



Development tool for Kinetis V series MCUs and digital signal controllers

High-Voltage Development Platform

Our high-voltage development platform is an evaluation and development solution for Kinetis V series MCUs and digital signal controllers (DSCs).

TARGET APPLICATIONS

- ▶ PMSM, BLDC and ACIM motor control algorithms
- ▶ Industrial drives
- ▶ Compressors
- ▶ Washing machines
- ▶ Dishwashers
- ▶ Refrigerators
- ▶ Pumps, fans
- ▶ Air conditioning units

The platform enables development of 3-phase PMSM, BLDC and ACIM motor control and power factor correction (PFC) solutions in a safe high-voltage environment. The High-Voltage Development Platform is an isolated solution that provides the development base for the controller cards supporting MCUs. The platform comes complete with a Kinetis KV46F150M controller card.

Control of the motor control stage and PFC stage is carried out via a single MCU. Input voltage is 85–240 V AC, with output power of the motor stage up to 1 KW, with the ability to drive a 1.2 Hp motor, and 800 watts when using the PFC stage with the motor stage.

The High-Voltage Development Platform is fully supported by a comprehensive enablement environment, alongside the many reference solutions that will be continuously developed to support this platform built on our embedded motor control and power conversion libraries.

DEVELOPMENT TOOLS

Embedded motor control and power conversion libraries

- ▶ Extensive suite of complimentary software libraries for motor and power control applications
- ▶ A group of algorithms, ranging from basic mathematics operations to advanced transformations and observers, which can easily be incorporated into complex real-time control applications

Proprietary MQX™ RTOS

- ▶ Our proprietary MQX RTOS is a full-featured complimentary real-time operating system including the MQX kernel, TCP/IP stack, embedded MS-DOS file system, and more.



- ▶ The mQX multitasking kernel provides pre-emptive scheduling, fast interrupt response, extensive inter-process communication and synchronization facilities.

Kinetis Software Development Kit (SDK)

- ▶ Extensive suite of robust peripheral drivers, stacks, middleware and example applications designed to simplify and accelerate application development on any Kinetis MCU
- ▶ The Kinetis SDK is complimentary and includes full source code under a permissive open-source license for all hardware abstraction and peripheral driver software.

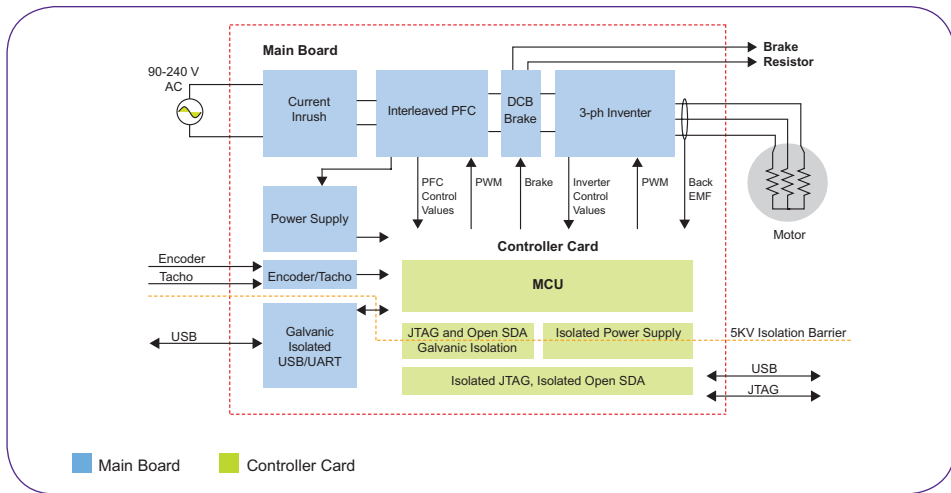
Processor Expert Software

- ▶ Building on the Kinetis SDK drivers, the processor expert software configuration tool is a development system to create, configure, optimize, migrate, and deliver software components that generate source code for our silicon.

Integrated Development Environments (IDE)

- ▶ Kinetis Design Studio IDE
 - No-cost integrated development environment (IDE) for Kinetis MCUs
 - Eclipse and GCC-based IDE for C/C++ editing, compiling and debugging
- ▶ IAR Embedded Workbench®
- ▶ ARM Keil® Microcontroller Development Kit
- ▶ CodeWarrior development studio for Microcontrollers 10.6
- ▶ Atollic® TrueSTUDIO®
- ▶ Green Hills Software MULTI
- ▶ Broad ARM ecosystem support through the Connect Partner Program

HIGH-VOLTAGE MOTOR CONTROL DEVELOPMENT KIT BLOCK DIAGRAM



HIGH-VOLTAGE DEVELOPMENT PLATFORM FEATURES AND BENEFITS

Features	Benefits
1 KW Motor driver stage	Drive BLDC, PMSM or ACIM motors up to 1.2 Hp
800 W Interleaved PFC stage	Develop motor systems that also incorporate PFC or standalone PFC systems
Detailed analog sensing	Includes all sense interfacing needed to develop a complete motor control with PFC solution regardless of whether it is a BLDC, PMSM or ACIM solution with or without sensor
Motor speed/position sensors interface: Encoder, Hall, Tacho generator	Allows the development of sensed solutions across all algorithms using all the main sensor types
Over voltage comparator with DC-brake resistor interface	Suitable for high dynamics drives, and safe PFC algorithm tuning
Current Inrush circuit	Safely cuts off at 14 amps during startup
Hardware over-current fault protection	Integrated protection hardware ensures no damage to your motor should an over-current occur
Support for multiple MCUs via low cost plug in controller cards	A single high-voltage environment that can be used to develop any Kinetis V series MCU or one of our proprietary DSC solutions
Isolated interfaces	All interfaces to the platform, USB/UART/JTAG are all galvanically isolated from the high voltage ensuring maximum safety up to 5 KV
Robust aluminum enclosure	Physical isolation from high voltage

HIGH-VOLTAGE DEVELOPMENT PLATFORM PACKAGE OPTIONS

Part Number	Description	Price (USD)
HVP-MC3PH	HVP-MC3PH High-Voltage Development Platform with HVP-KV46F150M Controller Card	\$600
HVP-KV46F150M	KV64 150 MHz ARM® Cortex®-M4 MCU Controller Card	\$50
HVP-KV31F120M	KV31 120 MHz ARM Cortex-M4 MCU Controller Card	\$50
HVP-KV10Z32	KV10 75 MHz ARM Cortex-M0+ MCU Controller Card	\$50
HVP-56F82748	MC56F82748 Digital Signal Controller (DSC) Controller Card	\$50
HVP-KV11Z75M	KV11 75 MHz ARM-Cortex-M0+ MCU Controller Card	\$50

www.nxp.com/HVP; www.nxp.com/Kinetis; www.nxp.com/Kinetis/VSeries or www.nxp.com/DSC

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