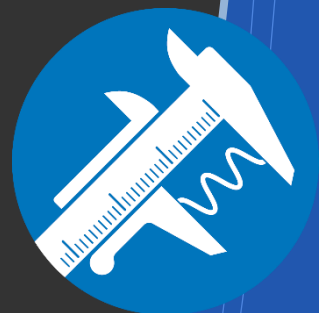




MotionBench User Guide

D-000101 Rev 02



MotionBench User Guide

Document Reference: D-000101 Rev 02

Effective: 27-03-2017

© ANCA Motion Pty. Ltd.

Table of Contents

1	Introduction.....	5
1.1	Purpose.....	5
1.2	Overview	5
2	Platform Requirements	5
2.1	PC Requirements.....	5
2.2	Supported Operating Systems	5
2.3	Supported (Tested) Network Adapters	5
2.4	Unsupported Network Adapters	5
3	Installation	5
3.1	Preparing the Network Connection	6
3.2	Installing the ANCA MotionBench	7
4	Communication with a Drive	9
4.1	Connecting to a Drive.....	9
4.2	Monitoring a Connection	11
4.3	Configure Motor Settings.....	12
5	Tuning Your System.....	13
5.1	Current and Velocity Controller Tuning	13
5.2	Tuning the Velocity Loop.....	14
5.3	Tuning the Current Loop	14
5.4	State Feedback Configuration Page	15
6	Diagnostic	16
6.1	Position, Current and Velocity graph.....	16
6.2	Circle Graph	16
6.3	FOI algorithms.....	17
7	Configuring General Drive Settings.....	18
7.1	Inputs and Outputs	18
7.1.1	Digital Output Configuration.....	19
7.1.2	Digital Input Configuration	21
7.1.3	Analog IO Configuration	21
7.2	Parameter List.....	21
7.3	Scaling	22
8	Creating Motion	23
8.1	Drive Controlled Moves Table	23
8.2	Drive Controlled Stroking	24
8.3	Drive Controlled Homing	25
9	Logging Drive Signals.....	25

9.1.1	Immediate.....	25
9.1.2	Parameter controlled trigger	26
9.2	Class 1 Diagnostic	27
10	Saving Your Drive Configuration	28
11	Guided Configuration.....	29
12	General settings	30
13	Advanced Mode	31
14	Faults and Warnings	33
15	Troubleshooting	33
16	Product, Sales and Service Enquiries	34

1 Introduction

1.1 Purpose

The aim of this document is to provide the user with the required information to commission and diagnose ANCA Motion servo drives using MotionBench as well as highlight some of the features and use cases.

1.2 Overview

ANCA MotionBench is a Windows based tool that is designed to work with ANCA Motion's range of EtherCAT servo drives.

MotionBench offers an easy to use graphical interface for configuring, monitoring, and diagnosing problems with AMD2000 / AMD5000 / AMD5x servo drives.

2 Platform Requirements

MotionBench can be run on a laptop, desktop, or ANCA Motion CNC.

2.1 PC Requirements

- 1GB Memory (minimum)
- 30MB Free Disk Space (minimum)
- 1280 x 960 Screen Resolution (recommended)
- An unused network adapter
- Microsoft .Net Framework 4.0
- Supported Operating System
- Supported Network Adapter

2.2 Supported Operating Systems

- Microsoft Windows XP SP2
- Microsoft Windows Vista / 7
- Microsoft Windows 8 / 8.1

2.3 Supported (Tested) Network Adapters

- Intel 82577LM Gigabit
- Broadcom NetXtream 57xx Gigabit
- Broadcom 57765-B0 PCI
- Marvell Yukon 88E8053 Gigabit
- ASIX AX88772A (USB2.0 to Ethernet dongle)
- Realtek RTL8139-810X

2.4 Unsupported Network Adapters

- Realtek PCIe GBE Family Controller
- Realtek PCIe FE Family Controller

3 Installation

WARNING! To connect an ANCA Motion drive to a Laptop or PC requires alteration of the Ethernet adapter configuration. This may affect the computer's office Ethernet connection. Installing a second Ethernet adaptor which is dedicated for use with the drive will prevent

this possible limitation. If you are uncomfortable about making changes to your Ethernet adapter configuration, or do not have the required user permission levels, then please consult with your IT administrator.

3.1 Preparing the Network Connection

1. Open Local Area Connection Properties for the network adapter to be connected to the drive(s).

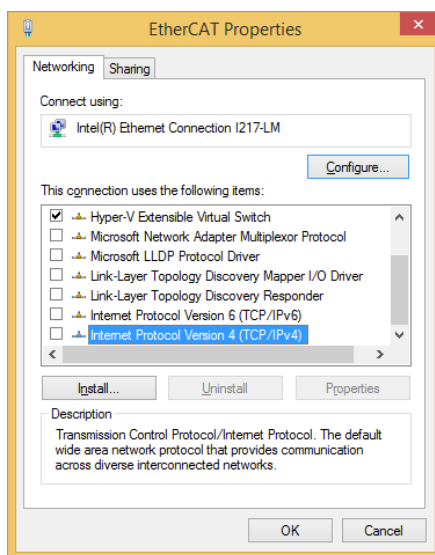


Figure 1

2. Double-click Internet Protocol Version 4 (TCP/IPv4) to open the property window for this protocol
3. Check Use the following IP address and enter 192.168.100.1 for the IP address and 255.255.0.0 for the subnet mask.
- 4.

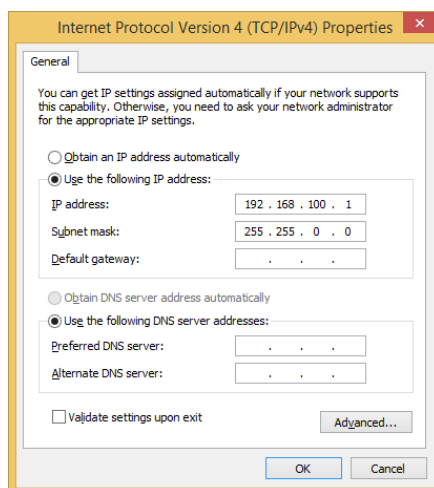


Figure 2

5. Click OK, and close the Local Area Connection Properties window

3.2 Installing the ANCA MotionBench

This section will guide you through the process to install ANCA MotionBench on your PC.

1. Double-click on the ANCA MotionBench installer .exe file. Latest installer file can be downloaded from the ANCA Motion website, under Product → AMD2000 → Resources.
2. You will then be presented with the welcome screen and *End-User License Agreement* as shown below shown below:

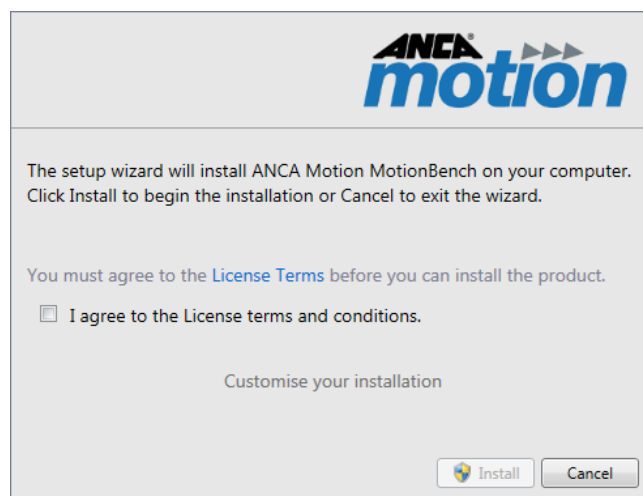


Figure 3

3. Please read the License Agreement and tick the "I agree to the license terms and conditions" check box. Click Install. You may be presented with the following dialogue:

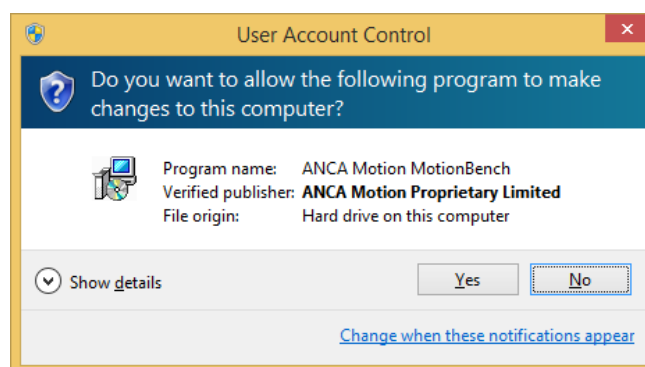


Figure 4

- Click Yes. MotionBench will then start installing on your PC. The dialogue shown below indicate the status of the installation process.

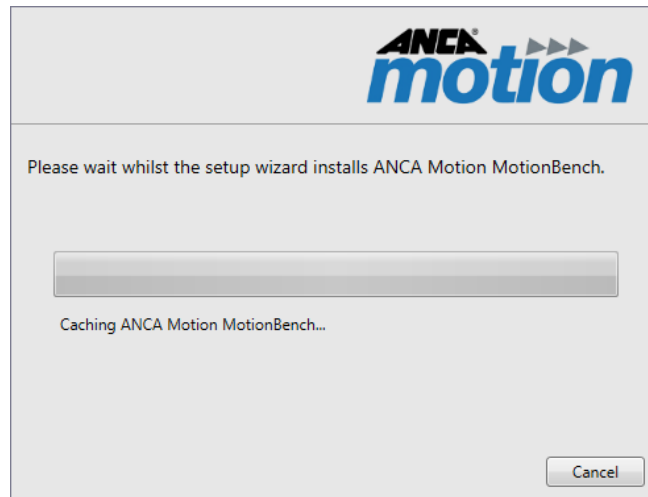


Figure 5

- When the installation process has completed the following dialogue will be shown.

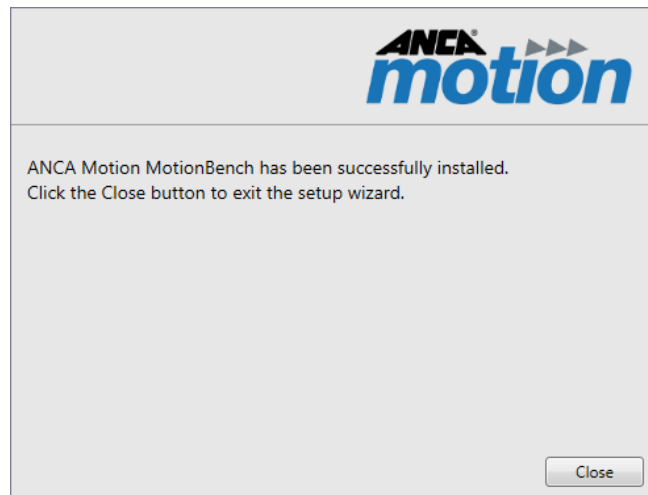


Figure 6

4 Communication with a Drive

4.1 Connecting to a Drive

MotionBench communicates with drives using EtherCAT via a standard Ethernet port. The communication with the drive is established through a Gateway module. A Gateway can either be a standard network adapter or a conduit to an external control system like AMCore see Figure 7.

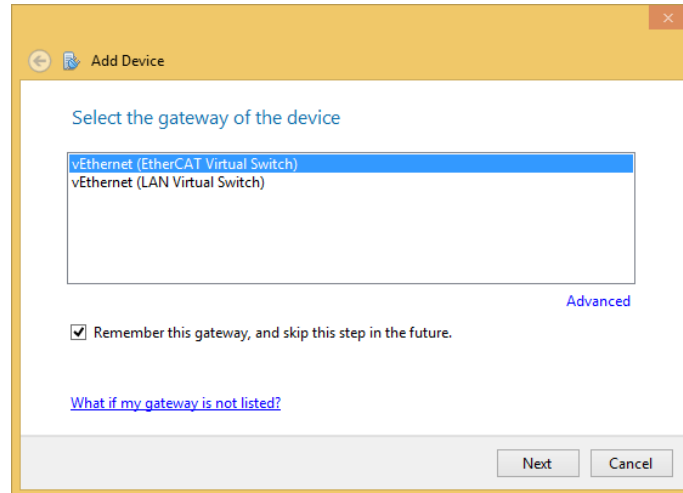


Figure 7

Note the tick box “Remember this gateway” will ensure that this gateway is used for future MotionBench session.

If no Gateway module is available for the current external control system MotionBench can connect to a drive by using a manually specified IP address see Figure 8. To manually specify an IP address select the Advanced button. If MotionBench is not using a Gateway to connect to a drive MotionBench will not be able to request control for the drive from the control system. In this case a user can only achieve partial control and some parameters will be marked as read only.

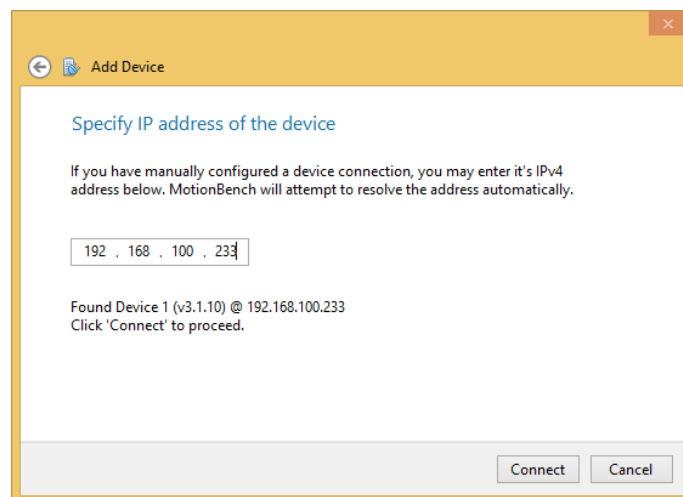


Figure 8

When a drive is physically connected (and the network adapter of the host machine is configured see [Preparing the Network Connection](#)) MotionBench will automatically detect and list all available drives in the **Add Device** wizard see Figure 9.

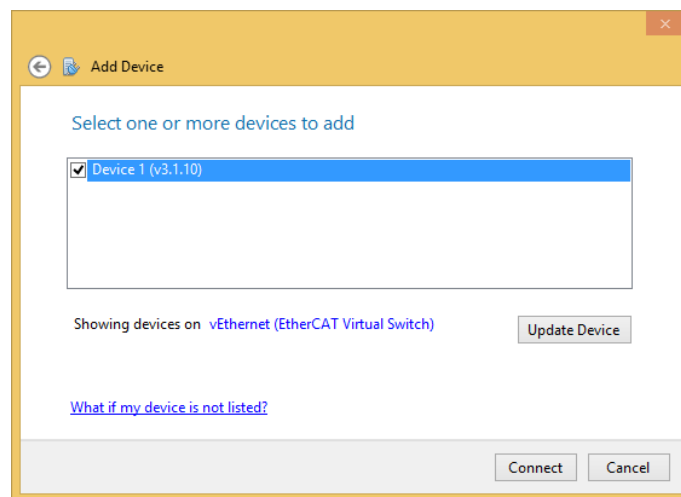


Figure 9

The version of the firmware currently installed on the drive is indicated. If required, this can be updated using the “Update Device” button.

If MotionBench cannot locate the amf-file which matches the firmware currently installed on the device the following screen is presented to allow the user to select the matching firmware.

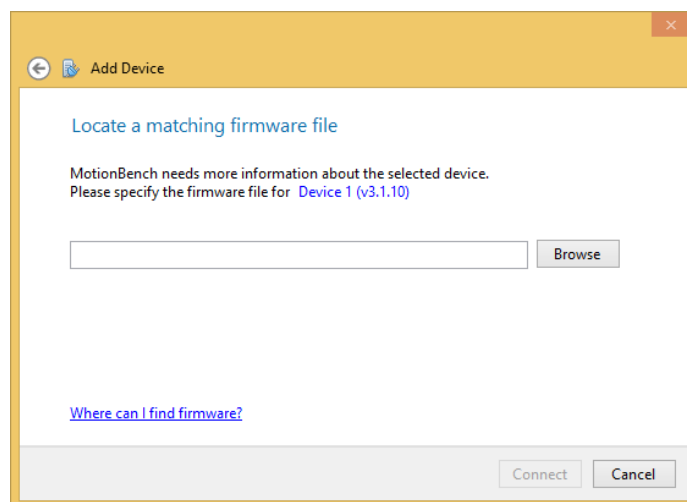


Figure 10

Finally MotionBench shows the Quick Start menu. The Quick Start menu is described elsewhere in this document.

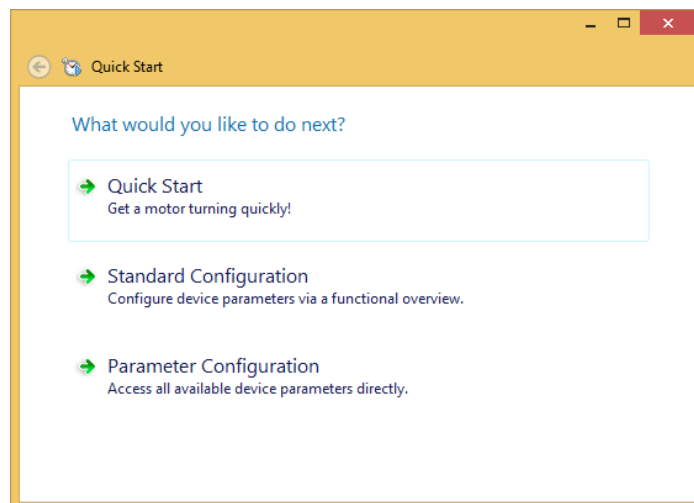


Figure 11

4.2 Monitoring a Connection

Once connected to a drive, MotionBench considers the drive either **Online** or **Offline**.

A drive is considered online if MotionBench is able to communicate with it; otherwise, it is considered offline.

The **Connection Status** screen can be accessed at any time via the following methods:

- Press the 'F10' hot-key
- Click the 'Connection Status' icon on the toolbar
- Navigate to and click the menu entry: Device > Connection Status
- Click on the connection information in the lower right corner of the status bar and select 'Open Connection Status'

The **Connection Status** screen provides the following information:

- Device - The name of the device
- Gateway - The name of the gateway through which the device is connected
- IP Address - The IP (Internet Protocol) address of the device
- Firmware Version - The current firmware version of the device
- Activity - The number of bytes sent / received to / from the device
- Duration - The duration of time that the device has been **Online**

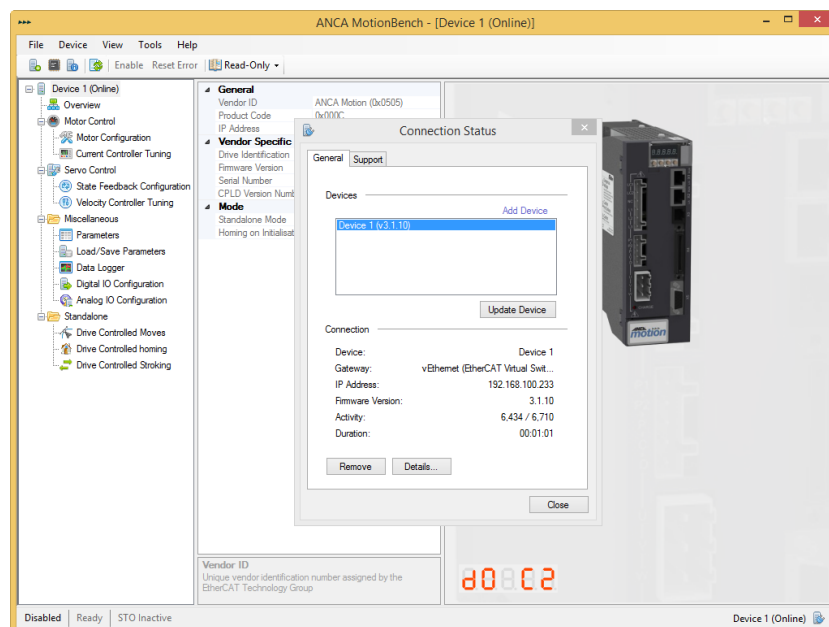


Figure 12

Before any device parameter can be modified MotionBench needs to negotiate access permission for the drive.

The following permission levels are available:

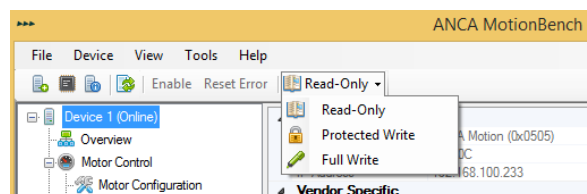


Figure 13

Level	Description
Read-Only	In Read-Only mode MotionBench is allowed to display any device parameter. Parameter modification is not allowed. This mode is used to monitor a drive.
Protected Write	In Protected Write mode MotionBench is allowed to display any parameter and modify parameters that do not interfere with a field-bus master controlling the drive.
Full Write	In Full Write mode MotionBench is allowed to display and modify any device parameter.

4.3 Configure Motor Settings

The Motor Configuration page is used to set up or confirm the parameters associated with the motor that is connected to the drive.

The Motor Configuration screen includes the following functionality:

- ANCA Motion motors which are compatible with the drive are available in the motor library
- Custom motor parameter sets can be created and added to the motor library if the connected motor is not listed.
- All motors can be imported and exported from the motor library
- Drive motor parameters are automatically detected and imported to the library if necessary

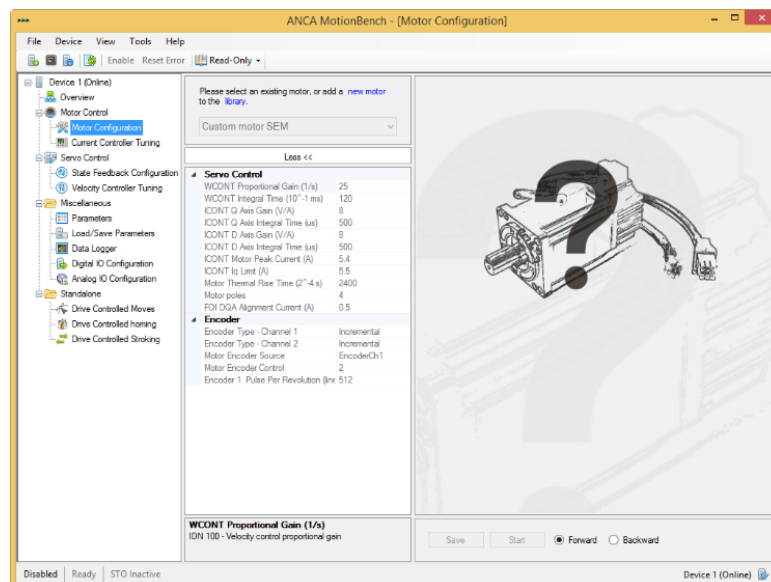
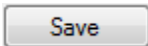




Figure 14

The following control elements are available to test and confirm correct configuration of the drive.

Action	Description
	Saves the current motor parameters to the drive. This button will be enabled when any of the motor parameters have changed.
	Allow the user to start motor movements to confirm correct motor parameters
	Controls direction of movement

5 Tuning Your System

Most servo systems require some level of tuning (setting up the desired response of the system usually with the load attached).

This can be done through several methods available within MotionBench.




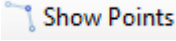
5.1 Current and Velocity Controller Tuning

Servo tuning is the process of setting the various drive parameters that are required for the drive to optimally control the servo motor for your application.

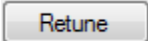

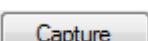

The **Current Controller Tuning** and **Velocity Controller Tuning** screens include the following functionality:

- Time and frequency domain analysis
- Chirp stimulus
- Step stimulus
- Saving captured data for offline analysis
- Trigger stimulus automatically on specified event

All tuning pages provide live graphing of relevant tuning data. The following table shows control elements that can be used to control the graphing window.

Action	Description
	Zoom in
	Zoom out
	Zooms in or out so that the entire graph is visible.
 Show Points	Toggles the visibility of data points on the graph.
View: <input type="text" value="Live"/>	<p>The view options depend on the selected tuning mode. It allow the user to select whether to display live or captured data.</p> <p>In chirp mode it also allows the user to display the tuning data in the frequency or time domain.</p>

The elements in the next table are used to control the tuning process.

Action	Description
	Retune the drive.
	Depending on the selected mode, MotionBench is preparing the drive by configuring and starting drive controlled moves or drive controlled stroking.
	Configures the drive data logger to sample data during a window stimulus input is being injected.
	Saves the captured data for offline analysis.

5.2 Tuning the Velocity Loop

This page allows the user to perform experiments to capture data that can be used to tune the velocity loop controller and torque reference filters. The page supports both chirp and step stimulus signals. The page gives direct access to the stimulus configuration parameters, the tuning parameters and the retune procedure command. With the step stimulus, tuning can be conducted in real-time. Figure 16 shows the time domain data from a velocity chirp stimulus signal (red) and the response (green). Figure 17 shows the data from Figure 16 converted into a Bode plot (frequency response). From this data the user can measure velocity loop bandwidth and identify mechanical resonance.

Figure 15 shows the time domain data from a velocity step stimulus signal, the response and the motor current command updating in real-time. With the data updating in real-time, the user can immediately see the result of changes to the tuning parameters.

For more information about the velocity control tuning process please refer to the drive configuration guide.

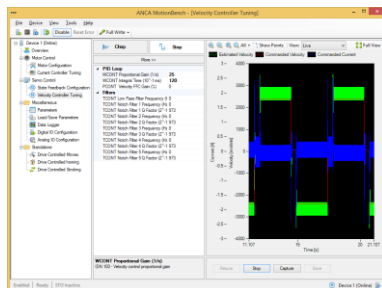


Figure 15

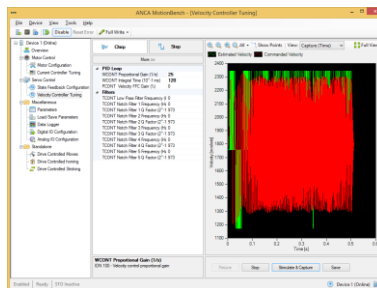


Figure 16

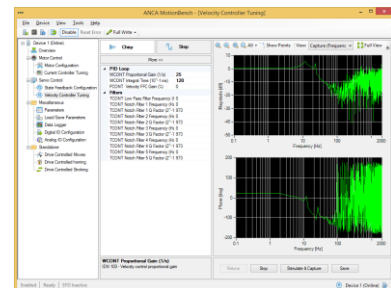


Figure 17

5.3 Tuning the Current Loop

Similar to the Velocity Controller tuning page the Current Controller tuning page allows the user to configure the parameters that governs the current control loop quickly and easily. The physical parameters affecting current loop tuning are primarily the resistance and inductance of the winding circuits. These parameters are usually fixed for any particular motor model, thus the current loop tuning is determined primarily by the motor model. See Configure Motor Settings in this document for how to set up or confirm the parameters associated with a motor.

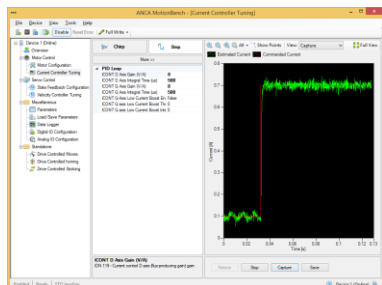


Figure 18

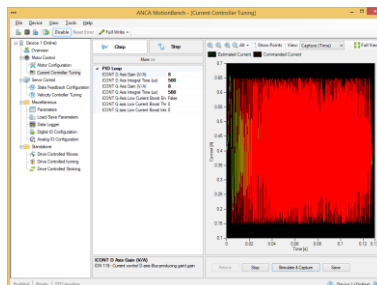


Figure 19

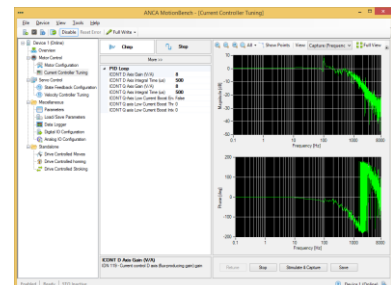


Figure 20

5.4 State Feedback Configuration Page

This page allows the user to configure the parameters related to mechanical configuration (gear-box ratio, ball screw feed constant, etc.), and the encoder configuration. It also gives real-time feedback of the measured position and velocity of the axis. Figure 21 shows the interface.

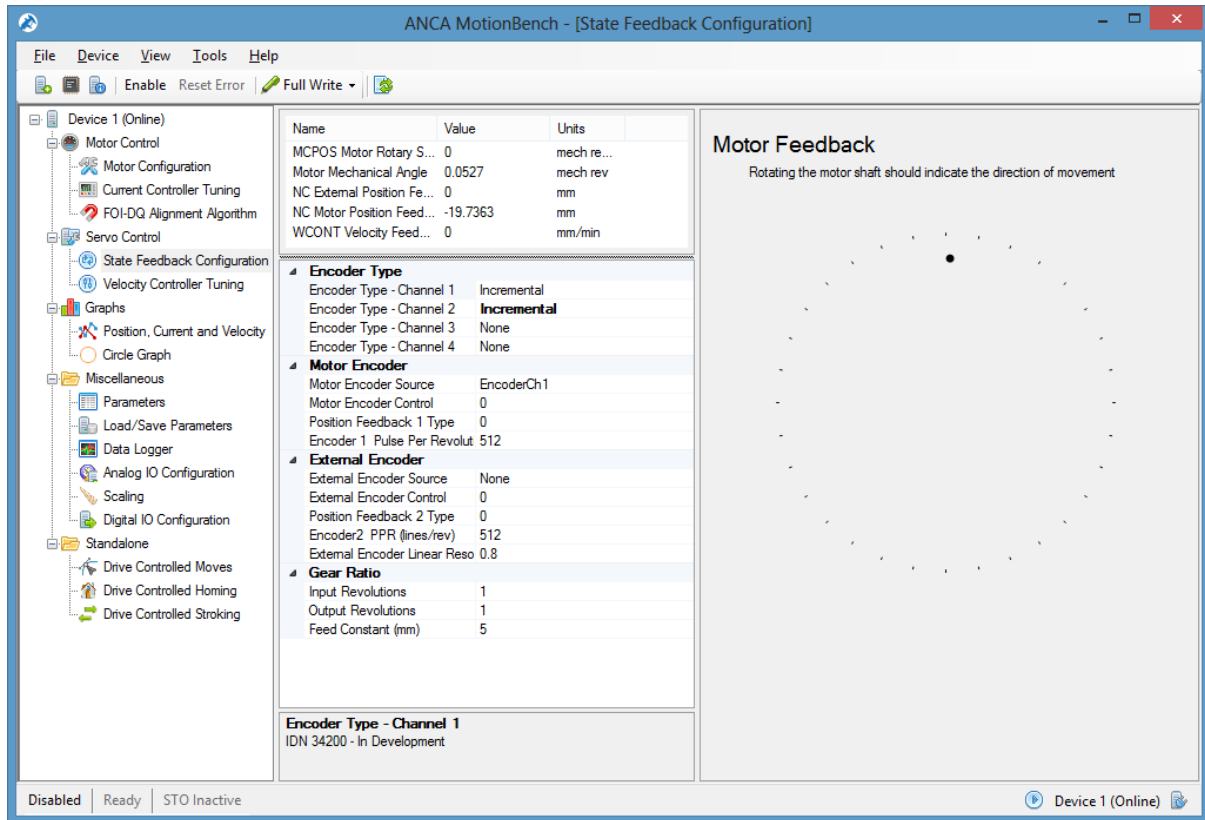


Figure 21

6 Diagnostic

MotionBench provides various pages to monitor and to visualize feedback from the drive. These pages are to aid the engineer to commission a system or to diagnose faults in the feedback signals

6.1 Position, Current and Velocity graph

This page allows a user to investigate whether one of the control loops is experiencing saturation or is not performing normally.

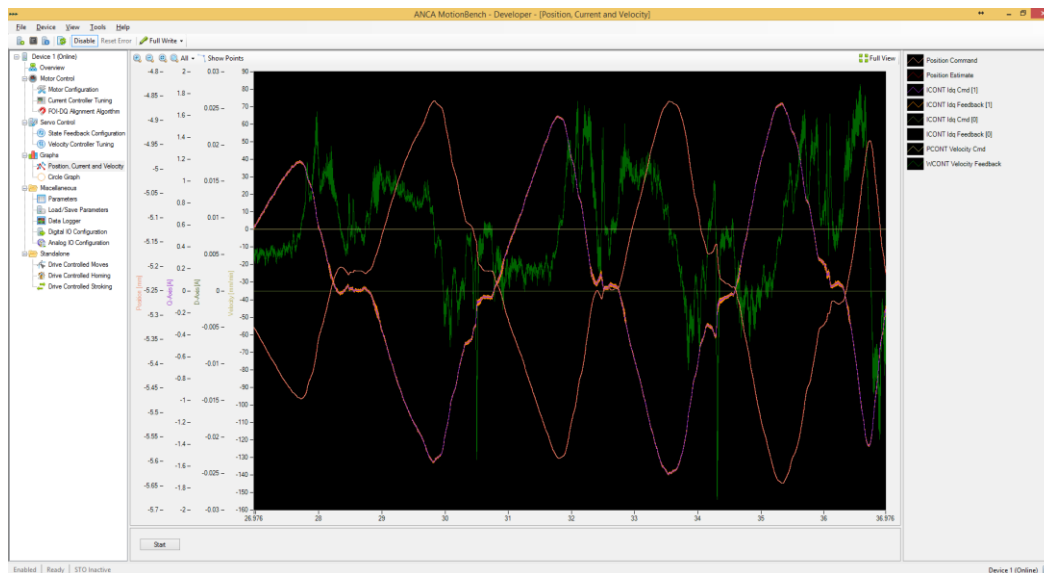


Figure 22

6.2 Circle Graph

The circle graph page allows a user to diagnose a fault with an analogue encoder. Figure 23 shows the circle plot for an analogue encoder. The red and yellow lines show graphically the location of the encoder amplitude minimum and maximum thresholds. The purple line is the raw encoder signals. The green line is the compensated encoder signals after offset and gain correction has been applied.

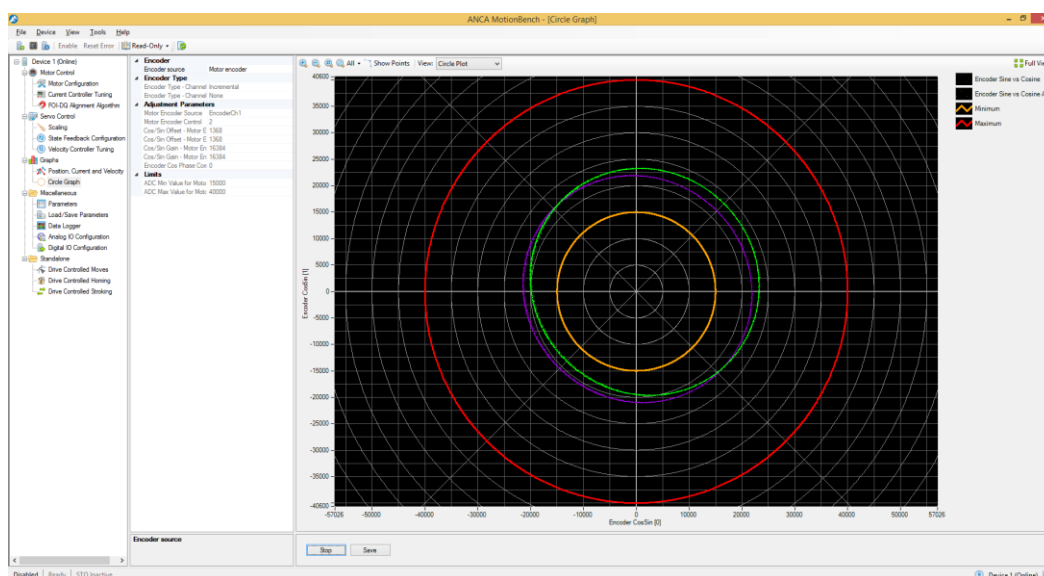

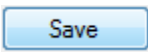


Figure 23 - Circle plot page

Action	Description
	Pressing the Start button will start capturing circle plot data and will stop once the user presses the button again.
	Saves the captured data for offline analysis.

6.3 FOI algorithms

This page allows the user to diagnosis issues with the Field Orientation initialisation (FOI) algorithm known as DQ Alignment (DQA). This algorithm is capable of detecting a large number of configuration / hardware based issues, specifically:

- incorrect motor poles configured
- incorrect motor phase sequence
- incorrect motor encoder line count configured
- incorrect motor encoder polarity configured
- the configured alignment current is too low to drive the motor
- motor/axis is jammed
- poorly tuned current loop
- DC bus voltage too low
- motor armature cable is disconnected
- STO is active

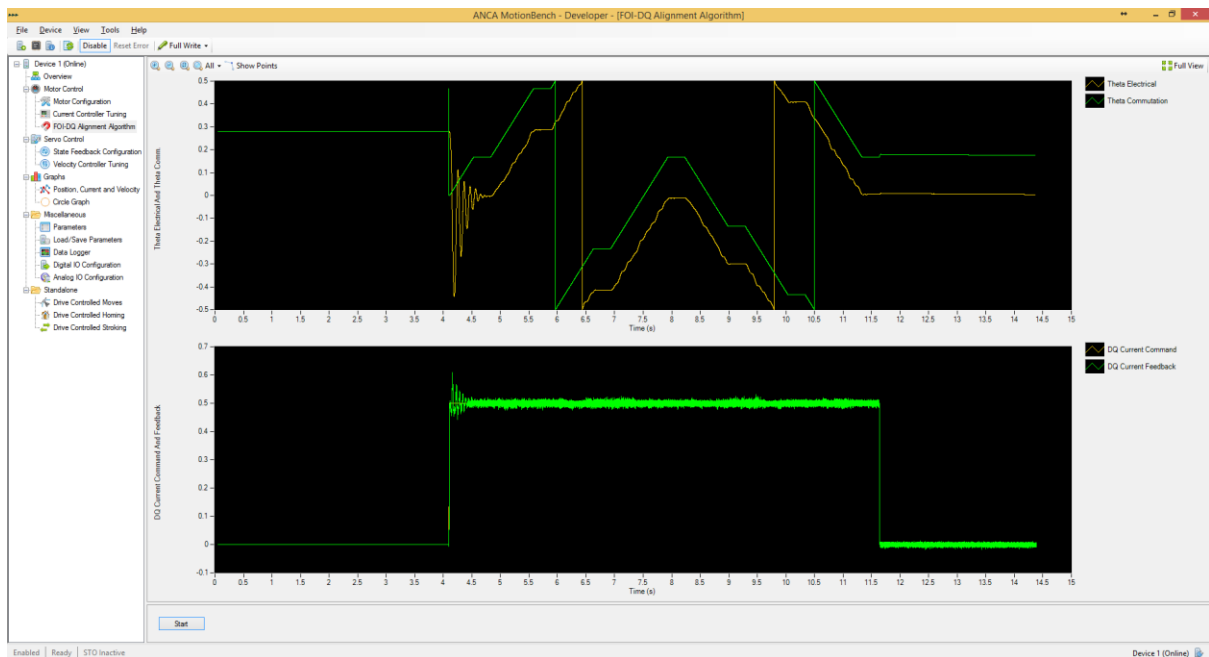


Figure 24

7 Configuring General Drive Settings

7.1 Inputs and Outputs

Some ANCA Motion drives have programmable inputs and outputs that a user can use to initiate motion, or trigger/monitor other actions.

The **Digital IO Configuration** and **Analogue IO Configuration** screens include the following functionality:

- Live update and display of analogue/digital inputs
- Adjust digital outputs for hardware controlled and general purpose configuration
- Intuitive selection of SoE IDNs for general purpose configuration
- Map digital inputs to drive controlled functions
- Dead zone configuration for analogue inputs

7.1.1 Digital Output Configuration

The Digital Output Configuration allows the user to specify how the drive is controlling the digital outputs.

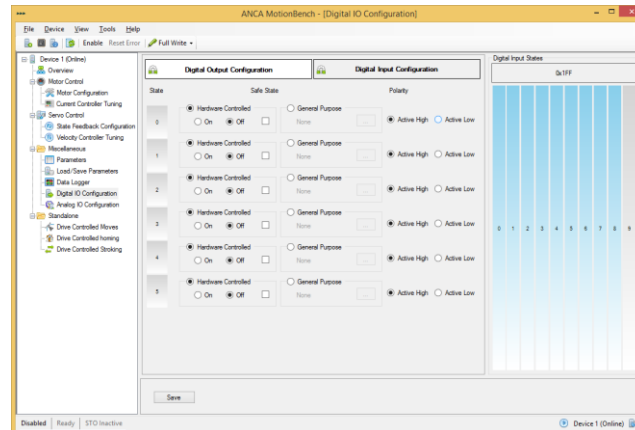
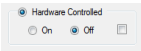
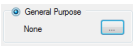



Figure 25

If the selected output is in Hardware controlled mode  a user can use the On/Off button to toggle the physical output. The Safe State check box specifies the safe state values of digital outputs directly at the hardware level.

In General Purpose mode  any drive parameter can be selected to trigger a digital output. Pressing the ellipsis button  brings up the following dialog to specify the parameter from which the value will be obtained for constructing the digital output.

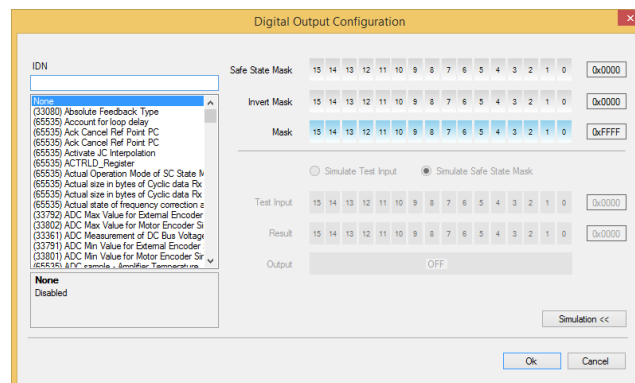


Figure 26

The **Safe State Mask** specifies the default user-defined digital output safe state. This is the value used when the drive enters the EtherCAT state SAFEOP as a result of abnormal conditions.

The **Invert Mask** specifies whether a selected bit of the input value needs to be inverted before the digital output is constructed. The **Mask** is used to mask out the required bits from the parameters value.

The simulation section of the dialog allows a user to test out the required settings before applying the parameter.

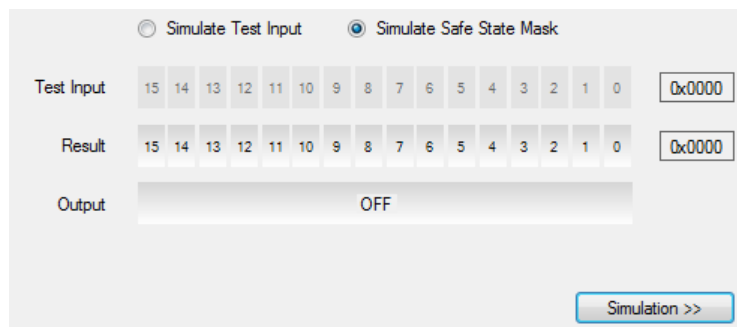
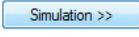


Figure 27

The simulation is enabled or disabled by pressing the  button.

Example:

Let's assume the Master Control Word has been selected to control a digital output. When the drive is enabled the user also want to activate a digital output. Drive Enable is bit 14 of the Master Control Word. Any other bit of the control word should be ignored. The following image shows how the Mask can be configured to only trigger when bit 14 of the Master Control Word is set. When you toggle Test Input 14 the Output should follow. Toggling any other bit in the Test Input should not affect the state of the Output.

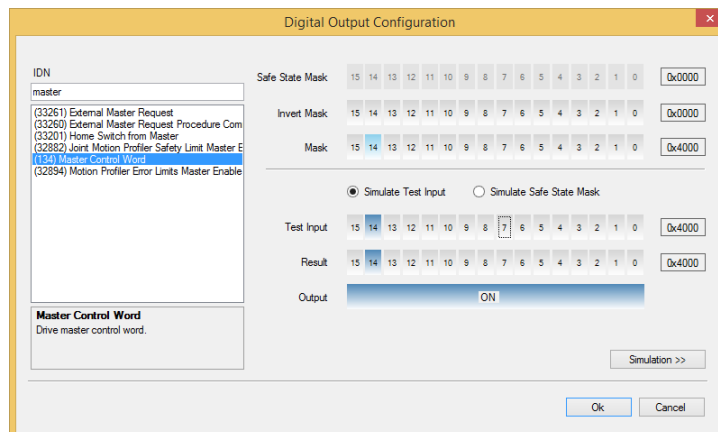


Figure 28

To define the safe state for the digital output specify the bit in the Safe State Mask that will set the Output state. See following image.

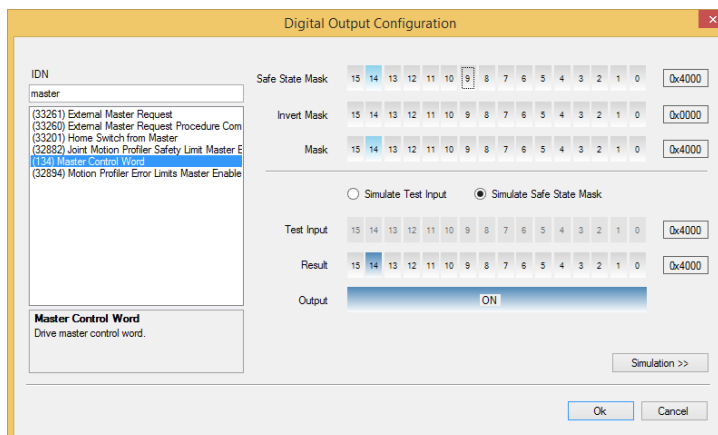


Figure 29

Parameters with a grey background are read-only and cannot be modified. ANCA Motion drives have a vast amount of configuration parameters that can be used to optimize the drive for a particular application. To help find a specific parameter this page provides a filter function that allows the user to search and filter for any information listed in the table. The table rows can be sorted by clicking any of the column headers.

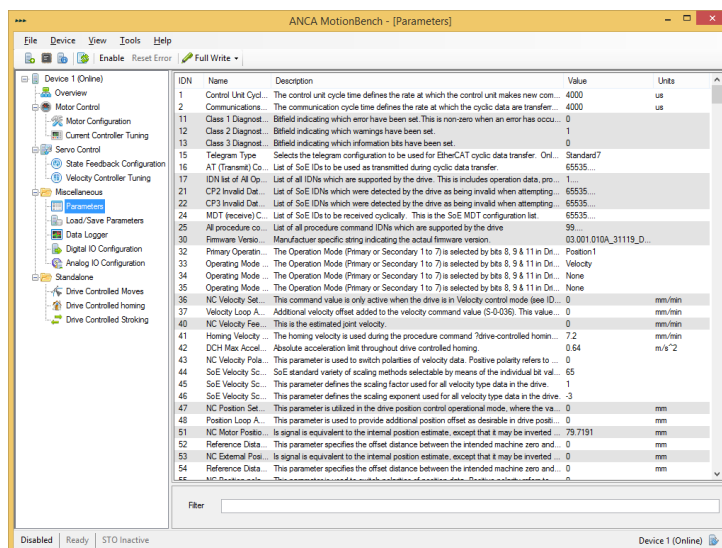


Figure 32

7.3 Scaling

On the scaling configuration page a user can configure the drive to convert data into units that are more meaningful to the application. For more information about the scaling related parameters refer to the drive configuration guide.

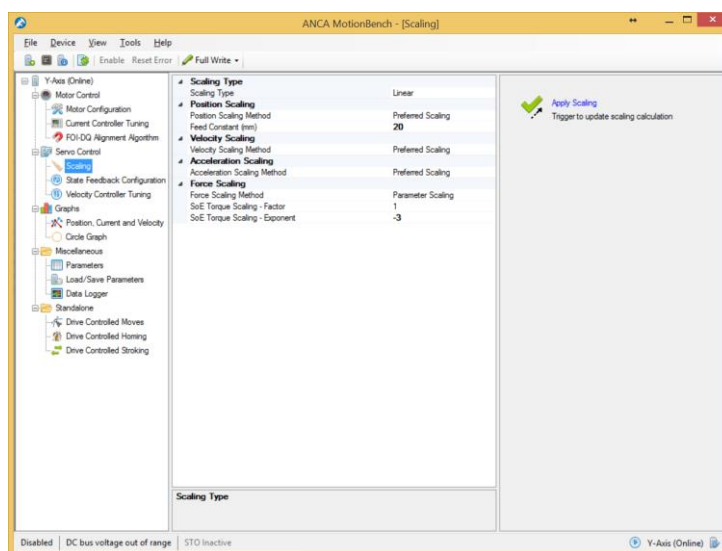


Figure 33 Scaling Configuration

Modifying the scaling parameters does not take immediate effect. To instruct the drive to apply the new scaling parameters a user need to select the Apply Scaling button.

8 Creating Motion

8.1 Drive Controlled Moves Table

The **Drive Controlled Moves** screen in MotionBench allows you to easily enter and manipulate moves in a tabular format.

With this table, you can enter specific moves and edit moves.

The data table you build remains in MotionBench until you load the moves into the drive.

Once the moves are loaded, you can execute the moves from a specified **Start Index** and see the current move highlighted live.

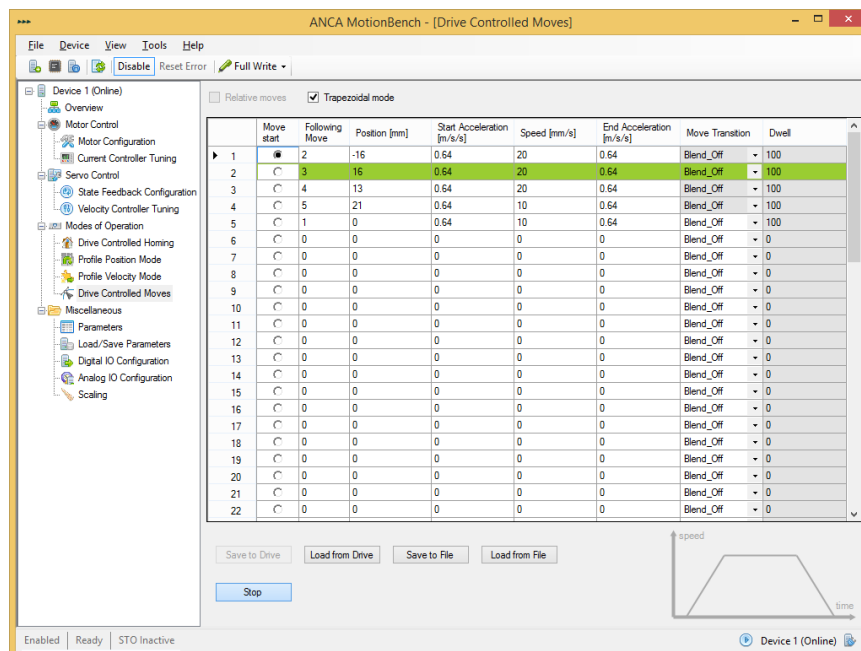
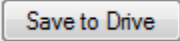

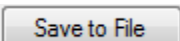
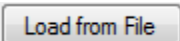
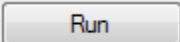


Figure 34

The data table includes the following editable fields


Table Column	Description
Move start	First segment of drive controlled move to be executed.
Following Move	Next move for a drive controlled move sequence.
Position	Drive controlled move segment Target Position.
Start Acceleration	Start acceleration limit for move segment.
Speed	Velocity limit for move segment.
End Acceleration	End acceleration limit for move segment.
Move Transition	Move transition type for move segment. Changing the move transition type is only possible if the previous and next move segment don't force a change in direction.
Dwell	Delay Time to wait before starting next move. Changing the delay time is only available if the move transition type is set to Blend_off.

The following functions are available on this page:

Action	Description
	Saves the modified parameters in the table to the drive.
	Loads drive controlled moves table with current values from the drive. This action overwrites the current content of the table.
	Saves the parameter information in the table to a file.
	Loads and overrides the drive controlled moves table with values from selected file.
	Execute the moves from a specified Start Index .

8.2 Drive Controlled Stroking

The Drive Controlled Stroking page allows the user to configure the drive to perform cyclic moves. On this page the user can make modification to the drive parameters and observe the various feedback from the drive.

Pressing the start button  triggers the drive to perform the stroking moves and starts monitoring the feedbacks. Any changes to the drives parameters takes immediate effect. Please refer to the drives User Guide for a detailed description of the various parameters to configure Drive Controlled Stroking.

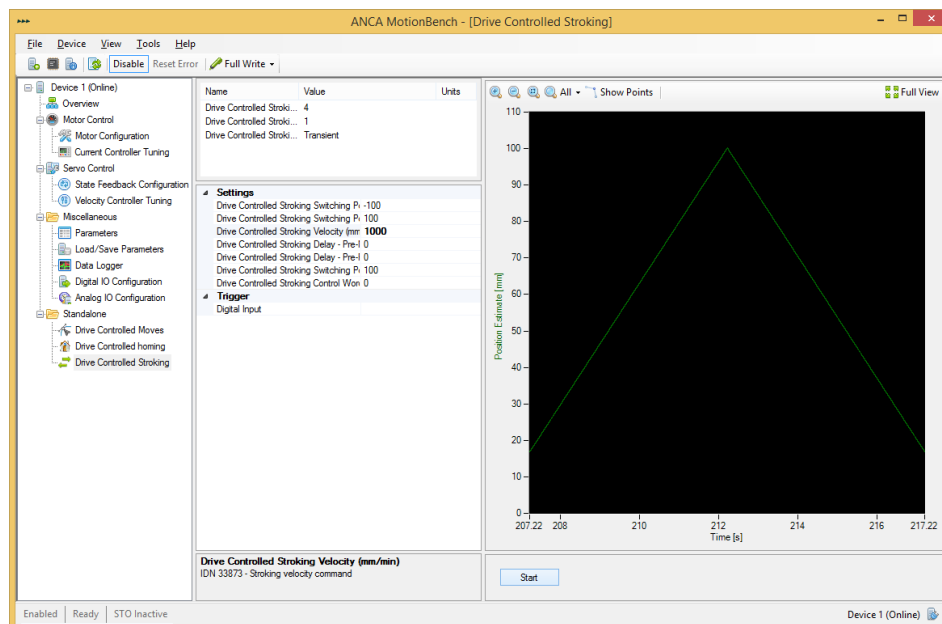



Figure 35

8.3 Drive Controlled Homing

The Drive Controlled Homing page allows the user to configure the homing routine of the drive. The homing routine can be executed by the drive in standalone operation (i.e. without an external control unit). Pressing the  button triggers the drives homing routine and starts monitoring the feedbacks. Drive-Controlled Homing is managed through a set of drive parameters which are detailed in the drives User Guide.

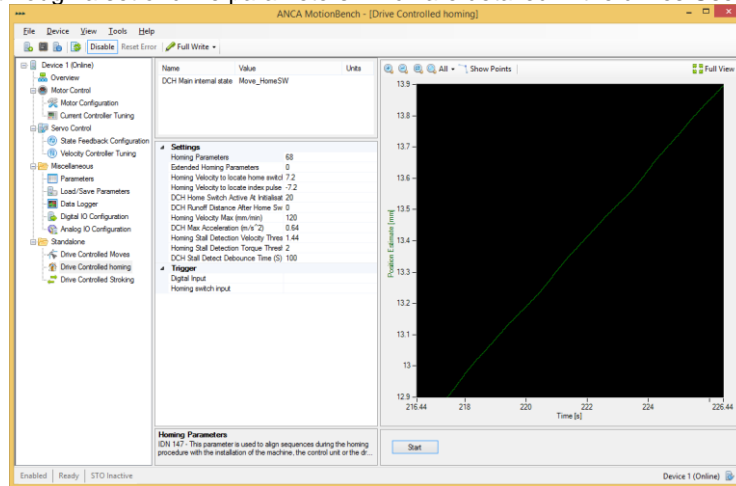


Figure 36

9 Logging Drive Signals

The **Data Logger** screen allows you to setup the drive to sample up to four different parameters from the drive, each with 2048 data points.

Three different triggers types are available to control under what conditions the data log will trigger.

- Immediate
- Parameter controlled trigger
- Class 1 Diagnostic (C1D) faults

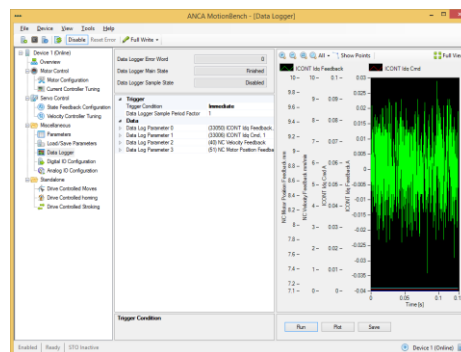



Figure 37

9.1.1 Immediate


If immediate is selected and the  button is clicked MotionBench instructs the drive to immediately start sampling the parameters and upon completion displays the captured data.

Data Logger Error Word	0
Data Logger Main State	Finished
Data Logger Sample State	Disabled
Trigger	
Trigger Condition	Immediate
Data Logger Sample Period Factor	1
Data	
▷ Data Log Parameter 0	(36) NC Velocity Setpoint Command
▷ Data Log Parameter 1	(37) Velocity Loop Additive Velocity Command
▷ Data Log Parameter 2	(40) NC Velocity Feedback
▷ Data Log Parameter 3	(51) NC Motor Position Feedback
Trigger Condition	

Figure 38

Parameter	Description
Data Logger Sample Period Factor	The data log is sampled at the rate of the motor control update, 62.5us. Sample Period Factor provides the ability to skip integer multiples of 62.5us

9.1.2 Parameter controlled trigger

If Parameter controlled trigger is selected and the  button is clicked MotionBench instructs the drive to arm the drive data logger. The drive will use the selected trigger parameter to determine when to begin finalising data logging. When MotionBench detects that the data log has been completed it will automatically display the results.

Trigger	
Trigger Condition	Parameter Controlled Trigger
Comparison Type	Greater Than
▷ Trigger Parameter	(134) Master Control Word
Data Logger Trigger Mask	15
Data Logger Trigger Value	1
Data Logger Sample Period Factor	1
Data Logger Pre-Trigger Samples	512
Data	
▷ Data Log Parameter 0	(36) NC Velocity Setpoint Command
▷ Data Log Parameter 1	(37) Velocity Loop Additive Velocity Command
▷ Data Log Parameter 2	(40) NC Velocity Feedback
▷ Data Log Parameter 3	(51) NC Motor Position Feedback

Figure 39

Parameter	Description
Trigger Parameter	Any parameter within the profile can be selected as the trigger. If the selected parameter is an array the Index field specified the array index of the parameter.

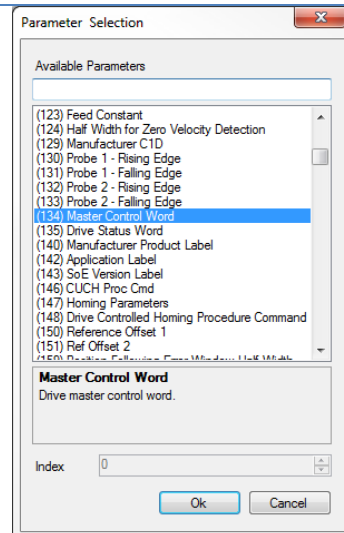


Figure 40

Data Logger Trigger Mask

This mask is applied to the value of the trigger parameter for selecting the bits to trigger off. Setting this parameter to zero disables the mask (Equivalent to a mask of 0xFFFF FFFF).

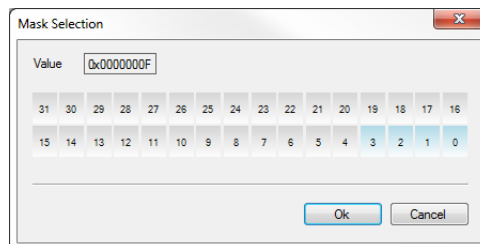


Figure 41

Data Logger Trigger Value

This is the value that the trigger parameter is compared to (with the trigger mask applied if applicable) for the data logger to trigger its completion

Data Logger Sample Period Factor

The data log is sampled at the rate of the current control update, 62.5us. Sample Period Factor provides the ability to skip integer multiples of 62.5us

Data Logger Pre-Trigger Samples

Specify the number of pre-trigger samples to log. The Pre-Trigger Samples parameter informs the drive of how many samples to keep prior to the trigger event. For instance if this value is set to 500 the buffers returned on completion of the data log will include 500 samples taken immediately before the trigger event occurred and 1548 after for a total of 2048 data points.

Comparison Type

Defines how the Data Logger Trigger Value is compared with the trigger parameter.

9.2 Class 1 Diagnostic

If Class 1 Diagnostic (C1D) Fault trigger is selected the drive will begin finalising data logging when a critical fault that disables the drive is detected. When MotionBench detects that the data log has been completed it will automatically display the results.

10 Saving Your Drive Configuration

MotionBench typically works with volatile parameters in the drive. In order to persist any configuration of the drive MotionBench offers a number of options for saving and restoring your configuration via the **Load/Save Parameters** screen.

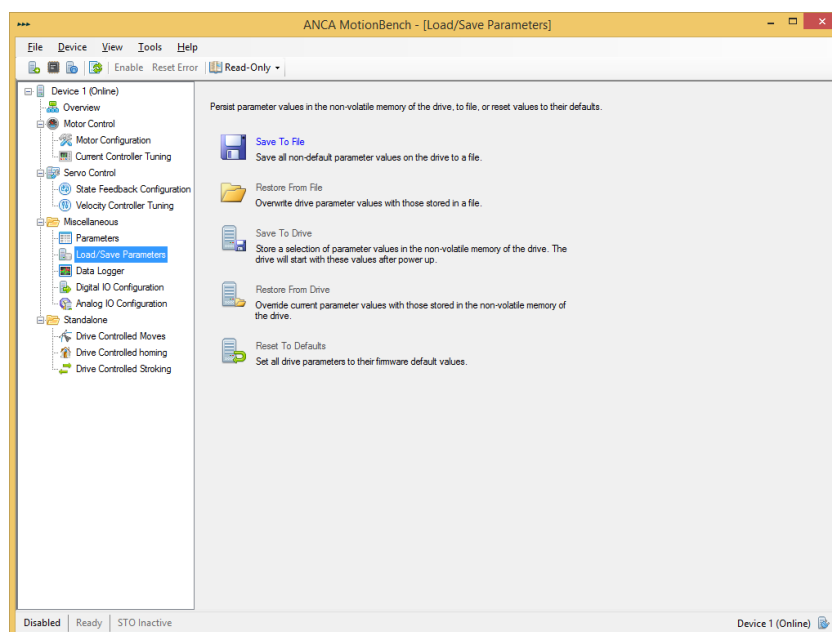


Figure 42

To copy a configuration from one drive to another, click the **Save to File** button on the first drive and then use the **Restore from File** on the second drive. If you wish the second drive to keep these new parameters after the drive is turned off, then you can save the parameters to the non-volatile memory with **Save to Drive**.

The following table list the functions available on Load/Save Parameter page.

Action	Description
Save To File	Reads all drive parameters and saves those that differ from the firmware defaults to file
Restore From File	Writes the values of parameters in the selected file to the drive
Save To Drive	<p>Saves a selection of parameters into the non-volatile memory of the drive. Each time the drive powers on, it will start with these saved parameters</p> <p>The drive has limited memory to store parameters. A user can specify in the following dialog which parameters can be retained on drive restart.</p>

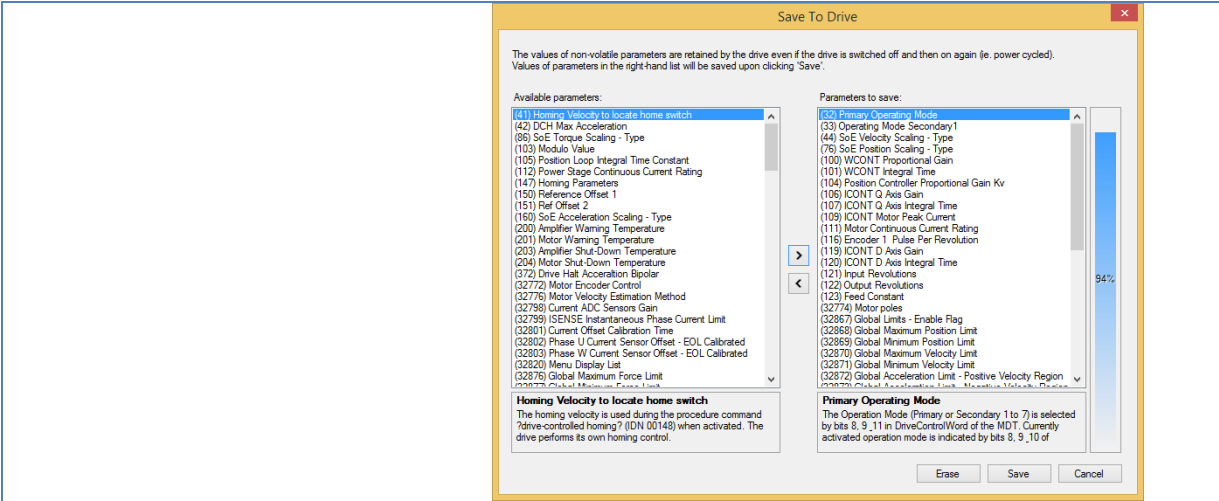


Figure 43

Restore From Drive	Overwrites current drive parameter values with those of parameters stored in the drive's non-volatile memory
Reset To Defaults	Returns all drive parameters back to their default values. Any changes you have made are lost

11 Guided Configuration

MotionBench provides various configuration modes to configure a drive for a specific application. You can select a configuration mode by right clicking a device node in the device tree and then selecting one of the available modes. Once a mode has been selected MotionBench applies a set of mode specific parameters to preconfigure the drive and presents configuration pages relevant for the selected mode.

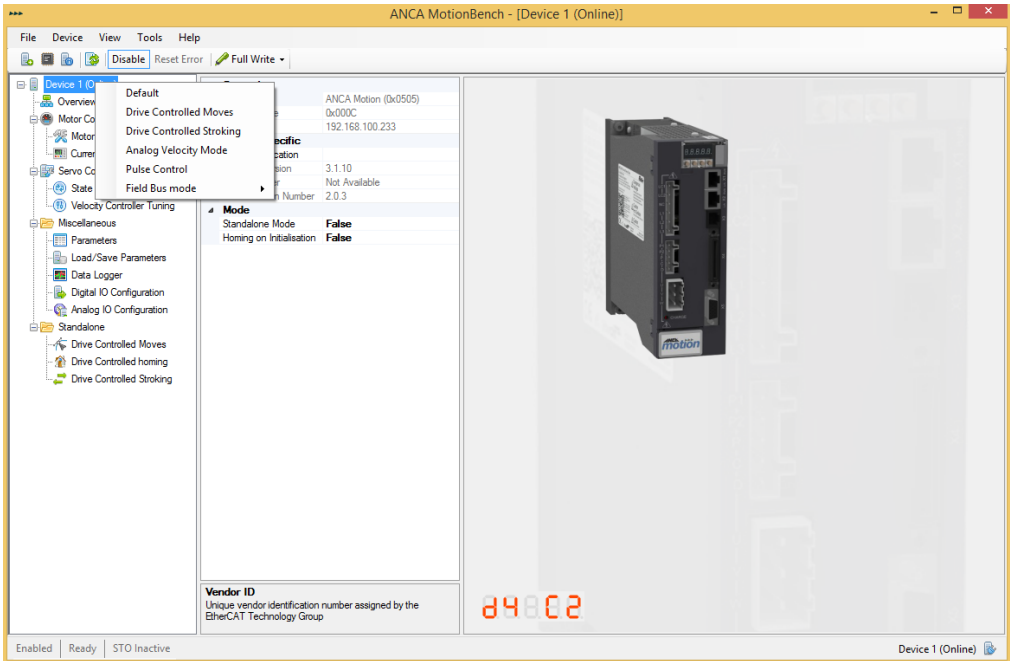


Figure 44

To return to the default view listing all available configuration pages right click a device and select Default. When MotionBench returns to the default view it does not modify any parameters and leaves the drive in the current modes of operation.

The following modes are available:

- Drive Controlled Moves: for guiding the user to set up a drive to automatically execute a sequence of pre-programmed moves.
- Drive Controlled Stroking: for guiding the user to set up a drive to automatically execute cyclic moves.
- Analog Velocity Mode: for guiding the user to set up a drive to use an analog input signal to control the velocity of the servo.
- Pulse Control: for guiding the user to set up a drive to use a pulse input to control the position of the servo.
- Field Bus mode for Torque, Velocity and Position mode: for guiding the user to set up a drive to receive motion commands via a higher level controller, such as a CNC.

12 General settings

The start behavior of MotionBench can be configured in the Options dialog, which can be opened by clicking Options on the Tools menu.

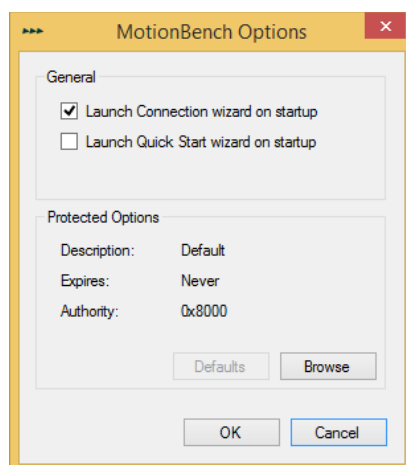


Figure 45

The following table list the available startup options:

Options	Description
Launch Connection wizard at startup	This option controls whether MotionBench is displaying the connection wizard. If the option is not selected MotionBench starts with an empty window. A user can manually add a device by clicking Add on the Device menu.

Launch Quick Start wizard on startup

This option specifies whether MotionBench display a dialog to select a landing page on startup.

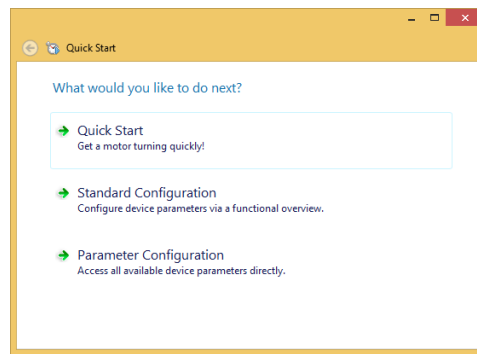


Figure 46

Quick Start will allow you to select a standard motor from the ANCA Motion range and get the motor turning with minimum effort.

Standard Configuration will take you to the functional overview of the drive, where you can drill down into specific function modules.

Parameter Configuration will take you to a table where all variables in the drive profile can be accessed.

Note: The controls shown in the Protected Options sections are intended for internal use only and should not be used.

13 Advanced Mode

Advance mode is a special mode in MotionBench that allows access to all parameters and signals in the drive.

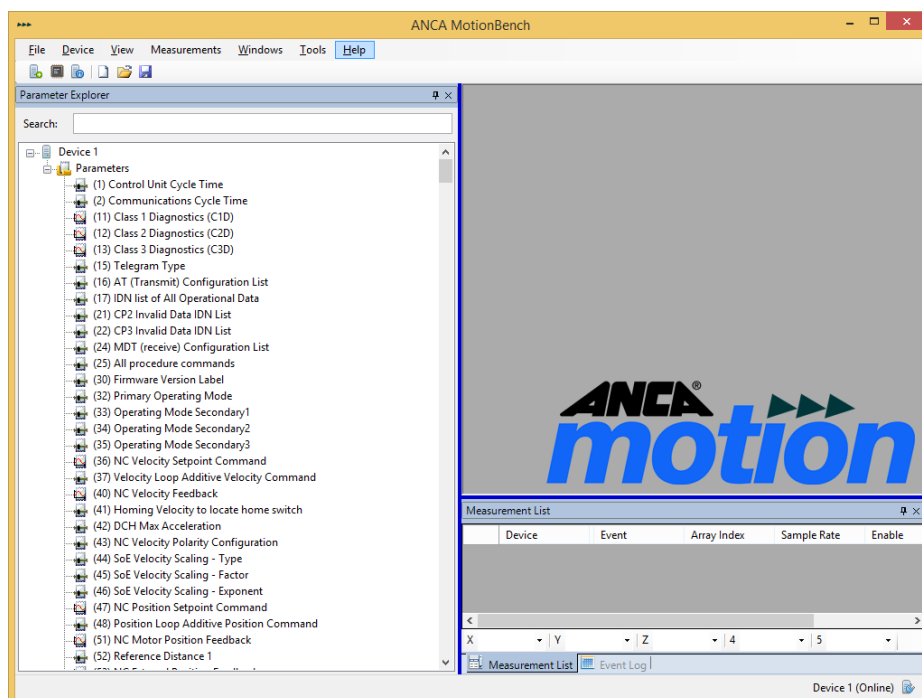
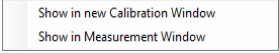


Figure 47

This mode is selected by clicking Advanced in the Device-Configuration Mode menu. In advanced mode you have the ability to graph and modify any parameter by dragging it into the workspace. To add a parameter select the parameter in the parameter Explorer tree and drag the parameter while holding the right mouse button. When you release the mouse button in the workspace you have the option to display the parameter in a measurement

or a calibration window.



Show in new Calibration Window
Show in Measurement Window

If the measurement window is selected the parameter is first added to the measurement list. The measurement list is a container for parameters that need to be streamed from the drive. Any parameter in the measurement list can be dragged into the workspace and displayed in a numeric or graph window. Parameter in the measurement list are read-only and updated when the measurement is started. To start measurements select Start in the Measurements menu or press F5. To stop measurements select Stop from the Measurements menu or press Shift+F5.

Parameters displayed in a calibration window can be modified. Any modification to a parameter in the calibration window takes immediate effect. The new value is transferred to the drive when the current Value edit field loses focus.

The buffers of the current measurement list can be saved in TDMS file format by clicking Save Buffers in the Measurements menu. TDMS is a structured file format by National Instruments that can be loaded by LabVIEW, Excel or any other application that supports the TDMS format.

14 Faults and Warnings

When a fault occurs, the drives output stage is switched off (motor loses all torque), and the drive state becomes **Disabled**.

The status bar along the bottom of the MotionBench application window displays the associated error number and message, as well as the state of the drive.

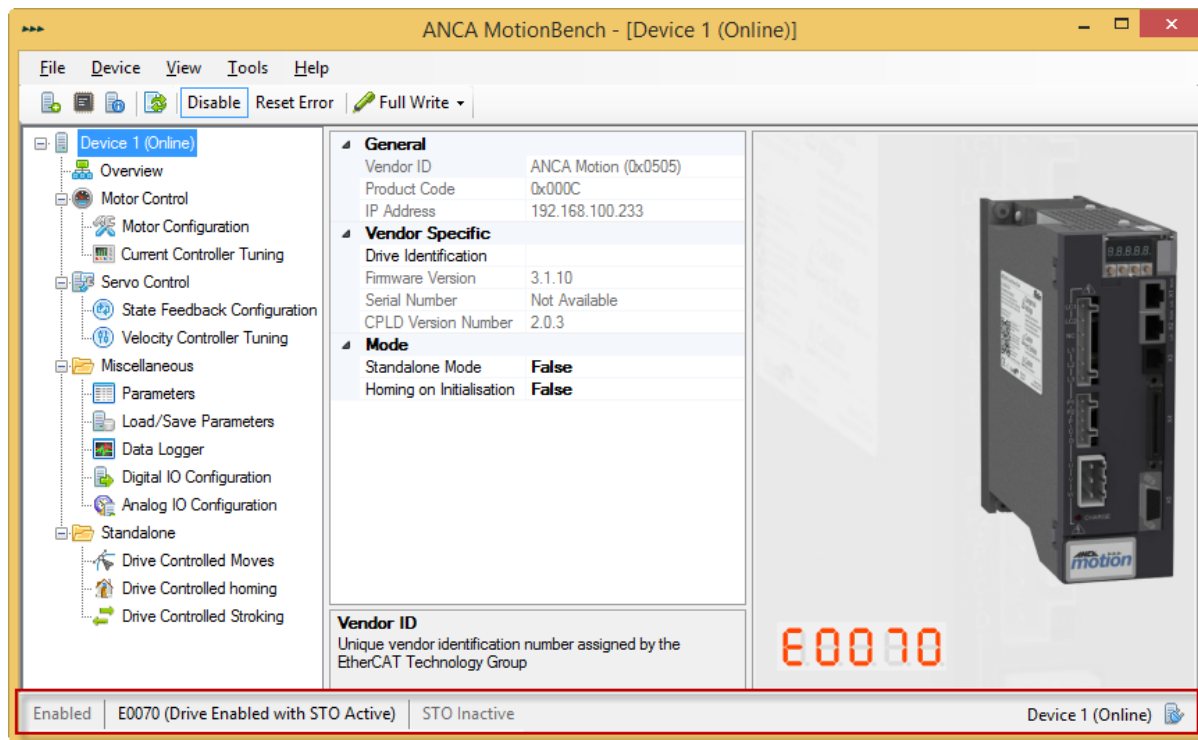


Figure 48

Most faults can be cleared without cycling power to the drive. Once the fault cause is remedied, you can clear the fault using the **Reset Error** button Enable Reset Error Read-Only in the MotionBench toolbar.

Note that if the drive was **Enabled** when the fault occurred, the **Enabled** button in the MotionBench toolbar remains 'primed'. Clicking **Reset Error** in this scenario will return the drive to **Enabled**.

15 Troubleshooting

This chapter provides troubleshooting techniques to assist if you are experience problems connecting to a drive.

1. Follow the steps in chapter [Preparing the Network Connection](#) to setup the network adapter. To ensure the network adapter is functional try pinging the network address you specified in the previous step.

To ping the network adapter open a new command window by pressing Window-Key + R and type `cmd`.

In the command window type ping followed by the IP address.

```
ping 192.168.100.1
```

2. Confirm that the network adapter connected to the drive is enabled. You can check the status of the network adapter by pressing Window-Key + R and type `ncpa.cpl`. Check in the network connection window if the status of the adapter is set to **Enabled**.

If the network adapter is disabled enable the adapter. Right click on the adapter in the list and select **Enable**.

If the adapter is in an error state which is usually indicated by a red cross on the network icon, try to disable and then re-enable the network adapter. Right click on the adapter in the list and select **Disable** and then **Enable** to re-enable the adapter.

By default Windows will disable a network device to save power if it is not in use. If you have just connected the drive to the computer it can take a couple seconds for windows to recognize that the network adapter is now active. If you have to frequently connect and disconnect drives it is recommended to disable power saving on the network adapter. Please consult the Microsoft documentation on how to adjust the power management features.

16 Product, Sales and Service Enquiries

If after reading the User Manual you still require assistance for installation, training or other customer support issues, please contact the closest ANCA Motion Customer Service Office in your area for details.

ANCA Motion Pty. Ltd.

1 Bessemer Road
Bayswater North
VIC 3153
AUSTRALIA

Telephone: +613 9751 8900

Fax: +613 9751 8901

www.ancamotion.com/Contact-Us

Email: sales.au@ancamotion.com

ANCA Motion Taiwan

1F, No.57, 37 Road
Taichung Industrial Park
Taichung 407
TAIWAN

Telephone: +886 4 2359 0082

Fax: +886 4 2359 0067

www.ancamotion.com/Contact-Us

Email: sales.tw@ancamotion.com

