

DIAG

Pagina pentru Suport Diagnoza pentru PC si Informatii pentru Reparatii

Pagina de informatii despre diagnoze de pornire ale placii de baza, asa numitele "power on self test" (POST) pentru AMI-BIOS, AWARD-BIOS si Phoenix-BIOS. Ajutor pentru diverse probleme la pornirea PC-ului. Linkuri catre pagini de suport ale producatorilor si adrese pentru centre service si de reparatii hardware din Germania.

Numele Fisierului : r_dta-pc-diag.htm

Locatia : <http://www.elektroniklager.de/pc-sup>

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1. Diagnoza de Pornire a Placii de Baza

Placile de baza moderne au o diagnoza de pornire, asa-numita "Power ON Self Test" (POST). Asta inseamna ca se verifica singure in privinta disponibilitatii functiilor vitale, a memoriei si a unora dintre placile din sloturi. Pentru a putea rula intreaga diagnoza urmatoarele conditii trebuiesc indeplinite:

1. Sursa trebuie sa genereze tensiunile corecte si sa seteze semnalul POWER OK. Aceasta conditie nu e indeplinita daca de ex. sursa detecteaza un scurt pe una dintre tensiuni (care ar putea fi cauzat de placa de baza sau de unul dintre HDDuri).
2. CPU-ul trebuie sa poata iesi din conditia de reset si sa execute instructiuni specifice (de procesor).
3. Chip-ul BIOS trebuie sa fie prezent pe placa de baza si sa fie citibil de catre CPU.
4. Chip-ul BIOS trebuie sa contina un program valid. Acest lucru va fi verificat prin intermediul unui checksum.
5. CMOS-ul trebuie sa fie prezent si citibil de catre CPU.
6. CMOS-ul trebuie sa contina date valide. Acest lucru este verificat prin intermediul unui checksum. In caz de neclaritate, CMOS-ul poate fi resetat prin setarea unui jumper pe placa de baza. Astfel va fi adus intr-o conditie definita.
7. CPU-ul trebuie sa poata citi memoria (RAM). Asta inseamna ca bus-ul de memorie, controller-ul de memorie si modulele de memorie trebuie sa fie in stare buna.
8. Primii 64KB (KiloByte) de memorie trebuie sa fie in stare buna pentru a putea stoca datele de POST. In caz de incertitudine, memoria ar trebui inlocuita de alt modul (de ex. interschimbarea modulelor de memorie intre ele).
9. Bus-ul I/O (Controller-ul I/O) trebuie sa fie in stare buna.
10. CPU-ul trebuie sa poata accesa adaptorul grafic prin intermediul bus-ului I/O pentru citire si scriere de date.
11. Adaptorul grafic trebuie sa fie prezent si in stare buna (chip-ul video si memoria video).
12. Speaker-ul / beeper-ul trebuie sa fie conectat corect si in stare buna.

Aceste functii trebuie sa fie in regula pentru a putea executa testele POST de baza. De ex. daca memoria sau adaptorul grafic nu sunt prezente sau nu sunt in stare buna, sistemul ar putea da un cod sonor prin intermediul Speaker-ului pentru a anunta defectul. Acest lucru totusi nu este posibil pentru toate erorile. De asemenea testele nu ruleaza neaparat in secventa de mai sus. Totusi, rezultatele bune ale testelor sunt conditii primare pentru executarea testelor de nivel superior ca de ex. verificarea floppy disk-ului sau a HDD-ului. Controller-ul de memorie cache va fi activat de obicei doar dupa o diagnoza de pornire reusita. Ca atare este putin probabil ca probleme de cache sa fie detectate de catre diagnoza de pornire. In sectiunea urmatoare sunt scrise cateva coduri sonore care sunt date de verificarile placii de baza in cazul detectarii unei erori. Asta se intampla, cum am mentionat deja, in cazul in care sistemul nu poate avansa asa de mult cu pornirea incat sa poata afisa un mesaj de eroare prin intermediul adaptorului grafic. A se nota de asemenea ca erorile care genereaza coduri sonore nu pot fi niciodata generate de sisteme de operare sau de software.

1.1. AMI BIOS

1 beep	DRAM refresh failure
2 beepuri	Parity Circuit Failure
3 beepuri	Base 64K RAM failure
4 beepuri	System Timer Failure
5 beepuri	Processor Failure
6 beepuri	Keyboard Controller / Gate A20 Failure
7 beepuri	Virtual Mode Exception Error
8 beepuri	Display Memory Read/Write Failure
9 beepuri	ROM BIOS Checksum Failure
10 beepuri	CMOS Shutdown Register Read/Write Error

La 1 beep, 2 beep-uri sau 3 beep-uri se recomanda sa se scoata memoria (RAM) si sa se reaseze pentru a rezolva posibile probleme de contact. Daca acest lucru nu ajuta, memoria ar trebui inlocuita cu un modul in stare 100% buna.

La 4 beep-uri, 5 beep-uri, 7 beep-uri sau 10 beep-uri cel mai probabil placa de baza este defecta.

La 6 beep-uri cel mai probabil tastatura sau controller-ul de tastatura sunt defecte. Incercati alta tastatura, iar daca asta nu ajuta inseamna ca placa de baza sau controller-ul de tastatura trebuie inlocuite.

La 8 beep-uri cel mai probabil adaptorul grafic este defect si trebuie inlocuit. Dar mai intai incercati sa-l reasezati.

La 9 beep-uri chip-ul de BIOS este defect. In majoritatea cazurilor poate fi inlocuit. Puteti cere producatorului placii de baza sa-l inlocuiasca.

Remarca facuta de Peter Götz: adesea problema provine de la o baterie defecta sau, la sisteme mai vechi, bateria reincarcabila poate fi goala daca PC-ul n-a fost utilizat pentru ceva vreme.

1.2. Award BIOS

Un beep lung urmat de 2 beep-uri scurte: arata ca adaptorul grafic nu e pozitionat corect sau este defect. Toate celelalte beep-uri: Cel mai probabil RAM-uri defecte sau incorect pozitionate sau defecte pe placa de baza.

1.3. Phoenix BIOS

1-1-3	CMOS write/read failure.
1-1-4	BIOS ROM checksum error.
1-2-1	System timer failure. (Programmable Interval Timer PIT)
1-2-2	DMA (direct Memory Access) failure.
1-2-3	DMA page register failure.
1-3-?	RAM failure.
1-4-1	64K RAM address line failure.
1-4-2	64K RAM parity error.
2-?-?	Orice serie de beep-uri incepand cu 2 beep-uri indica o eroare a chip-ului RAM de 64k sau a liniei de date.
3-1-1	Master DMA register test.
3-1-2	Mslave DMA register failure.
3-1-3	Master interrupt mask register failure.
3-1-4	Slave interrupt mask register failure.
3-2-4	Keyboard controller failure.
3-3-4	Screen (video) memory failure.
3-4-1	Screen initialization failure.
3-4-2	Screen retrace failure.
4-2-1	Timer tick interrupt test failure.
4-2-2	Shutdown test failure.
4-2-4	Unexpected interrupt in protected mode.

4-3-1	RAM test failure above address 0FFFFh (64K +)
4-3-3	Interval timer channel 2 test failure.
4-3-4	Time of day clock failure.
4-4-1	Serial port test failure.
4-4-2	Parallel port test failure.
4-4-3	Math Co-processor failure.

Codurile pot diferi substantial in functie de versiunea de BIOS. De aceea se recomanda download-ul foilor de date corespunzatoare.

1.4. Inca mai aveti Probleme?

ATENTIE! Inainte de a scoate sau repune placi in sloturi sau alte componente, trebuie intotdeauna sa opriti PC-ul si sa scoateti cablul de alimentare. In cazul PC-urilor moderne, sursa va da intotdeauna tensiune pe placa de baza. Daca nu observati acest lucru ar putea duce la defectare placii de baza sau a componentelor. Ar putea de asemenea sa va puna viata in pericol daca atingeti PC-ul sau componente ale acestuia atat timp cat cablul de alimentare este conectat.

Daca nu mai puteti auzi nici un beep si ecranul ramane negru, verificati urmatoarele:

1. Este speaker-ul conectat corect?
2. Este monitorul conectat corect si pornit?
3. Sursa ar trebui verificata. Conectati LED-ul de power la pinii corespunzatori de pe placa de baza (urmariti polaritatea). Daca LED-ul lumineaza si motorasele HDD-ului, etc. sunt pornite sursa este de obicei in regula.
4. Verificati placa de baza pentru componente desprinse sau lipsa. De ex. este CPU-ul asezat corect in socket si sunt modulele RAM pozitionate corect.
5. Scoateti toate placile I/O din sloturi cu exceptia adaptorului grafic si verificati din nou daca sistemul porneste. Daca acesta este cazul puneti inapoi placile una cate una in pozitiile lor originale. Verificati pentru fiecare placa daca sistemul poate porni. O placa defecta poate face intregul sistem sa nu mai functioneze. Daca sistemul nu functioneaza, ori placa de baza ori RAM-ul sunt defecte.

1.5. Pagini de Informatii despre BIOS

Phoenix BIOS codes - <http://www.phoenix.com/pcuser/PDF-Files/bios-postcode.pdf> ca fisiere PDF de la Phoenix.

Phoenix BIOS codes - <http://www.firmware.com/support/oldbios/1011.htm> de la Microfirmware.

Pagini cu cele mai frecvente intrebari despre Phoenix BIOS - <http://www.phoenix.com/pcuser/BIOS/biosfaq2.htm>

Informatii de la producator despre Award BIOS - <http://www.phoenix.com/PlatSS/pcplatforms/desktop/awardbios.html> and Phoenix BIOS

Informatii de la producator despre AMI BIOS - <http://www.ami.com/amibios/>

Informatii generale BIOS information page - <http://www.wimbios.com> de la Wim.

1.6. Probleme cu Componentele?

Daca sistemul computer-ului dumneavoastra porneste dar ceva tot nu functioneaza, ar trebui sa consultati aceste pagini de suport. Aceasta este o excelenta pagina generala de suport. (in Engleza)

Pentru probleme care pot fi fara indoiala puse pe seama componentelor, ar trebui sa consultati paginile de suport ale diversilor producatori. Aici gasiti manuale, suport, setari de jumperi, etc.:

Acer - <http://www.acer.com/aac/support/index.htm>
Adaptec - <http://www.adaptec.com/support>
ALR - <http://www.alr.com/service/service.htm>
Apple - <http://support.info.apple.com/manuals/manuals.qry>
AST - <http://www.ast.com/support/support.asp>
AT&T/NCR - <http://www.ncr.com/support>
CalComp - <http://www.calcomp.com/support/support.htm>
Canon - <http://www.ccsi.canon.com/care/index.html>
C.ITOH/CIE - <http://www.citoh.com/download.htm>
Compaq - <http://www.compaq.com/support>
Comtrol - <http://www.comtrol.com/techsup.htm>
CTX - <http://www.ctxcomputers.com/techsupport.html>
Dataproducts - http://www.dpc.com/support/technote/tn_dir.html#B
DEC - <http://ie.digital.com/channel/documentation/pcdoc>
Dell - <http://www.dell.com/support/index.htm>
DTK Taiwan - <http://www.dtk.com.tw/pc-sup/tech.html>
DTK USA - <http://www.dtkcomputer.com/pc-sup/tech.html>
Epson UK - <http://www.epson.co.uk/support>
Epson US - <http://www.epson.com/support>
Epson US FTP site - <ftp://ftp.epson.com>
Epson technical data - <http://support.dell.com/oti/index.asp?cc=5>
Everex - <http://www.everex.com/support.html>
Exabyte - <http://www.exabyte.com/home/suppserv.html>
Future Domain - <http://www.adaptec.com/support/eol/index.html#hardware>
Gateway 2000 - <http://www.gw2k.com/frameset.asp?s=home&p=support>
GCC Technologies - <http://www.gcctech.com/ts/index.html>
Hewlett Packard - <http://www.hp.com/cposupport/eschome.html>
IBM - <http://domino.www.ibm.com/Support/wwsup30e.nsf/d81ba789eae09118802564ca00636d9a?OpenView>
IBM FTP site - <ftp://ftp.pc.ibm.com/pub/pccbbs>
IBM PC Service manuals - <http://www.pc.ibm.com/us/cdt/hmm.html>
Intel - <http://support.intel.com/sites/support/welcome.htm>
Mannesman/Tally - <http://sales.tally.com/tech/techserv.html>
Micron - <http://support.micronpc.com>
Mitac - http://mitac.mic.com.tw/service/service_a.htm
NEC - <http://support.neccsdeast.com>
NCD - <http://www.ncd.com/support/support.html>
NCR/AT&T - <http://www.ncr.com/support>
Okidata - <http://www.okidata.com/services/pub.html>
Olivetti - <http://www.ocwi.com/ihdesk/firstpag.htm>
Printronix - <http://www.primtronix.com/html/ampc-sup/tech.html>
Quantex - <http://www.quantex.com/community/qmembers/support/aboutsup.asp>
Samsung - <http://samsungelectronics.com/nonjava/support/downloads/index.html>
SATO USA - <http://www.satoamerica.com/tech/pc-sup/tech.htm>
Seikosha America - <http://www.seikosha.com/printers.html>
SGI - <http://www.sgi.com/support/info.html>
SONY - <http://www.ita.sel.sony.com/support>
Stallion Technologies - <http://www.stallion.com/html/userdoc.html>
Star Micronics - <http://www.starmicronics.com/tech/index.cfm>

Swan Technologies - <http://support.neccsdeast.com/swan-zdsdirect/zds>

Texas Instruments - <http://www.genicom.com/techsupp/TI/TI-techspt.htm>

Toshiba - <http://www.toshiba.com/tais/csd/support>

Trantor - <http://www.adaptec.com/support/eol.html#hardware>

Unisys - <ftp://ftp.gcs.unisys.com/pub>

Wangtek/WangDAT - <http://www.tecmar.com/support/download/techdocs.html>

Zenith Data Systems - <http://support.neccsdeast.com/swan-zdsdirect/zds>

ZEOS - http://www.micronpc.com/support/file_lib/zeosbbs/zeosbbs.html

Ajutor special pentru Probleme de Afisaj poate fi gasit pe aceste Pagini (de ex. scheme electronice):

Electronix - <http://www.electronix.com/schematics>

Anatek - <http://www.anatekcorp.com>

1.7. Probleme cu Software-ul?

Daca aveti probleme cu produse MicroSoft, puteti cauta la <http://support.microsoft.com/support/a.asp> suport pentru probleme speciale cu anumite produse. Aceasta este o accesare laterala a paginilor de suport MicroSoft. Pentru probleme de "shutdown" cu Windows 9x si ME ati putea gasi ajutor pe aceasta pagina <http://www.freespeech.org/Khephra/a/shutdown.htm>.

2. Instrumente de Diagnoza

- Data Depot - <http://www.datadepo.com/catalog.htm> Instrumente PC, SW si HW. Diagnoze de bus ISA/MCA.
- FWB - <http://www.fwb.com> Pentru Apple MAC
- Micro2000 - <http://www.micro2000.com> Diagnoze PC HW si SW, POSTprobe, Micro-Scope, etc.
- Unicore Software - <http://www.unicore.com> Diagnoze PC HW si SW. Diagnoze de Bus ISA, EISA, Diagnoze POST.
- Windsor Technologies - <http://www.windsortech.com> Diagnoze PC Software.

3. Mai Mult Ajutor

- Cea din urma pagina de suport pentru diverse Probleme PC. Foarte Recomandabila! (In Germana): <http://www.fehlermeldungen.de>
- Suport de la Microsoft: <http://support.microsoft.com/support/a.asp>
- Reparatii de Monitoare si Notebook-uri: <http://www.morservice.com/> <http://www.sug-service.de/>
- Scheme Electronice: <http://www.schaltungsdienst.com/>

4. Adrese pentru Reparatii si Depanare (In Germania)

Manufacturer	Address / Hotline
3COM	3Com Parts Bank Germany DHL World Wide Express GmbH Anton-Flettner-Straße 6 D-65479 Raunheim Tel. 0130-821502 Tel.: 0800-1821502 Fax: 06142-924228 Hotline: Tel: 06107/754258 Fax: 06107/744110 email:modemsupport@3com.com auch für US-Robotic Modem
aashima	aashima Trust Siemensstr. 1 47533 Kleve Tel.: 02821/58810 Fax: 02821/58850 email:trust3@euronet.nl Tel.: 02821/58835 (RMA)
Acer	Acer Computer GmbH Kornkamp 4 22926 Ahrensburg Tel. 04102/4880 Fax 04102/488100 email:info@ccmail.acer.de Vertretung / Reparatur: Elektronik Denk & Hoffmann Wolframstr. 8a 85395 Wolfersdorf Tel.: 08168-96280 Fax: 08168-1725 Hotline 0190-788 788 (Endkunden) Hotline: 04102-488 430 (Händler)
Adaptec	Adaptec Richard-Reitzner-Allee 8 85540 Haar Tel: 089-4564060 Fax: 089-45640615
Agfa	Hotline : 0190-871167
AMD	AMD Rosenheimer Str. 143 B 81671 München Tel.: 089-45053199 Fax: 089-406490 e-mail: euro.tech@amd.com
AOC	AOC International Ltd. CSS AOC-Service Pippelweg 62 38120 Braunschweig Tel.: 0531-8010800
APC	APC Finkenweg 1 85774 Unterföhring Fax RMA Anträge 089/95823670 Tel: 0130/827988 oder 0130/818907 email:support@oln.comlink.apc.org Reparaturanschrift: ITG München APC Service Dieselstr. 16 85739 Garching 089-3261583

	Hotline: 0130-818907
Apris	Tel.: 09131/7550-0 Fax: 09131/7550-50 email:info@apris.de
Asus Computer	Asus Computer GmbH Harkortstr. 25 40880 Ratingen Tel: 02102-95990 Fax: 02102-959911
ATI	ATI Swords Business Park Dublin Ireland Tel.: 00353-180778-26 Fax: 00353-180778-46 e-mail: eurotech@ati.com
Atrend	A-Trend Technology Corporation 46600 Fremont Boulevard, Fremont, California 94538 Tel: (510) 226-6290 Fax: (510) 226-6296 email:support@a-trend.com (bei Ware USA) fae@atrend.com.tw. (bei Ware aus Europa)
AVM	AVM Alt Moabit 95 10559 Berlin Tel: 030-39004390 Tel: 030-39976-113 Fax: 030-39976266 email:info@avm.de email:mailto:email:support@avm.de
Belinea	Maxdata Service Center Elbestraße 16 45768 Marl Tel: 02365-952-0 Fax: 02365-952-3505 Tel. Fachhandel: 02365-952-1011 Tel. Endkunden: 02365-952-1010
Brother	Brother Im Rosengarten 14 61118 Bad Vibel Tel: 06101-805108 Fax: 06101-805328 Hotline 06101-805200 Drucker, 06101-805100 Faxgeräte email:service@brother.de odervetrieb@brother.de
CANON	CANON Deutschland GmbH Marie-Bernays-Ring 23 41199 Mönchengladbach Tel.: 02151-349480 Fax: 02151-349481 Hotline : 02151-349555 Reparaturanschrift: Schüller + Haigis Höninger Weg 139 50969 Köln Tel: 0211/3600-50 Fax 0211/3600-556
Casio	Casio Computer GmbH Bornbach 10 22848 Norderstedt Tel.: 040-52865-0 Hottline : 040-52865-541
CeQuadrat	Fax: 0241-942-0211 email:supportd@cequadrat.com
Cherry	Tel. 09643/181111 Fax 09643/18545 Europäisches Kunden-Service-Center Tel: 0180-5212111

	Fax: 0180-5212117
Compaq	Compaq Reparaturanschrift: IZE Karlsruher Str. 14 30880 Laatzen Hotline: 0180-5212111 (Monitore), 0511-8406718 (Notebook)
CSG	Hotline:06252-963502
Diamond	Diamond Multimedia Moosstr. 18b D-82319 Starnberg 08151-2662-09 08151-2662-13
D-Link	D-LINK GmbH Bachstr. 22 D-65830 Kriftel Tel: 06192-9711-0 Fax 06192-9711-11 D-Link Deutschland GmbH Breslauer Str. 25 63452 Hanau Tel.: 0800-72504000 Hotline : 0800-7250-8000 Infofax: 0800-7250-1000 e-mail: rma@dlink.de Tel: 0130-725040
Eizo	Eizo Deutschland Bischofstr. 98 47809 Krefeld Hotline: 02151-919551 Fax: 02151-919599 EIZO-Service-Center RMA Abteilung Lötscher Weg 66 41334 Nettetal RMA unter 02153/733162
Elsa	Elsa GmbH (keine Monitore) Sonnenweg 11 52070 Aachen Tel.: 0241-606-0 oder 0241-6065112 Fax: 0241-606-1199 oder Tel. 0241/9177-0 Fax 0241/9177-600 Hotline : 0241-9177211 Reparaturanschrift: AVC (nur Monitore) Gasstr. 18 22761 Hamburg Tel.: 040-892006
Epson	Epson Deutschland GmbH Zülpicher Str. 6 40549 Düsseldorf Tel.: 0211-5082700 oder Serviceabteilung / RMA Tel.: 0211-5603-0 Fax: 0211-5603-354 Hotline : 0180-5234150 oder 0180-8234130 Hotline Stylus-Drucker: 0180-5234110 Technikhotline: 0180-5234120 Mailbox analog: 0211-5621411 Mailbox ISDN: 0211-5082777
Fast	FAST Multimedia AG Landsberger Str. 76 D-80339 München

	Tel. 089-50206-111 Fax 089-50206-273
Freecom	Freecom Schlesische Str. 27 10997 Berlin Hotline: 0190-891111
FUJI	FUJI Tape GmbH Am Fallhammer 2 40221 Düsseldorf Tel.: 0211-9303336 Deutsche Fuji Tape GmbH Reparaturabteilung Fujistr. 1 47533 Kleve Tel. 02821/509-234 Fax 02821/509-628 email:fuji_serviceline@compuserve.com
Fujitsu	Fujitsu Deutschland GmbH Frankfurter Ring 211 80807 München Tel.: 089-32378-0 Fax: 089-32378-100 Fujitsu ICL GmbH Serviceabteilung /RMA Erfurterstr. 44 D-99610 Sömmerda Tel: 089-32378-0 email:fast@fdg.fujitsu-europe.com
Genius	Tel. 02173-9743-0
Gericom AG	Gericom AG Industriezeile 35 A - 4020 Linz Tel. Allgemein: 00 43-732-7664-100 Service-Tel.: 0190-880050 Fax: 0180-5968969 Pick-up Service Tel.: 0043-732-76649600
Goldstar	Tel: 02154/492-0 Monitore, CD-ROM Repair 2000 Hardware Service GmbH Werkstr. 5 22844 Norderstedt Tel. 040/5225031 Fax 040/5264811
Hewlett Packard	Hewlett Packard GmbH Reparaturzentrum Robert-Bosch-Str. 27-29 63225 Langen Tel: 0180-53207 Fax: 06172-161441 HP European Costumer Support DeskJet Modelle Tel: 0180-5258143 Helpline Kunden Tel. 02102/907070 Fax-Support (Treiber) Fax: 0130/810061
Toshiba	Toshiba Central Repair (nur für Garantiegeräte) Leibnitzstr. 2 D-93055 Regensburg Tel. 0941-7807-828 Fax. 0941-7807-947 IME Service GmbH In der Borsickerstr. 7-9 D-93092 Barbing

	Tel. 09401-9333-0 Fax 09401-9333-12 Toshiba Reparaturzentrum Lording 55-57 D-63843 Niedernberg Mc Byte EDV Service GmbH Toshiba-Service Bernhardstraße 10 D-90431 Nürnberg
US Robotics	Tel: 0180-567-1548
IBM	Tel: 0711-921445 Tel: 0180-5253553 Hotline: Drucker, Tel: 0180-55223350 PC/Monitore, Tel. 0180-5253558 Thinkpad, Tel. 0180-5253558 Hard Disk Drive Tel: 07032-153050 e-mail: drive@de.ibm.com
Intel	Intel Dornacher Str. 1 85622 Feldkirchen Tel: 089-99143-0 Fax: 089-9043948 CPUs Tel: 0044/1793431144 Fax: 0044/1793431155
IOMEGA	IOMEGA Europe GmbH Bötzingen Str. 48 79111 Freiburg Tel: 0130-829446 Fax: 0761-4504-414 Mailbox: 0761-4504444
Kodak	Digitale Kameras Tel: 0130/825402
KYE	KYE Systems Corp. Genius Service Hans Böckler Str. 62 40764 Langenfeld Tel: 02173-974318 Hotline: 02173-974321
Lexmark	Tel: 0231/9748-333 Fax: 0231/9748-480
LG - Monitore (Goldstar)	Hotline: 02154-492160 Tel: 02154-492149 Fax: 02154-492128
Logitech	Logitech GmbH Gabriele-Münter-Str. 3 82110 Germering
Madge	Madge Networks GmbH C/o Beauvais International GmbH Hürzenrott 3 D-52076 Aachen-Oberforstbach Tel: 0130-868828 Fax: 0044-1628858977
MAG	MAG Carl-Miele-Str.1 38112 Braunschweig Service-Hotline: 0180-5624100 Fax: 0180-5624200
MAXTOR	MAXTOR Customer Service Centre Boghall Road, Bray Co. Wicklow, Ireland Tel.: 00353-1-2866222 Fax: 00353-1-2864577

Microsoft	<p>Microsoft GmbH Edisonstraße 1 D-85716 Unterschleißheim Tel: 089-31761150 Microsoft Direkt Daimlerstr. 1-7 33442 Herzebrock-Clarholz Tel.: 0180-5251199 Fax: 0180-5251190</p>
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Miro	<p>Miro CPR Carl Mielestr. 4 38112 Braunschweig 0531-2113141 oder 0531-31060 Fax 0531/2113-274 Hotline: 0531/2113666 Hotline: 0180-5228144 Mailbox 0531/21113112</p> <p>Miro Displays GmbH TRIFORUM - Haus 1A Frankfurter Str. 233 63263 Neu-Isenburg Tel.: 0180-5223526 Fax: 06102-366777 e-mail: kontakt@miro.de Service-Tel.: 0180-5647602 Service-Fax: 0180-5647601</p>
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MSI	<p>MSI Technology GmbH Hanauer Landstrasse 306 60314 Frankfurt</p>
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Philips	Philips GmbH Tel: 0180/5336767 Support per Fax 0031/2060002589 Mailbox 040/28521841 Monitore: www.monitors.philips.com Tel: 0130-817143 oder 0800--26678846 (Fachhandel) 0800-- 1817143 (Endkunden) PC Add-ons: (Brenner, CD-ROM, Modems, Speaker) www.pc.be.philips.com Tel: 0130-823983 Mo-Fr. von 10:00 - 24:00, Sa/So. von 10:00 - 18:00 Mobile Computing: www.velo.philips.com Tel.: 0211-65791148 oder 0130-817148 Mo-Fr. von 8:00 - 20:00 Uhr Digitalkamera: www.digitalcamera.philips.com Tel.: 0130-827480 Mo-Fr. von 8:00 - 20:00 Uhr LCD-Projektoren: www.cds.be.philips.com Tel.: 0130-818490 Mo-Fr. 8:00 - 20:00 Uhr Teleplan Bunsenstr. 5 64374 Griesheim

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