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## RTOS Debugger for µC3/Standard

### ARM Cortex

- Real-time, non-intrusive display of uC3/ Compact/Standard system resources
- Task stack coverage
- Task related breakpoints
- Task related performance measurement
- Statistic evaluation and graphic display of task run times
- Task related evaluation of function run times
- PRACTICE Functions for OS Data
- Easy access via uC3 specific menu

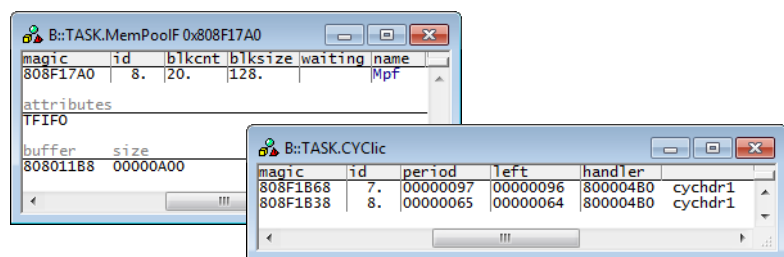
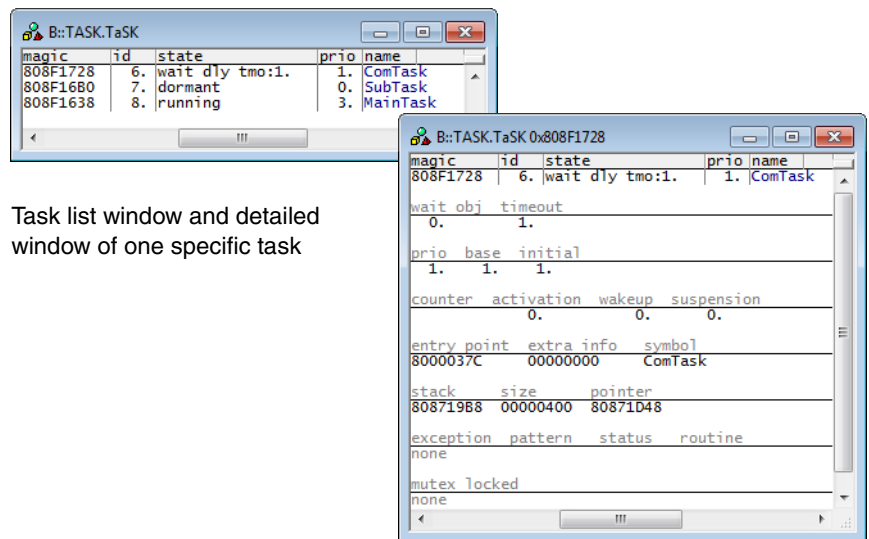
The TRACE32 System includes a configurable RTOS debugger to provide symbolic debugging in real time operating systems. Our software package contains a ready-to-run configuration for the uC3/Compact and uC3/Standard ITRON kernel from eForce Co. Ltd.

## RTOS Awareness on TRACE32 with $\mu$ C3/Compact and $\mu$ C3/ Standard

### Real-Time, Non-Intrusive Display of $\mu$ C3 System Resources

The TRACE32 RTOS debugger for  $\mu$ C3 provides display functions to show to the kernel resources. All resources, such as tasks, semaphores, flags etc. can be displayed. In addition, if the system allows reading memory

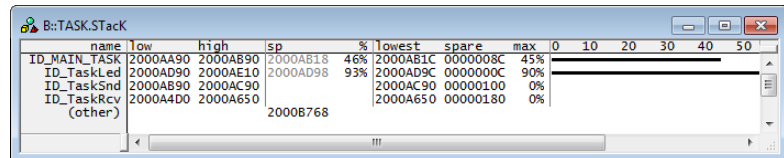
while running, the display of all these objects can be viewed non-intrusively in real time. The tables are updated permanently ("On The Fly"), without affecting the application at all.



## Task Stack Coverage

In real-time systems it is quite important to know, how much stack space each task consumes. For this purpose,

a special window shows the current and the maximum usage of the stack of each separate task.



Task stack coverage window

## Task Related Breakpoints

Any breakpoint set in the TRACE32 debugger can be set dependent to a specific task. This means, that the

breakpoint will only halt, if hit by the specified task. This allows task related debugging even in shared code.

## Task Related Performance Measurement

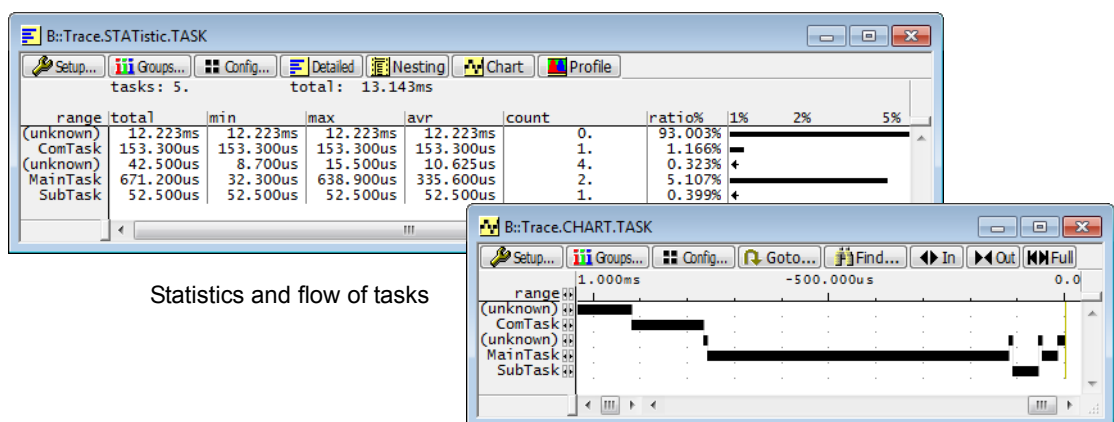
While  $\mu$ C3 is running, TRACE32 is capable of recurrently evaluating the current running task and collecting the results. The percentage, each task consumes of the system, is then dis-

played graphically and updated permanently. The longer time you let the measurement run, the more exact are the results. This feature is available even without any hardware trace.

## Statistic Evaluation and Graphic Display of Task Run Times

Out of the real time trace buffer (if available), the analyzer can calculate statistic tables of task run times and task switches. A graphical diagram shows

which task was active at a specific time, giving a clear view of the behaviour of the system.

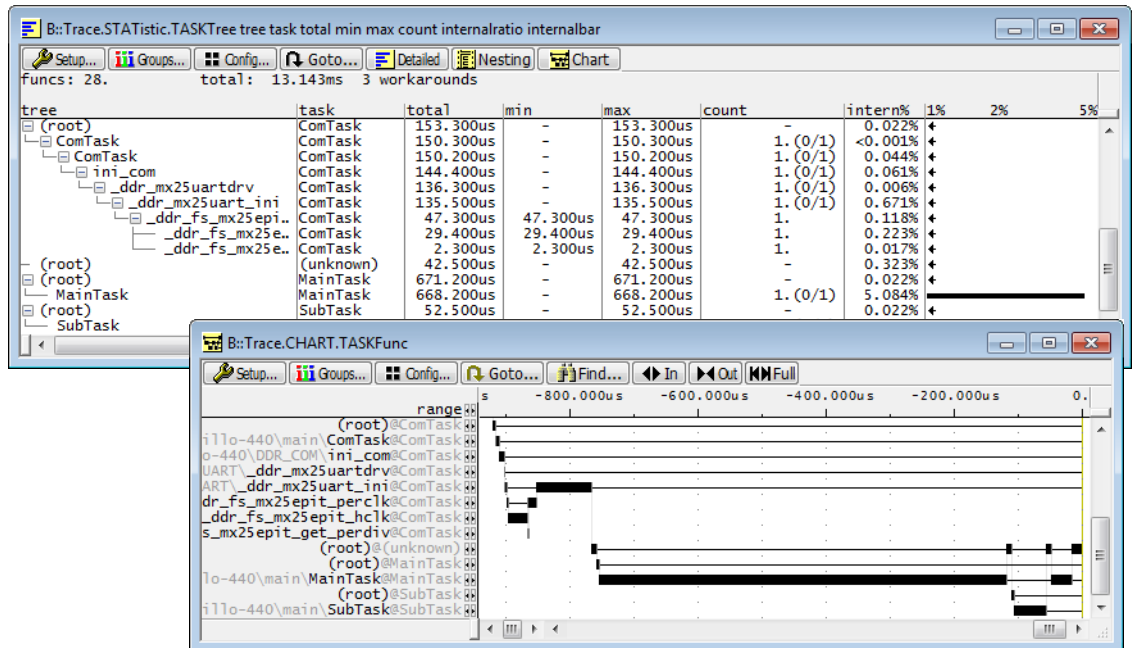


Statistics and flow of tasks

## Task Related Evaluation of Function Run Times

The statistic and graphic evaluation of function calls and function run times (if available) can be done dependant on the actual running task. This is neces-

sary, if different tasks call one single function at the same time, or if a task switch occurs in between the function.



Function call hierarchy with statistics and flow of functions

## PRACTICE Functions for OS Data

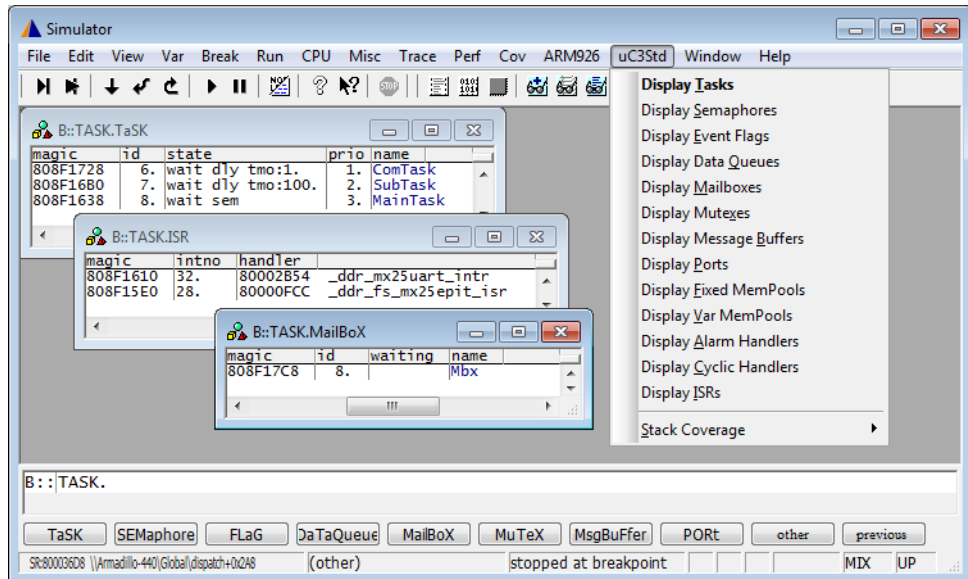
The support includes extended PRACTICE functions for  $\mu$ C3 specific data, to be used in setup and test scripts. E.g. the function "TASK.CONFIG(magic)"

returns the address of the so called magic value, which corresponds to the id of the current executing task.

## Easy Access via $\mu$ C3 Specific Menu

Because the menu bar of the TRACE32 user interface can be fully customized, you can create a new pull down menu, including operating sys-

tem specific commands. We deliver  $\mu$ C3 support with an example for such specific menus, which provides fast access to the  $\mu$ C3 awareness features.



TRACE32 with  $\mu$ C3/Standard menu

## Contact

### International Representative

#### Argentina

Anacom Eletronica Ltda.  
Mr. Rafael Sorice  
Rua Nazareth, 807, Barcelona  
BR-09551-200 São Caetano do Sul, SP  
Phone: +55 11 3422 4200  
FAX: +55 11 3422 4242  
EMAIL: rsorice@anacom.com.br

#### Australia

Embedded Logic Solutions P/L  
Mr. Ramzi Kaffan  
Suite 2, Level 3  
144 Marsden Street  
Parramatta NSW 2150  
Phone: +61 2 9687 1880  
FAX: +61 2 9687 1881  
EMAIL: sales@emlogic.com.au

#### Austria

Lauterbach GmbH  
Alltaufstr. 40  
D-85635 Höhenkirchen-Siegertsbrunn  
Phone: +49 8102 9876 130  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

#### Belgium

Tritec Benelux B.V.  
Mr. Robbert de Voogt  
Stationspark 550  
NL-3364 DA Sliedrecht  
Phone: +31 184 41 41 31  
FAX: +31 184 42 36 11  
EMAIL: software@tritec.nl

#### Brazil

Anacom Eletronica Ltda.  
Mr. Rafael Sorice  
Rua Nazareth, 807, Barcelona  
BR-09551-200 São Caetano do Sul, SP  
Phone: +55 11 3422 4200  
FAX: +55 11 3422 4242  
EMAIL: rsorice@anacom.com.br

#### Canada

Lauterbach Inc.  
Mr. Udo Zoettler  
4 Mount Royal Ave.  
USA-Marlborough, MA 01752  
Phone: +1 508 303 6812  
FAX: +1 508 303 6813  
EMAIL: info\_us@lauterbach.com

#### China Beijing

Lauterbach Technologies Co., Ltd  
Mr. Linglin He  
Beijing Office  
A3, South Lishi Road, XiCheng District  
Beijing 100037, P.R. China  
Phone: +86 10 68023502  
FAX: +86 10 68023523  
EMAIL: linglin.he@lauterbach.com

#### China Shenzhen

Lauterbach Technologies Co., Ltd  
1406/E Xihaimingzhu Building  
No.1 Taoyuan Road, Nanshan District  
Shenzhen 518052, P.R. China  
Phone: +86 755 8621 0671  
FAX: +86 755 8621 0675  
EMAIL: emily.zhang@lauterbach.com

#### China Suzhou

Lauterbach Technologies Co., Ltd  
Mr. Linglin He  
Hengyu Square, Rm 709  
No. 188, Xing Hai Street  
Suzhou, 215021 P.R. of China  
Phone: +86 512 6265 8030  
FAX: +86 512 6265 8032  
EMAIL: info\_cn@lauterbach.com

#### Czech Republic

Lauterbach GmbH  
Alltaufstr. 40  
D-85635 Höhenkirchen-Siegertsbrunn  
Phone: +49 8102 9876 130  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

#### Denmark

Nohau Danmark A/S  
Mr. Flemming Jensen  
Hørkær 26, Plan 4  
DK-2730 Herlev  
Phone: +45 44 52 16 50  
FAX: +45 44 52 26 55  
EMAIL: info@nohau.dk

#### Egypt

Lauterbach GmbH  
Alltaufstr. 40  
D-85635 Höhenkirchen-Siegertsbrunn  
Phone: +49 8102 9876 130  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

#### Finland

Nohau Solutions Finland  
Mr. Martti Viljainen  
Tekniikantie 14  
FI-02150 Espoo  
Phone: +358 40 546 0142  
FAX: +358 9 2517 8101  
EMAIL: sales@nohau.fi

#### France

Lauterbach S.A.R.L.  
Mr. Jean-Pierre Paradiso  
Europarc - Le Hameau B  
135 Chemin Des Bassins  
F-94035 Créteil Cedex  
Phone: +33 1 49 56 20 30  
FAX: +33 1 49 56 20 39  
EMAIL: info\_fr@lauterbach.com

#### Germany

Lauterbach GmbH  
Sales Team Germany  
Alltaufstr. 40  
D-85635 Höhenkirchen-Siegertsbrunn  
Phone: +49 8102 9876 130  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

#### Greece

Lauterbach GmbH  
Alltaufstr. 40  
D-85635 Höhenkirchen-Siegertsbrunn  
Phone: +49 8102 9876 130  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

#### Hungary

Lauterbach GmbH  
Alltaufstr. 40  
D-85635 Höhenkirchen-Siegertsbrunn  
Phone: +49 8102 9876 130  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

**India-Bangalore**

Electro Systems Associates Pvt. Ltd.  
Mr. G. V. Gurunatham  
S-606, World Trade Center  
Malleswaram West, No.26/1, Dr. Rajkumar  
Road  
India - Bangalore 560055  
Phone: +91 80 67648888  
FAX: +91 80 23475615  
EMAIL: Trace32sales@esaindia.com

**India-Chennai**

Electro Systems Associates Pvt. Ltd.  
Mr. D. Kannan  
No.109 /59A - Ground Floor  
IV Avenue, Ashok Nagar  
India - Chennai - 600 083 Tamilnadu  
Phone: +91 044-24715750  
FAX: +91 44 24715750  
EMAIL: chennai@esaindia.com

**India-Delhi**

Electro Systems Associates Pvt. Ltd.  
Mr. R.K. Bhandari  
No. 705, 7th Floor, Laxmi Deep  
Shivajinagar  
India - Delhi - 110 092  
Phone: +91 11-22549351  
FAX:  
EMAIL: delhi@esaindia.com

**India-Hyderabad**

Electro Systems Associates Pvt. Ltd.  
Mr. C.V.M. Sri Ram Murthy  
Shop No. 14, "Global Enclave"  
Bhagyanagar Colony, Kukat pally  
India - Hyderabad 500 072  
Phone: +91 40-23063346  
FAX: +91 40-23063346  
EMAIL: hyderabad@esaindia.com

**India-Kolkata**

Electro Systems Associates Pvt. Ltd.  
Mr. Arun Roy  
India - Kolkata  
Phone: +91 98305 78843  
FAX:  
EMAIL: kolkata@esaindia.com

**India-Pune**

Electro Systems Associates Pvt. Ltd.  
Mr. R K Bhandari  
Shriram Complex,1126/1, Model Colony  
Shivajinagar  
India - Pune - 411 016  
Phone: +91 20 - 30462035 / 25663  
FAX: +91 20-25677202  
EMAIL: pune@esaindia.com

**Ireland**

Lauterbach Ltd.  
Mr. Richard Copeman  
11 Basepoint Enterprise Centre  
Stroudley Road  
Basingstoke, Hants RG24 8UP  
Phone: 0044-118 328 3334  
FAX:  
EMAIL: info\_uk@lauterbach.com

**Israel**

Itec Ltd.  
Mr. Mauri Gottlieb  
P.O.Box 10002  
IL-Tel Aviv 61100  
Phone: +972 3 6491202  
FAX: +972 3 6497661  
EMAIL: general@itec.co.il

**Italy**

Lauterbach Srl  
Mr. Maurizio Menegotto  
Via Enzo Ferrieri 12  
I-20153 Milano  
Phone: +39 02 45490282  
FAX: +39 02 45490428  
EMAIL: info\_it@lauterbach.com

**Japan**

Lauterbach Japan, Ltd.  
Mr. Kenji Furukawa  
3-8-8 Shinyokohama  
Kohoku-ku, Nisso 16th Building  
Yokohama-shi, Japan 222-0033  
Phone: +81 45 477 4511  
FAX: +81 45 477 4519  
EMAIL: info@lauterbach.co.jp

**Luxembourg**

Tritec Benelux B.V.  
Mr. Robbert de Voogt  
Stationspark 550  
NL-3364 DA Sliedrecht  
Phone: +31 184 41 41 31  
FAX: +31 184 42 36 11  
EMAIL: software@tritec.nl

**Malaysia**

Flash Technology  
Mr. Teo Kian Hock  
No 61, # 04-15 Kaki Bukit Av 1  
Shun Li Industrial Park  
SGP-Singapore 417943  
Phone: +65 6749 6168  
FAX: +65 6749 6138  
EMAIL: teokh@flashtech.com.sg

**Mexico**

Lauterbach Inc.  
Mr. Udo Zoettler  
4 Mount Royal Ave.  
USA-Marlborough, MA 01752  
Phone: +1 508 303 6812  
FAX: +1 508 303 6813  
EMAIL: info\_us@lauterbach.com

**Netherlands**

Tritec Benelux B.V.  
Mr. Robbert de Voogt  
Stationspark 550  
NL-3364 DA Sliedrecht  
Phone: +31 184 41 41 31  
FAX: +31 184 42 36 11  
EMAIL: software@tritec.nl

**New Zealand**

Embedded Logic Solutions P/L  
Mr. Ramzi Kattan  
Suite 2, Level 3  
144 Marsden Street  
Parramatta NSW 2150  
Phone: +61 2 9687 1880  
FAX: +61 2 9687 1881  
EMAIL: sales@emilogic.com.au

**Norway**

Nohau Solutions AB  
Mr. Jörgen Nilsson  
Derbyvägen 6D  
SE-21235 Malmö  
Phone: +46 40 592 206  
FAX: +46-40 592 229  
EMAIL: Jorgen.nilsson@nohau.se

**Poland**

QUANTUM Sp. z o.o.  
Mr. Aleksander Bil  
ul. Jeleniogorska 6  
54-056 Wrocław  
Phone: +48 71 362 6356  
FAX: +48 71 362 6357  
EMAIL: info@quantum.com.pl

**Portugal**

Captura Electronica,SCCL  
Mr. Juan Martinez  
c/Duero, 40  
E-08031 Barcelona  
Phone: +34 93 429 5730  
FAX: +34 93 407 0778  
EMAIL: info@captura-el.com

**Romania**

Lauterbach GmbH  
Altlaufstr. 40  
D-85635 Höhenkirchen-Siegersbrunn  
Phone: +49 8102 9876 130  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

**Russia**

RTSoft  
Mr. Alexey Isaev  
Nikitinskaya 3  
RUS-105037 Moscow  
Phone: +7 495 742 6828  
FAX: +7 495 742 6829  
EMAIL: sales@rtsoft.msk.ru

**Singapore**

Flash Technology  
Mr. Teo Kian Hock  
No 61, # 04-15 Kaki Bukit Av 1  
Shun Li Industrial Park  
SGP-Singapore 417943  
Phone: +65 6749 6168  
FAX: +65 6749 6138  
EMAIL: teokh@flashtech.com.sg

**South Korea, Pangyo**

Hancom MDS Inc.  
Mr. Dongwook Jun  
3FL, Hancom Tower  
49, Daewangpangyo-ro 644, Bundang-gu  
Seongnam-si, Gyeonggi-do, 463-400, ROK  
Phone: +82-31-627-3000  
FAX: +82-31-627-3100  
EMAIL: trace32@hancommds.com

**Spain**

Captura Electronica, SCCL  
Mr. Juan Martinez  
c/Duero, 40  
E-08031 Barcelona  
Phone: +34 93 429 5730  
FAX: +34 93 407 0778  
EMAIL: info@captura-el.com

**Sweden**

Nohau Solutions AB  
Mr. Jörgen Nilsson  
Derbyvägen 6D  
SE-21235 Malmö  
Phone: +46 40 592 206  
FAX: +46 40 592 229  
EMAIL: Jorgen.nilsson@nohau.se

**Switzerland**

JDT Jberg DatenTechnik  
Mr. Andreas Jberg  
Zimmereistrasse 2  
CH-5734 Reinach AG  
Phone: +41 62 7710 886  
FAX:  
EMAIL: Andreas.Jberg@jdt.ch

**Taiwan**

Superlink Technology Corp.  
Mr. Sulin Huang  
3F-8, No. 77, Sec. 1, Xintaiwu Rd., Xizhi District,  
New Taipei City 22101, Taiwan, R.O.C.  
Phone: +886 2 26983456  
FAX: +886 2 26983535  
EMAIL: info.stc@superlink.com.tw

**Tunisia**

Lauterbach Consulting S.A.R.L.  
Mr. Khaled Jmal  
Route El Ain Km 3.5  
TN-3062 Sfax  
Phone: +216-31361061  
FAX: +216-74611723  
EMAIL: info\_tn@lauterbach.com

**Turkey-1**

Tektronik Muh. ve Tic. A.S.  
Mr. Hakan Yavuz  
CyberPlaza B-Blok, 702B  
Bilkent  
06800 Ankara  
Phone: +90 312 437 3000  
FAX: +90 312 437 1616  
EMAIL: info@tektronik.com.tr

**Turkey-2**

G3TEK Embedded Technologies Ltd.  
Mr. Celal Aygun  
Ilkyerlesim Mah. 445.  
Sok. No: 48  
06370 Battikent/Ankara  
Phone: +90 312 3324769  
FAX: +90 312 3324769  
EMAIL: info@g3tek.com

**UK**

Lauterbach GmbH  
Mr. Richard Copeman  
Altlaufstr. 40  
D-85635 Höhenkirchen-Siegersbrunn  
Phone: +49 8102 9876 190  
FAX: +49 8102 9876 187  
EMAIL: sales@lauterbach.com

**USA East**

Lauterbach Inc.  
Mr. Udo Zoettler  
4 Mount Royal Ave.  
USA-Marlborough, MA 01752  
Phone: +1 508 303 6812  
FAX: +1 508 303 6813  
EMAIL: info\_us@lauterbach.com

**USA West**

Lauterbach Inc.  
Mr. Bob Kupyn  
1111 Main Street, Suite 620  
USA-Vancouver, WA, 98660  
Phone: +1 503 524 2222  
FAX: +1 503 524 2223  
EMAIL: bob.kupyn@lauterbach.com



---

## Additional Information

<http://www.lauterbach.com>

### Lauterbach GmbH

Altlaufstr. 40  
D-85635 Höhenkirchen-Siegertsbrunn  
Tel. ++49 8102 9876-0 FAX -999  
info@lauterbach.com  
http://www.lauterbach.de

### Lauterbach Inc.

4 Mount Royal Ave.  
Marlboro MA 01752  
Phone (508) 303 6812 FAX (508) 303 6813  
info\_us@lauterbach.com  
http://www.us.lauterbach.com

### Lauterbach Ltd.

11 Basepoint Enterprise Ctre Stroudley Road  
Basingstoke, Hants RG24 8UP  
Phone ++44-1256-333-690 FAX -661  
info\_uk@lauterbach.com  
http://www.lauterbach.co.uk

### Lauterbach S.A.R.L.

135 Chemin Des Bassins  
F-94035 Créteil Cedex  
Phone ++33-149-562-030  
FAX ++33-149-562-039  
info\_fr@lauterbach.com  
http://www.lauterbach.fr

### Lauterbach Japan, Ltd.

3-9-5 Shinyokohama Kouhoku-ku  
Yokohama-shi Japan 222-0033  
Phone ++81-45-477-4511 FAX -4519  
info\_j@lauterbach.com  
http://www.lauterbach.co.jp

### Lauterbach s.r.l.

Lauterbach s.r.l.  
Via Enzo Ferrieri 12  
I-20153 Milano  
Phone ++39 02 45490282  
FAX ++39 02 45490428  
info\_it@lauterbach.it  
http://www.lauterbach.it

### Suzhou Lauterbach Consulting Co.,Ltd.

Room 1605, Xing Hai International Square  
No.200, Xing Hai Street  
Suzhou, 215021 PR of China  
Phone: 0086-512 6265 8030  
FAX: 0086-512 6265 8032  
info\_cn@lauterbach.cn  
http://www.lauterbach.cn

---

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