



dsPIC33EP512MU814 and PIC24EP512GU814

dsPIC33EP512MU814 and PIC24EP512GU814 144-pin TQFP to 100-pin Graphics Plug-In Module (PIM) Information Sheet

OVERVIEW

The dsPIC33EP512MU814 and PIC24EP512GU814 PIMs are designed to demonstrate the capabilities of the dsPIC33EXXMU8XX and PIC24EXXMU8XX families of devices using the Explorer 16 Development Board (DM240001) and the Graphics PICtail™ Plus Daughter Board (AC164127).

The dsPIC33EP512MU814 and PIC24EP512GU814 devices are high performance 16-bit Digital Signal Controllers and Microcontrollers. These devices are equipped with Peripheral Pin Select (PPS) which allows many of the digital peripherals to be remapped to use any number of pins on the device.

Because the dsPIC33EP512MU814 and PIC24EP512GU814 devices are both in a 144-pin package, several of the pins are multiplexed with the 100-pin PIM sockets using zero Ohm resistors. Designers can utilize the Peripheral Pin Select (PPS) feature and add or remove these resistors depending on their configuration needs. Also, any spare I/O on the dsPIC33EP512MU814 and PIC24EP512GU814 devices are routed to test points (i.e., RA9, RA10, etc.) providing designers with full access to all available pins.

Table 1 shows the mapping between the 100-pin PIM interface board functions and the device pins.

TABLE 1: 144-PIN TO 100-PIN PIM

Device Pin #	dsPIC33EP512MU814 and PIC24EP512GU814 Functional Description	PIM Pin #
1	RP127/RG15	1
2	VDD	—
3	AN29/RP85/RE5	10
4	AN30/RP86/RE6	11
5	AN31/RP87/RE7	12
6	PMA8/RJ8	50
7	PMA9/RJ9	49
8	PMA10/RJ10	42
9	PMA11/RJ11	41
10	AN16/RP49/RC1	6
11	AN17/RP50/RC2	7
12	AN18/RP51/RC3	8
13	AN19/RP52/RC4	9
14	PMA12/RJ12	35
15	PMA13/RJ13	34
16	C1IND/RP118/RG6	Test Point
17	C1INC/RP119/RG7	Test Point
18	C2IND/RP120/RG8	Test Point
19	MCLR	13
20	C2INC/RP121/RG9	14
21	RJ14	Test Point
22	RJ15	Test Point
23	Vss	—
24	VDD	—
25	TMS/RP16/RA0	17

Device Pin #	dsPIC33EP512MU814 and PIC24EP512GU814 Functional Description	PIM Pin #
26	AN20/RP88/RE8	18
27	AN21/RP89/RE9	19
28	RK0	Test Point
29	RK1	Test Point
30	AN5/C1INA/VBUSON/RP37/RB5	20
31	AN4/C1INB/USBOEN/RP36/RB4	21
32	AN3/C2INA/VPIO/RP35/RB3	22
33	AN2/C2INB/VMIO/RP34/RB2	23
34	PGEC3/AN1/RP33/RB1	24
35	PGED3/AN0/RP32/RB0	25
36	Vss	—
37	PGEC1/AN6/RP38/RB6	26
38	PGED1/AN7/RCV/RP39/RB7	27
39	VREF-/RA9	Test Point
40	VREF+/RA10	Test Point
41	AVDD	30
42	AVss	31
43	PMD0/RH0	93
44	PMD1/RH1	94
45	PMD2/RH2	98
46	PMD3/RH3	99
47	AN8/RP40/RB8	28
48	AN9/RP41/RB9	29
49	AN10/CVREF/RP42/RB10	Test Point
50	AN11/RP43/RB11	Test Point

Legend: Shaded cells indicate pins that are connected via a zero Ohm resistor and are populated as shown in the schematic.

dsPIC33EP512MU814 and PIC24EP512GU814

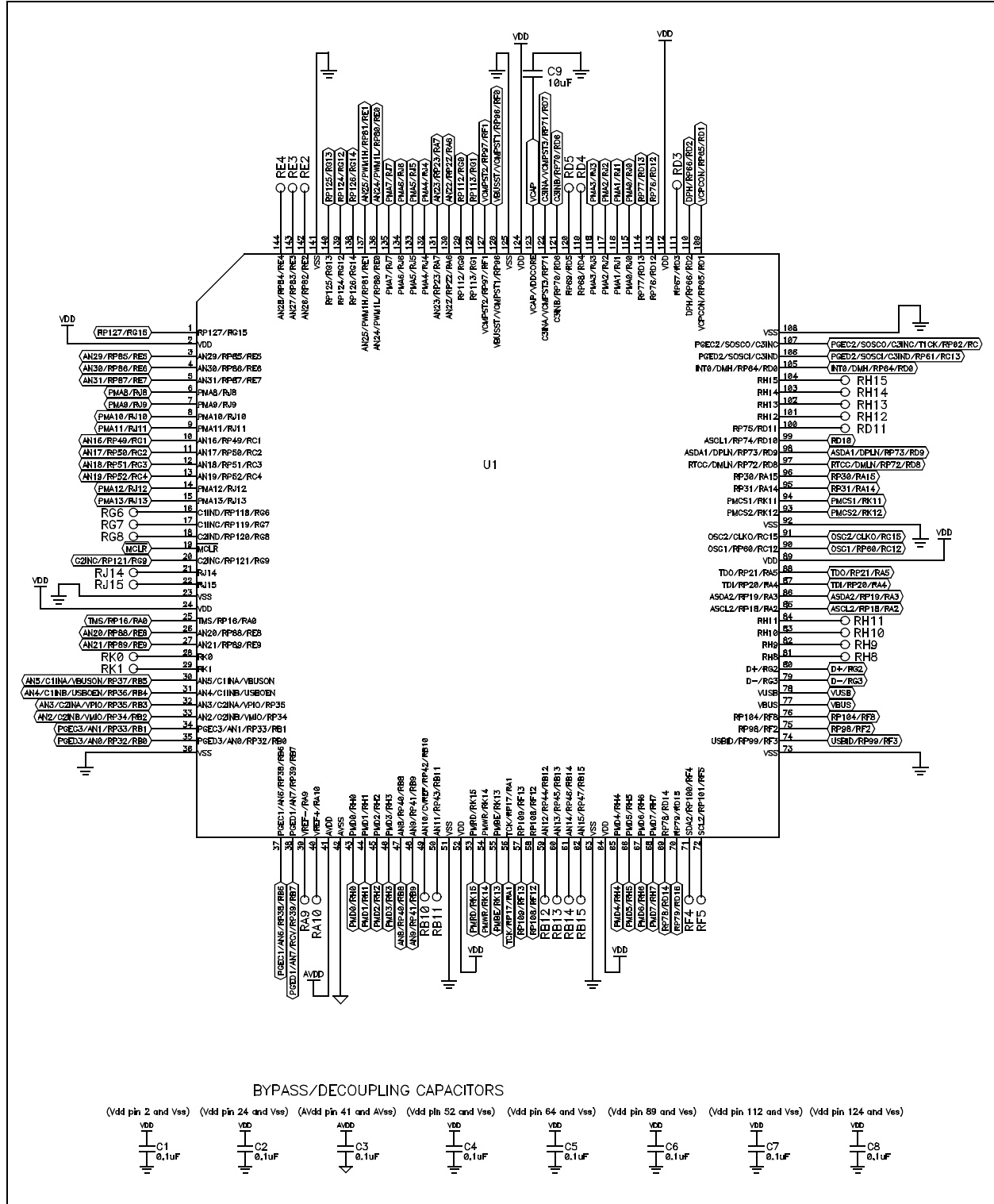
TABLE 1: 144-PIN TO 100-PIN PIM (CONTINUED)

Device Pin #	dsPIC33EP512MU814 and PIC24EP512GU814 Functional Description	PIM Pin #	Device Pin #	dsPIC33EP512MU814 and PIC24EP512GU814 Functional Description	PIM Pin #
51	Vss	—	98	ASDA1/DPLN/RP73/RD9	69
52	VDD	—	99	ASCL1/RP74/RD10	70
53	PMRD/RK15	82	100	RP75/RD11	Test Point
54	PMWR/RK14	81	101	RH12	Test Point
55	PMBE/RK13	78	102	RH13	Test Point
56	TCK/RP17/RA1	38	103	RH14	Test Point
57	RP109/RF13	39	104	RH15	Test Point
58	RP108/RF12	40	105	INT0/DMH/RP64/RD0	72
59	AN12/RP44/RB12	Test Point	106	PGED2/SOSCI/C3IND/RP61/RC13	73
60	AN13/RP45/RB13	Test Point	107	PGEC2/SOSCO/C3INC/T1CK/RP62/RC14	74
61	AN14/RP46/RB14	Test Point	108	Vss	—
62	AN15/RP47/RB15	Test Point	109	VCPCON/RP65/RD1	76
63	Vss	—	110	DPH/RP66/RD2	77
64	VDD	—	111	RP67/RD3	Test Point
65	PMD4/RH4	100	112	VDD	—
66	PMD5/RH5	3	113	RP76/RD12	79
67	PMD6/RH6	4	114	RP77/RD13	80
68	PMD7/RH7	5	115	PMA0/RJ0	44
69	RP78/RD14	47	116	PMA1/RJ1	43
70	RP79/RD15	48	117	PMA2/RJ2	14
71	SDA2/RP100/RF4	Test Point	118	PMA3/RJ3	12
72	SCL2/RP101/RF5	Test Point	119	RP68/RD4	Test Point
73	Vss	—	120	RP69/RD5	Test Point
74	USBID/RP99/RF3	51	121	C3INB/RP70/RD6	83
75	RP98/RF2	52	122	C3INA/VCMPST3/RP71/RD7	84
76	RP104/RF8	53	123	VCAP	85
77	VBUS	54	124	VDD	—
78	VUSB	55	125	Vss	—
79	D-/RG3	56	126	VBUSST/VCMPST1/RP96/RF0	87
80	D+/RG2	57	127	VCMPST2/RP97/RF1	88
81	RH8	Test Point	128	RP113/RG1	89
82	RH9	Test Point	129	RP112/RG0	90
83	RH10	Test Point	130	AN22/RP22/RA6	91
84	RH11	Test Point	131	AN23/RP23/RA7	92
85	ASCL2/RP18/RA2	58	132	PMA4/RJ4	11
86	ASDA2/RP19/RA3	59	133	PMA5/RJ5	10
87	TDI/RP20/RA4	60	134	PMA6/RJ6	33
88	TDO/RP21/RA5	61	135	PMA7/RJ7	32
89	VDD	—	136	AN24/RP80/RE0	49
90	OSC1/RP60/RC12	63	137	AN25/RP81/RE1	50
91	OSC2/CLKO/RC15	64	138	RP126/RG14	95
92	Vss	—	139	RP124/RG12	96
93	PMCS2/RK12	70	140	RP125/RG13	97
94	PMCS1/RK11	71	141	Vss	—
95	RP31/RA14	66	142	AN26/RP82/RE2	Test Point
96	RP30/RA15	67	143	AN27/RP83/RE3	Test Point
97	RTCC/DMLN/RP72/RD8	68	144	AN28/RP84/RE4	Test Point

Legend: Shaded cells indicate pins that are connected via a zero Ohm resistor and are populated as shown in the schematic.

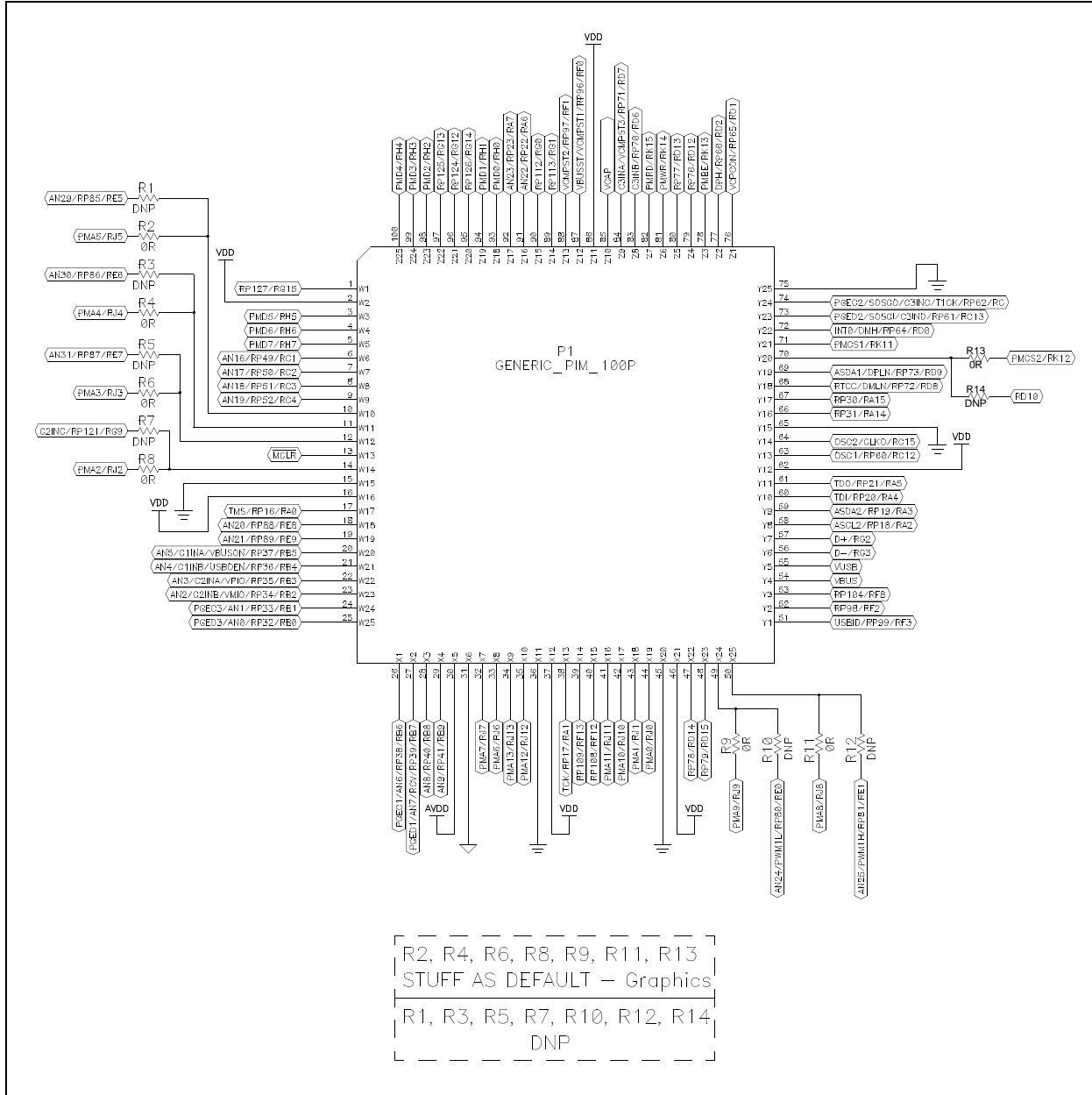
dsPIC33EP512MU814 and PIC24EP512GU814

FIGURE 1: 144-PIN DEVICE SCHEMATIC



dsPIC33EP512MU814 and PIC24EP512GU814

FIGURE 2: 100-PIN PIM SOCKET SCHEMATIC



APPENDIX A: REVISION HISTORY

Revision A (May 2010)

This is the initial released version of this document.

Revision B (February 2011)

This revision includes the following updates:

- Modified the Functional Description for Device Pins 51 through 70 and removed VDDCORE from the Functional Description of Device Pin 123 in [Table 1](#)
- Additional formatting updates were incorporated throughout the document

dsPIC33EP512MU814 and PIC24EP512GU814

NOTES:

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as “unbreakable.”

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights.

Trademarks

The Microchip name and logo, the Microchip logo, dsPIC, KEELOQ, KEELOQ logo, MPLAB, PIC, PICmicro, PICSTART, PIC³² logo, rPIC and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.


FilterLab, Hampshire, HI-TECH C, Linear Active Thermistor, MXDEV, MXLAB, SEEVAL and The Embedded Control Solutions Company are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, Application Maestro, CodeGuard, dsPICDEM, dsPICDEM.net, dsPICworks, dsSPEAK, ECAN, ECONOMONITOR, FanSense, HI-TIDE, In-Circuit Serial Programming, ICSP, Mindi, MiWi, MPASM, MPLAB Certified logo, MPLIB, MPLINK, mTouch, Omniscient Code Generation, PICC, PICC-18, PICDEM, PICDEM.net, PICkit, PICTail, REAL ICE, rLAB, Select Mode, Total Endurance, TSHARC, UniWinDriver, WiperLock and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

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

© 2011, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

 Printed on recycled paper.

ISBN: 978-1-60932-887-0

Microchip received ISO/TS-16949:2002 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC[®] MCUs and dsPIC[®] DSCs, KEELOQ[®] code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.

**QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
== ISO/TS 16949:2002 ==**



MICROCHIP

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:
<http://support.microchip.com>
Web Address:
www.microchip.com

Atlanta
Duluth, GA
Tel: 678-957-9614
Fax: 678-957-1455

Boston
Westborough, MA
Tel: 774-760-0087
Fax: 774-760-0088

Chicago
Itasca, IL
Tel: 630-285-0071
Fax: 630-285-0075

Cleveland
Independence, OH
Tel: 216-447-0464
Fax: 216-447-0643

Dallas
Addison, TX
Tel: 972-818-7423
Fax: 972-818-2924

Detroit
Farmington Hills, MI
Tel: 248-538-2250
Fax: 248-538-2260

Kokomo
Kokomo, IN
Tel: 765-864-8360
Fax: 765-864-8387

Los Angeles
Mission Viejo, CA
Tel: 949-462-9523
Fax: 949-462-9608

Santa Clara
Santa Clara, CA
Tel: 408-961-6444
Fax: 408-961-6445

Toronto
Mississauga, Ontario,
Canada
Tel: 905-673-0699
Fax: 905-673-6509

ASIA/PACIFIC

Asia Pacific Office
Suites 3707-14, 37th Floor
Tower 6, The Gateway
Harbour City, Kowloon
Hong Kong
Tel: 852-2401-1200
Fax: 852-2401-3431

Australia - Sydney
Tel: 61-2-9868-6733
Fax: 61-2-9868-6755

China - Beijing
Tel: 86-10-8528-2100
Fax: 86-10-8528-2104

China - Chengdu
Tel: 86-28-8665-5511
Fax: 86-28-8665-7889

China - Chongqing
Tel: 86-23-8980-9588
Fax: 86-23-8980-9500

China - Hong Kong SAR
Tel: 852-2401-1200
Fax: 852-2401-3431

China - Nanjing
Tel: 86-25-8473-2460
Fax: 86-25-8473-2470

China - Qingdao
Tel: 86-532-8502-7355
Fax: 86-532-8502-7205

China - Shanghai
Tel: 86-21-5407-5533
Fax: 86-21-5407-5066

China - Shenyang
Tel: 86-24-2334-2829
Fax: 86-24-2334-2393

China - Shenzhen
Tel: 86-755-8203-2660
Fax: 86-755-8203-1760

China - Wuhan
Tel: 86-27-5980-5300
Fax: 86-27-5980-5118

China - Xian
Tel: 86-29-8833-7252
Fax: 86-29-8833-7256

China - Xiamen
Tel: 86-592-2388138
Fax: 86-592-2388130

China - Zhuhai
Tel: 86-756-3210040
Fax: 86-756-3210049

ASIA/PACIFIC

India - Bangalore
Tel: 91-80-3090-4444
Fax: 91-80-3090-4123

India - New Delhi
Tel: 91-11-4160-8631
Fax: 91-11-4160-8632

India - Pune
Tel: 91-20-2566-1512
Fax: 91-20-2566-1513

Japan - Yokohama
Tel: 81-45-471- 6166
Fax: 81-45-471-6122

Korea - Daegu
Tel: 82-53-744-4301
Fax: 82-53-744-4302

Korea - Seoul
Tel: 82-2-554-7200
Fax: 82-2-558-5932 or
82-2-558-5934

Malaysia - Kuala Lumpur
Tel: 60-3-6201-9857
Fax: 60-3-6201-9859

Malaysia - Penang
Tel: 60-4-227-8870
Fax: 60-4-227-4068

Philippines - Manila
Tel: 63-2-634-9065
Fax: 63-2-634-9069

Singapore
Tel: 65-6334-8870
Fax: 65-6334-8850

Taiwan - Hsin Chu
Tel: 886-3-6578-300
Fax: 886-3-6578-370

Taiwan - Kaohsiung
Tel: 886-7-213-7830
Fax: 886-7-330-9305

Taiwan - Taipei
Tel: 886-2-2500-6610
Fax: 886-2-2508-0102

Thailand - Bangkok
Tel: 66-2-694-1351
Fax: 66-2-694-1350

EUROPE

Austria - Wels
Tel: 43-7242-2244-39
Fax: 43-7242-2244-393

Denmark - Copenhagen
Tel: 45-4450-2828
Fax: 45-4485-2829

France - Paris
Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

Germany - Munich
Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Italy - Milan
Tel: 39-0331-742611
Fax: 39-0331-466781

Netherlands - Drunen
Tel: 31-416-690399
Fax: 31-416-690340

Spain - Madrid
Tel: 34-91-708-08-90
Fax: 34-91-708-08-91

UK - Wokingham
Tel: 44-118-921-5869
Fax: 44-118-921-5820

08/04/10