

# MCK2812 DSP MOTION CONTROL KITS

## MSK2812 DSP MOTION STARTER KITS

DESIGN ENVIRONMENT FOR TMS320F28X

### STATE-OF-THE-ART DEVELOPMENT TOOLS FOR DIGITAL MOTION CONTROL

The Technosoft MCK2812 and MSK2812 are complete motion control development and evaluation kits, based on the powerful TMS320F2812 DSP controller. These advanced kits represent ideal environments for the design, development and implementation of digital motion control applications.

The MCK2812 kit is a complete DSP development platform that comes with a power module and a brushless motor, representing the perfect tool for digital motion control solutions design.

The MSK2812 kit is the best DSP development platform for users that already have the power module and motor, and want to develop their motion control software application.

To quickly develop and test motion control algorithms, the MSK2812 DSP board uses the 150 MIPS computational power of the TMS320F2812, combined with a double-event manager able to drive up to 16 PWM and 16 A/D converters. The embedded CAN interface may be used to connect the board to multiple-axis structures.

The MCK2812 and MSK2812 kits can be connected to a PC via an RS232 interface to download, execute and debug the software applications without the need of other hardware devices.

#### MSK2812 DSP Motion Starter Kit

- ✓ MSK2812 DSP board
- ✓ Processor evaluation software
- ✓ DMCD28x-Lite with assembler and linker
- ✓ User's Guide

#### MCK2812 DSP Motion Control Kit

- ✓ MSK2812 DSP Motion Starter Kit
- ✓ PM50 Power module (50W)
- ✓ Brushless motor with Hall sensors and 500-line encoder
- ✓ Motion Control Demos
- ✓ User's Guide

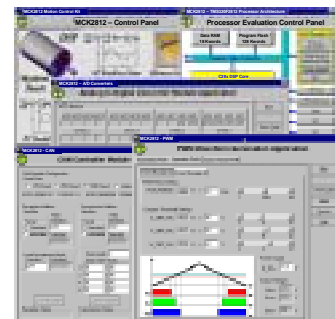


### MSK2812 DSP board – Hardware specifications

- DSP controller TMS320F2812 operating at 150 MHz
- 128K word on-chip Flash program memory
- 18K word on-chip data/program of RAM memory
- 128K word on-board data/program of RAM memory
- RS-232 serial communication port
- Opto - isolated CAN communication interface
- Standard I/O connector (3.3V – MC-BUS) for simultaneous links with two power modules
- Access to 56 Individually Programmable GPIO DSP pins
- 16 channels of 12-bit accuracy A/D inputs
- 2 channels of 12-bit accuracy D/A outputs
- DSP address / data expansion bus connector
- Single DC power supply: 5V
- Dimensions: 104x63 mm

### GRAPHICAL EVALUATION OF DSP DIGITAL MOTOR CONTROL

The MCK2812 and MSK2812 DSP development kits contain a comprehensive software packages for the DSP processor evaluation and basic development (assembler, linker and debugger), integrated under a Windows IDE platform. A set of ready-to-run demos (with C/ASM source code) is provided. Tests for timers, PWM, I/O, A/D functions are available at a click of the mouse.



Processor evaluation software

### MOTION CONTROL APPLICATIONS

Demos for AC and DC brushless motor speed control are included in the MCK2812 DSP kit. The dynamic behavior of the real-time system can easily be analyzed through an extended graphical display of all system variables. Speed and current controller parameters can be modified on-line, which allows the quick optimization of control algorithms.



Motion Control Application

New  
DSP solutions  
for digital  
motor control



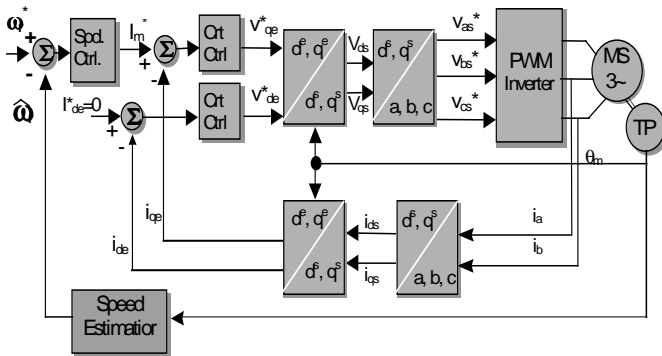
TECHNO SOFT  
MOTION DESK

# PROFESSIONAL KITS

## DMCD28X-PRO, DIGITAL MOTION CONTROL DEVELOPER

The MSK2812 and MCK2812 Pro kits include DMCD28x-Pro, the Technosoft advanced software platform, which allows the development of motor control applications in a Windows IDE environment, while providing:

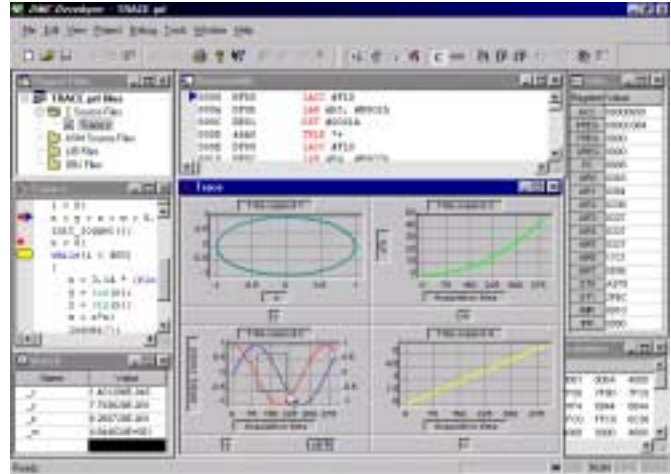
- Real-time debugging through serial interface
- Breakpoints, single step execution, stopping and start of current program
- Project management system
- Advanced reference generator
- True real-time data storage logger with advanced graphical IDE. Graphical control panel for on-line data visualization and motion parameter setting
- Observe/Edit global variables during debugging
- View/Edit of data and program memory contents of the DSP target board
- Full disassembly window for C and assembly code
- Usable with TI assembler, linker and C-compiler



PMSM control scheme

### Order List

Part No.	Description
24TKI80001	<b>MSK2812 DSP Motion Starter Kit</b> ✓ MSK2812 DSP board ✓ Processor evaluation software ✓ DMCD28x-Lite, Digital Motion Control Developer Lite
24TKI80003	<b>MSK2812 Pro</b> ✓ MSK2812 DSP Motion Starter Kit ✓ DMCD28x-Pro, Digital Motion Control Developer Pro
24TKI80212	<b>MSK2812 Kit C Pro</b> ✓ MSK2812 Pro Kit ✓ TI C/C++ Compiler/Assembler/Linker (TMS320F28x)
24TKI80011	<b>MCK2812 DSP Motion Control Kit</b> ✓ MSK2812 DSP Motion Starter Kit ✓ PM50, 3-phase, 36V, 2.1A, MOSFET inverter ✓ Brushless motor with Hall sensors & 500-line encoder ✓ Motion Control Applications
24TKI80112	<b>MCK2812 Kit A Pro</b> ✓ MCK2812 DSP Motion Control Kit ✓ DMCD28x-Pro, Digital Motion Control Developer Pro
24TKI80312	<b>MCK2812 Kit C Pro</b> ✓ MCK2812 Pro Kit ✓ TI C/C++ Compiler/Assembler/Linker (TMS320F28x)
24TKI80313	<b>MCK2812 Kit C Pro – S (BL)</b> ✓ MCK2812 Kit C Pro ✓ DMCode – S(BL), Source Code Speed Control library for Brushless Motor
24TKI80315	<b>MCK2812 Kit C Pro – S (IM)</b> ✓ MSK2812 C Pro + ACPM750E + Induction Motor ✓ DMCode–S(IM), Source Code Speed Control library for Induction Motor
24TKI80316	<b>MCK2812 Kit C Pro – MS(BL)</b> ✓ MCK2812 Kit C Pro ✓ DMCode – SM(BL), MATLAB-Simulink Position / Speed Control library for Brushless Motor
24TKI80317	<b>MCK2812 Kit C Pro – MS(IM)</b> ✓ MSK2812 C Pro + ACPM750E + Induction Motor ✓ DMCode – SM(BL), MATLAB-Simulink Position / Speed Control library for Induction Motor



### DMCode, MOTOR CONTROL SOURCE CODE LIBRARIES

The **MCK2812 Kits C Pro -S** include complete digital motion control application source code, fully documented, for the speed control of a brushless or induction motor. Options are:

**DMCode – S (BL) plug-in for DMCD28x-Pro** - complete source code for brushless motor speed control:

- Trapezoidal mode (BLDC)
- Sinusoidal mode (PMSM – vector control)

**DMCode – S (IM) plug-in for DMCD28x-Pro** - complete source code for induction motor speed control:

- Vector control
- V/f mode

These applications are structured as projects for the DMCD28x-Pro platform.

Starting with a complete, ready-to-run platform, the user will manage in a very efficient way the changes at hardware or software level, which can be controlled in a 'one change at a time - test - validate' manner.

The code is developed mainly in C language with some specific functions in assembler.

**MATLAB™** – compatible versions of the DMCode libraries are also available, with **Simulink™** models for the motor control structure. One can easily simulate the system behavior and validate the control scheme performances. Then, you can use the C-code generator feature of MATLAB, and obtain the corresponding C-code, compile, download and test it on the DSP module.

### COMPATIBILITY WITH TEXAS INSTRUMENTS SOFTWARE TOOLS

TI software tools (C/C++ compiler, assembler and linker) are fully compatible with all MSK2812 DSP Motion Starter Kits and MCK2812 DSP Motion Control Kits.

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