



LAN8741A/LAN8741Ai

LAN8741A/LAN8741Ai Silicon Errata and Data Sheet Clarification

This document describes known anomalies for functional revision A and B of the LAN8741A/LAN8741Ai device. The functional revision can be determined by its top marking as indicated in [Figure 1](#) and [Figure 2](#).

TABLE 1: HARDWARE ERRATAS SUMMARY

HARDWARE FUNCTIONAL REV		DESCRIPTION
A	B	
X	X	Section Module 1 :, "EEE Mode Link Failures with Cables Greater than 100m"
X	X	Section Module 2 :, "EEE Mode Link Drops with BCM53125 Link Partner for Cables Less than 20m"
X		Section Module 3 :, "EEE Mode Drops Link with Devices that Do Not Meet the Minimum IEEE 802.3az Transmit Wake Time Specification"
X		Section Module 4 :, "Cable Diagnostics Incorrectly Returns "Open" Cable Condition for Terminated Cable"
X	X	Section Module 5 :, "EEE Mode Link Drops with Realtek RTL8305N or RTL8309E Link Partners"

Note: X = Applicable to the Functional Rev.

For the purposes of this anomaly sheet, the part number indicated throughout the document includes an "A". Though only functional revision B parts contain an "A" in the device part number, this anomaly sheet also applies to the LAN8741 parts. The "A" in the part number is not indicative of the functional revision. Refer to [Figure 1](#) and [Figure 2](#) for the proper identification of the functional revision of a given device.

LAN8741A/LAN8741AI

FIGURE 1: TOP MARKING FOR FUNCTIONAL REVISION A DEVICE

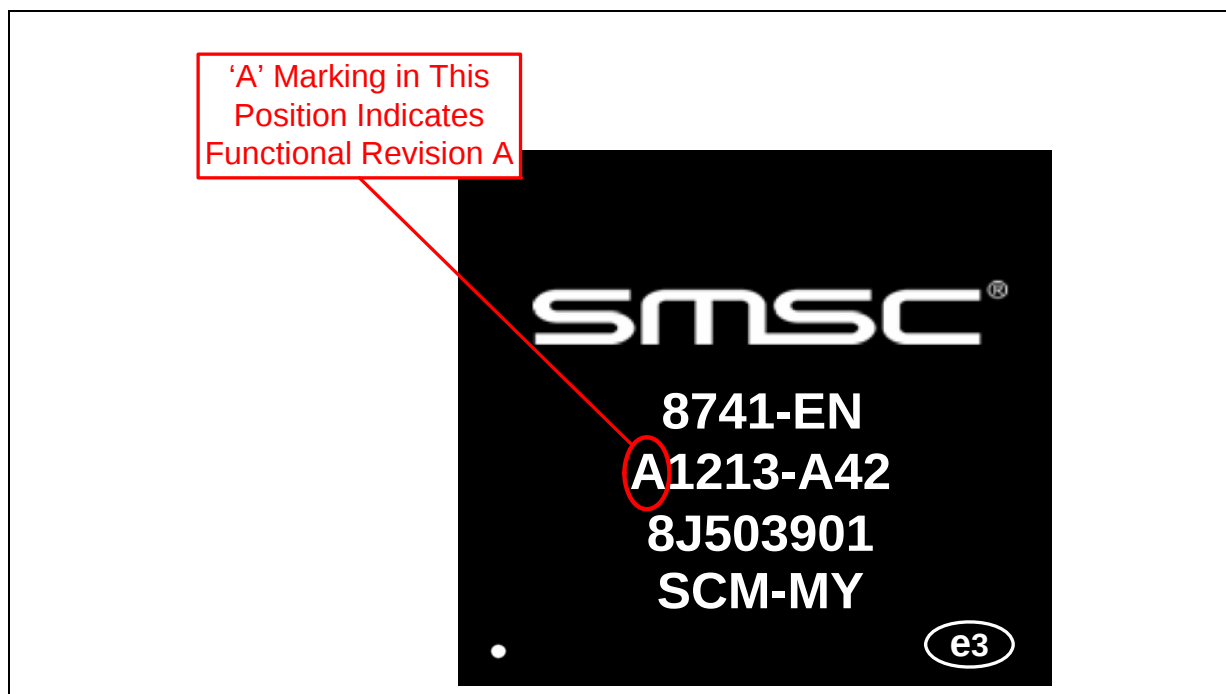
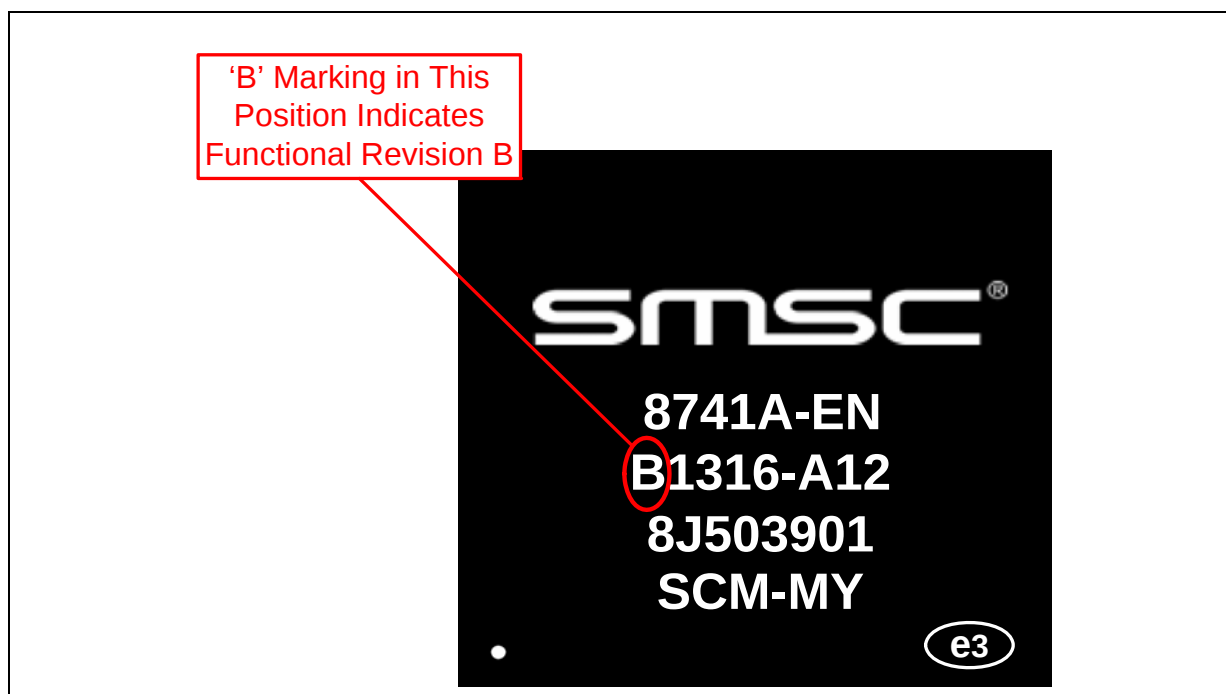


FIGURE 2: TOP MARKING FOR FUNCTIONAL REVISION B DEVICE



Note: Figure 1 and Figure 2 detail the top markings of example parts. Other than the highlighted revision marking, other top marking values may differ (manufacture date, lot codes, industrial temperature part, etc.)

Module 1: EEE Mode Link Failures with Cables Greater than 100m

DESCRIPTION

In EEE mode, the device may fail to link or drop link at cable lengths exceeding the IEEE 802.3 specification of 100 meters.

END USER IMPLICATIONS

When in EEE mode, the device may either fail to link or will drop link when using cable lengths greater than the IEEE 802.3 specification of 100 meters. This anomaly does not impact 10Mb or non-EEE operation.

Work around

When using EEE mode, limit cable length to 100 meters or less.

PLAN

This will not be addressed in a future revision of the device.

Module 2: EEE Mode Link Drops with BCM53125 Link Partner for Cables Less than 20m

DESCRIPTION

In EEE mode, the device may drop link when using a Broadcom BCM53125 link partner at cable lengths less than 20 meters.

END USER IMPLICATIONS

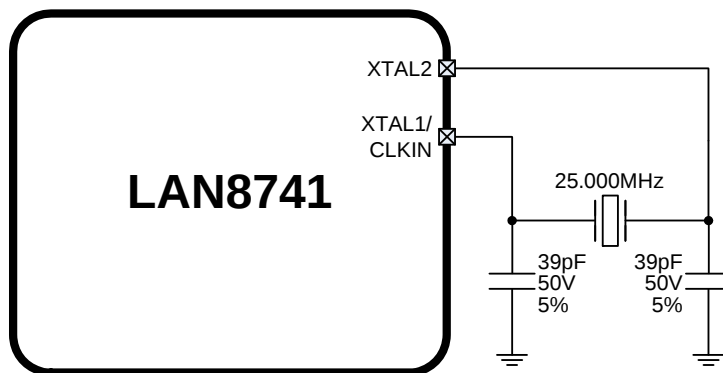
When using a Broadcom BCM53125 link partner in EEE mode, the device may drop link when using cable lengths less than 20 meters. The BCM53125 has exhibited a sensitivity to minute deviations in its link partner's transmit clock frequency during 100Mb EEE operation. This issue is exacerbated at short cable lengths. This anomaly does not impact 10Mb or non-EEE operation.

Work around

There are three methods to reduce the likelihood of occurrence:

1. Utilize an Ethernet cable length of greater than 20m.
2. Increase the load capacitors on the LAN8741A/LAN8741Ai external crystal circuit to 39pF and exercise best practices for board layout. Refer to [FIGURE 3](#): for an example external crystal circuit.

FIGURE 3: EXAMPLE EXTERNAL CRYSTAL CIRCUIT



3. Use a single-ended 25MHz clock source that meets the LAN8741A/LAN8741Ai specification requirements in lieu of a crystal.

PLAN

This will not be addressed in a future revision of the device.

LAN8741A/LAN8741AI

Module 3: EEE Mode Drops Link with Devices that Do Not Meet the Minimum IEEE 802.3az Transmit Wake Time Specification

DESCRIPTION

The LAN8741A/LAN8741Ai will not maintain link with devices that do not meet the minimum IEEE 802.3az transmit wake time specification.

END USER IMPLICATIONS

The device will drop link when entering EEE mode. This does not impact 10Mb or non-EEE operation.

Work around

The following sequence of PHY register writes may be used as a work-around:

Write PHY Register 0x00: 0x2100

Write PHY Register 0x14: 0x0000

Write PHY Register 0x14: 0x0000

Write PHY Register 0x14: 0x0000

Write PHY Register 0x14: 0x0400

Write PHY Register 0x14: 0x0000

Write PHY Register 0x14: 0x0400

Write PHY Register 0x17: 0x1002

Write PHY Register 0x14: 0x4C00

Write PHY Register 0x17: 0x18BC

Write PHY Register 0x14: 0x4C03

Write PHY Register 0x17: 0x017C

Write PHY Register 0x14: 0x4C04

Write PHY Register 0x17: 0x017C

Write PHY Register 0x14: 0x4C05

Write PHY Register 0x17: 0x017C

Write PHY Register 0x14: 0x4C06

Write PHY Register 0x17: 0x0610

Write PHY Register 0x14: 0x4C08

Write PHY Register 0x17: 0x0270

Write PHY Register 0x14: 0x4C07

Write PHY Register 0x17: 0x0088

Write PHY Register 0x14: 0x4C09

Write PHY Register 0x17: 0x66FF

Write PHY Register 0x14: 0x4C0A

Write PHY Register 0x00: 0x3100

This work-around does not impact interoperability with other IEEE 802.3az compliant devices.

PLAN

This anomaly has been fixed in functional revision B and newer devices.

Module 4: Cable Diagnostics Incorrectly Returns “Open” Cable Condition for Terminated Cable

DESCRIPTION

The TDR Control/Status register bits [10:9] (TDR Channel Cable Type) return 10b indicating an “Open” condition when the cable is properly terminated (connected to a link partner). For a properly terminated cable, this field should return 11b (Match condition).

END USER IMPLICATIONS

The TDR does not return 11b for a properly terminated cable. Short and Open conditions are detected and reported correctly. There are no functional implications associated with this anomaly.

Work around

The following sequence of PHY register writes may be used as a work-around:

Write PHY Register 0x18: 0x9B9D

Write PHY Register 0x0D: 0x001E

Write PHY Register 0x0E: 0x000B

Write PHY Register 0x0D: 0x401E

Write PHY Register 0x0E: 0x0249

Write PHY Register 0x0D: 0x001E

Write PHY Register 0x0E: 0x000C

Write PHY Register 0x0D: 0x401E

Write PHY Register 0x0E: 0x0132

PLAN

This anomaly has been fixed in functional revision B and newer devices.

Module 5: EEE Mode Link Drops with Realtek RTL8305N or RTL8309E Link Partners

DESCRIPTION

In 100Mb EEE mode, the device may infrequently drop link during continuous high-traffic operation when linked to the Realtek RTL8305N or RTL8309E devices.

END USER IMPLICATIONS

When using a Realtek RTL8305N or RTL8309E link partner in 100Mb EEE mode, the device may drop link during continuous high-traffic operation. It is unlikely that this behavior will create any user-visible interference to the operation of applications anticipated for the device. This anomaly does not impact 10Mb or non-EEE operation.

Work around

No solution is required.

PLAN

This will not be addressed in a future revision of the device.

LAN8741A/LAN8741Ai

APPENDIX A: LAN8741A/LAN8741Ai DOCUMENT REVISION HISTORY

REVISION LEVEL AND DATE	DESCRIPTION
DS80000678A (12-3-15)	Rev A replaces the previous SMSC version Rev. 1.2
Rev. 1.2 (06-03-13)	Added functional revision B information.
	Added Section Module 5 :, "EEE Mode Link Drops with Realtek RTL8305N or RTL8309E Link Partners"
Rev. 1.1 (10-17-12)	Updated Section Module 4 :, "Cable Diagnostics Incorrectly Returns "Open" Cable Condition for Terminated Cable," on page 5 including solution information. Co-branded document with Microchip logo, modified legal disclaimer.
	Updated Section Module 3 :, "EEE Mode Drops Link with Devices that Do Not Meet the Minimum IEEE 802.3az Transmit Wake Time Specification," on page 4 solution information
	Updated Section Module 2 :, "EEE Mode Link Drops with BCM53125 Link Partner for Cables Less than 20m," on page 3 including end user implications and solution information
	Updated Section Module 1 :, "EEE Mode Link Failures with Cables Greater than 100m," on page 3
Rev. 1.0 (05-14-12)	Initial release

THE MICROCHIP WEB SITE

Microchip provides online support via our WWW site at www.microchip.com. This web site is used as a means to make files and information easily available to customers. Accessible by using your favorite Internet browser, the web site contains the following information:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQ), technical support requests, online discussion groups, Microchip consultant program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

CUSTOMER CHANGE NOTIFICATION SERVICE

Microchip's customer notification service helps keep customers current on Microchip products. Subscribers will receive e-mail notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, access the Microchip web site at www.microchip.com. Under "Support", click on "Customer Change Notification" and follow the registration instructions.

CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at: <http://microchip.com/support>

LAN8741A/LAN8741AI

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 unless otherwise stated.

Trademarks

The Microchip name and logo, the Microchip logo, dsPIC, FlashFlex, flexPWR, JukeBlox, KEELOQ, KEELOQ logo, Kleer, LANCheck, MediaLB, MOST, MOST logo, MPLAB, OptoLyzer, PIC, PICSTART, PIC³² logo, RightTouch, SpyNIC, SST, SST Logo, SuperFlash and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

The Embedded Control Solutions Company and mTouch are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, BodyCom, chipKIT, chipKIT logo, CodeGuard, dsPICDEM, dsPICDEM.net, ECAN, In-Circuit Serial Programming, ICSP, Inter-Chip Connectivity, KleerNet, KleerNet logo, MiWi, motorBench, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICKit, PICtail, RightTouch logo, REAL ICE, SQI, Serial Quad I/O, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, 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.

Silicon Storage Technology is a registered trademark of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

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

© 2015, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

ISBN:

QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
= ISO/TS 16949 =

Microchip received ISO/TS-16949:2009 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.



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

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

Austin, TX
Tel: 512-257-3370

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
Novi, MI
Tel: 248-848-4000

Houston, TX
Tel: 281-894-5983

Indianapolis
Noblesville, IN
Tel: 317-773-8323
Fax: 317-773-5453

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

New York, NY
Tel: 631-435-6000

San Jose, CA
Tel: 408-735-9110

Canada - Toronto
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: 852-2943-5100
Fax: 852-2401-3431

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

China - Beijing
Tel: 86-10-8569-7000
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 - Dongguan
Tel: 86-769-8702-9880

China - Hangzhou
Tel: 86-571-8792-8115
Fax: 86-571-8792-8116

China - Hong Kong SAR
Tel: 852-2943-5100
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: 86-755-8864-2200
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

ASIA/PACIFIC

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

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

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: 91-20-3019-1500

Japan - Osaka
Tel: 81-6-6152-7160
Fax: 81-6-6152-9310

Japan - Tokyo
Tel: 81-3-6880-3770
Fax: 81-3-6880-3771

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: 886-3-5778-366
Fax: 886-3-5770-955

Taiwan - Kaohsiung
Tel: 886-7-213-7828

Taiwan - Taipei
Tel: 886-2-2508-8600
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 - Dusseldorf
Tel: 49-2129-3766400

Germany - Karlsruhe
Tel: 49-721-625370

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

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

Italy - Venice
Tel: 39-049-7625286

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

Poland - Warsaw
Tel: 48-22-3325737

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

Sweden - Stockholm
Tel: 46-8-5090-4654

UK - Wokingham
Tel: 44-118-921-5800
Fax: 44-118-921-5820

07/14/15