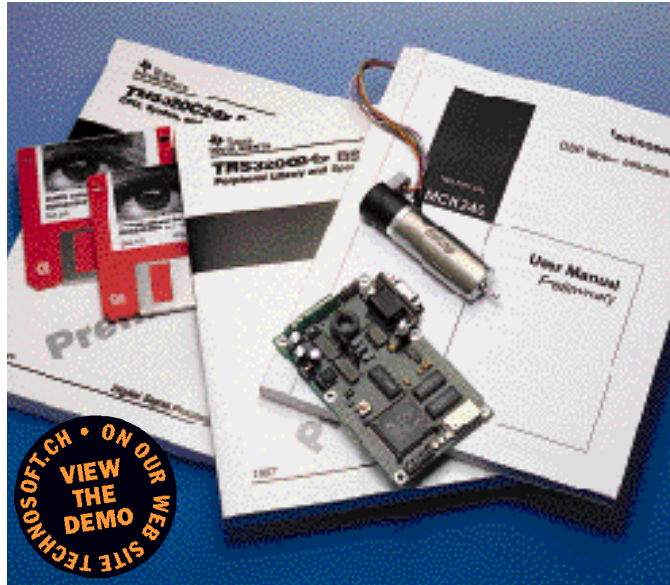


MCK240 TMS320F240 DSP Motion Control Kit



Hardware Specifications

MCK240 Board equipped with :

- DSP motion controller TMS320F240 with 16kWords of flash EPROM
- 32K words 0 wait state SRAM external data/program memory
- 3 phase PWM inverter, 30V, 1.7 A
- Measurement of inverter low side legs currents or DC path current
- DC link voltage measurement
- Incremental encoder port
- RS-232 serial communication port
- Standard I/O connector for link with other motor power modules (MC-bus)
- JTAG interface
- Single DC power supply 15 V
- Optional external motor supply up to 30 V
- Dimensions: 104 x 63mm

New development tools speed DMC development

The MCK240 is an evaluation kit for the Texas Instruments TMS320F240 DSP controller applied to digital motor control applications.

The MCK240 provides to the designer a complete set of tools in order to quickly develop, implement and test digital motor control algorithms. It includes high level graphical programming tools and a DSP board equipped with a three phases inverter. A dynamic escap[®] brushless motor combine with an incremental encoder, which can be directly driven in AC or DC brushless modes, is also included in the kit.

To rapidly develop and test motion control algorithms, the MCK240 utilizes the features of the unique motor control event manager of the F240, such as PWM generation or quadrature encoder interface, and includes also, in order to speed up the development process, examples of assembler source code for these functions.

The MCK240 can be connected directly to a PC via an RS-232 interface in order to download and execute programs on the MCK240 or to have access to the various processor registers or to program the Flash memory.

The MCK240 offers also an universal I/O interface for connection to various external power amplifiers, such as IGBT inverter bridges (see ACPM750 data sheet) for controlling larger motors.

The built-in current feedback from the inverter low-side legs or DC path, combined with the 10-bit A/D of the F240, facilitate the development and implementation of a large set of control algorithms including sensorless approaches.

Compatibility with TI development tools

The MCK240 is also provided with a JTAG interface in order to download, execute and debug C240 programs using Texas Instruments software development tools (C source debugger, assembler, linker, compiler).

Graphical programming of digital motor control

The MCK240 motion kit is combined with the extended software package MCWIN, which includes a basic monitor for serial communication with down/up load functions, debug facilities and, a Windows IDE for assistance on performance evaluation of motor control applications.

All these tools offer a user friendly graphical interface, which facilitates the development, implementation and test of DSP motor control applications.

Ready-to-run examples

Ready-to-run examples of AC and DC brushless motor speed control are contained in the BLAC/BLDC packages on a single licence basis. The dynamic behaviour of the real time system can be easily analysed during run-time through the data acquisition and graphical display of

all the system variables, thus permitting a quick optimisation of the control algorithms.

Custom programs can also easily be downloaded through the serial link and executed.

A complete development platform:

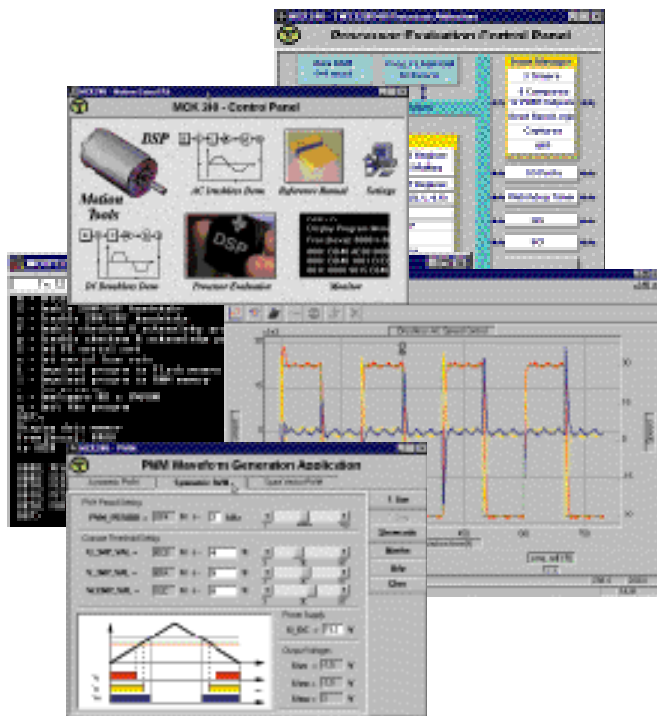
These features, combined with high level graphical user interface transform the MCK240 into a complete test unit for high performance control algorithms and drivers and provides a rapid understanding of the advantages of the DSP for real-time control applications.

The MCK240 motion kit package :

- MCK240 kit with on board PWM power amplifier
- escap[®] brushless motor with 500 lines quadrature encoder and Hall sensors
- **Ready to run software for:**
 - serial communication
 - processor evaluation
 - reference generator
 - control implementation
 - data acquisition
 - motion examples
 - motion applications analysis and development
- **Full documentation:**
 - TMS320C240 documentation
 - interactive help
 - MCK240 user's guide



TECHNOSOFT
MOTION DESK



Graphical DSP programming

The MCWIN is an evaluation and analysis Windows platform for the MCK240 configuration.

At the basic level, MCWIN offers the PROCEV processor evaluation applications. These programming examples are of great value for users, providing them with a starting point for their applications.

With MONPC monitor facilities users can easily download, execute and debug a DSP motion program. The BLAC/BLDC motion control programs are ready-to-run examples

for AC or DC brushless speed control. They offer the possibility of analysing a basic motion control structure. Different motion profiles and controller parameters may be defined.

During run-time, the main dynamic system variables like speed reference, motor speed/position, speed error, current command(s) and motor current(s) are saved in the external data memory.

The system behaviour can be evaluated by using the advanced graphical module included in the DSPMOT program.

Software Modules

MCWIN - Windows platform for the MCK 240 kit including :

MCK 240-PC Communication

- **MON240** - TMS320F240 monitor program for MCK240, written in the Flash memory
- **MONPC** - PC monitor program using serial communication with MCK240 board
- **MONWIN.DLL** - PC library for communication with the MCK240 board, to be integrated in user developed Windows applications.

Processor Evaluation

- **PROCEV** - processor evaluation with ready-to-run programming examples (PWM, I/O, A/D functions)

Motion Control Applications

DSPMOT - Advanced graphical tool for motion applications development and evaluation.

Features:

- Graphical reference generator
- Controller parameters setting
- Automatic download of motion parameters to MCK240
- Motion data logger and loader
- Possibility of easily comparing the performances of different control structures

BLAC/BLDC - TMS320F240

programs for AC and DC brushless motor speed control.

Features:

- Includes and takes advantage of all the DSPMOT program environment features
- Digital PI current controller(s)
- Digital PI speed controller
- User definable reference and controller structure through C or assembly language programming

The user can also visualise the dynamic variables of his own application. At the advanced level, MCWIN permits to the user to define and integrate his own reference or controllers written in C or assembly languages, within the two motion applications.

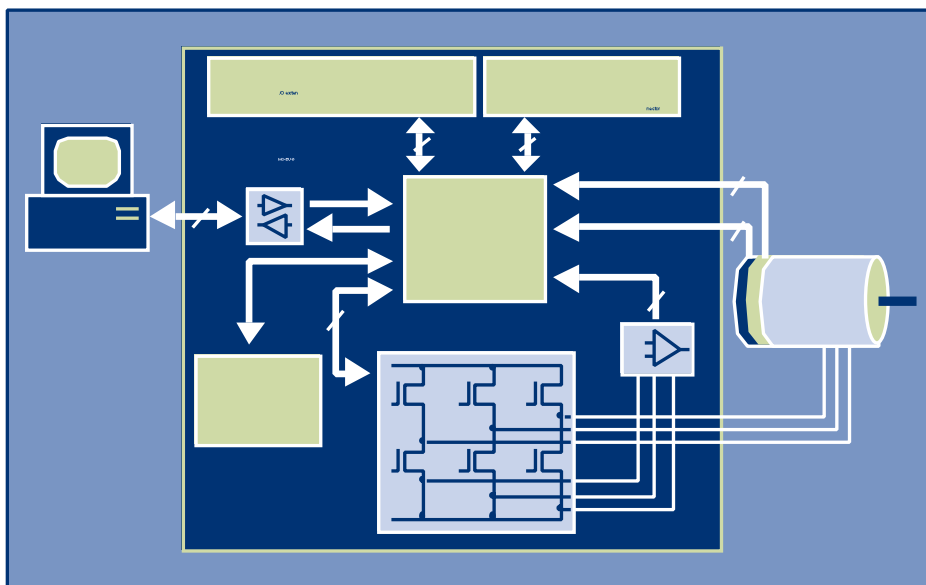
The development of user specific motion control software is facilitated by the easy integration in the DSPMOT framework. This allows to use the advanced analysis features of DSPMOT which provide rapid debugging and implementation of real-time control applications.

The MCWIN environment is fully compatible with Texas Instruments development tools (compiler, assembler, linker).

Transfer to target applications

The applications developed on the basis of the MCK 240 can be also easily transplanted into the customer final target application. Upon request, a set of ready to use and industrial plug-in DSP controller boards of the IMMC240 family (see specific documentation) and the corresponding motion control libraries are available.

MCK240 - A development platform for DSP motor control applications



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