Quick Start Guide

HVP-KE18F Controller Card

HIGH-VOLTAGE DEVELOPMENT PLATFORM

GET TO KNOW THE HVP-KE18F BOARD
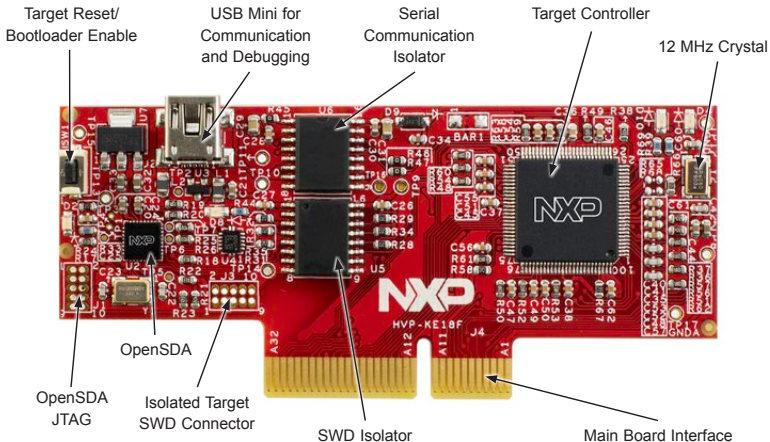

Figure 1: Front Side of HVP-KE18F

HVP-KE18F INTRODUCTION

The HVP-KE18F controller card is a development platform for the Kinetis®
KE1x family that, in combination with the HVP-MC3PH high-voltage development
platform, provides ready-made software and hardware development for
high-voltage motor control and power conversion applications.

This Quick Start Guide will teach you to:

• Easily program precompiled examples for the KE1x MCU

• Spin the 3-phase PMSM motor of the HVP-MC3PH module

HVP-KE18F Controller Card Features

• Accommodates target MCU MKE18F512VLL16

• SWD isolation up to 5KV

• Programmable OpenSDA v2 platform pre-loaded with the CMSIS-DAP interface

• Design optimized for low noise

• onboard serial line isolation, allowing safe debugging and safe user interface

STEP-BY-STEP INSTRUCTIONS

1 Download software

Download installation software and documentation under **"Jump Start Your Design"** at **www.nxp.com/HVP**.

2 Install the software and tools

1. Download and install mbed™ win serial driver from **developer.mbed. org/handbook/Windows-serial-configuration**.

2. Download and install the free debug monitoring and data visualization tool FreeMASTER, v2.0 or later, at **www.nxp.com/FreeMASTER**.

3 Program a precompiled LED_demo example

1. Plug the HVP-KE18F into the HVP-MC3PH main board and close the lids.

Note: HVP-KE18F could not be programmed standalone without HVP-MC3PH, since the V_{DDA} power supply could not be floating in the KE1x family.

2. Plug the USB mini cable into HVP-KE18F. Windows® will detect a new mbed drive and automatically install the required drivers.

3. Turn on power for HVP-MC3PH main board.

4. Program a precompiled example "LED_demo" for the KE18 In the mbed drive, copy LED_demo.bin file from the "Precompiled Examples" folder of the Quick Start Package. Demo will start after power is off and on again (Capacitor discharge can take approximately 25 seconds until the blue LED is off).

5. User LED on the controller card will blink.
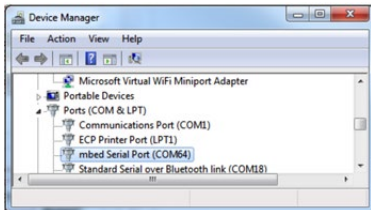
STEP-BY-STEP INSTRUCTIONS (CONT.)
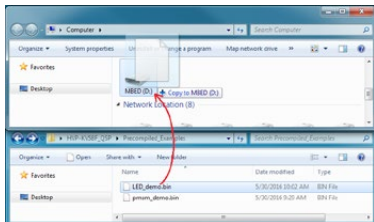
- Insert HVP-KE18F into HVP-MC3PH and close the lids.

- Connect the servo motor leads to output connector J13. (Out-of-box applications are tuned for servo motor type: Mige 60CST-M01330 or Maxsine 60MSLO1330FC).

- Connect the mini USB cable between the daughter card and your computer. Windows will detect a CMSIS-DAP debug port, mbed serial port.

4 Run your first motor with HVP-MC3PH

1. Configure hardware.

- Configure jumpers at HVP-MC3PH as shown in the table below:

| OPTION	SETTING
J1	1-2, 2-3
J3	1-2, 2-3

STEP-BY-STEP INSTRUCTIONS (CONT.)

5 Loading the PMSM demo software

1. Connect a line-isolated, current-limited 110 V DC or 90 V AC power supply to the power input module with the IEC connector. The power supply current limit should be set for less than 3 amps. The DC supply's polarity does not matter. Regardless whether DC or AC power is used, the power is always applied to the input power connector located on the rear panel.

2. Program a precompiled example **"pmsm_demo"** for the KE18 in the HVP-KE18F drive and copy **pmsm_demo.bin** file from the "Precompiled Examples" folder of the Quick Start Package.
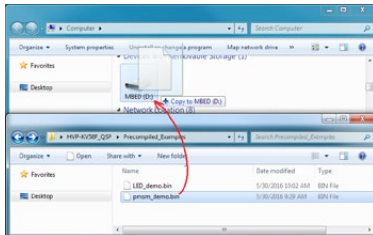
3. Turn off main power switch, wait until the blue LED turns off (it can take up to 25 seconds) and turn power on again.

STEP-BY-STEP INSTRUCTIONS (CONT.)

6 Monitor the project with FreeMASTER

Launch NXP® FreeMASTER v2.0 or later from the Windows Start menu.

Open the FreeMASTER project file **pmsm_demo.pmp** following the path HVP-KE18F_QSP\MC Demo GUI\ pmsm_demo.pmp in the Quick Start Package. The PMSM sensorless application interface will appear in FreeMASTER to monitor and control the speed, the voltage and the current consumption of the motor.

In Project Options, set the COM port affected (info available in Device Manager) and set the baud rate/speed to 19200 bps (check the option Do not Open Port at Startup to avoid error messages at FreeMASTER startup).

From the toolbar, select the action Start the Communication.

Select in FreeMASTER speedometer; the requested speed and the motor will spin automatically.
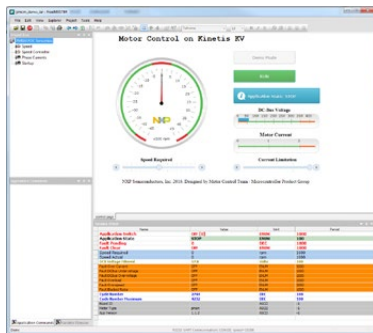
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