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HVP-56F82748 Quick Start Guide

Freescale Controller Card

High-Voltage
Development
Platform



Get to know the HVP-56F82748

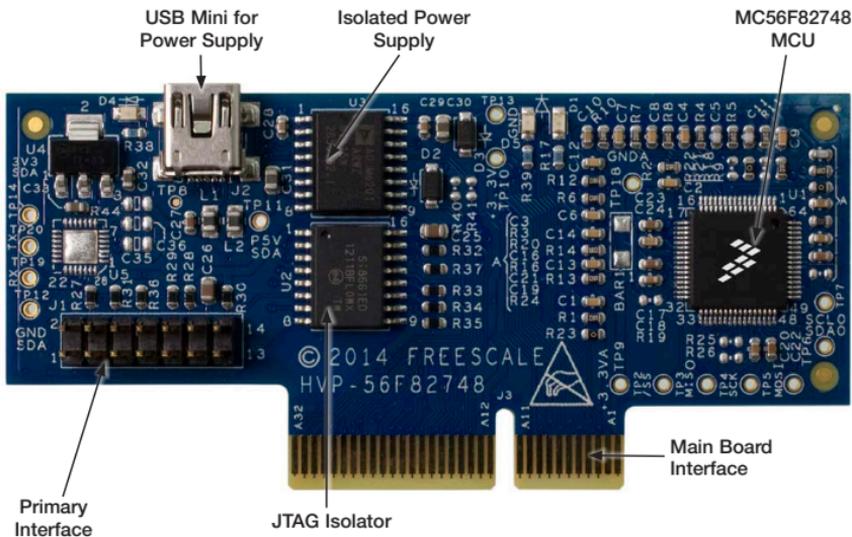


Figure 1: HVP-56F82748

HVP-56F82748 High-Voltage Development Platform



The Freescale High-Voltage Development Platform is a set of software and hardware tools for evaluation and development of high-voltage motor control and power conversion algorithms. It is ideal for rapid prototyping of high-voltage microcontroller-based applications.

Introduction to HVP-56F82748 High-Voltage Development Platform

The HVP-56F82748 controller card is a development platform for the DSC56F8xxxx family which in combination with one of 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 examples for the DSC56F8xxxx family
- Spin the 3-phase PMSM motor of the HVP-MC3PH module while monitoring the motor with the FreeMASTER tool

HVP-56F82748 Controller Card Features

- Accommodates target MC56F82748VLH MCU (32-bit DSP core with single-cycle math computation, 100 MHz, 64 KB flash, 2x12-bit ADCs, high-resolution PWM, 64 LQFP) SWD isolation up to 5KV
- Galvanic Isolation
- Design optimized for low noise
- On-board isolated power supply, allowing safe debugging
- Controller card allows stand-alone operation

Tools Required

- CodeWarrior Development Studio for MCU version 10.6
- Freescale FreeMASTER for real-time debug monitoring and data visualization

Step-by-Step Installation Instructions

1 Download Software and Tools

Download installation software and documentation under **“Jump Start Your Design”** at freescale.com/HVP.



2 Install the Software and Tools

- Download and install the CodeWarrior Development Studio for MCU version 10.6.
- Download and install the driver for USB to serial controller CP210x.
- Download and install the free debug monitoring and data visualization tool Freescale FreeMASTER, v1.4 or later, at freescale.com/FreeMASTER.

3 Debug Motor Control Project in CodeWarrior with HVP-MC3PH High-Voltage Development Platform

1) Configuring Hardware

- Plug the controller card HVP-56F82748 into 64-pin PCI connector located at HVP-MC3PH.
- Configure jumpers at HVP-MC3PH as is shown in the table below.

Option	Setting
J1	1-2, 2-3
J3	1-2, 2-3

- Close the lids.
- Connect the servo motor leads to output connector J13. (Applications are tuned for Servo motor type: Mige 60CST-M01330 or Maxsine 60MSLO1330FC).
- Connect mini USB cable between controller card and your computer

Step-by-Step Installation Instructions

to provide power supply for galvanic isolator.

- Connect debugger (USB TAP, or PE micro multilink) to J1 JTAG connector.

4

Loading the PMSM Motor Demo Software

- Launch CodeWarrior and Build the “PMSM_sensorles_FOC”. Open the CodeWarrior project file .project following the path Project Labs\
PMSM_sensorles_FOC\ in the Quick Start Package. Clean the project before selecting the action Rebuild All.

Note: The compilation may return warning messages without consequence.

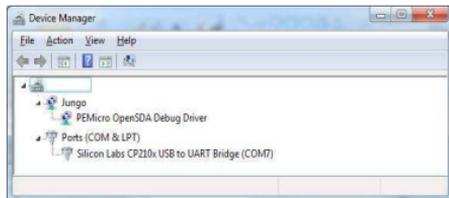
- Run CodeWarrior Debug Mode and Download and Debug the “PMSM_sensorles_FOC” project.

- 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.
- Start the debug session by selecting the GO option from the toolbar. To spin motor and set motor speed, continue to following section.

5-step-by-5-step Installation Instructions

5 Monitor the Project with FreeMASTER

- Launch Freescale FreeMASTER v1.4 or later from the Windows Start menu.
- Connect USB cable between USB on HVP-MC3PH and your computer.
- Windows will detect a UART to USB bridge.



- Open the FreeMASTER project file **PMSM_Sensorless_DSC.pmp** following the path Project Labs\freemaster\PMSM_Sensorless_FOC 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 the Project Options, set the COM port affected as the CP210x USB to UART Bridge (information 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.



et Started



Download installation software and documentation under
“**Jump Start Your Design**” at freescale.com/HVP.

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