

# Motion Perfect v4

## FEATURES

- ★ **Clear Connection Modes...** MPv4 can connect to the *Motion Coordinator* MC4 range and above in Direct, Tool or Synchronous mode, allowing connection at a level that is appropriate to the operations needed.
- ★ **EtherCAT drive support...** View and control the network state, see individual drive status information, read and set CoE objects in the remote drive.
- ★ **Panasonic RTEX Drive Support...** User Interface supports large numbers of drives with greater responsiveness and a New STARTUP file generation process to improve usability.
- ★ **Tree view of Motion Coordinator and Project...** See all the controller and project information in one place, via a familiar intuitive display.
- ★ **Window docking...** Allows the user even more flexibility in how the *Motion Perfect* v4 desktop is laid out.
- ★ **Program editor...** The TrioBASIC editor appears in a tabbed layout and includes enhanced breakpoint handling, bookmarks, auto commenting and scope checking.
- ★ **Support for IEC 61131-3 included...** The program editor can be used to create and edit IEC 61131-3 programs in Structured Text, Function Block, Sequential Function Chart and Ladder.
- ★ **Enhanced Axis Parameter display...** Choose which parameter groups to display and which parameters to see live in a continuously updated window.
- ★ **Data viewers...** The VR and TABLE viewers can be set to display non-contiguous data ranges and with auto-updating enabled will provide a live display of the values.
- ★ **Real-time-clock synchronisation...** View the contents of the *Motion Coordinator's* real-time clock (where fitted) and synchronise it with the PC clock at the touch of a button.
- ★ **STARTUP generation...** Improved wizard for generation and modification of STARTUP.BAS.
- ★ **Project resolution dialogues...** When connecting to the *Motion Coordinator* a completely new set of windows will guide you through the process of synchronising the controller's project with the copy on the PC.
- ★ **Support for multiple controllers...** View any number of controllers using the solution manager from one instance of *Motion Perfect* v4
- ★ **Fully integrated HMI support...** Design a complete graphical HMI interface within *Motion Perfect* v4 where buttons and fields can link to any system parameter or command.
- ★ **Oscilloscope...** Up to 32 channels can be linked to axis and system parameters. X/Y display mode for interpolated motion in 2D.
- ★ **3D Scope display mode...** Helps with visualisation of XYZ paths.
- ★ **Language Support...** Support for Chinese language
- ★ **3D machine visualisation tool...** Take a 3D solid model of the working parts of the machine motion and animate it to see a simulation controlled from the motion program.

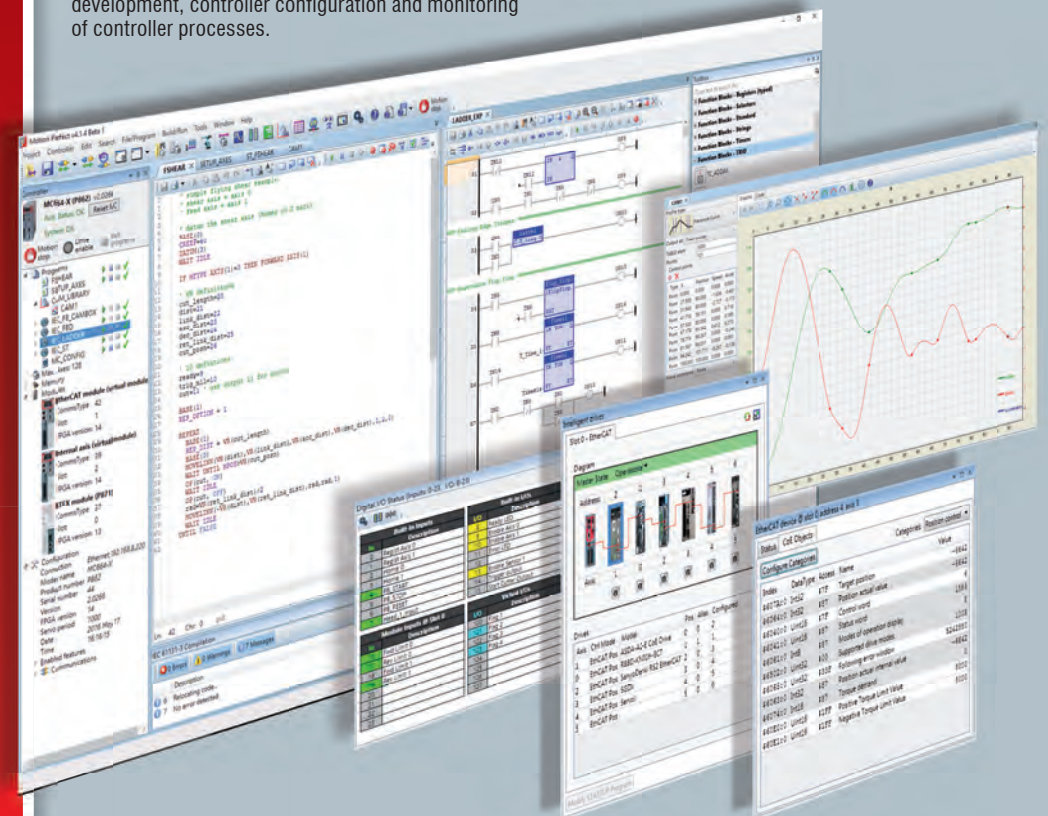
*Motion Perfect* v4 is a Microsoft Windows™ based application for the PC, designed to be used in conjunction with Trio Motion Technology's *Motion Coordinator* MC4 and above range of multi-tasking motion controllers.

*Motion Perfect* v4 has been developed using the latest .NET and WPF technologies from Microsoft. Designed from the ground up to make setup, diagnostics, commissioning and using our range of *Motion Coordinators* even more straight-forward.

It provides the user with an easy to understand Windows based interface for rapid application development, controller configuration and monitoring of controller processes.

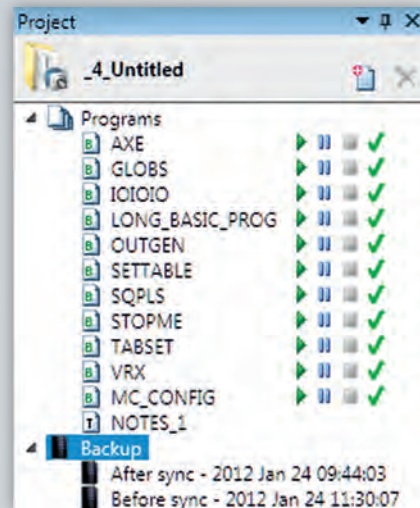
*Motion Perfect* v4 comes with the MC400 Simulator and Unisplay HMI Simulator program which allows offline programming.

*Motion Perfect* v4 is available as a **FREE** download from the Trio website:  
[www.triomotion.com](http://www.triomotion.com)



# Motion Perfect v4 Free Download

## Motion Perfect Projects

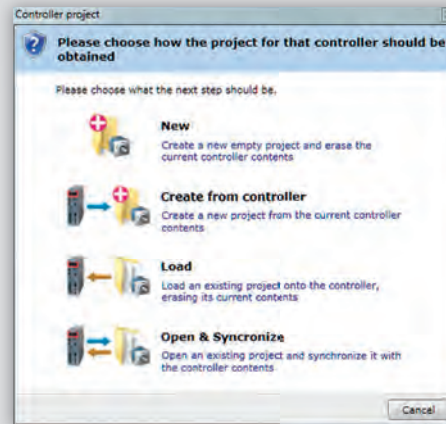


One of the keys to using *Motion Perfect v4* is its concept of a "Project". The project aids the application design and development process, by providing a copy of the multiple controller programs, parameters and data required for a single motion application, all stored in one folder.

Once the user has defined a project, *Motion Perfect v4* works behind the scenes automatically maintaining consistency between the programs on the controller and the files on the PC.

When creating or editing programs on the controller they are automatically duplicated on the PC which means you do not have to worry about loading or saving programs and you can be confident that next time you connect to a controller you will have the correct information on your PC.

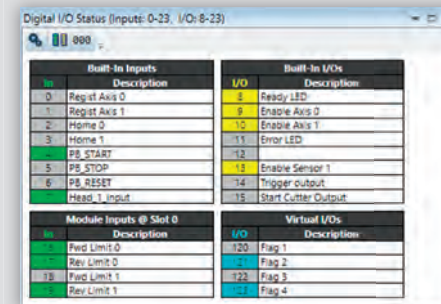
## Project Manager



The multi-tasking capability of *Motion Coordinators* means there will be a number of different program files to make an application. In order to keep track of these multiple files and their associated data, a major component of the *Motion Perfect v4* environment is the project manager.

- Load and Save multiple programs as a single named project
- Simultaneous saving of program files to both the PC and the *Motion Coordinator*
- Verify that the contents of a controller match the project file on disk
- Load and Save controller variables and table memory to disk
- Automatically generate controller "Startup" configuration files
- Include BASIC, HMI and IEC 61131-3 programs in the same project

## Digital I/O Status



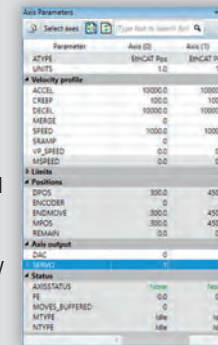
- Display status of all I/O Channels simultaneously
- Automatically configures to support available I/O
- Set outputs with a mouse click
- I/O's can be named and saved in a Project

## Project Encryptor

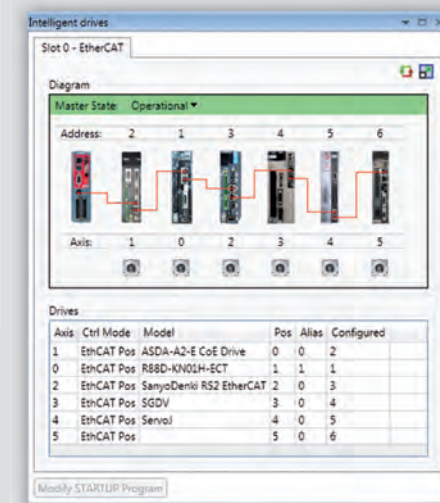
The Project Encryptor is a utility that enables a programmer's intellectual property to be licenced to individual *Motion Coordinators*. Once encrypted the program is safe to distribute and can only be loaded to a controller with a correct key, which is unique to both the controller serial number or distributor code and source project.

## Axis Parameter Screen

- Spreadsheet style interface to monitor and set axis parameters
- Automatically updates real time parameters
- Support for all axis types (including virtual axes)
- Enhanced user configured axis display

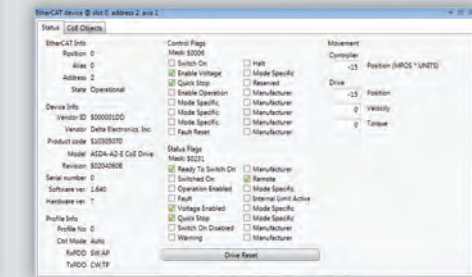


## Drive Setup / Parameterisation



When using fieldbus axes connected to a MC4N, MC664 or MC464, *Motion Perfect v4* can access and display bus status and node specific information.

- Display and control the network state
- Diagram view of the fieldbus network
- Double click on any drive or IO node and view the node status
- Select and view drive parameters. (CoE and RTE)
- Build a STARTUP file to configure the drives (RTEX only)





# Motion Perfect v4

## HMI Editor / Uniplay

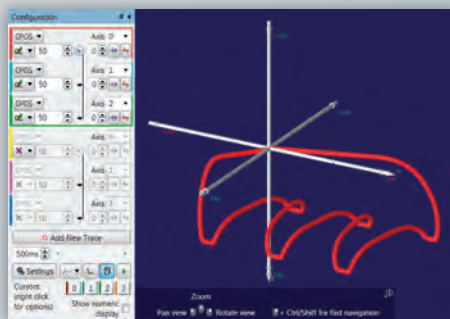


Trio's unique UNIPLAY HMI system keeps all the application programming in one place. No need for a separate HMI programming tool. *Motion Perfect v4* comes with a built in visual editor for the Trio UNIPLAY HMIs.

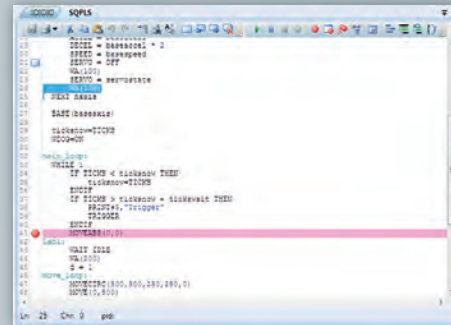
- Full function visual editor
- Select and draw objects directly to the screen
- Button, text box, progress bar, combo box and many other object types
- Link object attributes to BASIC program variables
- Supports integer, floating point and text string variables
- Simulate the HMI on your PC

## 3D Scope

The oscilloscope has a new 3D display mode. Configure the sample rate, trace thickness and colour. Pan, zoom and rotate in 3D in real-time.

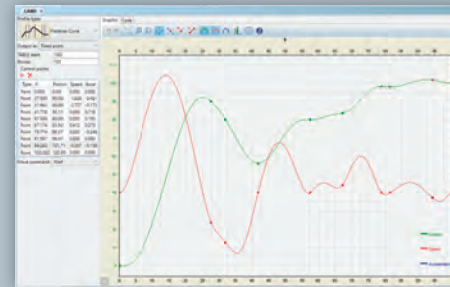


## Basic Program Editor



- Simultaneously edits the controller program and a copy on disk - programs do not need to be downloaded after editing
- Windows style editor with Cut, Copy & Paste - information may be pasted between programs
- Edit multiple programs simultaneously
- Find & Replace
- Jump directly to any line number or program label
- View and edit programs while they are running
- Bookmark lines for easy access
- Offline editing with advanced MC400 simulator
- Immediate line tokenisation
- Context sensitive help
- Autocomplete suggestions and command line help menus
- Keyword assisted and parameter help
- Auto-formatting, colour-coded syntax to make editing and debugging easier

## CamGen



Define and generate cam tables using this interactive graphical cam designer. Commonly used cam shapes are pre-built into the CAM library software.

The required dimensions and offsets can be entered and the resulting cam shape is immediately shown as graphs of position, speed and acceleration. Data can be output as a cam table formula or as **FLEXLINK** parameters.

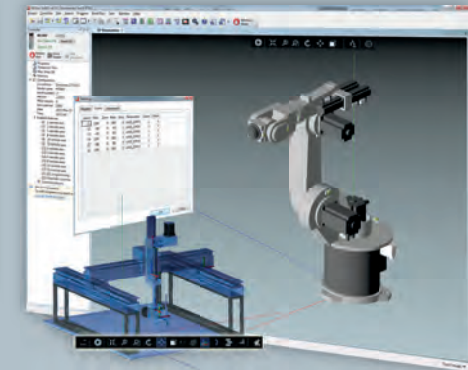
Alternatively, cam shapes can be built up using the interactive "Piecewise Curve" feature. Enter your XY points and see the resulting cam shapes. Points can be adjusted by dragging points on the graph, giving a truly interactive experience and saving time compared to using trial and error techniques.

The resulting cam tables are ready to be copied and pasted into your programs and used with **CAM** and **CAMBOX** functions.

## MC400 Simulator

If for any reason a *Motion Coordinator* is not available, the MC400 Simulator provides a software simulation of Trio Motion Technology's MC4/5/6 range of multi-tasking *Motion Coordinators*.

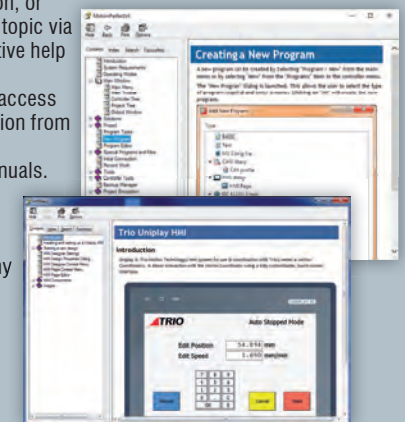
## 3D Visualization Tool



The 3D Visualization tool, available in *Motion Perfect v4*, enables simulation of Machine Motion, using an externally generated 3D model which can be synchronized with the motion program. This tool can simulate realistic movement sequences on a PC in real time.

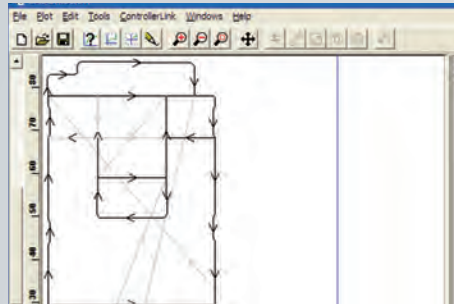
## Motion Perfect Help

*Motion Perfect v4* comes with complete help files for TrioBASIC and the IEC programming libraries. Using the search function, or jumping to a help topic via the context sensitive help in the editor, the programmer has access to all the information from Trio's technical programming manuals. The help files are also rich in programming examples for many motion applications.



# Free Support Software

## CAD2Motion



CAD2Motion is a program designed to allow users to translate CAD generated two dimensional motion paths into TrioBASIC programs.

The program allows the user to create motion paths in a CAD package such as AutoCAD and convert them into code executable by a Trio *Motion Coordinator*. Typically the path information will be drawn on a single layer in the CAD package and exported as a DXF file. The DXF file (layer with motion path only) is read into CAD2Motion to create a 2D program to follow the motion path.

The motion path can be manipulated and edited before being saved as a TrioBASIC program file that can be loaded onto a Trio *Motion Coordinator*.

## Trio PCMotion

PCMotion is an ActiveX component allowing direct connection to the Trio *Motion Coordinator* from a custom user application. It can be used to control any of the *Motion Coordinator* functionality as well as send text files down to the controller.

PCMotion ActiveX runs a high speed dedicated communications protocol between the user application and the *Motion Coordinator*. It allows simple programming of user 'front end' software that can be "tailored" to the application.

PCMotion ActiveX can be used in any programming language that supports ActiveX (OCX) components such as any of the Microsoft Visual languages (BASIC, C#, C++, etc.), LabView, Delphi, etc.

## Autoloader

A compact, self-contained package designed to allow simple distribution of projects written using *Motion Perfect v4*. Simply add the project to the Autoloader folder, edit a script file to provide control of the loading sequence and send to the customer. The Autoloader, complete with project files is small enough to distribute efficiently via email and the end user needs only minimal PC knowledge to complete the loading process.

## MCLoader

Trio MCLoader is a Windows ActiveX control which can load projects (produced with *Motion Perfect v4*) and programs onto a Trio *Motion Coordinator*. Communication can be via Ethernet.

## TextFileLoader

The TextFileLoader can load files into the *Motion Coordinator's* memory or the SD card. This allows machine files written in text based languages such as G-Code and HPGL to be loaded to the *Motion Coordinator* where they can be parsed and executed by a TrioBASIC program.

The transfer process is optimised to compress the file and reduce transfer times, or it can be set to stream the file into a FIFO buffer on the *Motion Coordinator*. This can help reduce overall machine cycle times when file sizes can be large.

## G-Code & HGPL Programming

The Trio MC4 range of *Motion Coordinators* has the ability to save and read text files, operate FIFO buffer files and receive text data such as G-Code and HPGL. This text file handling allows TrioBASIC to process either pre-recorded files or stream information coming in real-time to a serial port or the Ethernet port. String handling functions in the TrioBASIC allow for simple parsing of any text based file.

Example G-Code parsing and dispatching programs can be made available, that can then be used as the basis for a machine development. The examples cover the use of many common codes controlling up to 3 axes. As the examples are all written in TrioBASIC they are fully adaptable by the machine builder or system programmer to suit custom mechanics or special functions.

Similar to G-Code an HGPL parser can also be provided which reads the HGPL sequence line by line. A conversion program takes the HPGL commands like PR (plot relative), AA (arc absolute) and LT (line type) and performs the appropriate motion operation. Machine designers have access to the program and can change the actions performed to suit their application.

This flexible approach ensures that OEMs can maintain control over the machine specification and add differentiators to make them stand out in their market.