

PS4200EV

PS4200 Evaluation Kit

1.0 INTRODUCTION

The PS4200EV evaluation kit provides the opportunity to evaluate the PS402 IC quickly and easily. The evaluation kit contains all of the hardware and software necessary to implement a fully functional smart battery and demonstrate all operating modes. The included PS4200 module is a complete smart battery controller subsystem, based on the Microchip PS402 battery manager with patented Accuron[™] technology. The module is designed to operate in a battery pack consisting of six (6) to ten (10) series connected Ni-based cells. The module consists of the Microchip PS402 battery manager IC, with a four LED SOC display and an optional connection for an external thermistor.

The included PowerTool[™] Windows[®]-based software can be used to modify the programming in the preprogrammed evaluation module. Although many interdependent parameters must be taken into account when programming the battery manager, the process is simplified with the PowerTool configuration wizard.

1.1 Evaluation Kit Contents

The PS4200 Evaluation Kit contains the following hardware, software, and documentation:

- PS4200
- PS041
- PS4200EV CD-ROM
- Power Supply Unit (120V input, 12V output)
- RS-232 Cable

The PS4200EV CD-ROM contains:

- PS040 PowerTool Development Software
- PS041 Data Sheet (DS40234)
- PS402 Data Sheet (DS21766)
- PS4200 Data Sheet (DS21768)
- This Product Brief (DS21787)



2.0 INSTALLATION

The PowerTool software provided on the disk is based on the Windows operating system. To install the software, copy the executable from the CD to a directory of choice on a PC hard drive. PowerTool cannot be run from a CD-ROM or other read-only media.

• Double click the PowerTool software executable icon to start the software.

| 🗅 powertool | | |
|--|--|--|
| <u>Eile E</u> dit ⊻iew F <u>a</u> vorite | es <u>T</u> ools <u>H</u> elp | |
| Back Forward | Up Search Folders Views | |
| Address 🗁 C:\microchip\po | owertool | |
| File and Folder Tasks Image: Publish this folder to the Web Image: Share this folder Other Places Image: My Computer Image: My Network Places Image: Details powertool | PowerTool PowerTool MFC Application Microchip Inc. | |
| Other Places | | |
| imicrochip My Documents My Computer My Network Places | | |
| Details | * | |
| powertool | | |

• A dialog box appears to start the pack configuration wizard. Click Next.

| Welcome to PowerTool | | X |
|--|---------------|------|
| Would you like to start the P4 Wizard? | ⊙ Yes ⊂ No | |
| < <u>B</u> ack <u>N</u> ext > | Cancel | Help |

• Choose NiMH and click Next.

| Welcome to PowerTool - 2 | X |
|---------------------------------------|------------------|
| Are you using LION or NiMH batteries? | ⊂ Lion ☞ Nimh |
| < <u>B</u> ack <u>N</u> ext > | Cancel Help |

• Choose Default Values and click Next.



• Click Finish. The wizard will begin.

| Welcome to PowerTool - 4 | × |
|--|-------------|
| | |
| That's it, Press 'Finish' to begin the P4 Wizard. | |
| | |
| | |
| | |
| | |
| < <u>B</u> ack Finish | Cancel Help |

• Follow instructions in the wizard to complete the configuration of a PS4200 pack.

3.0 DEVELOPMENT TOOL SUMMARY

Microchip provides all the necessary hardware and software to enable easy tailoring of battery control algorithm parameters, and cell performance models, to meet specific application requirements and attain the highest accuracy available anywhere. Table 3-1 summarizes the development tool offering from Microchip to support the PS4200. Please refer to the Microchip web site for ordering information and design documentation (including schematics) at www.microchip.com.

TABLE 3-1: MICROCHIP DEVELOPMENT TOOL SUMMARY

| Development Tool | Use |
|--|--|
| PowerInfo [™] hardware with PowerTool [™] software (PS041) | Read and write Smart Battery data values, EEPROM programming, OTP EPROM programming |
| PowerCal™ hardware with PowerTool software (PS042) | Read and write Smart Battery data values, EEPROM programming, OTP EPROM programming, pack calibration, pack test |

3.1 Reference Documents

This data sheet provides an overview of the PS4200 Battery Manager Module. For further information on the PS402 and development tool operations, please refer to the following documents available for download at www.microchip.com.

TABLE 3-2: MICROCHIP REFERENCE DOCUMENTS

| Document Number | Documents Available |
|-----------------|---|
| DS21766 | PS402 Single Chip Battery Manager - Nickel Chemistries Data Sheet (IC Products) |
| DS40234 | PS041 PowerInfo Configuration Interface Product Brief |
| DS40237 | PS042 PowerCal Calibration Platform Data Sheet |

TO OUR VALUED CUSTOMERS

It is our intention to provide our valued customers with the best documentation possible to ensure successful use of your Microchip products. To this end, we will continue to improve our publications to better suit your needs. Our publications will be refined and enhanced as new volumes and updates are introduced.

If you have any questions or comments regarding this publication, please contact the Marketing Communications Department via E-mail at **docerrors@mail.microchip.com** or fax the **Reader Response Form** in the back of this data sheet to (480) 792-4150. We welcome your feedback.

Most Current Data Sheet

To obtain the most up-to-date version of this data sheet, please register at our Worldwide Web site at:

http://www.microchip.com

You can determine the version of a data sheet by examining its literature number found on the bottom outside corner of any page. The last character of the literature number is the version number, (e.g., DS30000A is version A of document DS30000).

Errata

An errata sheet, describing minor operational differences from the data sheet and recommended workarounds, may exist for current devices. As device/documentation issues become known to us, we will publish an errata sheet. The errata will specify the revision of silicon and revision of document to which it applies.

To determine if an errata sheet exists for a particular device, please check with one of the following:

- Microchip's Worldwide Web site; http://www.microchip.com
- Your local Microchip sales office (see last page)
- The Microchip Corporate Literature Center; U.S. FAX: (480) 792-7277

When contacting a sales office or the literature center, please specify which device, revision of silicon and data sheet (include literature number) you are using.

Customer Notification System

Register on our web site at www.microchip.com/cn to receive the most current information on all of our products.

Information contained in this publication regarding device applications and the like is intended through suggestion only and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. No representation or warranty is given and no liability is assumed by Microchip Technology Incorporated with respect to the accuracy or use of such information, or infringement of patents or other intellectual property rights arising from such use or otherwise. Use of Microchip's products as critical components in life support systems is not authorized except with express written approval by Microchip. No licenses are conveyed, implicitly or otherwise, under any intellectual property rights.

Trademarks

The Microchip name and logo, the Microchip logo and PowerSmart are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

Accuron, PowerTool, SmartSensor, SmartShunt, SmartTel, PowerCal and PowerInfo are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2003, Microchip Technology Incorporated. Printed in the U.S.A., All Rights Reserved.

Printed on recycled paper.



WORLDWIDE SALES AND SERVICE

AMERICAS

Corporate Office 2355 West Chandler Blvd. Chandler, AZ 85224-6199 Tel: 480-792-7200 Fax: 480-792-7277 Technical Support: 480-792-7627 Web Address: http://www.microchip.com

Rocky Mountain

2355 West Chandler Blvd. Chandler, AZ 85224-6199 Tel: 480-792-7966 Fax: 480-792-4338

Atlanta

3780 Mansell Road, Suite 130 Alpharetta, GA 30022 Tel: 770-640-0034 Fax: 770-640-0307

Boston

2 Lan Drive, Suite 120 Westford, MA 01886 Tel: 978-692-3848 Fax: 978-692-3821

Chicago

333 Pierce Road, Suite 180 Itasca, IL 60143 Tel: 630-285-0071 Fax: 630-285-0075

Dallas

4570 Westgrove Drive, Suite 160 Addison, TX 75001 Tel: 972-818-7423 Fax: 972-818-2924

Detroit

Tri-Atria Office Building 32255 Northwestern Highway, Suite 190 Farmington Hills, MI 48334 Tel: 248-538-2250 Fax: 248-538-2260

Kokomo

2767 S. Albright Road Kokomo, Indiana 46902 Tel: 765-864-8360 Fax: 765-864-8387

Los Angeles

18201 Von Karman, Suite 1090 Irvine, CA 92612 Tel: 949-263-1888 Fax: 949-263-1338

San Jose

Microchip Technology Inc. 2107 North First Street, Suite 590 San Jose, CA 95131 Tel: 408-436-7950 Fax: 408-436-7955

Toronto

6285 Northam Drive, Suite 108 Mississauga, Ontario L4V 1X5, Canada Tel: 905-673-0699 Fax: 905-673-6509

ASIA/PACIFIC

Australia Microchip Technology Australia Pty Ltd

Marketing Support Division Suite 22, 41 Rawson Street Epping 2121, NSW Australia Tel: 61-2-9868-6733 Fax: 61-2-9868-6755 China - Beijing Microchip Technology Consulting (Shanghai) Co., Ltd., Beijing Liaison Office Unit 915 Bei Hai Wan Tai Bldg. No. 6 Chaoyangmen Beidajie Beijing, 100027, No. China Tel: 86-10-85282100 Fax: 86-10-85282104 China - Chengdu Microchip Technology Consulting (Shanghai) Co., Ltd., Chengdu Liaison Office Rm. 2401-2402, 24th Floor, Ming Xing Financial Tower No. 88 TIDU Street Chengdu 610016, China Tel: 86-28-86766200 Fax: 86-28-86766599 China - Fuzhou Microchip Technology Consulting (Shanghai) Co., Ltd., Fuzhou Liaison Office Unit 28F, World Trade Plaza No. 71 Wusi Road Fuzhou 350001, China Tel: 86-591-7503506 Fax: 86-591-7503521 China - Hong Kong SAR Microchip Technology Hongkong Ltd. Unit 901-6, Tower 2, Metroplaza 223 Hing Fong Road Kwai Fong, N.T., Hong Kong Tel: 852-2401-1200 Fax: 852-2401-3431 China - Shanghai Microchip Technology Consulting (Shanghai) Co., Ltd. Room 701, Bldg. B Far East International Plaza No. 317 Xian Xia Road Shanghai, 200051 Tel: 86-21-6275-5700 Fax: 86-21-6275-5060 China - Shenzhen Microchip Technology Consulting (Shanghai) Co., Ltd., Shenzhen Liaison Office Rm. 1812, 18/F, Building A, United Plaza No. 5022 Binhe Road, Futian District Shenzhen 518033, China Tel: 86-755-82901380 Fax: 86-755-82966626 China - Qingdao Rm. B505A, Fullhope Plaza No. 12 Hong Kong Central Rd. Qingdao 266071, China Tel: 86-532-5027355 Fax: 86-532-5027205

India

Microchip Technology Inc. India Liaison Office Marketing Support Division Divyasree Chambers 1 Floor, Wing A (A3/A4) No. 11, O'Shaugnessey Road Bangalore, 560 025, India Tel: 91-80-2290061 Fax: 91-80-2290062

Japan

Microchip Technology Japan K.K. Benex S-1 6F 3-18-20, Shinyokohama Kohoku-Ku, Yokohama-shi Kanagawa, 222-0033, Japan Tel: 81-45-471- 6166 Fax: 81-45-471-6122 Korea Microchip Technology Korea 168-1, Youngbo Bldg. 3 Floor Samsung-Dong, Kangnam-Ku Seoul, Korea 135-882 Tel: 82-2-554-7200 Fax: 82-2-558-5934 Singapore Microchip Technology Singapore Pte Ltd. 200 Middle Road #07-02 Prime Centre Singapore, 188980 Tel: 65-6334-8870 Fax: 65-6334-8850 Taiwan Microchip Technology (Barbados) Inc., Taiwan Branch 11F-3. No. 207 Tung Hua North Road Taipei, 105, Taiwan Tel: 886-2-2717-7175 Fax: 886-2-2545-0139

EUROPE

Austria

Microchip Technology Austria GmbH Durisolstrasse 2 A-4600 Wels Austria Tel: 43-7242-2244-399 Fax: 43-7242-2244-393 Denmark Microchip Technology Nordic ApS Regus Business Centre Lautrup hoj 1-3 Ballerup DK-2750 Denmark Tel: 45 4420 9895 Fax: 45 4420 9910 France Microchip Technology SARL Parc d'Activite du Moulin de Massy 43 Rue du Saule Trapu Batiment A - ler Etage 91300 Massy, France Tel: 33-1-69-53-63-20 Fax: 33-1-69-30-90-79 Germany Microchip Technology GmbH Steinheilstrasse 10 D-85737 Ismaning, Germany Tel: 49-089-627-144-100 Fax: 49-089-627-144-44 Italy Microchip Technology SRL Via Quasimodo, 12 20025 Legnano (MI) Milan, Italy Tel: 39-0331-742611 Fax: 39-0331-466781

United Kingdom

Microchip Ltd. 505 Eskdale Road Winnersh Triangle Wokingham Berkshire, England RG41 5TU Tel: 44 118 921 5869 Fax: 44-118 921-5820

02/12/03