

Overview

Intelligent Motor Drives

TECHNOSOFT motor drives are high performance, cost effective motion control products with embedded intelligence, for use in the Original Equipment Manufacturer (OEM) market. Through high-level programming, Technosoft servo and stepper drives offer extended flexibility and versatility resulting in easy-to-use solutions for a variety of motion control applications.

These state-of-the-art intelligent drives offer features usually found only in high-end motion controllers and drives:

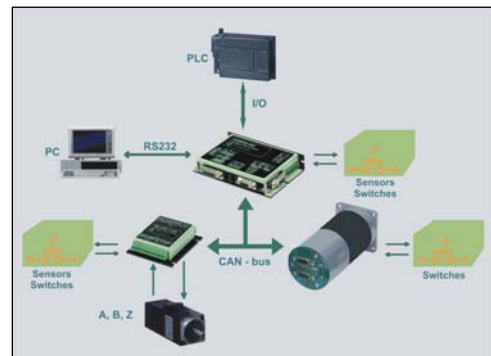


- Software configurability to drive AC or DC brushless, DC brush ,stepper or asynchronous motors
- Several modes of motion operation: contouring, profiling, gearing, electronic camming
- Stand-alone or multi-axes operation
- Wide feedback support: tachometer, incremental encoder, resolver, sine/cosine, digital or linear Halls, absolute feedback
- Distributed control over RS232/485, CAN, CANopen or Ethernet

The high-level programming tool **EasyMotion Studio**, complemented by application notes, application examples and tutorials, helps to configure stand-alone or networked intelligent motion solutions. Technosoft Intelligent Drives can be used with all the main motor technologies, ranging from DC and brushless to stepper and induction motors, thus offering a common platform for distributed control. Technosoft products are supported by experienced application engineers, and sold through world class motion control organizations and experts.

Benefits of Technosoft Motion Technology

- Compact and cost effective motion solutions
- All in one - controller and drive in one unit
- One for all - same drive for DC, stepper, brushless or linear motors
- Distributed intelligence with RS485, CAN, CANopen networks
- Advanced motion control with MotionChip™ DSP technology (PVT, S-curves, electronic camming)
- Easy implementation with Motion Libraries for PC (C/C++, Visual Basic, Delphi, LabVIEW, Linux) and PLC (Simatic S7 or Omron CJ1)
- Graphical programming with EasyMotion Studio
- Custom designs on demand

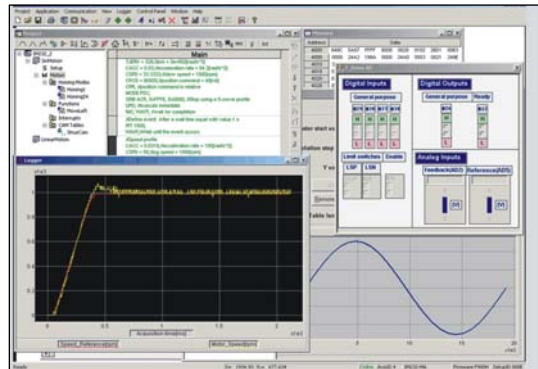


Easy Set-up and Programming with *EasyMotion Studio*

The EasyMotion Studio application exploits the key advantage of Technosoft products: the ability to execute complex motion without requiring an external motion controller, thanks to the built-in control and programming features. The software gives you full access to the high performance **Technosoft Motion Language (TML)**. This language simplifies complex applications, by distributing the intelligence between the master and slave drives.

Engineers can take advantage of the benefits of Technosoft drives provided by the extensive features integrated into EasyMotion Studio:

- The motors are more accurately and quickly controlled with the 100 μ s speed and position control loops.
- Extensive data logging and displaying
- Ability to customize GUI for specific purposes
- Users can design custom trajectories with PVT and PT interpolation.
- Users can quickly develop programs that are executed on the drive.
- Electronic gearing and absolute/relative cams allow simultaneous motor control motor with various speeds and build-in synchronized motion involving multiple drives.
- Immediate status update on all drives connected to a network.



Technosoft Motion Language Examples

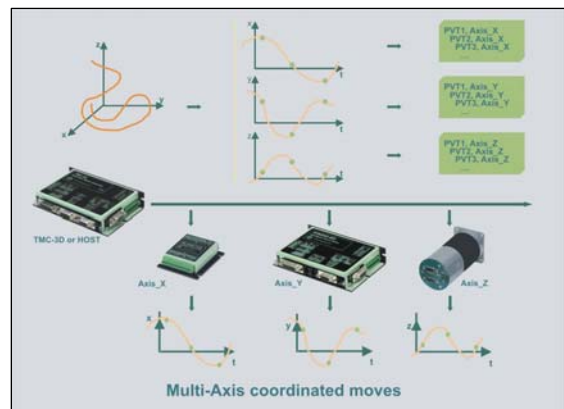
Through high-level software programming, Technosoft drives offer extended flexibility and versatility resulting in easy-to-use solutions for a variety of motion control applications.

Single Axis Stand Alone or Host Controlled:

The drives can run a locally stored TML program, or they can be programmed and controlled from a host controller via various communication channels: RS-232, RS-485, or CAN-bus (with CAN / CANopen drive versions). 'Immediate' on-line commands and TML instructions (loading and running of programs, setup of parameters, and queries on drive status) can be sent and executed.

Event and Interrupt Handling: Programmable events on Technosoft drives, combined with the TML specific interrupt structure, allow you to simultaneously handle different tasks such as: protection, timers, I/O or capture status, control error or status variable values, in addition to the main program's TML motion sequences.

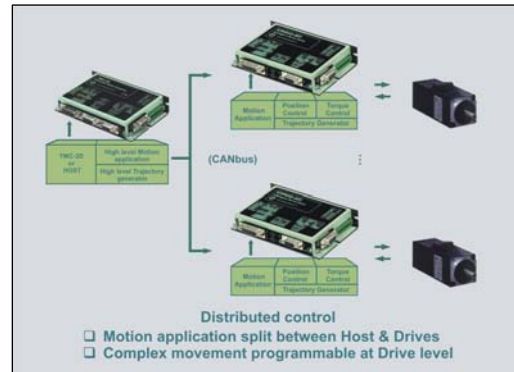
Multi-Axes Coordination: In distributed multi-axes structures, a host can provide data points to the axes in the network (CAN, CANopen or RS-485). Also, locally stored motion profiles can be executed via host commands, or coordinated via on-board I/O points. Moreover, any axis can request and receive information from other axes in the system, via specific TML commands.



Electronic Gearing and CAM: A host can send reference master position information to be used on each slave axis as reference with a locally programmable gearing factor. Similar to the electronic gearing mode, the drives can be programmed to implement electronic camming. Thus, based on a master position sent by the host, each slave axis can compute (from a locally-stored CAM profile table) its own position reference that will be controlled by that axis.

Multiple I/O Configuration / Multi-Axis I/O Handshake:

PLC-specific functionalities of Technosoft drives allow you to configure and use the I/O resources of the drive. Also the I/Os available on the drives allow you to create handshake structures between the axes, by appropriate TML programming. Activation of specific axes, completion of programmed tasks on axes, chaining of actions from one axis to another can easily be implemented, further increasing the flexibility of the motion system configuration.

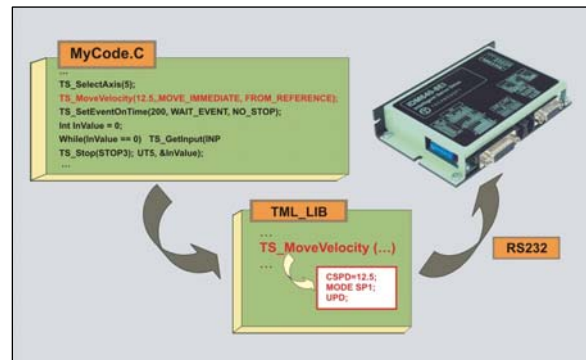


Motion Libraries

Motion Libraries are collections of functions allowing you to implement motion control applications on a PC or PLC, in order to run Technosoft Intelligent Drives based on the MotionChip™ technology. They enable you to communicate with a drive, set up its parameters, interrogate about its status, send motion commands, define motion events, read inputs and set output status.

Available Motion Libraries:

- PC Motion Libraries running under Windows: C/C++, Visual Basic, Delphi Pascal, LabVIEW.
- PC Motion Libraries running under Linux: C/C++
- PLC Motion Libraries: TML_LIB_S7 and TML_LIB_CJ1
- In preparation: Motion Libraries for Mitsubishi and Allen Bradley PLCs



Starter Kits

For a fast and easy way of learning how to use Intelligent Servo Drives, Technosoft now offers starter kits for each product. These evaluation kits are ready-to-run packages that include the complete hardware and software you need in order to evaluate and develop your motion applications.

Each starter kit includes:

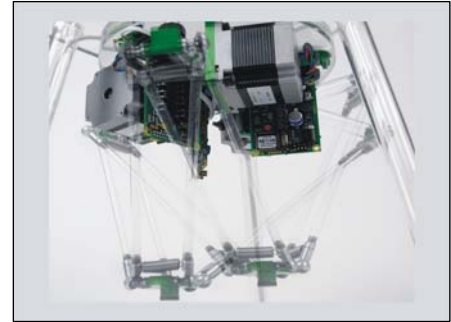
- The EasyMotion Studio software
- The intelligent drive of your choice
- A motor (brushless or stepper)
- An I/O board
- A collection of application notes



Industrial Applications

Technosoft's emphasis on modularity at both the hardware and software level allows us to create highly flexible and adaptable dedicated solutions that can easily and rapidly be prototyped to meet your specific needs. Customers from various industries requiring a wide range of motion control products and systems for specialized applications have effectively utilized Technosoft's expertise for:

- Industrial equipment: Sensorless vector control of fans
- Packaging: Intelligent solutions for distributed control
- Textile: Yarn feeder, high dynamic controls
- Machine tools: Electronic screw drivers and nut runners
- Semiconductor industry: Wafer handling and processing
- ...



Custom Solutions

We combine advanced theoretical and modelling know-how in the field of electrical machines and digital motion control implementation on the latest Digital Signal Processor (DSP) technology. Our multidisciplinary engineering team includes experts in the various fields of motion control and mechatronics, such as:

- Intelligent and distributed motor control
- Digital control electronics
- Specific motor control algorithms
- Sensorless vector control
- Digital, analog and power electronics design
- Complete motion system industrialisation
- Technosoft customized solutions
- Specific custom integration
- Digital motor control software modules



Quality

Our experience: For over 15 years Technosoft has delivered motion solutions in various fields of the industry. This experience has matured into the continuous improvement of the quality and reliability of our products.

Our commitment: Satisfy our customer's expectations by mastering all the technological aspects related to Digital Motion Control Solutions.

Your satisfaction: Technosoft is certified according to the ISO 9001:2000 standard. This rigorous management system of continuous improvement of the processes reinforces every day our competitiveness and the satisfaction of our customers.



PRODUCTS

A. INTELLIGENT MOTOR DRIVES

A1. Plug-in Motor Drives

► IPS110 Intelligent Minidrive - 45V, 0.5A, 25W

- Fully digital 0.5A stepper or 1A DC brush amplifier
- 5V logic
- 12-45V motor power supply
- Programmable digital inputs (2) / outputs (2), analog inputs (2)
- Quadrature encoder and linear Hall feedback
- Pulse and Direction input for speed or position reference
- RS-232 and CAN / CANopen (optional)

Part information:

P045.001.E001:IPS110 Microstep / DC Drive, RS232
P045.001.E002:IPS110 Microstep / DC Drive, CAN
P045.001.E012:IPS110 Microstep / DC Drive, CANopen
P045.001.E084:IPS110 Starter Kit for Stepper Motor



► PIM2401 Intelligent Plug-in Control Module - 24V, 1A, 25W

- Suitable for brushless, DC brush and step motors
- 6-24V logic and motor power supply
- 1A continuous, 3.6A peak current
- Programmable digital inputs (5)/outputs (2), analog inputs (2)
- Quadrature encoder, Hall sensors or linear Hall feedback
- RS-232 and CAN / CANopen (optional)

Part information:

P035.001.E102:PIM2401 Plug-in Control Module, CAN
P035.001.E112:PIM2401 Plug-in Control Module, brush/brushless, CANopen
P035.001.E113:PIM2401 Plug-in Control Module, stepper, CANopen
P035.001.E114:PIM2401 Plug-in Control Module, brushless w/ linear Hall, CANopen



► PIM2403 Intelligent Plug-in Control Module - 24V, 3A, 75W

- Suitable for brushless, DC brush and step motors
- 12-24V logic and motor power supply
- 3A continuous, 6A peak current
- Programmable digital input / outputs and analog inputs
- Quadrature and Sin/Cos encoders, Hall sensors or linear Hall feedback
- RS-232 and CAN / CANopen (optional)

Part information:

P037.001.E302:PIM2401 Plug-in Control Module, CAN
P037.001.E312:PIM2401 Plug-in Control Module, brush/brushless, CANopen
P037.001.E313:PIM2401 Plug-in Control Module, stepper, CANopen
P037.001.E314:PIM2401 Plug-in Control Module, brushless w/ linear Hall, CANopen



► **ISCM4805/8005 Intelligent Control Modules - 48/80V, 5A, 200W**

- Suitable for brushless, DC brush and step motors
- 12-48V logic
- 48V - ISCM4805 or 80V - ISCM8005 motor power supply
- High current capability 5A continuous, 16A peak
- Programmable digital input / outputs and analog inputs
- Quadrature and Sin/Cos encoders, Hall sensors or linear Hall feedback
- RS-232 and CAN / CANopen (optional)



Part information:

- P047.001.E201:ISCM4805 Servo Control Module, CAN
- P047.001.E211:ISCM4805 Servo Control Module, brush/brushless, CANopen
- P047.001.E212:ISCM4805 Servo Control Module, stepper, CANopen
- P047.001.E301:ISCM8005 Servo Control Module, CAN
- P047.001.E311:ISCM8005 Servo Control Module, brush/brushless, CANopen
- P047.001.E312:ISCM8005 Servo Control Module, stepper, CANopen
- P047.001.E084:ISCM4805 Starter Kit for Brushless Motor
- P047.001.E085:ISCM4805 Starter Kit for Stepper Motor

A2. Open-frame Motor Drives

► **IPS210 Intelligent Minidrive - 24V, 0.5A, 12W**

- Fully digital 0.5A stepper / 1A DC brush amplifier
- 8-24 V logic and motor power supply
- Programmable digital inputs (2) / outputs (2), analog inputs (2)
- Quadrature encoder and linear Hall feedback
- Pulse and Direction input for speed or position reference
- RS-232 and CAN / CANopen (optional)



Part information:

- P045.001.E201:IPS210, RS232
- P045.001.E202:IPS210, CAN
- P045.001.E212:IPS210, CANopen
- P045.001.E086:IPS210 Starter Kit for DC Motor
- P045.001.E087:IPS210 Starter Kit for Stepper Motor

► **ISM4803 Intelligent Drive Module - 48V, 3A, 150W**

- Suitable for brushless, DC brush and step motors
- 5V logic, 48V motor power supply
- 3A continuous, 6A peak
- Programmable digital inputs (7) / outputs (6), analog inputs (3)
- Quadrature encoder, Hall sensor or linear Hall feedback
- RS-232 and CAN / CANopen (optional)



Part information:

- P030.001.E001:ISM4803 Servo Module, RS232
- P030.001.E002:ISM4803 Servo Module, RS232, CAN
- P030.001.E003:ISM4803 Servo Module, RS232 with J6 / J9 connector
- P030.001.E004:ISM4803 Servo Module, CAN with J6 / J9 connector

P030.001.E014:ISM4803 Servo Module, CANopen with J6 / J9 connector
P030.001.E084:ISM4803 Starter Kit for Brushless Motor
P030.001.E085:ISM4803 Starter Kit for Stepper Motor

► **ISCM4805 / ISCM8005 DIN Intelligent Control Modules - 48/80V, 5A, 200W**

- Suitable for brushless, DC brush and step motors
- DIN -rail version
- 12-48V logic
- 48V - ISCM4805 or 80V - ISCM8005 motor power supply
- High current capability 5A continuous, 16A peak
- Programmable digital input / outputs and analog inputs
- Quadrature and Sin/Cos encoders, Hall sensors or linear Hall feedback
- RS-232 and CAN / CANopen (optional)



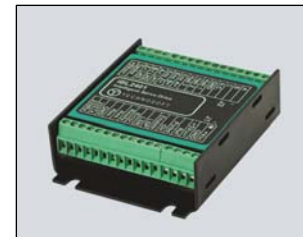
Part information:

P052.001.E201:ISCM4805 Servo Control Module, DIN rail, CAN
P052.001.E211:ISCM4805 Servo Control Module, DIN rail, brush/brushless, CANopen
P052.001.E212:ISCM4805 Servo Control Module, DIN rail, stepper, CANopen
P052.001.E301:ISCM8005 Servo Control Module, DIN rail, CAN
P052.001.E311:ISCM8005 Servo Control Module, DIN rail, brush/brushless, CANopen
P052.001.E312:ISCM8005 Servo Control Module, DIN rail, stepper, CANopen

A3. Closed-frame Motor Drives

► **IBL2401 Intelligent Motor Drive - 24V, 1A, 25W**

- Suitable for brushless, DC brush, stepper motors
- 6-24V logic and motor power supply
- 1A continuous, 3.6A peak current
- Programmable digital inputs (5) / outputs (2), analog inputs (2)
- Quadrature encoder, Hall sensor or linear Hall feedback
- RS-232 and CAN / CANopen (optional)



Part information:

P035.001.E001:IBL2401, RS232
P035.001.E002:IBL2401, RS232 and CAN
P035.001.E012:IBL2401, brush/brushless, CANopen
P035.001.E013:IBL2401, stepper, CANopen
P035.001.E014:IBL2401, brushless w/ linear Hall, CANopen
P035.001.E084:IBL2401, Starter Kit for Stepper Motor
P035.001.E085:IBL2401, Starter Kit for Brushless Motor

► **IBL2403 Intelligent Motor Drive - 24V, 3A, 75W**

- Suitable for brushless, DC brush and step motors
- 12-24V logic and motor power supply
- 3A continuous, 6A peak current
- Programmable digital input / outputs and analog inputs
- Quadrature encoder, Hall sensor or linear Hall feedback
- RS-232 and CAN / CANopen (optional)



Part information:

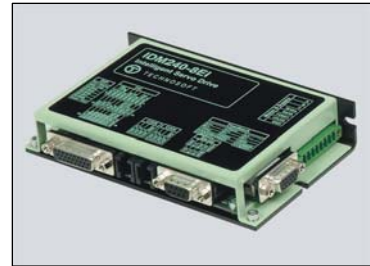
- P037.001.E001:IBL2403, RS232
- P037.001.E002:IBL2403, RS232 and CAN
- P037.001.E012:IBL2403, brush/brushless, CANopen
- P037.001.E013:IBL2403, stepper, CANopen
- P037.001.E014:IBL2403, brushless w/ linear Hall, CANopen
- P037.001.E084:IBL2403 Starter Kit for Brushless Motor
- P037.001.E085:IBL2403 Starter Kit for Stepper Motor

► **IDM240 Intelligent Motor Drive - 48V, 5A, 240W**

- Suitable for brushless, DC brush and step motors
- 12-48V logic, 48V motor power supply
- 5A continuous, 16A peak current
- Opto-isolated programmable digital inputs (7) / outputs (6) and analog inputs (2)
- High resolution up to 256 microsteps / full step
- Quadrature or SSI encoder, digital Hall sensors
- RS-232 or RS-485 and CAN

Part information:

- P051.001.E002:IDM240-5EI, CAN

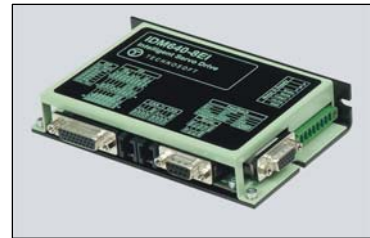


► **IDM640 Intelligent Motor Drive - 80V, 8A, 640W**

- Suitable for brushless, DC brush and step motors
- 12-48V logic and 80V motor power supply
- 8A continuous, 16A peak current
- Opto-isolated programmable digital inputs (7) / outputs (6) and analog inputs (2)
- High resolution up to 256 microsteps / full step
- Quadrature or SSI encoder, digital Hall sensors
- RS-232 or RS-485 and CAN / CANopen (optional)

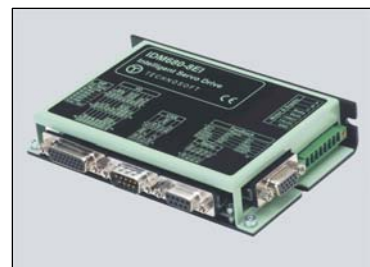
Part information:

- P048.001.E101:IDM640-8EI, CAN
- P048.001.E111:IDM640-8EI, brush/brushless, CANopen
- P048.001.E112:IDM640-8EI, stepper, CANopen
- P048.001.E085:IDM640 Starter Kit for Brushless Motor
- P048.001.E084:IDM640 Starter Kit for Stepper Motor



► **IDM680 Intelligent Motor Drive - 80V, 8A, 640W**

- Suitable for brushless, DC brush and step motors
- 12-48V logic and 80V motor power supply
- 8A continuous, 16A peak current
- Opto-isolated programmable digital inputs (7)/outputs (6) and analog inputs (2)
- High resolution up to 256 microsteps/full step (optional)
- Sin/Cos encoder, linear Hall
- Optional resolver, SSI or quadrature encoder, digital Hall sensors
- RS-232 or RS-485 and CAN / CANopen



Part information:

P048.002.E101:IDM680-8LI, Sin/Cos encoder, Linear Hall, CAN/CANopen

P048.002.E102:IDM680-8RI, Resolver, CAN/CANopen

P048.002.E103:IDM680-8EI Incremental or SSI encoder, CAN/CANopen

P048.002.E104:IDM680-8EI BiSS encoder, CAN/CANopen

► **IDM3000 Intelligent Motor Drive - 325V, 10A, 3kW**

- Suitable for brushless, DC brush and induction (optional)
- 20-30V logic and 160-325V motor power supply
- 10A continuous, 30A peak current *
- Opto-isolated programmable digital inputs (8) / outputs (6) and analog inputs (2)
- Resolver, SSI and quadrature encoder
- Sin/Cos encoder (optional)
- RS-232 and CAN / CANopen

* Note: with external heat sink.



Part information:

P049.004.E101:IDM3000-ER, Encoder / Resolver, CAN

P049.004.E111:IDM3000-ER, Encoder / Resolver, CANopen

P049.004.E102:IDM3000-SC, Sin/Cos encoder, CAN

P049.004.E112:IDM3000-SC, Sin/Cos encoder, CANopen

► **TMC-3D Multi-Axis Motion Controller - 640W, 80V, 8A**

- Multi-axis motion controller (up to 8 axes)
- Real-time 3D reference generator
- Powerful motion language commands including vector interpolation, 3D coordinated moves
- CAN network management
- Integrated servo drive for 1 axis, suitable for brushless / DC motors with encoder or resolver feedback
- Usable with all Technosoft drives



Part information:

P048.002.E301:TMC-3D Multi-Axis Motion Controller

B. DEVELOPMENT TOOLS

B1. Motion Starter Kits

MSK2812, MSK2407 and MSK28335 DSP Motion Starter Kits are the best DSP motion control platforms based on the TMS320F2812 and TMS320LF2407 (fixed-point) or TMS320F28335 (floating-point) processors, for a quick start of software development using a DSP controller.

With Technosoft kits you will discover the Digital Motor Control Developer (DMCD-lite) software platform with integrated debugger, basic assembler, linker, and many other features that enable a quick development of specific motion control applications.

These kits can later be complemented with other Technosoft modules like: power modules, motors, I/O boards, etc., and software modules like source code libraries and simulation schemes, for a step-by-step upgrade as your application's growth requires it.

The Motion Starter Kit Family

- MSK28335 DSP Motion Starter Kit
- MSK2812 DSP Motion Starter Kit
- MSK2407 DSP Motion Starter Kit



B2. Motion Control Kits

MCK2812, MCK2407 and MCK28335 DSP Motion Control Kits provide the fastest way to learn, evaluate, develop, test and implement DSP Digital Motion Control algorithms. Kits include a complete hardware development platform (DSP controller board, power inverter and a brushless motor equipped with Hall sensors and 500-line encoder) powered by high-level graphical programming tools. You can directly drive the motor in AC or DC brushless mode through a set of ready-to-run examples. The dynamic behavior of the real time system can easily be analyzed through graphical displays of any of the system variables, for a quick optimization of the control algorithms.

The kits include the Digital Motor Control Developer (DMCD-Lite) software platform with integrated debugger, basic assembler, linker, and many other useful features for a fast, professional development of your specific motion control application.

This combination of hardware and software represents a training, test and basic development unit for high performance motor control, helping you to quickly understand the advantages of using DSP controllers for real-time motion control applications.

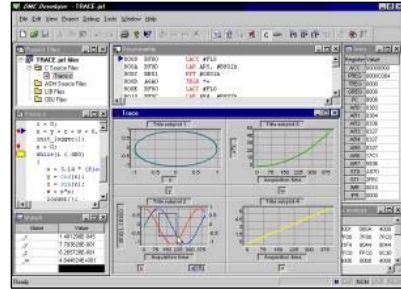
The Motion Control Kit Family

- MCK28335 DSP Motion Control Kit
- MCK2812 DSP Motion Control Kit
- MCK2407 DSP Motion Control Kit



C. DSP MOTION CONTROL DEVELOPMENT TOOLS

- Digital Motion Control development kits including complete DSP motion control hardware, development software, demos, source-code application libraries
- Rapid access to DSP technology and Digital Motor Control, to speed up your design considerably
- Based on fixed-point TMS320F2812, TMS320LF2407, TMS320LF2406, and floating-point TMS320F28335 DSP



Using TECHNOSOFT Digital Motor Control Tools is the fastest way to learn, evaluate, develop, test and implement DSP Motion Control. From basic starter kits to sophisticated professional kits with source code application examples and motion libraries, we offer a wide range of excellent tools for the design of DSP-based motor control applications. Technosoft tools are modular in construction; so you can easily upgrade from a simpler kit to a more powerful one, as your project's complexity requires it, by adding a new software/hardware module.



C1. Professional Development Kits

Technosoft Professional Development Kits represent the state-of-the-art in Digital Motion Control tools. Including all hardware components of Motion Control Kits or Motion Starter Kits, along with Technosoft's high-end Digital Motor Control Developer (DMCD-Pro) platform and optionally with TI's C-Compiler, Assembler and Linker, these professional development kits are unparalleled tools for the quick research, development and implementation of sophisticated motion control algorithms.



Technosoft Professional tools are intended for users who need a complete DSP development platform powered by advanced dedicated motion control software.

The Professional Development Kit Family (with TI tools)

- MCK28335 Kit C Pro
- MCK2812 Kit C Pro
- MCK2407 Kit C Pro
- IMDM15 Kit C Pro
- MSK28335 Kit C Pro
- MSK2812 Kit C Pro
- MSK2407 Kit C Pro

C2. Professional Development Kits with Applications

These professional DSP development tools, which include source code / object code application examples and libraries, represent the most advanced offer in the Digital Motor Control field. All packages are self-contained, so they allow you to start the evaluation and development immediately.

You will discover how easy it is to control a brushless motor (in trapezoidal or sinusoidal mode), or an induction motor (in vector control or V/f mode). Moreover, for experienced designers, these examples can represent a useful starting point for any advanced motion control applications that you may want. You can rely on Technosoft Professional Tools to meet your challenging project's schedule and complexity.



The Family of Professional Development Kits with Applications

Kits with source code - for brushless motor

- MCK2812 Kit C Pro-S(BL)
- MCK2407 Kit C Pro-S(BL)
- IMDM15 Kit C Pro-S(BL)
- MCK28335 Kit C Pro-S(BL)

Kits with source code - for induction motor

- MCK2812 Kit C Pro-S(IM)
- MCK2407 Kit C Pro-S(IM)
- IMDM15 Kit C Pro-S(IM)
- MCK28335 Kit C Pro-S(IM)

Kits with object code collection

- MCK2407 Kit C Pro-L

Kits with MATLAB / VisSim libraries - brushless

- MCK2812 Kit C Pro-MS(BL) with MATLAB library
- MCK2812 Kit C Pro-VS(BL) with VisSim library
- MCK28335 Kit C Pro-MS(BL) with MATLAB library

Kits with MATLAB / VisSim libraries - induction

- MCK2812 Kit C Pro-MS(IM) with MATLAB library
- MCK2812 Kit C Pro-VS(IM) with VisSim library
- MCK28335 Kit C Pro-MS(IM) with MATLAB library