




---

## RTOS Debugger for ARTK

**680x0**

**683xx**

- Real time, non-intrusive display of ARTK system resources
- ARTK specific display of analyzer listing
- Statistic evaluation and graphic display of task run times
- Task related evaluation of function run times
- Statistic evaluation and graphic display of task states
- Task stack coverage
- PRACTICE functions for OS data
- ARTK related pull-down menu

The TRACE32 systems include a configurable multitask debugger to provide symbolic debugging in real time operating systems. Our software package contains a ready-to-run configuration for the AdaWorld Ada Run Time Kernel (ARTK) from Aonix.

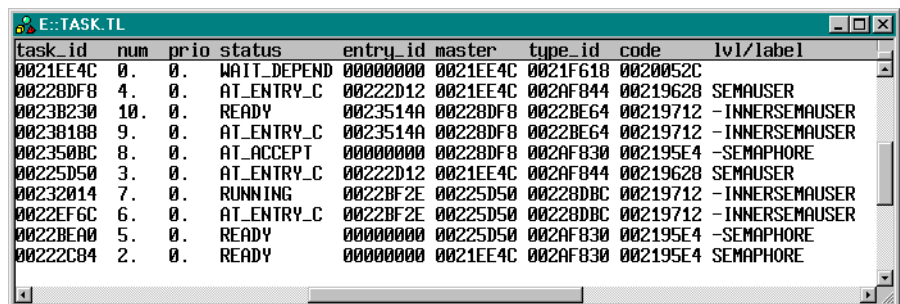
In close cooperation with Aonix we built a special multi-task support for ARTK on Motorola 68k processors.

## Multitask Debugging on TRACE32 with AdaWorld ARTK

### Real time, non-intrusive display of ARTK system resources

The TRACE32 multitask debugger for ARTK provides display functions to display the system tasks. In addition, by using the emulators dual-port memory, the display of the tasks can be viewed

non-intrusively in real time. The tables are updated permanently ("On The Fly"), without affecting the application at all.



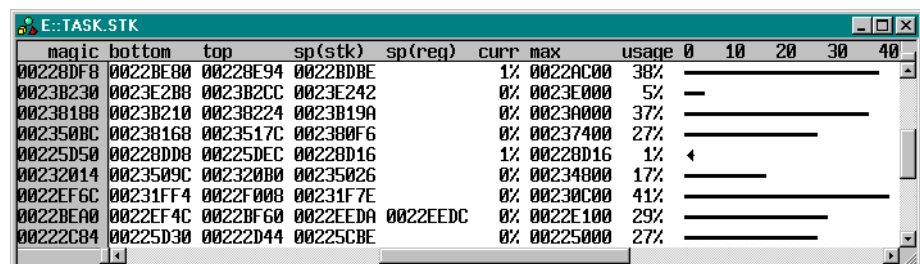
task_id	num	prio	status	entry_id	master	type_id	code	lvl/label
0021EE4C	0	0	WAIT_DEPEND	00000000	0021EE4C	0021F618	0020052C	
00228DF8	4	0	AT_ENTRY_C	00222D12	0021EE4C	002AF844	00219628	SEMAUSER
0023B230	10	0	READY	0023514A	00228DF8	0022BE64	00219712	-INNERSEMAUSER
00238188	9	0	AT_ENTRY_C	0023514A	00228DF8	0022BE64	00219712	-INNERSEMAUSER
002350BC	8	0	AT_ACCEPT	00000000	00228DF8	002AF830	002195E4	-SEMAPHORE
00225D50	3	0	AT_ENTRY_C	00222D12	0021EE4C	002AF844	00219628	SEMAUSER
00232014	7	0	RUNNING	0022BF2E	00225D50	00228DBC	00219712	-INNERSEMAUSER
0022EF6C	6	0	AT_ENTRY_C	0022BF2E	00225D50	00228DBC	00219712	-INNERSEMAUSER
0022BEA0	5	0	READY	00000000	00225D50	002AF830	002195E4	-SEMAPHORE
00222C84	2	0	READY	00000000	0021EE4C	002AF830	002195E4	SEMAPHORE

Task list window

### 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 each separate task.



magic	bottom	top	sp(stk)	sp(req)	curr	max	usage	0	10	20	30	40
00228DF8	0022BE80	00228E94	0022BDBE		1%	0022AC00	38%	[Progress bar]				
0023B230	0023E2B8	0023B2CC	0023E242		0%	0023E000	5%	[Progress bar]				
00238188	0023B210	00238224	0023B19A		0%	0023A000	37%	[Progress bar]				
002350BC	00238168	0023517C	002380F6		0%	00237400	27%	[Progress bar]				
00225D50	00228DD8	00225DEC	00228D16		1%	00228D16	1%	[Progress bar]				
00232014	0023509C	002320B0	00235026		0%	00234800	17%	[Progress bar]				
0022EF6C	00231FF4	0022F008	00231F7E		0%	00230C00	41%	[Progress bar]				
0022BEA0	0022EF4C	0022BF60	0022EEDA	0022EEDC	0%	0022E100	29%	[Progress bar]				
00222C84	00225D30	00222D44	00225CBE		0%	00225000	27%	[Progress bar]				

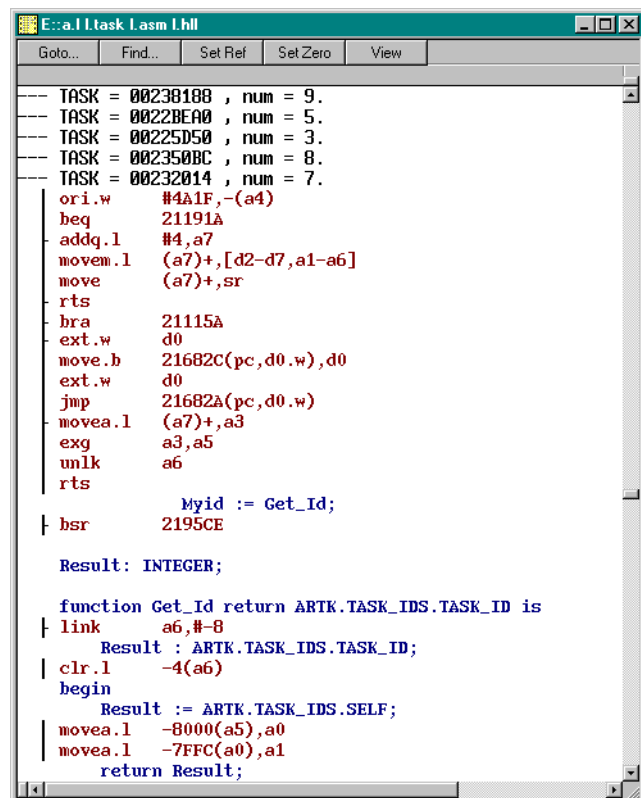
Task stack coverage window

## PRACTICE functions for OS data

The support includes extended PRACTICE functions for process specific data. E.g. the function "TASK.CONFIG(magic)" returns the address of the so called magic value.

## ARTK specific display of analyzer listing

The data recorded in the analyzer can be displayed and interpreted specific to the operating system. The task switches are displayed symbolically.



```

E::a.l task l.asm l.hll
Goto... Find... Set Ref Set Zero View
--- TASK = 00238188 , num = 9.
--- TASK = 0022BEA0 , num = 5.
--- TASK = 00225D50 , num = 3.
--- TASK = 002350BC , num = 8.
--- TASK = 00232014 , num = 7.
| ori.w #4A1F,-(a4)
| beq 21191A
| addq.l #4,a7
| movem.l (a7)+,[d2-d7,a1-a6]
| move (a7)+,sr
| rts
| bra 21115A
| ext.w d0
| move.b 21682C(pc,d0.w),d0
| ext.w d0
| jmp 21682A(pc,d0.w)
| movea.l (a7)+,a3
| exg a3,a5
| unlk a6
| rts
| bsr Myid := Get_Id;
| 2195CE
|
| Result: INTEGER;
|
| function Get_Id return ARTK.TASK_IDS.TASK_ID is
| link a6,#-8
| Result : ARTK.TASK_IDS.TASK_ID;
| clr.l -4(a6)
| begin
| Result := ARTK.TASK_IDS.SELF;
| movea.l -8000(a5),a0
| movea.l -7FFC(a0),a1
| return Result;

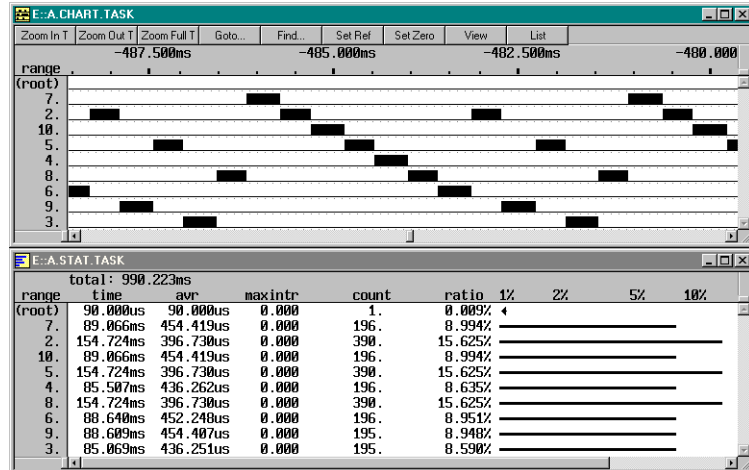
```

Analyzer listing, task selective recording, display of task switches, assembler mnemonics and HLL lines

## Statistic evaluation and graphic display of task run times

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.

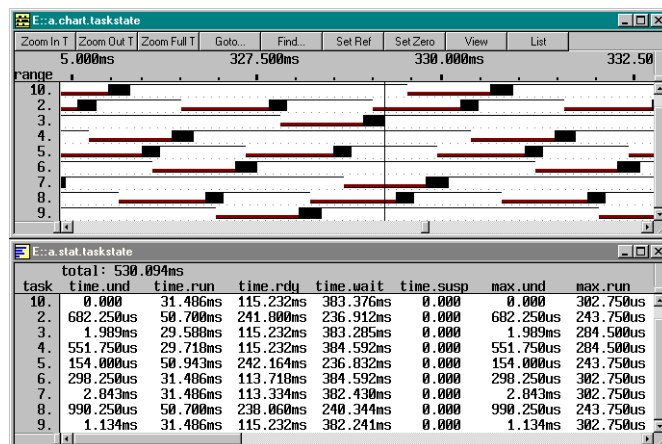


Statistics and flow of tasks

## Statistic evaluation and graphic display of task states

These tabular and graphical analyses of the status of tasks show the various states (i.e. running, ready, waiting, suspended and undefined) and times each

task spent in each state. A graphical view of the data can help to highlight prioritisation problems, critical paths etc.



Statistics and flow of task states

## Task related evaluation of function run times

The statistic and graphic evaluation of function calls and function run times can be done dependant on the actual running task. This is necessary, if dif-

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

record	func	ti	fore	address	cycle	d.w
TASK = 00238180 , num = 9.						
+009879		0.500us		SD:0021ED60	wr-word	0023
+009880		50.750us		SD:0021ED62	wr-word	8180
+009881	GET_ID+2	0.000us		SP:002195D0	rd-word	FFF8
+009882		0.500us		SD:0021ED60	rd-word	0023
+009883	GET_ID+14	1.000us		SD:0021ED62	rd-word	8180
+009884	GET_ID+2	142.250us		SP:002195E2	rd-word	4E75
+009885		0.000us		SP:002195D0	rd-word	FFF8
+009886	GET_ID+2	0.500us		SD:0021ED60	rd-word	0023
+009887	GET_ID+14	1.000us		SD:0021ED62	rd-word	8180
+009888	GET_ID+14	4.000us		SP:002195E2	rd-word	4E75
+009889	INNERSEMAUSER+66	3.250us		SP:00219778	rd-word	60C2
+009890	INNERSEMAUSER+2E	230.500us		SP:00219740	rd-word	43EE
+009891		0.500us		SD:0021ED60	rd-word	0023
+009892		6.000us		SD:0021ED62	rd-word	8180
TASK = 0022BEA0 , num = 5.						
+009893		0.500us		SD:0021ED60	wr-word	0022
+009894		47.000us		SD:0021ED62	wr-word	BEA0
+009895	GET_ID+2	0.000us		SP:002195D0	rd-word	FFF8
+009896		0.500us		SD:0021ED60	rd-word	0022
+009897	GET_ID+14	1.000us		SD:0021ED62	rd-word	BEA0
+009898	GET_ID+14	5.500us		SP:002195E2	rd-word	4E75
+009899	SEMAPHORE+32	133.000us		SP:00219616	rd-word	266D
+009900	SEMAPHORE+42	195.750us		SP:00219626	rd-word	60E4

Analyzer listing, function call hierarchy and task switches

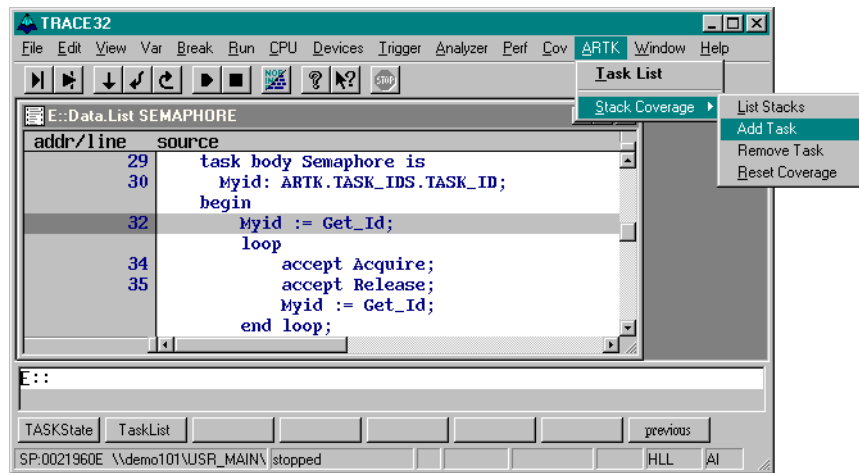
range	tree	time	min	max	avr
total: 374.161ms					
(root)010	(root)010	33.799ms	0.000	33.799ms	33.799ms
INNERSEMAUSER+2E010	INNERSEMAUSER+2E010	33.559ms	453.500us	453.500us	447.453us
MAIN\DEMO\GET_ID+2010	GET_ID+2010	1.406ms	9.500us	9.500us	9.500us
(root)02	(root)02	58.469ms	0.000	58.469ms	58.469ms
DEMO\SEMAPHORE+3202	SEMAPHORE+3202	19.551ms	133.000us	133.000us	133.000us
MAIN\DEMO\GET_ID+202	GET_ID+202	1.396ms	9.500us	9.500us	9.500us
(root)03	(root)03	32.010ms	0.000	32.010ms	32.010ms
DEMO\SEMAUSER+0C203	SEMAUSER+0C203	21.389ms	293.000us	293.000us	289.040us
MAIN\DEMO\GET_ID+203	GET_ID+203	693.500us	9.500us	9.500us	9.500us
(root)04	(root)04	32.449ms	0.000	32.449ms	32.449ms
DEMO\SEMAUSER+0C204	SEMAUSER+0C204	21.682ms	293.000us	293.000us	289.093us
MAIN\DEMO\GET_ID+204	GET_ID+204	703.000us	9.500us	9.500us	9.500us
(root)05	(root)05	58.469ms	0.000	58.469ms	58.469ms
DEMO\SEMAPHORE+3205	SEMAPHORE+3205	19.551ms	133.000us	133.000us	133.000us
MAIN\DEMO\GET_ID+205	GET_ID+205	1.396ms	9.500us	9.500us	9.500us
(root)06	(root)06	33.555ms	0.000	33.555ms	33.555ms
INNERSEMAUSER+2E06	INNERSEMAUSER+2E06	33.310ms	453.500us	453.500us	450.243us
MAIN\DEMO\GET_ID+206	GET_ID+206	1.406ms	9.500us	9.500us	9.500us

Statistics on function hierarchy, task related

## ARTK related pull-down 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 ARTK support with an example for such specific menus, which provides fast access to the ARTK features.



TRACE32 with AdaWorld ARTK 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  
Altlaufstr. 40  
D-85635 Höhenkirchen-Siegersbrunn  
Phone: +49 8102 9876 0  
FAX: +49 8102 9876 999  
EMAIL: info@lauterbach.com

#### Belgium

Tritec Benelux B.V.  
Mr. Robbert de Voogt  
Stationspark 550  
NL-3364 DA Slidrecht  
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  
Altlaufstr. 40  
D-85635 Höhenkirchen-Siegersbrunn  
Phone: +49 8102 9876 0  
FAX: +49 8102 9876 999  
EMAIL: info@lauterbach.com

#### Denmark

Nohau Danmark A/S  
Mr. Flemming Jensen  
Klausdalsbrovej 493  
DK-2730 Herlev  
Phone: +45 44 52 16 50  
FAX: +45 44 52 26 55  
EMAIL: info@nohau.dk

#### Egypt

Wantech Egypt  
Mr. Wagih A. Nawara  
5 Shafik Ghalie St., Suite 2  
Off Pyramids Road, Giza  
Cairo 12111  
Phone: +20 100 1251955  
FAX: +20 100 1250349  
EMAIL: sales@wantech.net.com

#### Finland

Nohau Solutions Finland  
Mr. Martti Viljainen  
Teknobulevardi 3-5  
FI-01531 Vantaa  
Phone: +358 40 546 1469  
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  
Altlaufstr. 40  
D-85635 Höhenkirchen-Siegersbrunn  
Phone: +49 8102 9876 0  
FAX: +49 8102 9876 999  
EMAIL: info@lauterbach.com

#### Germany North

Lauterbach GmbH  
Mr. Klaus Hommann  
Leonhardring 5  
D-31319 Sehnde  
Phone: +49 8102 9876 174  
FAX: +49 5138 6185 3  
EMAIL: klaus.hommann@lauterbach.com

**Germany South**

Lauterbach GmbH  
 Andreas Grimm  
 Altlaufstr. 40  
 D-85635 Höhenkirchen-Siegertsbrunn  
 Phone: +49 8102 9876 190  
 FAX: +49 8102 9876 187  
 EMAIL: andreas.grimm@lauterbach.com

**Greece**

Lauterbach GmbH  
 Altlaufstr. 40  
 D-85635 Höhenkirchen-Siegertsbrunn  
 Phone: +49 8102 9876 0  
 FAX: +49 8102 9876 999  
 EMAIL: info@lauterbach.com

**Hungary**

Lauterbach GmbH  
 Altlaufstr. 40  
 D-85635 Höhenkirchen-Siegertsbrunn  
 Phone: +49 8102 9876 0  
 FAX: +49 8102 9876 999  
 EMAIL: info@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"  
 Bhagyanager Colony, Kukat pally  
 India - Hyderabad 500 072  
 Phone: +91 40-23063346  
 FAX: +91 40-23063346  
 EMAIL: hyderabad@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. Barry Lock  
 11 Basepoint Enterprise Centre  
 Stroudley Road  
 Basingstoke, Hants RG24 8UP  
 Phone: +44-1256-333-690  
 FAX: +44-1256-336-661  
 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  
 Kouhoku-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@emlogic.com.au

**Norway**

Nohau Solutions AB  
 Mr. Jörgen Nilsson  
 Derbyvägen 4  
 SE-21235 Malmö  
 Phone: +46 40 592 206  
 FAX: +46 40 592 229  
 EMAIL: sales@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 0  
FAX: +49 8102 9876 999  
EMAIL: info@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**

MDS Technology Co., Ltd.  
Mr. Sangheon Lee  
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@mdstec.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 4  
SE-21235 Malmö  
Phone: +46 40 592 206  
FAX: +46 40 592 229  
EMAIL: sales@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: +216-74611730  
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 Batikent/Ankara  
Phone: +90 312 3324769  
FAX: +90 312 3324769  
EMAIL: info@g3tek.com

**UK**

Lauterbach Ltd.  
Mr. Barry Lock  
11 Basepoint Enterprise Centre  
Stroudley Rd  
Basingstoke, Hants RG24 8UP  
Phone: +44 1256 333 690  
FAX: +44 1256 350 301  
EMAIL: info\_uk@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

---

## Disclaimer

The information presented is intended to give overview information only. Changes and technical enhancements or modifications can be made without notice.