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## Hardware Reference

### ARM7/ARM9/XScale iCARD Debug module

Ordering code	IC30115
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## POD Hardware Reference

### iCard

The iC3000 and iC4000 support a wide range of serial debug interfaces like Motorola's Background Debug Mode (BDM), the Serial Debug Interface (SDI) and the On-Chip Emulation (OnCE) interface. JTAG based debug interfaces are also supported by these Emulators. For each specific debug interface a special iCARD is available.

The iCARD is a PCMCIA-style interface card which contains all necessary adaptations including the target interface cable for a selected serial debug interface. The iCARD plugs into the PCMCIA-style card slot of the iC3000 unit. Features like on-chip-, in-system programming and programming voltage generation are standard features.

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Note: Whenever connecting to the target both target and the Emulator must be switched off. The Emulator is first switched on, and the target right afterwards. Note that otherwise during connecting the target a massive current spike may flow during static discharge or ground potential equalization.

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On debugging iCards beside the interface specific cable there's a 3-pin connector. The 5V/300mA output provides power to small low-power targets. On some iCards, also the 12V/60mA programming voltage is available and also generated by the iC3000/4000 development system and routed to the iCARD's 3-pin connector. Note that the 12V output is controlled by the software. The output defaults to 5V. On the iC3000 the current for 12V flows from the 5V source. Thus, a 12V/50mA load represents 120mA load on the 5V power source. Note that on interface cards for ActiveEmulator, iTRACE and similar this connector is not available, and also on some iCards, the 12V output is not available since it is not needed.

When not in use, the iCARD should be kept in its protective antistatic bag to ensure its dependability and keep the 68-pin PC-Card connector clean.

**The iCard is a delicate piece of equipment. Always handle it with care, make sure not to bend it or deform it in any way, to keep it clean, etc. If these instructions are not followed, damage to the iCard or the Emulator can occur.**

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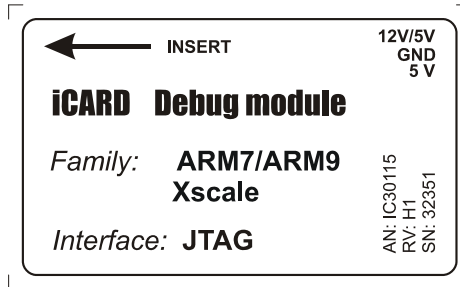
Note: Despite using the same format, iCARDS are not pin compatible with PCMCIA cards. Do NOT use iCARDS in PCMCIA slots and vice-versa! If the iCARD is inserted into a PCMCIA slot, damage to the iCARD and/or the PCMCIA slot will occur. If a PCMCIA card is inserted into the iCARD slot, damage to the PCMCIA card and/or the Emulator will occur.

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## Hardware Reference

**ARM7/ARM9/XScale iCARD Debug module**

<b>Ordering code</b>	<b>IC30115</b>
<b>Dimensions (WxLxH, mm)</b>	<b>54x84x5</b>



Supported CPU cores
ARM7
ARM720T
ARM7DI
ARM7TDMI
ARM9
ARM9E
ARM9TDMI
ARM920T
ARM922T
ARM925
ARM940T
ARM946ES
ARM966ES
XScale

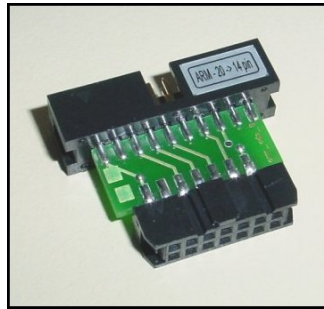
For the latest list of supported cores and devices, please check with your local iSYSTEM distributor.

The following pinout is valid on the target side:

Signal direction	Signal description	Signal	Pin	Pin	Signal	Signal description	Signal direction
Input	Reference voltage	VTref	1	2	TVcc	Target Vcc	Input
Output	Standard JTAG	nTRST	3	4	GND	Ground	
Output	Standard JTAG	TDI	5	6	GND	Ground	
Output	Standard JTAG	TMS	7	8	GND	Ground	
Output	Standard JTAG	TCK	9	10	GND	Ground	
Input	Return TCK	RTCK	11	12	GND	Ground	
Input	Standard JTAG	TDO	13	14	GND	Ground	
In/Out	System Reset	nSRST	15	16	GND	Ground	
Output	Debug request	DBGREQ	17	18	GND	Ground	
Input	Debug Acknowledge	DBACK	19	20	GND	Ground	

ARM 20-pin target connector

An adapter for 14-pin pinouts is also available.

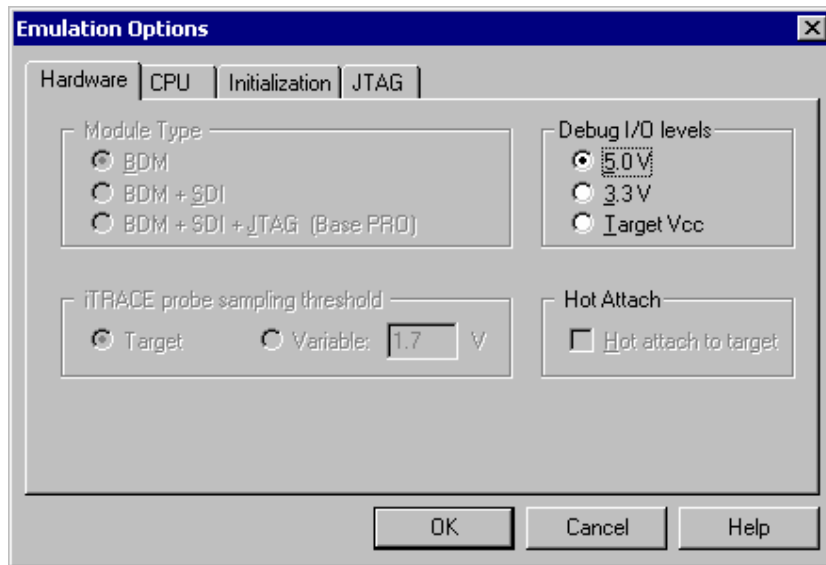


With the adapter, the following pinout is valid on the target side:

Signal direction	Signal description	Signal	Pin	Pin	Signal	Signal description	Signal direction
Input	Target Vcc	TVcc	1	2	GND	Ground	
Output	Standard JTAG	nTRST	3	4	GND	Ground	
Output	Standard JTAG	TDI	5	6	GND	Ground	
Output	Standard JTAG	TMS	7	8	GND	Ground	
Output	Standard JTAG	TCK	9	10	GND	Ground	
Input	Standard JTAG	TDO	11	12	nSRST	System Reset	In/Out
Input	Reference voltage	VTref	13	14	GND	Ground	

ARM 14-pin target connector

## Power Supply



### *Power Supply Selection*

The iCARD can be configured in a way that debug JTAG signals are driven at 3.3V, 5V or target voltage levels. When 'Target Vcc' Debug I/O level is selected, iCARD uses voltage from the VTref pin (1) on the target debug connector as a reference voltage for driving debug JTAG signals. Make sure that VTref is connected when 'Target Vcc' Debug I/O level is selected. The VTref range can be from 1.8V to 5.5V.

## Troubleshooting

Please, visit the following link for troubleshooting information: <http://www.asystemelectronic.si/isystem/faq>

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Note: Despite using the same format, iCARDS are not pin compatible with PCMCIA cards. Do NOT use iCARDS in PCMCIA slots and vice-versa!

Note also the direction in which the iCARD is inserted into the iCARD slot. The side with the label is the top side; the arrow shows the direction in which the iCARD should be inserted.

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