

## In-Circuit Emulator for ARM7

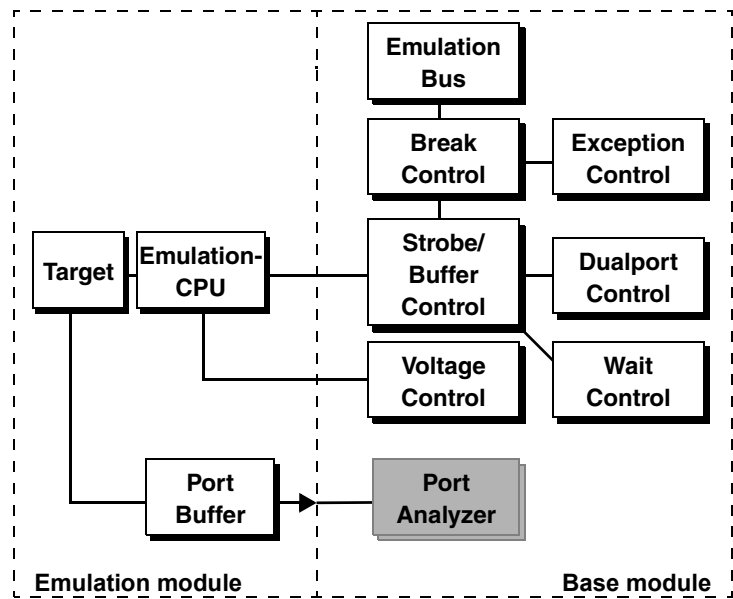
**ARM7TDMI**  
**ARM7TDMI-AMBA**

- Active, passive and tracking emulation supported
- Interface for flexible adaption to ARM7TDMI based designs
- Software compatible JTAG debugger available
- HLL debugger with C and C++ support
- Disassembler for ARM and THUMB code
- Inline assembler for ARM and THUMB code
- Little and big endian byte ordering
- Support for pipelined and de-pipelined address timing
- Operation from 3.0 to 5.0V in passive mode and from 3.0 to 3.6V in active and tracking mode

The TRACE32-ICEARM supports the ARM7TDMI macro-cell with and without AMBA interface. The flexible concept of the probe allows the adaption to customer specific ASICs or to standard microcontrollers. An extensive specification is available that provides a detailed overview of our requirements. Please call or email our technical support to get this document.

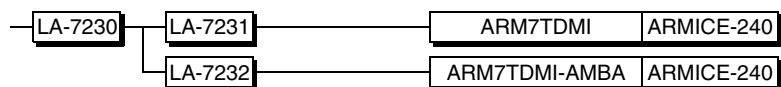
## In-Circuit Emulator

### Basics of Operation



## Emulation Modules

### Modules Overview



## Interfaces

### Compiler

CPU	Language	Compiler	Company	Option
ARM	C	ARMCC	ARM Ltd.	AIF
ARM	C	ARMCC	ARM Ltd.	ELF/DWARF
ARM	C	REALVIEW-MDK	ARM Ltd.	ELF/DWARF2
ARM	C	GCCARM	Free Software Foundation, Inc.	COFF/STABS
ARM	C	GCCARM	Free Software Foundation, Inc.	ELF/DWARF2
ARM	C	GREENHILLS-C	Greenhills Software Inc.	ELF/DWARF2
ARM	C	ICCARM	IAR Systems AB	ELF/DWARF2
ARM	C	ICCV7-ARM	Imagecraft Creations Inc.	ELF/DWARF
ARM	C	CARM	ARM Germany GmbH	ELF/DWARF
ARM	C	HIGH-C	Synopsys, Inc	ELF/DWARF
ARM	C	TI-C	Texas Instruments	COFF
ARM	C	GNU-C	Wind River Systems	COFF
ARM	C	D-CC	Wind River Systems	ELF
ARM	C++	ARM-SDT-2.50	ARM Ltd.	ELF/DWARF2
ARM	C++	REALVIEW-MDK	ARM Ltd.	ELF/DWARF2

CPU	Language	Compiler	Company	Option
ARM	C++	GCCARM	Free Software Foundation, Inc.	COFF/STABS
ARM	C++	GNU	Free Software Foundation, Inc.	EXE/STABS
ARM	C++	GCCARM	Free Software Foundation, Inc.	ELF/DWARF2
ARM	C++	GREENHILLS-C++	Greenhills Software Inc.	ELF/DWARF2
ARM	C++	MSVC	Microsoft Corporation	EXE/CV5
ARM	C++	HIGH-C++	Synopsys, Inc	ELF/DWARF
ARM	C/C++	XCODE	Apple Inc.	Mach-O
ARM	C/C++	GCC	HighTec EDV-Systeme GmbH	ELF/DWARF
ARM	C/C++	VX-ARM	TASKING	ELF/DWARF2

## RTOS Support

Company	Product	Comment
Kadak Products Ltd.	AMX	
-	Android	Dalvik support in development
Oracle Corporation	ChorusOS	
CMX Systems Inc.	CMX-RTX	
eCosCentric Limited	ECOS	1.3, 2.0 and 3.0
Elektrobit Automotive GmbH	Elektrobit tresos	via ORTI

Company	Product	Comment
Segger	embOS	3.80
Evidence	Erika	via ORTI
Cypress Semiconductor Corporation	FAMOS	
-	FreeRTOS	v4-v8
-	Linux	Kernel version 2.4, 2.6, 3.x, 4.x
MontaVista Software, LLC	Linux	3.0, 3.1, 4.0, 5.0
Timesys Corporation	Linux	
NXP Semiconductors	MQX	3.x and 4.x
Synopsys, Inc	MQX	2.40 and 2.50
-	NetBSD	
Mentor Graphics Corporation	Nucleus	
Radisys Inc.	OS-9	
ST Microelectronics N.V.	OS21	
Enea OSE Systems	OSE Basic	(OSARM)
Enea OSE Systems	OSE Delta	4.x and 5.x
Enea OSE Systems	OSE Epsilon	(OSARM), 3.x
-	OSEK	via ORTI
Sygo AG	PikeOS	
eSOL Co., Ltd.	prKERNEL	
Elektrobit Automotive GmbH	ProOSEK	via ORTI
Wind River Systems	pSOS+	2.1 to 2.5, 3.0
QNX Software Systems	QNX	6.0 to 6.6
Hilscher GmbH	rcX	implemented by Hilscher
	RealTime Craft	(XECARM)
RTEMS	RTEMS	4.10
ARM Germany GmbH	RTX-ARM	
Quadros Systems Inc.	RTXC 3.2	
Quadros Systems Inc.	RTXC Quadros	

Company	Product	Comment
Sciopta	Sciopta	
Coressent Technology Inc.	SMX	
Micro Digital Inc.	SMX	3.4 to 4.0
Symbian	Symbian OS	6.x, 7.0s, 8.0a 8.1a
Symbian	Symbian OS	8.0b, 8.1b, 9.x, S^3
Texas Instruments	SYS/BIOS	
eSOL Co., Ltd.	T-Kernel	
Express Logic Inc.	ThreadX	3.0, 4.0, 5.0
Micrium Inc.	uC/OS-II	2.0 to 2.92
Micrium Inc.	uC/OS-III	3.0
E-Force Corporation eForce Co., Ltd.	uC3/Compact	v2
E-Force Corporation eForce Co., Ltd.	uC3/Standard	
-	uCLinux	Kernel Version 2.4, 2.6, 3.x, 4.x
-	uITRON	HI7000, RX4000, NORTi, PrKernel
Wind River Systems	VxWorks	5.x to 7.x
Microsoft Corporation	Windows CE	4.0 to 6.0
Microsoft Corporation	Windows Embedded Compact 2013	
Microsoft Corporation	Windows Embedded Compact 7	
Microsoft Corporation	Windows Mobile	4.0 to 6.0
Microsoft Corporation	Windows Phone 7	
Microsoft Corporation	Windows Standard	

## Debugger Support

CPU	Debugger	Company
	WINDOWS CE PLATF. BUILDER	-
	CODE::BLOC KS	-
	C++TEST	-
	ADENEO	-
	X-TOOLS / X32	blue river software GmbH
	CODEWRIGH T	Borland Software Corporation
	CODE CONFIDENC E TOOLS	Code Confidence Ltd
	CODE CONFIDENC E TOOLS	Code Confidence Ltd
	EASYCODE	EASYCODE GmbH
	ECLIPSE	Eclipse Foundation, Inc
	CHRONVIEW	Inchron GmbH
	LDRA TOOL SUITE	LDRA Technology, Inc.
	UML DEBUGGER	LieberLieber Software GmbH
	SIMULINK	The MathWorks Inc.
	ATTOL TOOLS	MicroMax Inc.
	VISUAL BASIC INTERFACE	Microsoft Corporation
	LABVIEW	NATIONAL INSTRUMENT S Corporation
	RAPITIME	Rapita Systems Ltd.
	RHAPSODY IN MICROC	IBM Corp.

CPU	Debugger	Company
	RHAPSODY IN C++	IBM Corp.
	DA-C	RistanCASE
	TRACEANALY ZER	Symtavigation GmbH
	TA INSPECTOR	Timing Architects GmbH
	UNDODB	Undo Software
	VECTORCAS T UNIT TESTING	Vector Software
	VECTORCAS T CODE COVERAGE	Vector Software
ARM	GURUCE	-
ARM	VIVADO	XILINX



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## Operation Frequency and Voltage

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### Denied Access

For details about the speed of the different subsystems please refer to the full ARMICE specification.

It is strictly recommended to use the ICE-ARM only with 15ns SRAM modules.

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### Operation Voltage

In passive emulation mode a voltage range from 3.0 to 5.0V is supported (also in reconstruction mode). In active- and tracking mode the voltage range is from 3.0 to 3.6V.

These voltage ranges are valid for all available modules.

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## Dimensions

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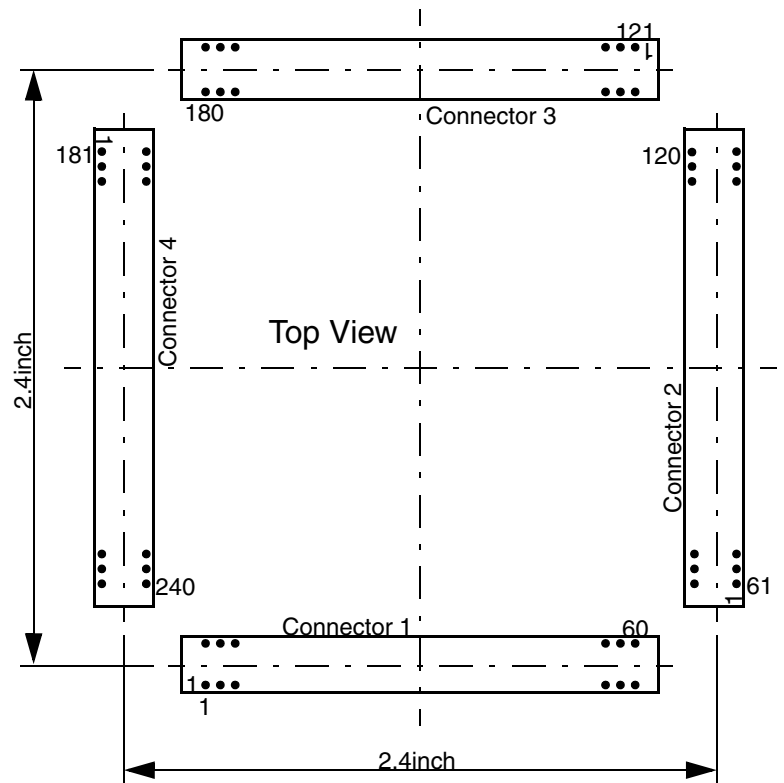
### Module Dimensions

tbd

## Connectors

On the target four 60 pin male connectors of type TFM 130 from SAMTEC are required (for a data sheet please refer to <http://www.samtec.com/>

tfm.html). It is recommended to use the connectors with the maximum available body height (lead style -31 or -32).



Notes to the schematic:

- All LAR signals must be not connected on the target
- All ARM signals are reserved for extensions and new ARM products, they must also be not connected on the target

Not necessary.

**ARMICE Connector 1**

Pin	AMBA	ARM7TDMI	Pin	AMBA	ARM7TDMI
1	GND	GND	2	A00	A00
3	A01	A01	4	A02	A02
5	LAR	LAR	6	A03	A03
7	A04	A04	8	A05	A05
9	GND	GND	10	A06	A06
11	A07	A07	12	A08	A08
13	LAR	LAR	14	A09	A09
15	A10	A10	16	A11	A11
17	GND	GND	18	A12	A12
19	A13	A13	20	A14	A14
21	LAR	LAR	22	A15	A15
23	A16	A16	24	A17	A17
25	GND	GND	26	A18	A18
27	A19	A19	28	A20	A20
29	LAR	LAR	30	A21	A21
31	A22	A22	32	A23	A23
33	GND	GND	34	A24	A24
35	A25	A25	36	A26	A26
37	LAR	LAR	38	A27	A27
39	A28	A28	40	A29	A29
41	GND	GND	42	A30	A30
43	A31	A31	44	WRITE	nRW
45	LAR	LAR	46	SIZE0	MAS0
47	SIZE1	MAS1	48	PROT1	nTRANS
49	GND	GND	50	LOCK	LOCK
51	PROT0	nOPC	52	VCCSENSE	VCCSENSE
53	LAR	LAR	54	LAR	LAR
55	LAR	LAR	56	LAR	LAR
57	LAR	LAR	58	LAR	LAR
59	LAR	LAR	60	LAR	LAR

**ARMICE Connector 2**

Pin	AMBA	ARM7TDMI	Pin	AMBA	ARM7TDMI
61	GND	GND	62	LAR	LAR
63	LAR	LAR	64	ALE	ALE
65	LAR	LAR	66	APE	APE
67	LAR	LAR	68	LAR	LAR
69	GND	GND	70	D00	D00
71	D01	D01	72	D02	D02
73	LAR	LAR	74	D03	D03
75	D04	D04	76	D05	D05
77	GND	GND	78	D06	D06
79	D07	D07	80	D08	D08
81	LAR	LAR	82	D09	D09
83	D10	D10	84	D11	D11
85	GND	GND	86	D12	D12

Pin	AMBA	ARM7TDMI	Pin	AMBA	ARM7TDMI
87	D13	D13	88	D14	D14
89	LAR	LAR	90	D15	D15
91	D16	D16	92	D17	D17
93	GND	GND	94	D18	D18
95	D19	D19	96	D20	D20
97	LAR	LAR	98	D21	D21
99	D22	D22	100	D23	D23
101	GND	GND	102	D24	D24
103	D25	D25	104	D26	D26
105	LAR	LAR	106	D27	D27
107	D28	D28	108	D29	D29
109	GND	GND	110	D30	D30
111	D31	D31	112	VCCSENSE	VCCSENSE
113	LAR	LAR	114	LAR	LAR
115	LAR	LAR	116	LAR	LAR
117	LAR	LAR	118	LAR	LAR
119	LAR	LAR	120	LAR	LAR

### ARMICE Connector 3

Pin	AMBA	ARM7TDMI	Pin	AMBA	ARM7TDMI
121	GND	GND	122	DISREQ	LAR
123	REQARM	LAR	124	LAR	LAR
125	GNTARM	LAR	126	LAR	LAR
127	REQ001	LAR	128	SEL1	SEL1
129	GNT001	LAR	130	LAR	LAR
131	GND	GND	132	TBE	TBE
133	SEL0	SEL0	134	BSTR	BSTR
135	nTRST	nTRST	136	ESIZE0	ESIZE0
137	TDO	TDO	138	VCCSENSE	VCCSENSE
139	TMS	TMS	140	TCK	TCK
141	TDI	TDI	142	ESIZE1	ESIZE1
143	DBGACK	DBGACK	144	BREAKPT	BREAKPT
145	DBGRRQ	DBGRRQ	146	ASICRD	ASICRD
147	ARM	ARM	148	EXTERN0	EXTERN0
149	EXTERN1	EXTERN1	150	ASICWR	ASICWR
151	VCCSENSE	VCCSENSE	152	VCCSENSE	VCCSENSE
153	ARM	ARM	154	LAR	LAR
155	GND	GND	156	LAR	LAR
157	ARM	ARM	158	LAR	LAR
159	ARM	ARM	160	LAR	LAR
161	SLOWCS0	SLOWCS0	162	LAR	LAR
163	SLOWCS1	SLOWCS1	164	LAR	LAR
165	GND	GND	166	RANGEOU T1	RANGEOU T1
167	RANGEOU T0	RANGEOU T0	168	LAR	LAR
169	LAR	LAR	170	LAR	LAR
171	LAR	LAR	172	VCCSENSE	VCCSENSE
173	LAR	LAR	174	LAR	LAR

Pin	AMBA	ARM7TDMI	Pin	AMBA	ARM7TDMI
175	LAR	LAR	176	LAR	LAR
177	LAR	LAR	178	LAR	LAR
179	LAR	LAR	180	LAR	LAR

### ARMICE Connector 4

Pin	AMBA	ARM7TDMI	Pin	AMBA	ARM7TDMI
181	GND	GND	182	COMMRX	COMMRX
183	COMMTX	COMMTX	184	ICEINT	ICEINT
185	nTWAIT	nTWAIT	186	LAR	LAR
187	ARM	ARM	188	LAR	LAR
189	TRAN0	SEQ	190	TRAN1	nMREQ
191	LAR	LAR	192	BL0	BL0
193	LAR	LAR	194	WAIT	nWAIT
195	GND	GND	196	LAST	LAR
197	BL1	BL1	198	BL2	BL2
199	BL3	BL3	200	EEBE	EEBE
201	nCPI	nCPI	202	CPB	CPB
203	CPA	CPA	204	RES0	LAR
205	GND	GND	206	RES1	nRESET
207	ERROR	ABORT	208	RES2	LAR
209	MCLK	MCLK	210	ARM	ARM
211	ISYNC	ISYNC	212	nFIQ	nFIQ
213	nIRQ	nIRQ	214	BIGEND	BIGEND
215	GND	GND	216	nICERE- SET	nICERE- SET
217	ARM	ARM	218	ARM	ARM
219	ARM	ARM	220	ARM	ARM
221	nEXEC	nEXEC	222	nM1	nM1
223	nM0	nM0	224	VCCSENSE	VCCSENSE
225	nM2	nM2	226	nM3	nM3
227	nM4	nM4	228	GND	GND
229	LAR	LAR	230	LAR	LAR
231	LAR	LAR	232	VCCSENSE	VCCSENSE
233	LAR	LAR	234	LAR	LAR
235	LAR	LAR	236	LAR	LAR
237	LAR	LAR	238	LAR	LAR
239	LAR	LAR	240	LAR	LAR

## Available Tool Chain

TRACE32 provides a complete set of development tools for this family. This includes:

- The In-Circuit Emulator TRACE32-ICE
- The high speed RISC Emulator TRACE32-FIRE
- The BDM/JTAG/ONCE etc. based In-Circuit Debugger TRACE32-ICD
- The ROM Monitor based In-Circuit Debugger TRACE32-ICD
- The ICD Trace, a trace extension to the BDM/JTAG debuggers or ROM monitors
- Evaluation boards, which can be used until the target hardware is available.
- The Instruction Set Simulator (SIM), a software tool for code test without any hardware

The following list give an overview which development tools are available for the specific derivatives of this family.

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## Order Information

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### Module Description



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Detailed Order Information

## Contact

### International Representative

#### Argentina

Anacom Eletronica Ltda.  
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