

# Low-Voltage Starter Kit

## Description

The MC-LVKIT-714 is a complete evaluation kit that allows you to demonstrate and evaluate the CPU and motor control functions of NEC Electronics'  $\mu$ PD78F0714 microcontroller. The power module (MC-PWR-LV) in this kit can be used for any low-voltage application that requires drive capability of motors up to 24 volts. The target interface board (MC-IO) has on-board user interface hardware for controlling and operating motor units.

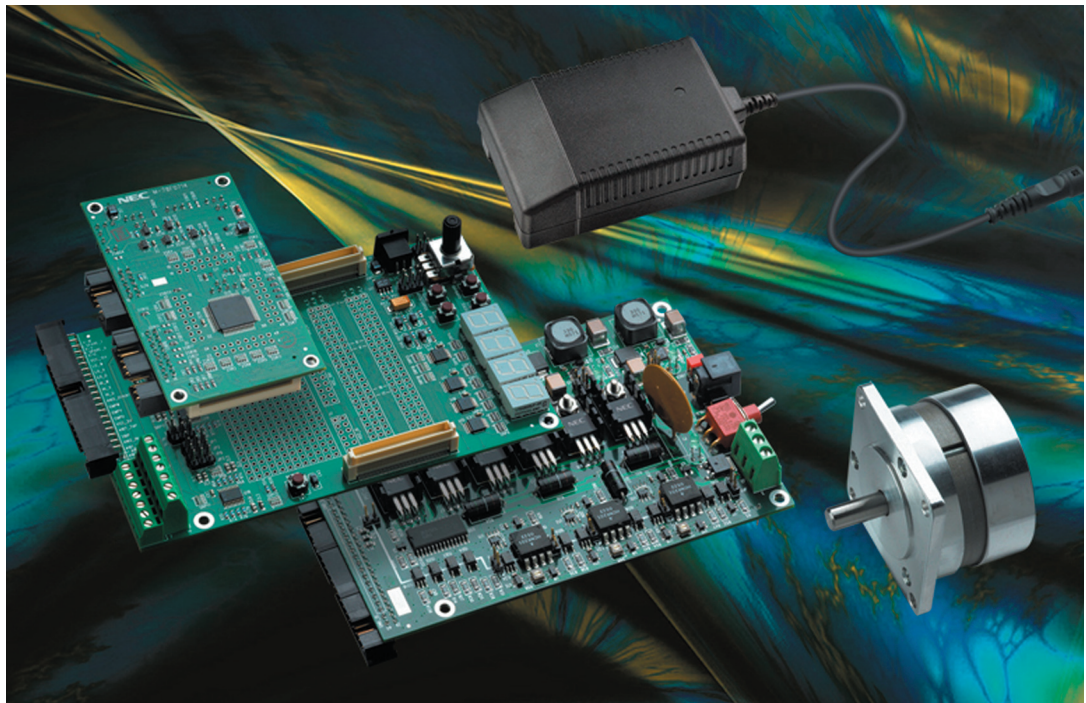
The sample code and PC GUI software in this package allow you to run a low-voltage motor and tune your code by changing the PID controller parameters from the PC GUI. The kit can run in standalone mode from the PC GUI or it can be connected to NEC Electronics' debugging tools for system debugging purposes.

## Applications

The MC-LVKIT-714 can be used for evaluating a 3-phase asynchronous current induction motor (ACIM) or permanent magnet asynchronous current (PMAC) motor control applications. The kit is also suitable for low-voltage applications such as those for battery-operated hand tools or HVAC actuators.

## Kit Contents

- > M-78F07114 micro-board for  $\mu$ PD8F0714
- > MC-IO sample target interface board
- > MC-PWR-LV low-voltage power module
- > 12V brushless DC motor
- > Sample code and GUI for fine-tuning user code
- > User's manuals
- > 15V/ 2A power supply



## Available Micro-Boards

Part Number	Supporting Devices
M-V850ES-1K1 / IE2	μPD70F3327 and μPD70F3329 μPD70F3713 and μPD70F3714
M- V850E-1A4	μPD70F3185 and μPD70F3186
M-V850ES-KJ1	μPD70F3318 and μPD70F3316 μPD70F3733 and μPD70F3734
M-78F0712	μPD78F0711 and μPD78F0712

For further information on NEC Electronics' microcontrollers, visit our website at [www.am.necel.com/microcontrollers](http://www.am.necel.com/microcontrollers).

## NEC Electronics Offices

**NEC Electronics America, Inc.**  
Santa Clara, CA USA  
1-800-366-9782 and 1-408-588-6000  
[www.am.necel.com](http://www.am.necel.com)

**NEC Electronics (Europe) GmbH**  
Dusseldorf, Germany  
+49 (0) 211 65 03 01  
[www.ee.nec.de](http://www.ee.nec.de)

**NEC Electronics Taiwan Ltd.**  
Taipie, Taiwan  
02-2719-2377  
[www.necel.com](http://www.necel.com)

**NEC Electronics Corporation**  
Kawasaki, Japan  
044-435-5111  
[www.necel.com](http://www.necel.com)

**NEC Electronics Hong Kong Ltd.**  
Hong Kong  
(+852) 28869318  
[www.necel.com.hk](http://www.necel.com.hk)

**NEC Electronics Seoul**  
Seoul, Korea  
02-558-3737  
[www.necel.com](http://www.necel.com)

The information in this document is current as of March 2006. The information is subject to change without notice. For actual design-in, refer to the latest publications of NEC Electronics data sheets or data books, etc., for the most up-to-date specifications of NEC Electronics products. Not all products and/or types are available in every country. Please check with an NEC sales representative for availability and additional information. No part of this document may be copied or reproduced in any form or by any means without prior written consent of NEC Electronics. NEC Electronics assumes no responsibility for any errors that may appear in this document. NEC Electronics does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from the use of NEC Electronics products listed in this document or any other liability arising from the use of such NEC Electronics products. No license, express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Electronics or others. Descriptions of circuits, software and other related information in this document are provided for illustrative purposes in semiconductor product operation and application examples. The incorporation of these circuits, software and information in the design of customer's equipment shall be done under the full responsibility of customer. NEC Electronics no responsibility for any losses incurred by customers or third parties arising from the use of these circuits, software and information. While NEC Electronics endeavors to enhance the quality, reliability and safety of NEC Electronics products, customers agree and acknowledge that the possibility of defects thereof cannot be eliminated entirely. To minimize risks of damage to property or injury (including death) to persons arising from defects in NEC Electronics products, customers must incorporate sufficient safety measures in their design, such as redundancy, fire-containment and anti-failure features. NEC Electronics products are classified into the following three quality grades: "Standard", "Special" and "Specific". The "Specific" quality grade applies only to NEC Electronics products developed based on a customer-designated "quality assurance program" for a specific application. The recommended applications of NEC Electronics product depend on its quality grade, as indicated below. Customers must check the quality grade of each NEC Electronics product before using it in a particular application. "Standard": Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots. "Special": Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support). "Specific": Aircraft, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems and medical equipment for life support, etc. The quality grade of NEC Electronics products is "Standard" unless otherwise expressly specified in NEC Electronics data sheets or data books, etc. If customers wish to use NEC Electronics products in applications not intended by NEC Electronics, they must contact NEC Electronics sales representative in advance to determine NEC Electronics' willingness to support a given application.

(Note)

- (1) "NEC Electronics" as used in this statement means NEC Electronics Corporation and also includes its majority-owned subsidiaries.  
(2) "NEC Electronics products" means any product developed or manufactured by or for NEC Electronics (as defined above).

© March 2006 NEC Electronics America, Inc. All rights reserved.