Language	German
Language Option 4 details	
Language	LastID 0
Language Option 5 details	
Language	LastID 0
Language Option 6 details	
Language	LastID 0
Language Option 7 details	
Language	LastID 0
Language Option 8 details	
Language	LastID 0

6.12.1 Display Language
Shows the language currently used on the display. This is linked to Display Language Section 6.11.1

6.12.2 Language Option Details

Language
For indication only, shows the current language installed in the relevant language slot. Blank slots will be indicated with Last ID   0.

6.13 Namur Settings

Namur Settings

Namur Status		
Namur Maintenance Status Flag	⦿ Inactive	◯ Active
Namur Out of Specification Status Flag	⦿ Inactive	◯ Active
Namur Function Check Status Flag	⦿ Inactive	◯ Active
Namur Failure Status Flag	⦿ Inactive	◯ Active
Namur Maintenance Group Mask Settings		
Battery Low alarm	⦿ Inactive	◯ Active
Local Fault alarm	⦿ Inactive	◯ Active
Power fault alarm	⦿ Inactive	◯ Active
Thermostat Tripped fault alarm	⦿ Inactive	◯ Active
Contactor Service Limit	⦿ Inactive	◯ Active
Service Date Reached	⦿ Inactive	◯ Active
Torque HI HI Limit	⦿ Inactive	◯ Active
Torque HI Limit	⦿ Inactive	◯ Active
Valve fault Indication	⦿ Inactive	◯ Active
Turns Limit Exceeded	⦿ Inactive	◯ Active
Unavailable for Remote Control	⦿ Inactive	◯ Active
ESD Inhibiting Control	⦿ Inactive	◯ Active
Actuator Control Inhibited	⦿ Inactive	◯ Active
Remote Communications Lost	⦿ Inactive	◯ Active
Hardware Error	⦿ Inactive	◯ Active
Partial Stoke Test Error	⦿ Inactive	◯ Active
Motor Starts Limit Reached	⦿ Inactive	◯ Active
Actuator Stalled	⦿ Inactive	◯ Active
Actuator Encoder in Limited Operation mode	⦿ Inactive	◯ Active
End of Travel Timeout Exceeded	⦿ Inactive	◯ Active
Control Network Fault	⦿ Inactive	◯ Active
Customer 24V Supply Fault	⦿ Inactive	◯ Active
Valve Travel Timeout	⦿ Inactive	◯ Active
Operation Direction Fault	⦿ Inactive	◯ Active
Namur Out of Specification Group Mask Settings		
Battery Low alarm	⦿ Inactive	◯ Active
Local Fault alarm	⦿ Inactive	◯ Active
Power fault alarm	⦿ Inactive	◯ Active

6.13.1 Namur Status

Namur Maintenance Status Flag
Specify whether the Namur Maintenance alarm will trigger an actuator status should a configured condition become active.

Namur Out of Specification Status Flag
Specify whether the Namur Out of Specification alarm will trigger an actuator status should a configured condition become active.

Namur Function Check Status Flag
Specify whether the Namur Function Check alarm will trigger an actuator status should a configured condition become active.

Namur Failure Status Flag

Specify whether the Namur Failure alarm will trigger an actuator status should a configured condition become active.

6.13.2 Namur Mask Settings (All groups)

This specifies the conditions that will trigger the Namur category alarm. Refer to PUB002-040 for further details on Namur settings for IQ3.

6.14 Analogue Control/CPT/CTT/AIO Option

Analogue Control/CPT/CTT/AIO Option

Analogue Card Type		
Analogue Option Card Type	Folomatic/CPT build	
Analogue Card Configuration		
Analogue signal type	0-20mA	
Analogue Input signal inversion	Not inverted	
Analogue Output signal inversion	Not inverted	
Digital input (Hand/Auto)	○ Enabled	◉ Disabled
Analogue Signal Calibration		
Software Version		
Software Version	v105 (843)	
Status		
Eeprom Status	○ Error/Not Initialised	◉ Okay
Analogue Input Status	◉ Okay - In range	○ Error - Out of range
CAN Comms Status	◉ Communications Good	○ Communications Failed
Analogue Input Status	◉ Input within range	○ Input out of range HIGH
Analogue Input Status	◉ Input within range	○ Input out of range LOW
Digital Input State	◉ Input Low (Auto)	○ Input High (Hand)

6.15 Extra Relays S5-S8

Extra Relays S5-S8

Extra Relays S5-S8 Status	
Extra Relays S5-S8 Interface Type	26
Extra Relays S5-S8 Software Version	v102 (1919)

7.0 IQ3 Data Logger

All the main IQ3 data logger functions have an adjustable scale that is proportional to the size of the Insight 2 window. Adjustment of graphical data, for increased or decreased detail, can be performed by expanding or contracting the program window.

7.1 Event Logger

7.1.1 Time Line
7.1.2 Trace View
7.1.3 List View

7.2 Torque Profile

7.3 Torque Limit Profiles

7.4 Torque Reference Profile

7.5 Torque Reference Limit Profiles

7.6 Starts Log

7.7 Movement Log

7.8 Current Partial Stroke Profile

7.9 Vibration Trend Log

7.10 Battery Voltage and Temperature Trend Log

7.10.1 Battery voltage Trend
7.10.2 Temperature Trend

7.11 Motor Starts and Output Turns Trend Log

7.11.1 Output Turns Trend
7.11.2 Starts Trend

7.12 Miscellaneous Datalog Data

7.12.1 Motor Related Data
7.12.2 Power Related Data
7.12.3 Limit Related Data
7.12.4 Environmental Related Data

7.1 Event logger

The Event Logger will store information related to actuator actions and condition changes. All events are date and time stamped to accurately assess the actuator operations.

Event Logger

Current Record	550	Event Date	28/05/2014	Event Time	07:56:45.474

The top scroll bar can be used to navigate from the first recorded event (far left) to the most recent event (far right). The recorded event number is shown with the event date and time stamp above the navigation bar.

7.1.1 Time Line
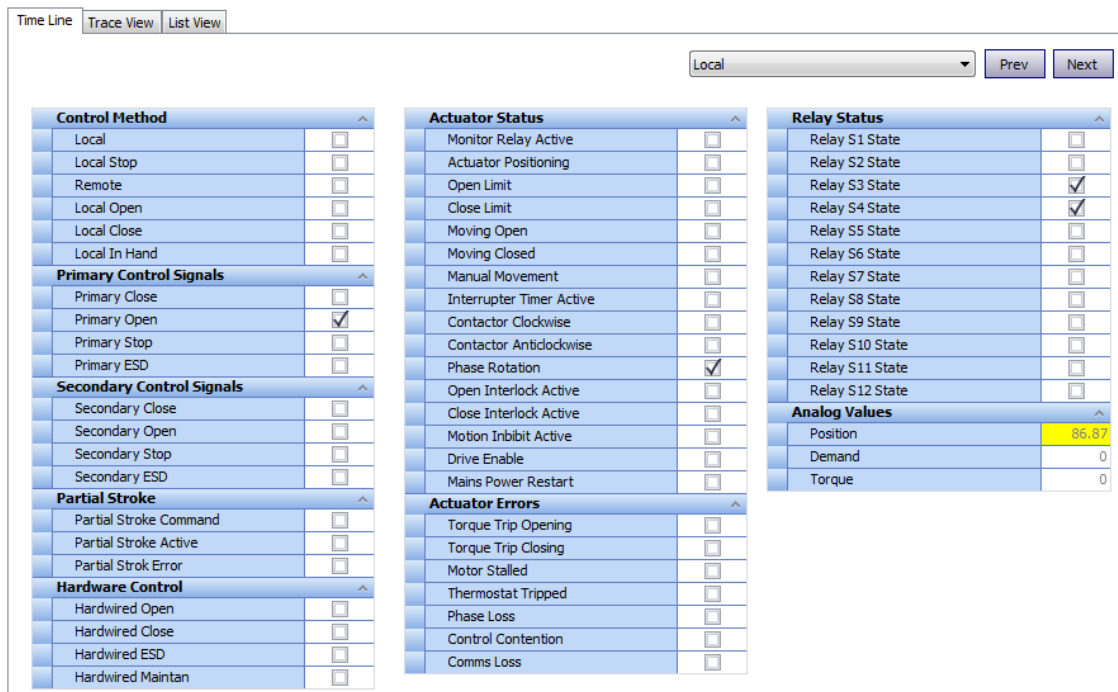
The Time Line display style provides the user with a visual indication of active conditions for the specific event selected with the top scroll bar. An active condition is indicated by a checked box. The dropdown menu is included to apply a filter. The Prev and Next actions buttons chronologically skip to the next recorded event for the chosen condition.

7.1.2 Trace View

The trace view provides a comparison between various event triggers during each period between events. The Position (%), Demand (%) and Torque (%) traces are analogue recorded values whilst other event conditions can be configured as Digital Traces.
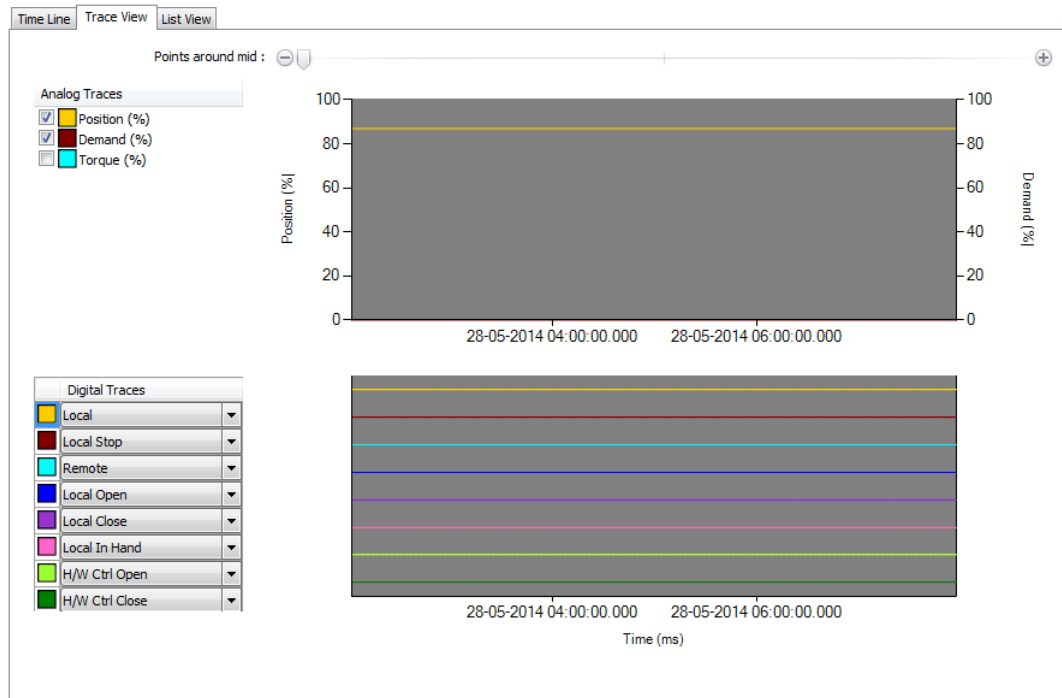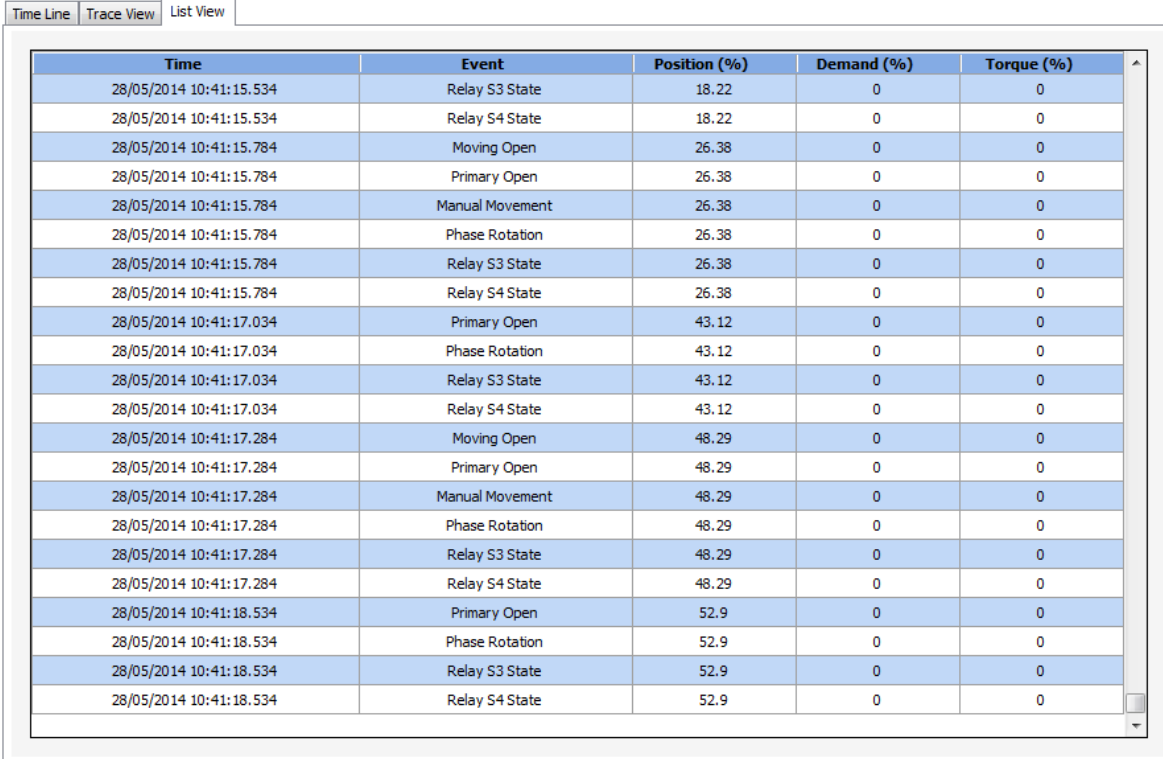
The top scroll bar can be used to navigate through various events. There is also an additional scroll bar within the Trace view window. This can be used to adjust the scaling of both traces for more detailed analysis.

Each digital trace can be allocated a different function by opening the associated drop down menu and selecting the required condition.
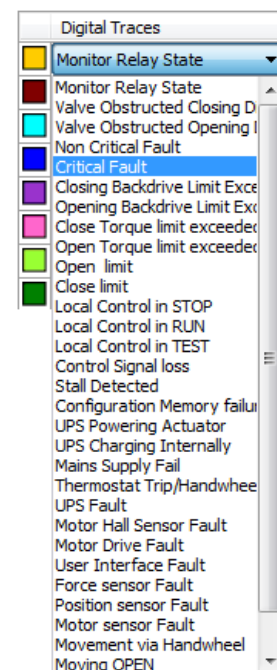
7.1.3 List View

This type of display depicts the data event Log of the IQ3 in tabular format as a chronological series of events.

Time Line | Trace View | **List View**

Time	Event	Position (%)	Demand (%)	Torque (%)
28/05/2014 10:41:15.534	Relay S3 State	18.22	0	0
28/05/2014 10:41:15.534	Relay S4 State	18.22	0	0
28/05/2014 10:41:15.784	Moving Open	26.38	0	0
28/05/2014 10:41:15.784	Primary Open	26.38	0	0
28/05/2014 10:41:15.784	Manual Movement	26.38	0	0
28/05/2014 10:41:15.784	Phase Rotation	26.38	0	0
28/05/2014 10:41:15.784	Relay S3 State	26.38	0	0
28/05/2014 10:41:15.784	Relay S4 State	26.38	0	0
28/05/2014 10:41:17.034	Primary Open	43.12	0	0
28/05/2014 10:41:17.034	Phase Rotation	43.12	0	0
28/05/2014 10:41:17.034	Relay S3 State	43.12	0	0
28/05/2014 10:41:17.034	Relay S4 State	43.12	0	0
28/05/2014 10:41:17.284	Moving Open	48.29	0	0
28/05/2014 10:41:17.284	Primary Open	48.29	0	0
28/05/2014 10:41:17.284	Manual Movement	48.29	0	0
28/05/2014 10:41:17.284	Phase Rotation	48.29	0	0
28/05/2014 10:41:17.284	Relay S3 State	48.29	0	0
28/05/2014 10:41:17.284	Relay S4 State	48.29	0	0
28/05/2014 10:41:18.534	Primary Open	52.9	0	0
28/05/2014 10:41:18.534	Phase Rotation	52.9	0	0
28/05/2014 10:41:18.534	Relay S3 State	52.9	0	0
28/05/2014 10:41:18.534	Relay S4 State	52.9	0	0

The top slider bar can be used to navigate through all available events currently in the data log. Alternatively the scroll bar on the right side of the event information can be used to navigate events in the same fashion.

7.2 Torque Profile

Torque Profile

Closing Torque Profile

☑ ▬ Closing Torque
☑ ▬ Average Closing Torque

Opening Torque Profile

☑ ▬ Opening Torque
☑ ▬ Average Opening Torque
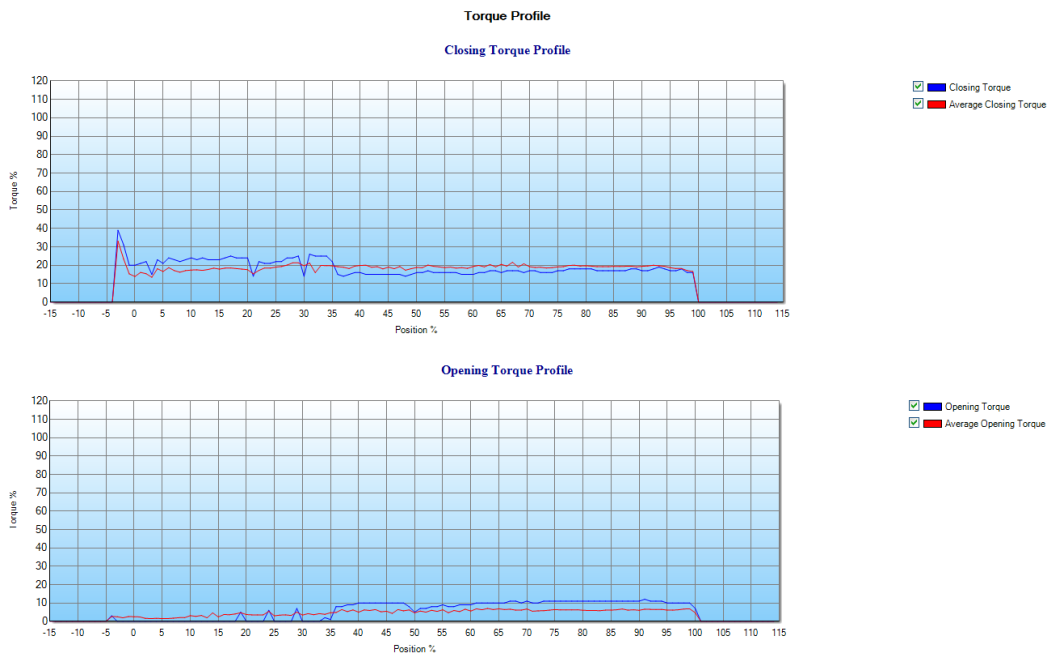
The torque profile graphs show graphical traces detailing the last recorded and average opening or closing torque as a percentage of rated torque by the actuator across a full stroke. This graphical display can be used to identify excessive valve wear.

Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized representation of that area. All traces can be selected/deselected to provide bespoke comparisons.

7.3 Torque Limit Profiles

Torque Limit Profiles

Torque Close Limit Profile

☑ ▬ Opening Torque
☑ ▬ Average Opening Torque
☑ ▬ Closing Torque
☑ ▬ Average Closing Torque

Torque Open Limit Profile

☑ ▬ Opening Torque
☑ ▬ Average Opening Torque
☑ ▬ Closing Torque
☑ ▬ Average Closing Torque
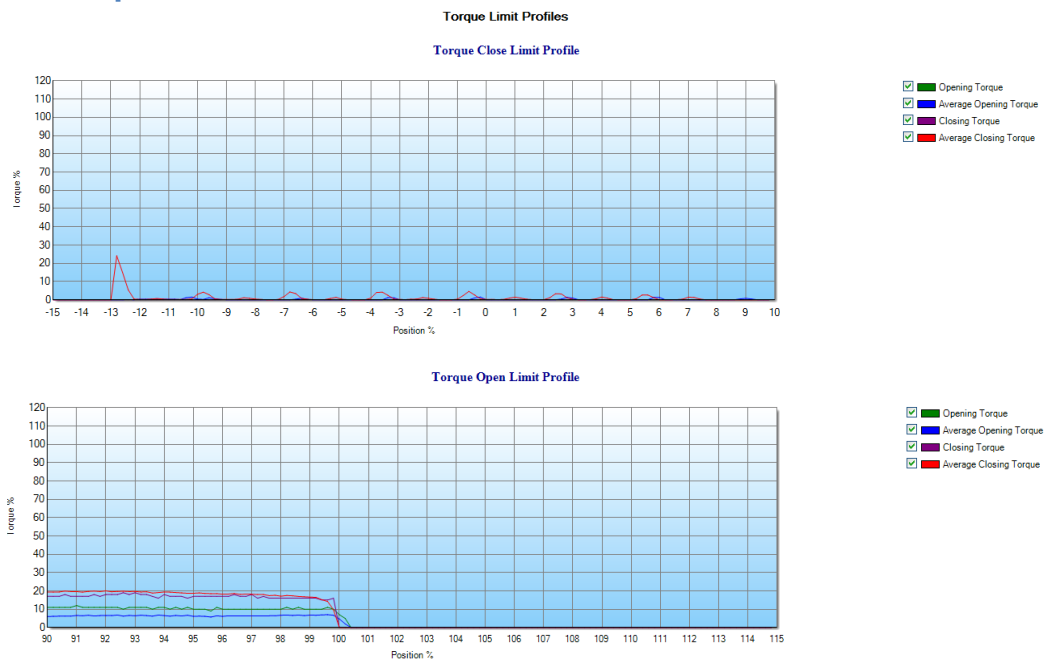
Torque limit profile graphs show the measured torque in both directions around each position limit. The average torque is provided as a reference against the last recorded torque. This will help to identify any valve degradation at the fully closed or fully open positions.

Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized representation of that area. All traces can be selected/deselected to provide bespoke comparisons.

7.4 Torque Reference Profile

Torque Reference Profile

Close Torque Reference Profile

Open Torque Reference Profile
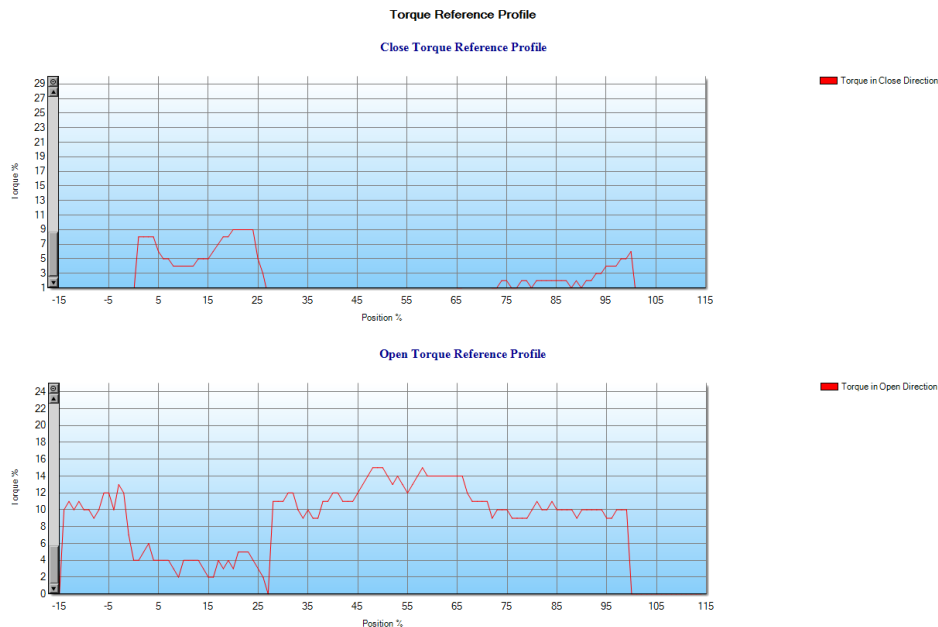
This screen displays the reference stroke for the actuator. The reference data is collected by stroking the valve during commissioning and saving the valve torque within the actuator settings.

Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized graph of that area.

7.5 Torque Reference Limit Profiles
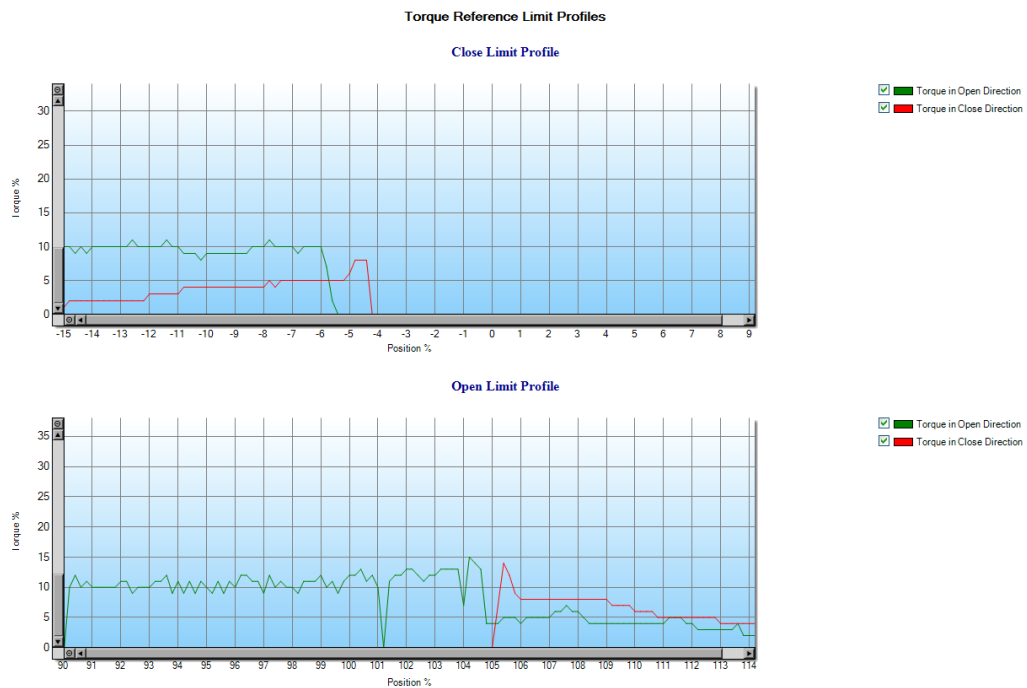
This screen provides greater detail of the reference torque at each position limit. The reference data is collected by stroking the valve during commissioning and saving the valve torque within the actuator settings.

Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized representation of that area. All traces can be selected/deselected to provide bespoke comparisons.

7.6 Starts Log

Starts Log

Close Starts Log

Open Starts Log
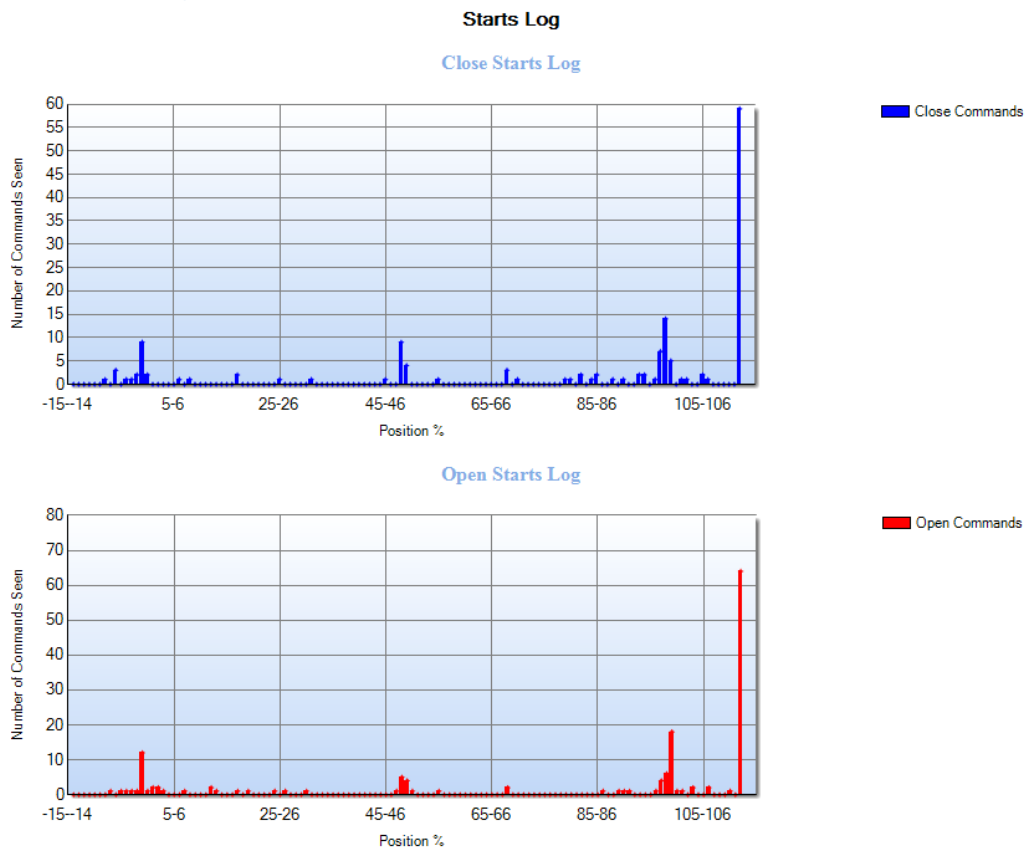
This screen displays the total number of movements initiated in each direction against a position of full valve stroke.

Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized graph of that area.

7.7 Movement Log

Movement Log

Movement Profile
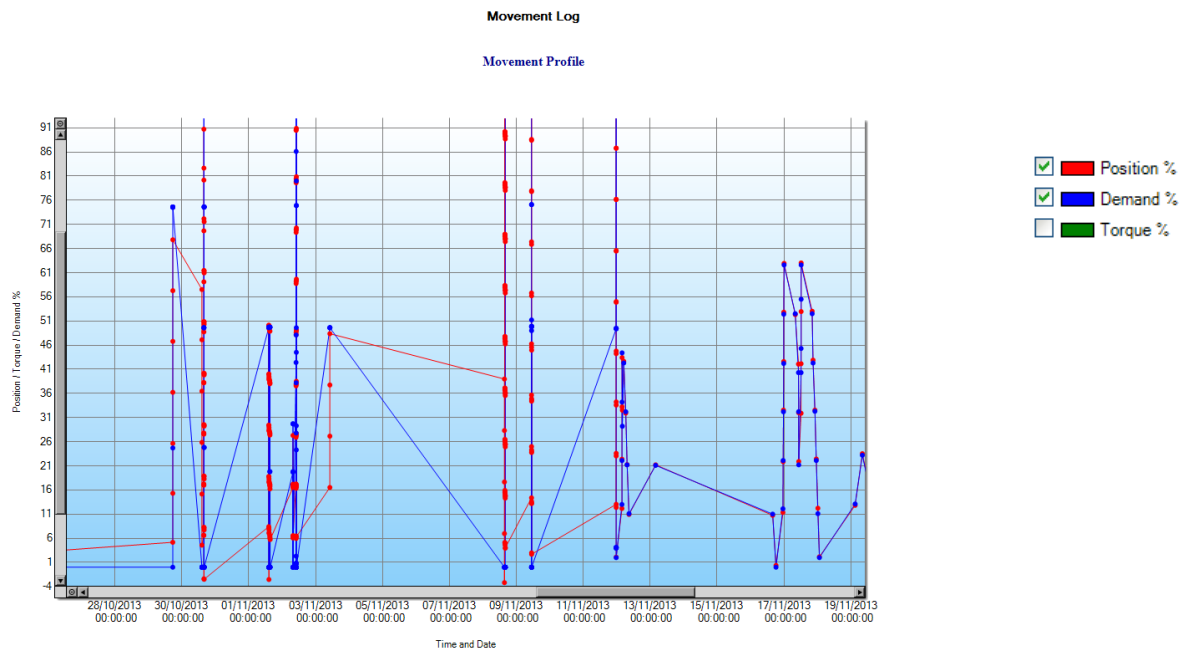
The movement log records the actuator position, demand and torque as a percentage of rated across the data log period.

Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized graph of that area.

7.8 Current Partial Stroke Profile

Current Partial Stroke Profile

Close Partial Stroke Profile

Open Partial Stroke Profile
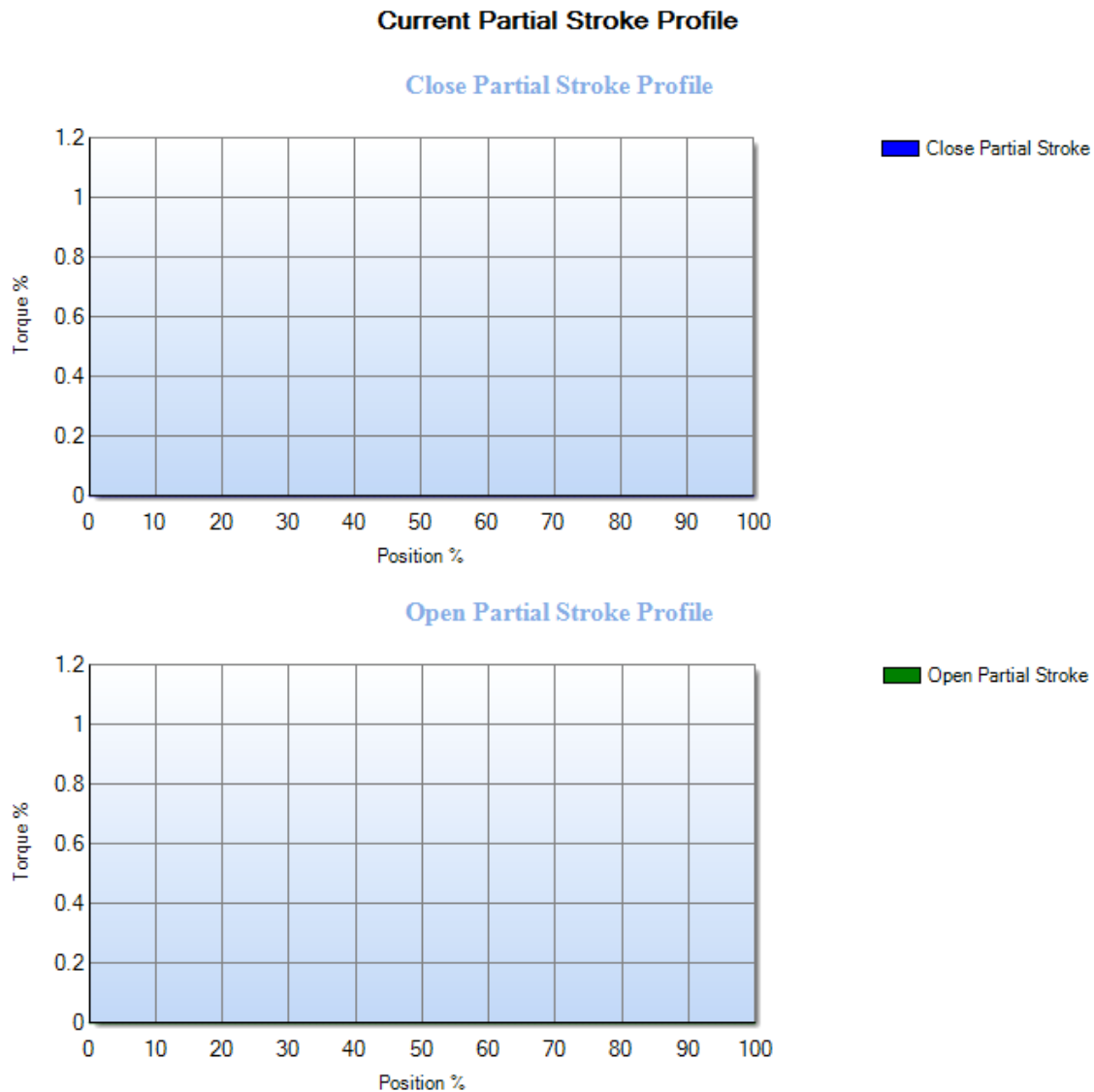
This screen displays a torque graph of the last partial stroke movement for both directions. The torque required to operate the valve during the last partial stroke operation may help to diagnose problems with the valve and its condition.

Graph detail can be enhanced by dragging a selection area over a section of the graph. This will adjust the axis to zoom into a full sized graph of that area.

7.9 Vibration Trend Log

Vibration Trend Log

Peak Vibration trend

Average Vibration trend
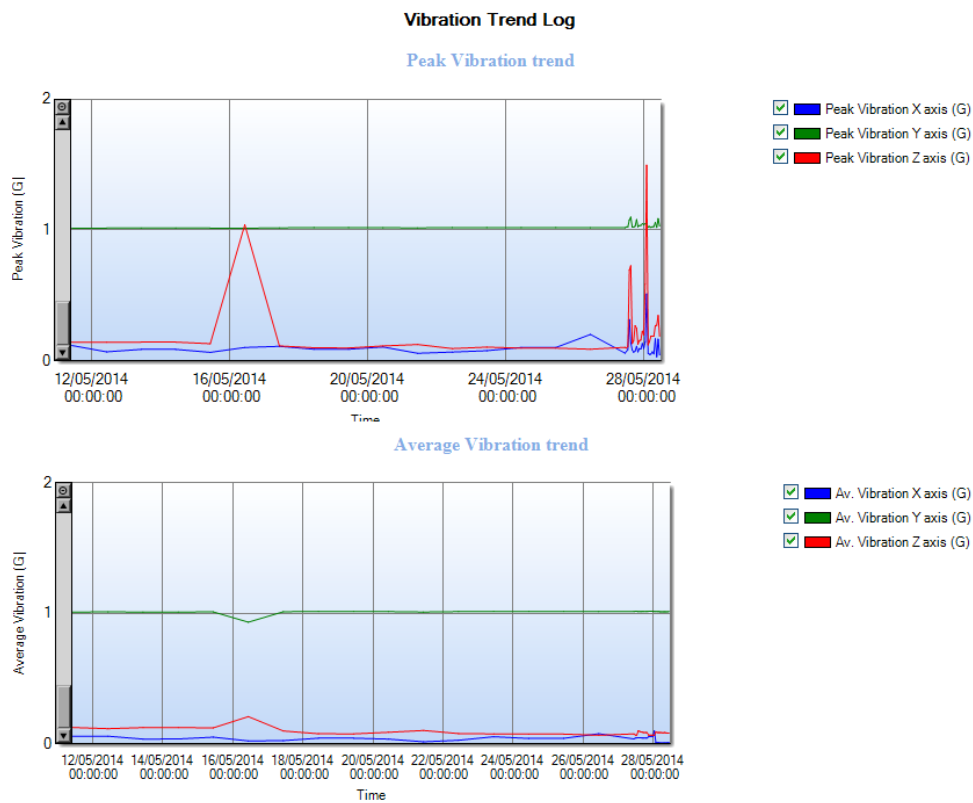
The vibration trend log screen displays the peak and average vibration detected by the actuator. The sensor is located on the circuit board and records vibration (G) in three axes. Peak values shown will be the highest recorded for that period. Vibration analysis graphs may help the user understand how plant induced vibration affects actuator/valve operation.

7.10 Battery Voltage and Temperature Trend Log

7.10.1 Battery Voltage Trend

Battery Voltage and Temperature Trend Log

Battery Voltage trend
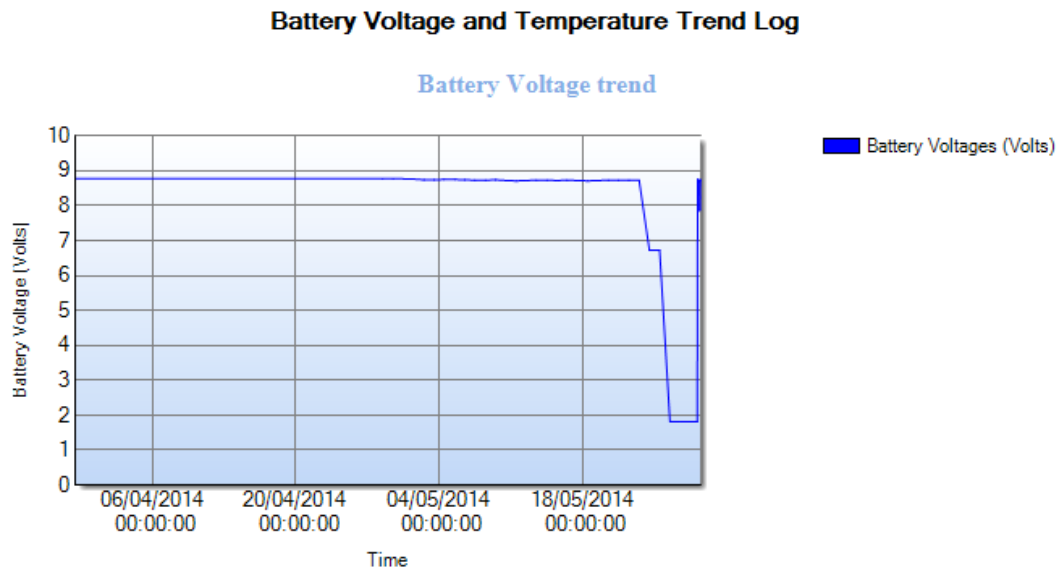
Battery voltage is constantly monitored to ensure that actuator position and status can still be viewed during a power loss. The trend graph will identify a replacement battery is required if the measured voltage drops significantly.

7.10.2 Temperature Trend
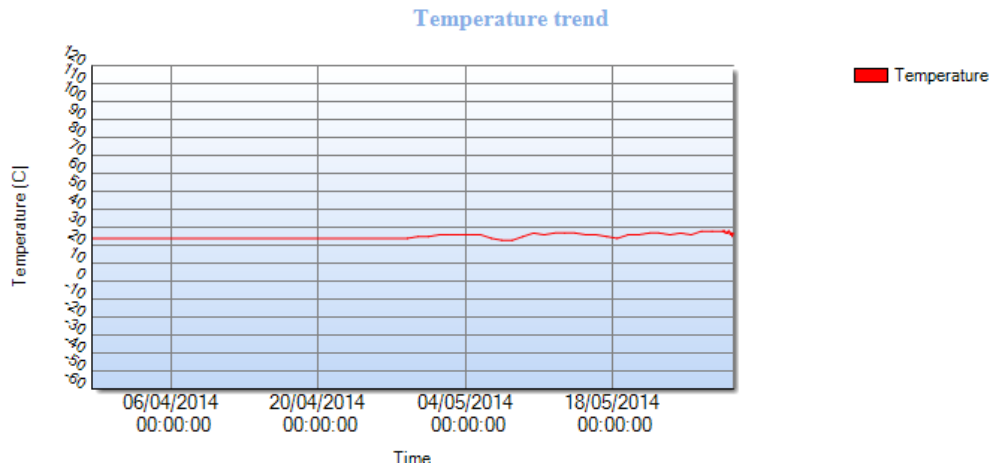
Temperature trend

The actuator ambient temperature is monitored to identify if the internal electronics are being exposed to an excessively high operating temperature. Operators can use this trend to issue a protective action should heat rise be witnessed (e.g. fitment of a sun shade in a hot outside unclouded environment).

7.11 Motor Starts and Output Turns Trend Log

Motor Starts and Output turns Trend Log

Output Turns trend
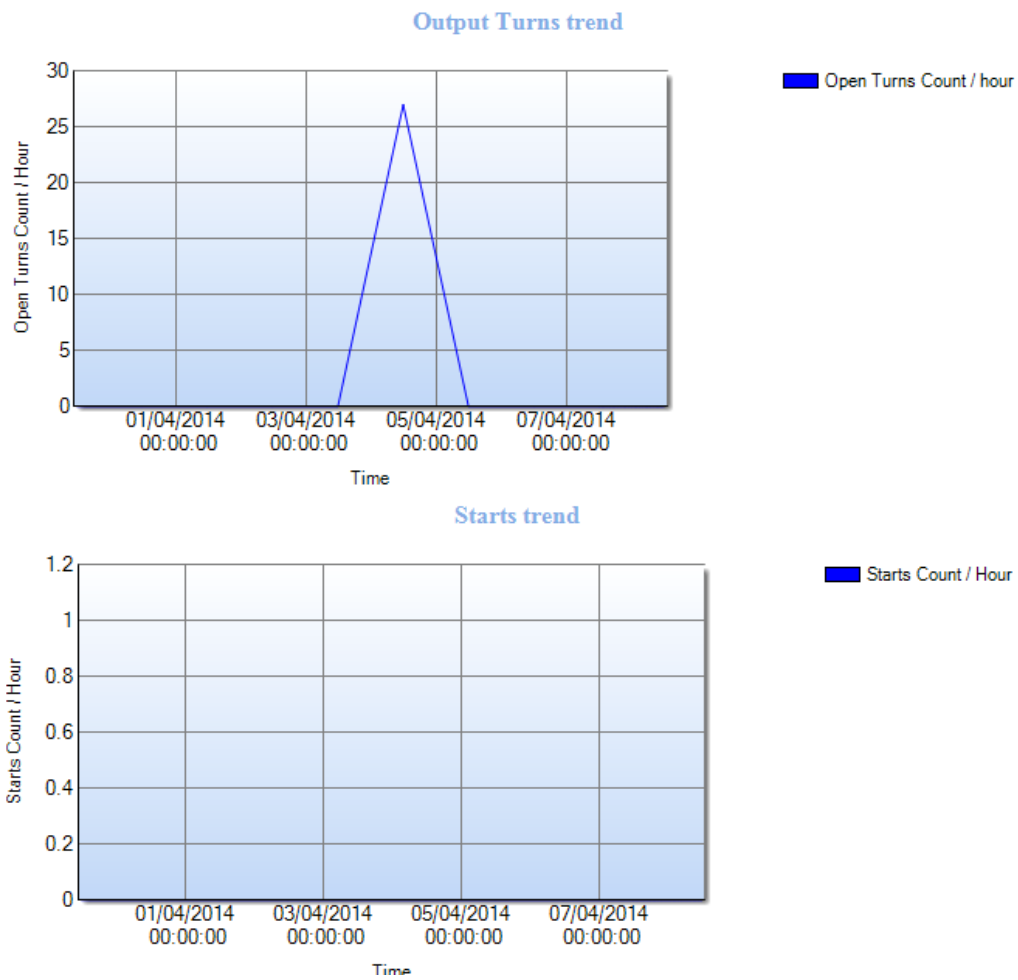
Starts trend

The Output Turns trend provides a quick visual indication of actuator activity over a number of days. The Starts trend can be used in conjunction with the Output Turns trend to identify if the actuator is moving in an isolating fashion (large movements) or modulating fashion (small step changes).

7.12 Miscellaneous Datalog Data

Miscellaneous Datalog Data

Motor Related Data	
Total Number Open Contactor Operations	201
Total Number Close Contactor Operations	196
Total Number Output Turns	13985
Maximum Number of Starts per Hour	25
Total Motor Run Time in 1/4 seconds	2934
Power Related Data	
Nunber of Power Cycles	229
Total Battery Run Time in 1/4 seconds	1738
Maximum Powered On Time in 1/4 seconds	635458
Maximum Powered Down Time in 1/4 seconds	1223702
Limit Related Data	
Maximum Open Limit Torque recorded	3
Maximum Close Limit Torque recorded	138
Average Torque recorded	84
Environmental Related Data	
Maximum recorded temperature	32
Minimum recorded temperature	0

7.12.1 Motor Related Data

Total Number Open Contactor Operations

A decimal count of the number of experienced contactor operations in the Open direction.

Total Number Close Contactor Operations

A decimal count of the number of experienced contactor operations in the Close direction.

Total Number Output Turns

A decimal count of the total output turns throughout the actuator life.

Maximum Number of Starts per Hour

The maximum number of starts per hour witnessed throughout the actuator life. This can identify if an actuator has exceeded the rated duty cycle maximum starts per hour.

1.12.2 Power Related Data

Number of Power Cycles

Displays the total number of times the actuator has been powered up after a main supply loss.

Total Battery Run Time in ¼ seconds

Displays the total time period across the actuator life that the actuator has been functioning on battery power without a main power supply. The value is shown in ¼ seconds as this is the sample rate of the data log.

Maximum Powered on Time in ¼ Seconds

Displays the total time period across the actuator life that the actuator has been operating on the main power supply. The value is shown in ¼ seconds as this is the sample rate of the data log.

Maximum Powered Down Time in ¼ Seconds

Displays total time period across the actuator life that the actuator has been powered off. The value is shown in ¼ seconds as this is the sample rate of the data log.

1.12.3 Limit Related Data

Maximum Open Limit Torque Recorded

Displays the maximum measured torque the actuator has experienced in the open direction at the open position limit.

Maximum Close Limit Torque Recorded

Displays the maximum measured torque the actuator has experienced in the close direction at the closed position limit.

1.12.4 Environmental Related Data

Maximum Recorded Temperature

Displays the maximum temperature (°C) recorded within the internal electronics enclosure.

Minimum Recorded Temperature

Displays the minimum temperature (°C) recorded within the internal electronics enclosure.

8.0 EH Pro and SI Pro Screens

The settings for EH Pro and SI Pro have been collated into one section because of the similarities present during configuration of each type of actuator. This means that some settings shown in this manual may not be visible for your specific actuator.

8.7 Interrupter Timer

8.7.1 Interrupter Timer
8.7.2 Interrupter Timer Direction
8.7.3 Interrupter Timer Start (%)
8.7.4 Interrupter Timer Stop (%)
8.7.5 Interrupter Timer Interval
8.7.6 Interrupter Timer On Time
8.7.7 Interrupter Timer Off Time
8.7.8 Interrupter Timer with ESD Enabled

8.8 Actuator Statistics

8.8.1 Number of Times Open Limit Reached
8.8.2 Number of Times Close Limit Reached
8.8.3 Time Spent Moving Open (sec)
8.8.4 Time Spent Moving Closed (sec)
8.8.5 Number of ESD Events
8.8.6 Number of Motor Starts
8.8.7 Number of Accumulator Recharges

8.1 Basic Settings

Basic Settings

Basic settings		
Valve Tag	Test SI Pro	
Close Action	⦿ Stop on Pressure	○ Stop on Limit
Open Action	⦿ Stop on Limit	○ Stop on Pressure
Close Pressure (Limit) (%)	⊖ ────────────▌── ⊕	90
Close Pressure (Mid) (%)	⊖▌──────────── ⊕	0
Open Pressure (Limit) (%)	⊖ ───────────▌── ⊕	90
Open Pressure (Mid) (%)	⊖▌──────────── ⊕	0
Closed Limit	0	
Open Limit	4096	

8.1.1 Valve Tag
User defined name for the actuator consisting of up to 32 alpha-numeric or symbolic characters. It is normally used by operators to specify a unique tag based on location or a description of the actuator.

8.1.2 Close Action
The actuator can be configured to close on pressure for seating valve types or limit for non-seating valve types. Limit means the actuator will stop moving once it reaches the set closed position limit. Pressure means the actuator will stop when it reaches the set closed pressure limit.

8.1.3 Open Action
The actuator can be configured to open on pressure for back-seating valve types or limit for non-back seating valve types. Limit means the actuator will stop moving once it reaches the set open position limit. Pressure means the actuator will stop when it reaches the set open pressure limit.

8.1.4 Close Pressure (Limit) (%)
This setting is the maximum cut-off pressure while travelling from the closed limit to the mechanical end stop. The value set is a percentage of the maximum available pressure, which is limited by the pressure relief valve.

8.1.5 Close Pressure (Mid) (%)
This setting is the maximum mid-travel cut-off pressure, between the open and closed limit, while travelling in the close direction. If the value is set to 0, the pressure-off value from 8.1.7 Open Pressure is used.

8.1.6 Open Pressure (Limit) (%)
This setting is the maximum cut-off pressure while travelling from the open limit to the mechanical end stop. The value set is a percentage of the maximum available pressure, which is limited by the pressure relief valve.

8.1.7 Open Pressure (Mid) (%)
This setting is the maximum mid-travel cut-off pressure, between the closed and open limit, while travelling in the open direction. If the value is set to 0, the pressure-off value from 8.1.5 Close Pressure is used.

8.1.8 Closed Limit
This setting shows the raw positional value for the set closed limit. Rotork Service Engineer use only.

8.1.0 Open Limit
This setting shows the raw positional value for the set open limit. Rotork Service Engineer use only.

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8.2 Contact Relays

Contact Relays

Relay 1		
Contact r1 - Function	Closed limit	▼
Contact r1 - Value	⊖ ▯ —————————⊕ 0	
Contact r1 - Form	○ Normally closed ◉ Normally open	
Relay 2		
Contact r2 - Function	Open limit	▼
Contact r2 - Value	⊖ ▯ —————————⊕ 0	
Contact r2 - Form	○ Normally closed ◉ Normally open	
Relay 3		
Contact r3 - Function	Fault alarm	▼
Contact r3 - Value	⊖ ▯ —————————⊕ 0	
Contact r3 - Form	○ Normally closed ◉ Normally open	

8.2.1 Contact – Function

This setting determines the function of the selected relay contact. The drop down box enables the user to select from the following function settings.

Condition	Description
Closed Limit	The actuator has reached its closed limit
Open Limit	The actuator has reached its open limit
Fault Alarm	The actuator has detected a fault and is displaying an actuator alarm
Position % Open	The actuator has reached a user defined position
Motor Running	The motor is running
Closing	The actuator is moving closed
Opening	The actuator is moving open
Moving	The actuator is moving in either direction
Stall (Mid-Travel)	The motor has stalled whilst away from the limits
Stall (Any Position)	The motor has stalled whilst at either limit
Over Pressure (Mid-Travel)	The motor has stalled at any position
Over Pressure (End of Travel)	Active when an over pressure is present at either limit
Over Pressure (Any Position)	Active when an over pressure is present at any position of travel
Stop Selected	The Local/Stop/Remote switch is switched to stop
Local Selected	The Local/Stop/Remote switch is switched to Local
Remote Selected	The Local/Stop/Remote switch is switched to Remote
Control Alarm	The actuator is portraying a control alarm
ESD Active	The actuator is performing its ESD Function
Temperature (ºC)	The actuator has reached a set Temperature
Manual Override Switch	Manual override is active
Accumulator Pressure Switch	Accumulator pressure has been exceeded
External Manual Reset Switch	External manual reset switch is active
Motor Thermostat Switch	Motor thermostat is active
Partial Stroke Passed	The actuator has passed its partial stroke test
Partial Stroke Failed	The actuator has failed its partial stroke test
Monitor Output	The actuator is available for remote operation
None	The relay is disabled

8.2.2 Contact – Value

This is directly related to some of the relay functions shown above. The setting is configurable from 0% to 100% in increments of 0.1%.

8.2.3 Contact – Form

Set the relay contact type to normally open (make on active) or normally closed (break on active).

8.3 General Settings

General Settings

General settings	
Remote Select	Digital control ▼
Configure Local Controls	◉ Push to run ○ Maintained
Low Power Mode	◉ Off ○ On ○ Extra low
Closed LED Colour	◉ Green ○ Red

8.3.1 Remote Select

Specify the actuator remote control source. The available options are:

Digital Control: The actuator is controlled with hardwired pushbutton controls.

Analogue Control: The actuator is controlled using a 4-20mA or 0-10 Volt signal.

Option Card: The actuator is controlled using an option card over a network communication platform (e.g. Profibus, Modbus, Pakscan, Foundation Fieldbus or DeviceNet).

Option ESD: The actuator is controlled using an option card and a hardwired ESD function.

Off: There is no remote control option for the actuator.

8.3.2 Configure Local Controls

Local controls can be configured to behave in two different ways.

Push to Run: The actuator will only move when the open or close signal is manually maintained.

Maintained: The actuator will self-maintain a fleeting open or close signal and will run until it reaches its respective limit or a pressure trip. The user can manually stop a maintained signal using the local controls.

8.3.3 Low Power Mode

Low power mode can be activated for particular low power consumption applications. For more information on the functionality during low power states please contact Rotork. There are three available options:

Off: Low Power Mode is disabled and the actuator will remain powered as normal.

On: Low Power Mode is enabled and the actuator power consumption will decrease.

Extra Low: Extra Low Power Mode is enabled and the actuator power consumption will decrease to the lowest setting.

8.3.4 Closed LED Colour

Set the LED colour when the actuator is at its closed limit. The open limit LED will always be the opposite colour to this setting.

8.4 Digital Control

Digital Control

Digtial control configuration				^
Remote priority	◉ Stay Put	○ Close	○ Open	
Hold position	◉ On		○ Off	
Position hysteresis	⊖ ▯———————————		⊕	0.5
Over pressure hysteresis	⊖ —▯——————————		⊕	10
Under pressure hysteresis	⊖ —▯——————————		⊕	10

8.4.1 Remote Priority

Remote priority defines what the actuator will do when open and close signals are applied simultaneously. There are three available options:

Stay Put: The actuator will stop in the current position.

Close: The actuator will close until it reaches a travel limit, over pressure or manual stop.

Open: The actuator will open until it reaches a travel limit, over pressure or manual stop.

8.4.2 Hold Position

The actuator hold position setting can be configured to reduce the effects of back driving forces acting on the valve.

On: The actuator will maintain the current position by compensating for position drift using the solenoid valve or pump.

Off: The actuator position drift will not be compensated for; therefore the actual position may fluctuate.

8.4.3 Position Hysteresis

The position hysteresis setting works in conjunction with the hold position setting to set the amount of travel permitted before the actuator should automatically reposition itself. This is set from 0.1% to 9.9%.

8.4.4 Over Pressure Hysteresis

This feature will vent the internal hydraulic pressure in the actuator if it reaches a set defined value while the actuator is at a position limit. The setting range is 1% to 99%. By default this is set to 110% of the Close Pressure (Limit) 8.1.4 or Open Pressure (Limit) 8.1.6 for the respective limit position.

8.4.5 Under Pressure Hysteresis

This feature will increase the internal hydraulic pressure in the actuator if it falls below the set value while the actuator is at a position limit. The setting range is 1% to 99%. By default this is set to 90% of the Close Pressure (Limit) 8.1.4 or Open Pressure (Limit) 8.1.6 for the respective limit position.

8.5 ESD/Partial Stroke

ESD/Partial Stroke

ESD		
Software ESD Action	De-energise all Solenoid Valves	▼
ESD Local Stop Override	◉ No	○ Yes
ESD Contact Type	◉ Normally open	○ Normally closed
ESD Manual Reset	No Reset	▼
ESD Temporary Loss of Signal	Stop Actuator, Move if Signal is Present	▼
Partial stroke		
Partial stroke position (%)	⊖———————————┃——⊕	90
General Tolerance (secs)	⊖┃——————————⊕	0.5
Reference Partial Stroke Test Recorded Values		
Time to Partial Stroke Position (1st Stroke)	0	
Time to Partial Stroke Position (2nd Stroke)	0	
Time from the Partial Stroke Position to limit (1st Stroke)	0	
Time from the Partial Stroke Position to limit (2nd Stroke)	0	

8.5.1 ESD

Software ESD Action

This is where the ESD action of the actuator is defined. There are four available options:
De-energise all Solenoid Valves: On receiving an ESD signal the actuator will de-energise all solenoid valves fitted.
Close Actuator: When receiving an ESD signal the actuator will run to its closed limit position.
Open Actuator: When receiving an ESD signal the actuator will run to its open limit position.
Stay Put: When receiving an ESD signal the actuator will not move from its position and stop if it is currently travelling in either direction.

ESD Local Stop Override

This feature dictates whether an active ESD signal will override a present local stop. There are two available options:
No: Select this option if a software ESD command should NOT override the local stop.
Yes: Select this option if a software ESD command should override a present local stop.

ESD Contact Type

This setting determines if a signal should be applied or removed to initiate a software ESD action. There are two available options:
Normally Open: The ESD signal has to be applied to perform a software ESD function.
Normally Closed: The ESD signal has to be removed to perform the set software ESD function.

ESD Manual Reset

This feature dictates the reset option for the ESD state. There are four available options:
No Reset: Set this option if the actuator does not need to be reset after an ESD event or loss of mains power.
After ESD: Set this option if the actuator must be manually reset after an ESD event.
After Mains Loss: Set this option if the actuator must be manually reset after loss of mains power.
ESD/Mains Loss: Set this option if the actuator must be manually reset after an ESD event of loss of mains power.

ESD Temporary Loss of Signal

This shows the options for the actuator under a temporary loss of an ESD signal. The available options are:

Stop Actuator, Move if Signal is Present: Meaning the actuator will stop and wait for the ESD signal to be restored before continuing the ESD actions

Stop Actuator, Wait for New Signal: Meaning the actuator will stop and wait for a new ESD signal to be sent before continuing the ESD action

Continue ESD action: Meaning if the signal is temporarily lost the actuator will continue to perform its ESD action.

8.5.2 Partial Stroke

Partial Stroke Position (%)

This is the set position that the actuator will move to when a partial stroke test is performed. The current settings for the analogue input deadband and hysteresis values will be used during the partial stroke test. The available range is 1% to 99% at 1% increments.

General Tolerance (sec)

This is the acceptable tolerance for the partial stroke test time in addition to 8.5.3 reference strokes. E.g. with a 1.5 second tolerance and 15 second reference stroke time to total allowable time before a failure is recognised is 16.5 seconds.

8.5.3 Reference Partial Stroke Test Recorded Values

The partial stroke reference test values are recorded by performing the partial stroke setup at the actuator (refer to pub021-033).

Time to Partial Stroke Position (1st Stroke)

For indication only, displays the time from the set end of travel limit, for the actuator to reach the set partial stroke position (refer to 8.5.2).

Time to Partial Stroke Position (2nd Stroke)

For indication only, displays the time from the set end of travel limit, for the actuator to reach the set partial stroke position (refer to 8.5.2).

Time from the Partial Stroke Position to Limit (1st Stroke)

For indication only, displays the time from the set partial stroke position (refer to 8.5.2), for the actuator to reach the set end of travel limit.

Time from the Partial Stroke Position to Limit (2nd Stroke)

For indication only, displays the time from the set partial stroke position (refer to 8.5.2), for the actuator to reach the set end of travel limit.

8.6 Analogue Control

Analogue Control

Analogue control			
Demand Analogue Input	⦿ Current	○ Voltage	
Set Demand Input at Closed Limit	0		
Set Demand Input at Open Limit	4096		
Set CPT Output	Position Output		▼
Analogue Signal Failure Action	⦿ Alarm Off	○ Alarm On	○ Alarm and Softwar
Deadband Closing (%)	⊖ ▭	⊕	1
Deadband Opening (%)	⊖ ▭	⊕	1
Hysteresis Closing (%)	⊖ ▭	⊕	0.5
Hysteresis Opening (%)	⊖ ▭	⊕	0.5
Minimum percentage demand (%)	⊖ ▭	⊕	0.5
Flow Characterisation			
Flow Characterisation Enabled	⦿ No	○ Yes	
Demand input to position at 0% (%)	⊖ ▭	⊕	0
Demand input to position at 5% (%)	⊖ ▭	⊕	5
Demand input to position at 10% (%)	⊖ ▭	⊕	10
Demand input to position at 15% (%)	⊖ ▭	⊕	15
Demand input to position at 20% (%)	⊖ ▭	⊕	20
Demand input to position at 25% (%)	⊖ ▭	⊕	25
Demand input to position at 30% (%)	⊖ ▭	⊕	30
Demand input to position at 35% (%)	⊖ ▭	⊕	35
Demand input to position at 40% (%)	⊖ ▭	⊕	40
Demand input to position at 45% (%)	⊖ ▭	⊕	45
Demand input to position at 50% (%)	⊖ ▭	⊕	50
Demand input to position at 55% (%)	⊖ ▭	⊕	55
Demand input to position at 60% (%)	⊖ ▭	⊕	60
Demand input to position at 65% (%)	⊖ ▭	⊕	65
Demand input to position at 70% (%)	⊖ ▭	⊕	70
Demand input to position at 75% (%)	⊖ ▭	⊕	75
Demand input to position at 80% (%)	⊖ ▭	⊕	80
Demand input to position at 85% (%)	⊖ ▭	⊕	85
Demand input to position at 90% (%)	⊖ ▭	⊕	90
Demand input to position at 95% (%)	⊖ ▭	⊕	95
Demand input to position at 100% (%)	⊖ ▭	⊕	100

8.6.1 Analogue Control

Demand Analogue Input

The analogue position control can accept either a 4-20mA (current) control signal or a 0-10Vdc (voltage) control signal. This setting configures the analogue card for the appropriate control signal type.

Set Demand Input at Closed Limit

For indication only, shows the raw value witnessed by the actuator during analogue input calibration.

Set Demand Input at Open Limit

For indication only, shows the raw value witnessed by the actuator during analogue input calibration.

Set CPT Output

CPT (current position transmitter) is the analogue output signal that provides feedback of the current actuator status. There are two available options for CPT output:

Position Output: Displays a 4-20mA (0-10V) signal scaled to the actuator position.
4mA (0V) = 0% and 20mA (10V) = 100%.

System Pressure: Displays a 4-20mA (0-10V) signal scaled to the actuator system pressure.
4mA (0V) = 0% and 20mA (10V) = 100%.

Analogue Signal Failure Action

This dictates the actuator action if an analogue signal failure occurs. The three options are:

Alarm Off: The actuator will not present an alarm.

Alarm On: The actuator will present an alarm under loss of analogue signal.

Alarm and Software ESD: The actuator will present an alarm and perform its Software ESD action (refer to 8.5.1).

Deadband Closing (%)

This setting specifies the deadband for the analogue control signal in the close direction. The available range is 0.1% to 9.9% at 0.1% increments.

Deadband Opening (%)

This setting specifies the deadband for the analogue control signal in the open direction. The available range is 0.1% to 9.9% at 0.1% increments.

Hysteresis Closing (%)

This setting specifies the hysteresis for the analogue control signal in the close direction. The available range is 0.1% to 9.9% at 0.1% increments.

Hysteresis Opening (%)

This setting specifies the hysteresis for the analogue control signal in the open direction. The available range is 0.1% to 9.9% at 0.1% increments.

Minimum Percentage Demand (%)

The minimum demand required through the analogue input before the actuator will move away from the closed limit. The available range is 0% to 9.9% at 0.1% increments.

8.6.2 Flow Characterisation

Flow Characterisation Enabled

This enables or disables flow characterisation. The analogue input for the SI Pro can be characterised to suit the valve type. For example, equal percentage flow can be configured for the analogue input.

Demand input to position at (0% - 100%)

Each setting relates to an actuator position, every 5% across the full range of travel. The editable setting value relates to a percentage of the analogue signal span (0% is 4mA or 0Vdc, 100% is 20mA or 10Vdc).

8.7 Interrupter Timer

The Interrupter Timer is designed to increase the valve operating time by periodically inhibiting movement of the unit. This can be used to reduce the effects of hydraulic shock "water hammer" in the process pipeline.

Interrupter Timer

Interrupter Timer		
Interrupter Timer	◉ Disabled	○ Enabled
Interrupter Timer Direction	◉ Closing	○ Opening
Interrupter Timer Start (%)	⊖ ▯—————————	⊕ 1
Interrupter Timer Stop (%)	⊖ ▯—————————	⊕ 1
Interrupter Timer Interval	◉ Seconds	○ Milliseconds
Interrupter Timer On Time	⊖ ————▮————	⊕ 50
Interrupter Timer Off Time	⊖ ————▮————	⊕ 50
Interrupter Timer with ESD Enabled	◉ No	○ Yes

8.7.1 Interrupter Timer
Enable or disable the Interrupter Timer function.

8.7.2 Interrupter Timer Direction
This setting dictates which direction the Interrupter Timer will function.
Closing: The Interrupter Timer will only be active in the close direction.
Opening: The Interrupter Timer will only be active in the open direction.

8.7.3 Interrupter Timer Start (%)
Specify the valve position that timed operation will begin, the available range is 0% to 100% at 1% increments.

8.7.4 Interrupter Timer Stop (%)
Specify the valve position that timed operation will stop, the available range is 0% to 100% at 1% increments.

8.7.5 Interrupter Timer Interval
Specify the setting units for the Interrupter Timer on and off times. The available options are:
Seconds: The values associated to 8.7.6 and 8.7.7 will be in seconds.
Milliseconds: The values associated to 8.7.6 and 8.7.7 will be in milliseconds.

8.7.6 Interrupter Timer On Time
The set time for the movement period during timed operation. Configurable from 1 to 99.

8.7.7 Interrupter Timer Off Time
The set time for the inhibited period during timed operation. Configurable from 1 to 99.

8.7.8 Interrupter Timer with ESD Enabled
This setting will enable or disable the Interrupter Timer during an ESD action.
No: The ESD action will override the Interrupter Timer and operate at full actuator speed.
Yes: The ESD action will operate with the Interrupter Timer settings inhibiting movement.

8.8 Actuator Statistics

Actuator Statistics

Actuator Statistics	
Number of Times Open Limit Reached	0
Number of Times Close Limit Reached	0
Time Spent Moving Open (sec)	8
Time Spent Moving Closed (sec)	11
Number of ESD Events	0
Number of Motor Starts	0
Number of Accumulator Recharges	0

8.8.1 Number of Times Open Limit Reached
For indication only, shows the number of times the actuator has reached its open limit.

8.8.2 Number of Times Close Limit Reached
For indication only, shows the number of times the actuator has reached its closed limit.

8.8.3 Time Spent Moving Open (sec)
For indication only, shows the time the actuator has spent moving in the open direction.

8.8.4 Time Spent Moving Closed (sec)
For indication only, shows the time the actuator has spent moving in the closed direction.

8.8.5 Number of ESD Events
For indication only, shows the number of ESD events that have occurred.

8.8.6 Number of Motor Starts
For indication only, shows the number of motor starts experienced by the actuator.

8.8.7 Number of Accumulator Recharges
For indication only, shows the number of times the accumulator has been recharged.

9.0 Bluetooth Setting Tool Screens

9.1 BTST Information

9.1.1 Firmware Version
9.1.2 Battery Status (mV)
9.1.3 Number of Files
9.1.4 Free Space on the BTST (Bytes)
9.1.5 Flash Memory Size on BTST (Bytes)

9.2 CVA

9.3 IQ2

9.4 EHP

9.5 IQ3

9.6 SIP

9.7 Missions

9.7.1 Create Missions
9.7.2 Custom Mission
9.7.3 Review/Edit Mission
9.7.4 Delete Mission
9.7.5 Delete All Missions
9.7.6 Format BST

To connect to the *Bluetooth* Setting Tool Pro please refer to section 4.3 of this manual.

9.1 BTST Information

This screen is found by clicking on the *Bluetooth* Setting Tool in Insight 2.

9.1.1 Firmware Version

Shows the firmware version of the connected *Bluetooth* Setting Tool.

9.1.2 Battery Status (mV)

Shows the battery status of the connected *Bluetooth* Setting Tool.

9.1.3 Number of Files

Shows the number of files stored on the *Bluetooth* Setting Tool. This includes configuration, data log and mission files but excludes any system files used for *Bluetooth* communication.

9.1.4 Free Space on the BTST (Bytes)

Shows the remaining space left on the *Bluetooth* Setting Tool.

9.1.5 Flash Memory size on BTST (Bytes)

Shows the capacity of the *Bluetooth* Setting Tool.

9.2 CVA

This is where configuration and data log files for CVA actuators are stored. They are stored under their individual serial numbers. Double clicking a serial number will open the stored configuration file and associated data log. For information on all CVA Screen see section 5.0 CVA and CVA Quarter Turn Screens.

9.3 IQ2

This feature is currently unavailable but will be introduced in a future version of Insight 2. Support for our IQ2 range of actuators is through the first iteration of Insight.

9.4 EHP

This is where configuration and data log files for EH Pro Actuators are stored. They are stored under their individual serial numbers. Double clicking a serial number will open the stored configuration file and associated data log. For information on all EH Pro Screens see section 7.0 EH Pro and SI Pro Screens.

9.5 IQ3

This is where configuration and data log files for IQ3 actuators are stored. They are stored under their individual serial numbers. Double clicking a serial number will open the stored configuration file and associated data log. For information on all IQ3 Screens see section 6.0 – IQ3 Screens.

9.6 SIP

This is where configuration and data log files for SI Pro Actuators are stored. They are stored under their individual serial numbers. Double clicking a serial number will open the stored configuration file and associated data log. For information on all SI Pro Screens see section 7.0 EH Pro and SI Pro Screens.
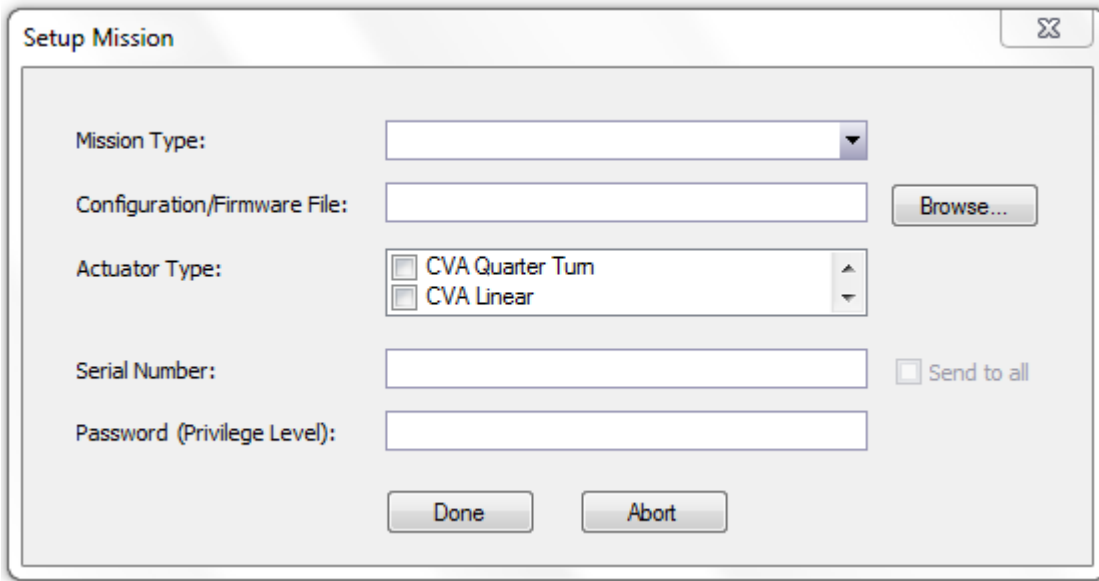
9.7 Missions

A mission is a defined set of instructions programmed to perform a variety of tasks when communicating with an actuator. Missions are used to send and receive actuator configuration files, upload firmware and collect data log files.

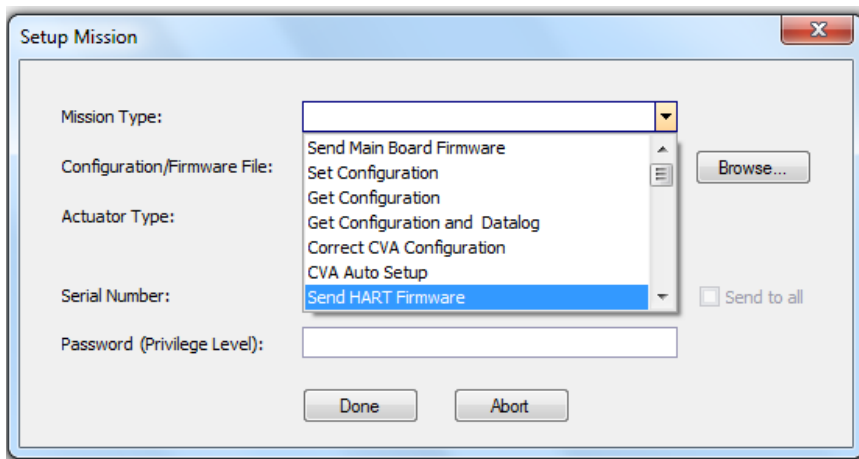### 9.7.1 Create Missions

To create a mission, right click on the missions menu under *Bluetooth* Setting Tool.
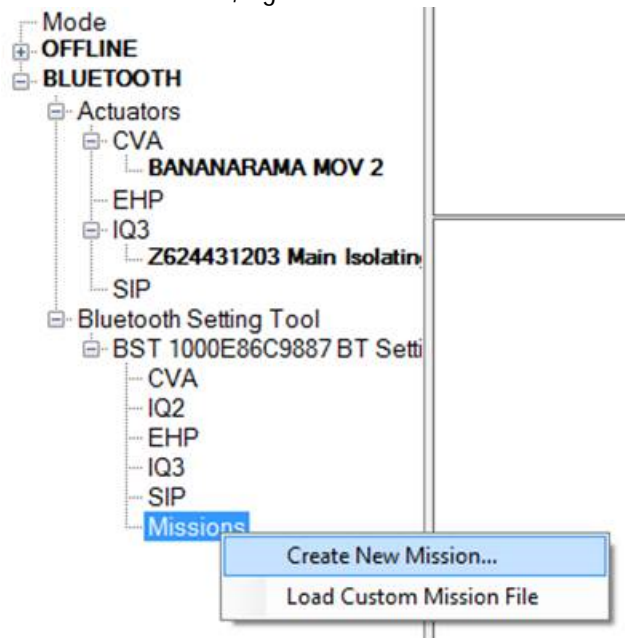
From here the Setup Mission screen will appear and you can start to create your mission.

Here you can select the mission type from the drop down menu.

For Missions which upload firmware or configuration files, the browse button can be used to find the file necessary for the upload. Select the appropriate actuator type from the list as shown below.
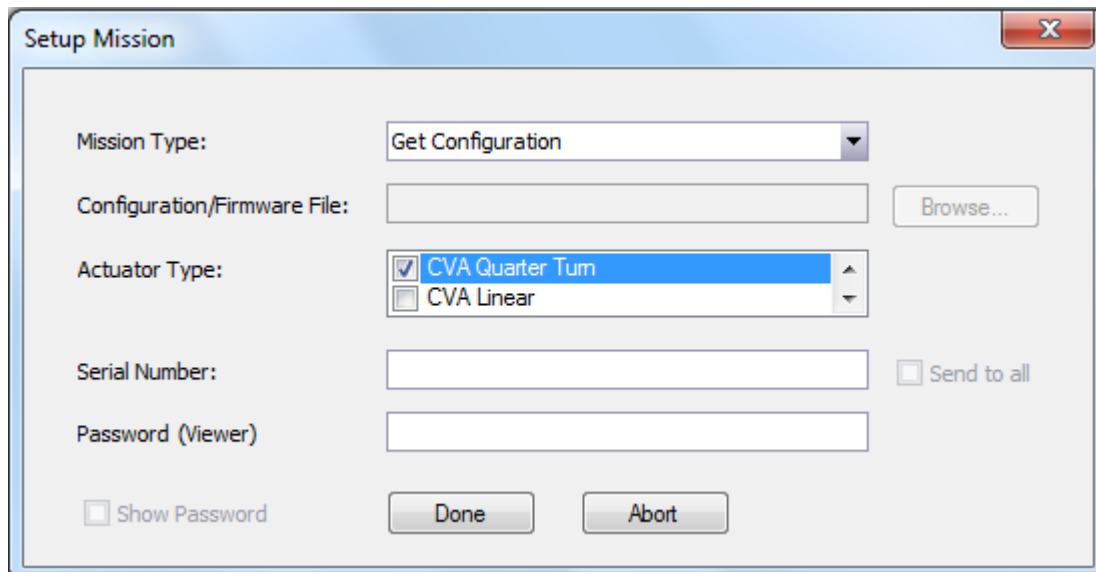
If the mission is intended for a specific actuator, the serial number can be entered in the Serial Number field. If the connected actuator does not match the entered serial number then the mission will be skipped. If the mission is intended for all actuators that satisfy the actuator type criteria, select "Send to All" on the right hand side of the Serial Number field.
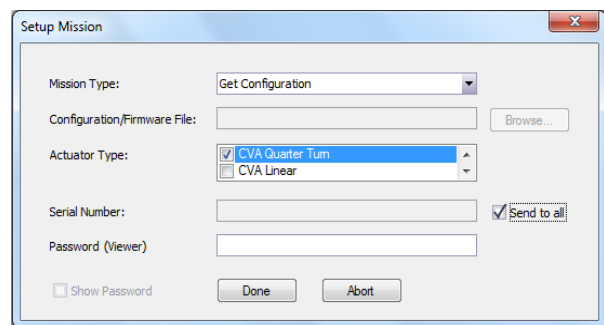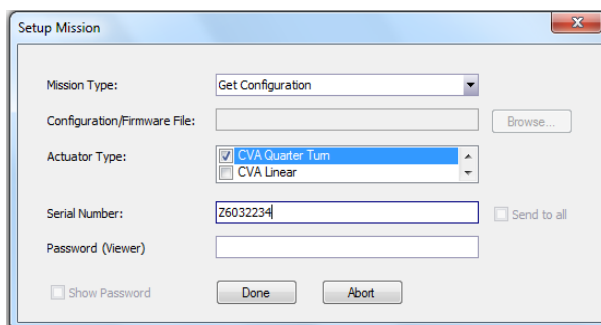
Depending upon the type of mission, Insight 2 will require you to input the corresponding actuator privilege level password. The required privilege level will be shown in brackets.

Note: If the wrong password is entered, the mission will still write to the setting tool however it will fail when you attempt to run it once connected to an actuator.
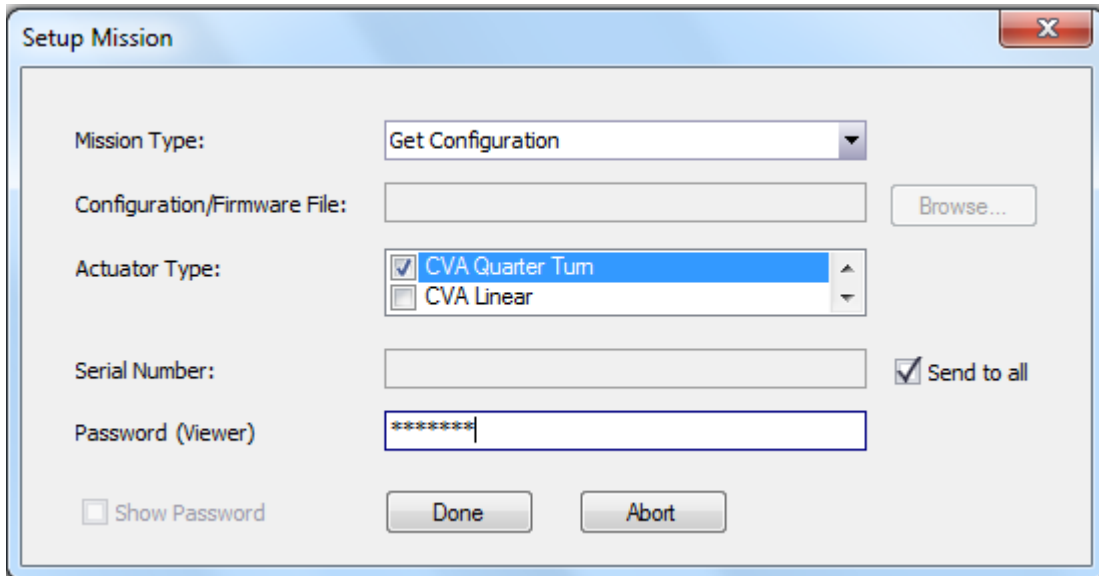
When all the mission details are complete, select "Done" and wait for it to be uploaded to the setting tool.

9.7.2 Custom Mission

Custom Missions can be used to configure more complicated settings in a Rotork actuator.
To add a custom mission file to the *Bluetooth* setting tool right click on the Missions menu and select Load Custom Mission File. The window below will appear allowing the user to browse for the custom mission file they wish to load.
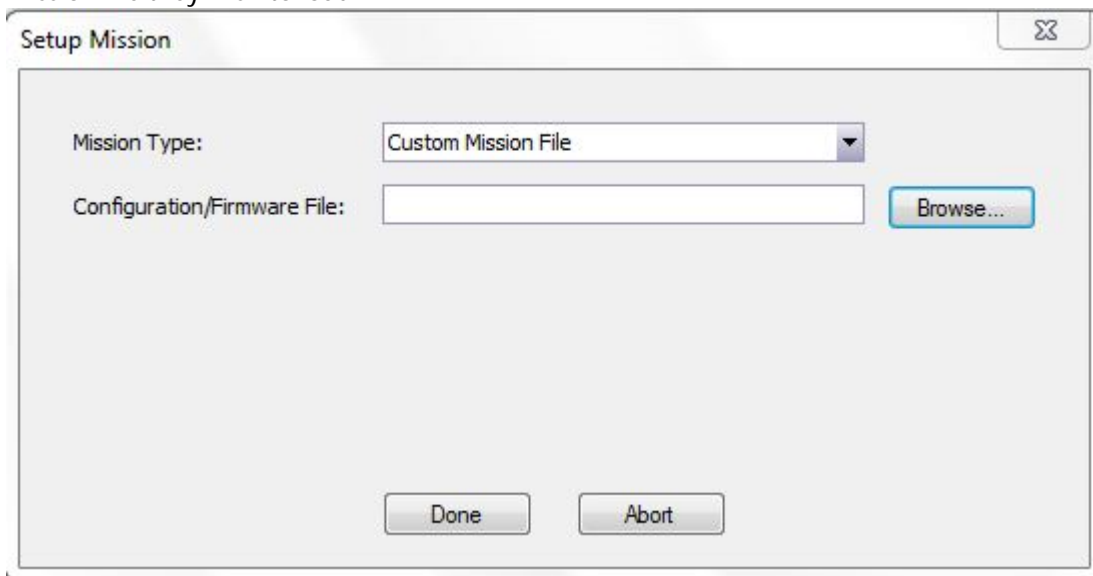

Alternatively create a new mission and select Custom Mission File from the drop down mission type menu or right click the setting tool name and select "LoadMissionFile".

9.7.3 Review/Edit Mission

To review/edit a mission on the *Bluetooth* setting tool the user must right click on the mission they wish to edit and select the Review/Edit Mission option from the drop down menu.
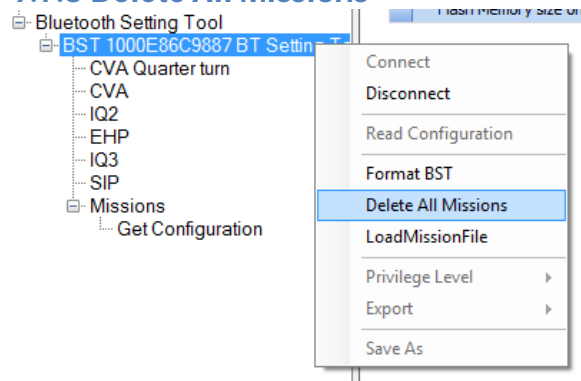
This will bring up the screen below and allow the user to change all the mission settings.
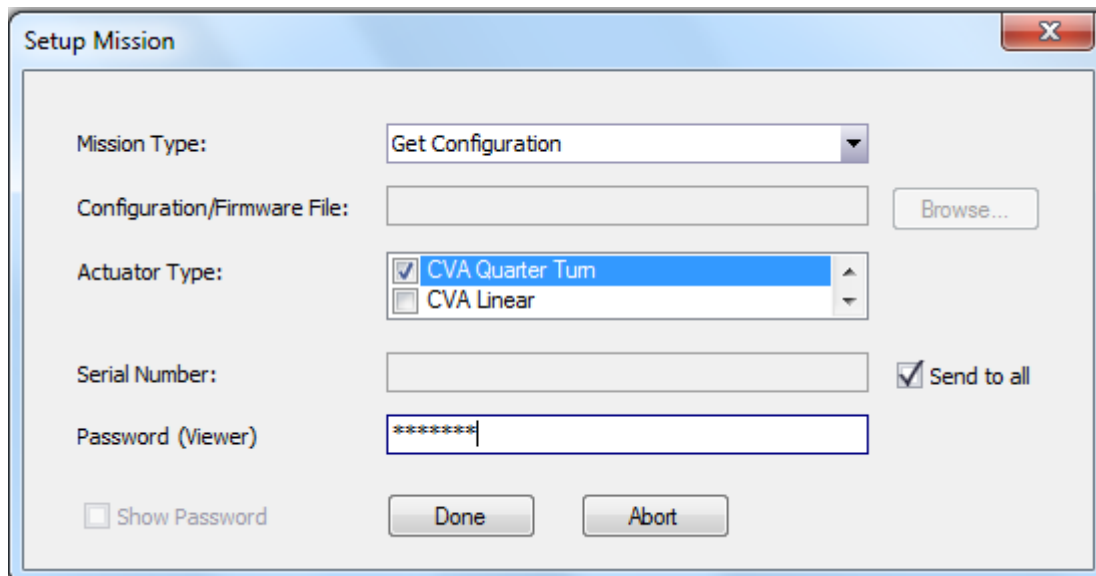

9.7.4 Delete Mission

To remove a mission from the setting tool, just right click on the mission and click Delete Mission.

9.7.5 Delete All Missions

To delete all missions currently present on the *Bluetooth* Setting Tool, right click the setting tool tag and select Delete All Missions. A confirmation window will appear before you can continue. This function will only delete mission files. Any configuration or data log files currently held in memory will remain on the tool.

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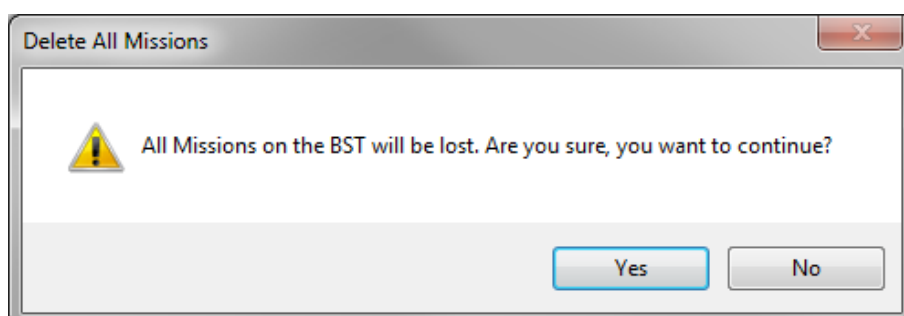
9.7.6 Format BST

To format the *Bluetooth* Setting Tool Pro to the factory default state, right click the setting tool name and select Format BST. Formatting the setting tool will remove all missions, configurations and data log files currently held in memory.