
Hardware Reference

ARM Cortex family iCARD Debug module

Ordering codes	IC30129
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Hardware Reference

iCard General Notes

The iC3000 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.

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.

On some 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 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.

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.

Temperature range

All iSYSTEM devices, unless explicitly otherwise noted, are specified to operate at room temperatures (specifically, between 10°C/50°F and 40°C/105°F).

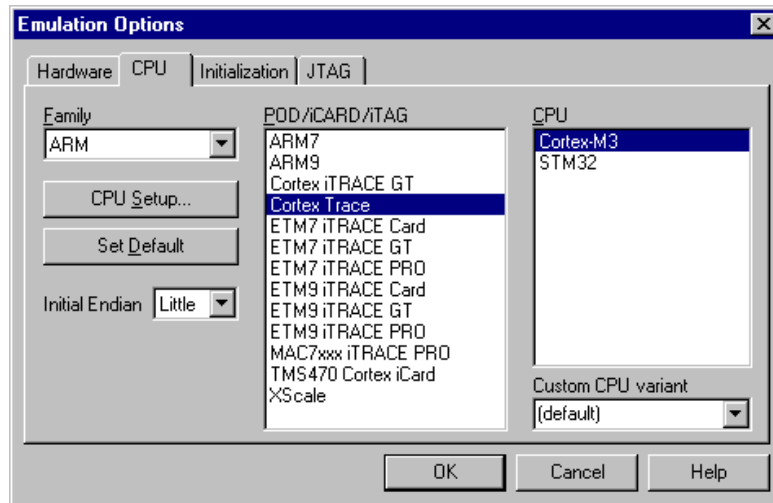
Hardware Reference

ARM Cortex family iCARD

Supported CPU cores
ARM7
ARM9
XScale
Cortex-M3

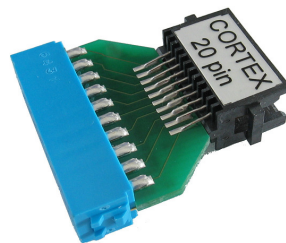
For the latest list of supported cores and devices, please check with your local iSYSTEM distributor.

Depending on the core being debugged, select proper iCARD type in the 'Hardware/Emulation Options' dialog. Select ARM7 iCARD for ARM7, ARM9 iCARD for ARM9, XScale iCARD for XScale and Cortex iCARD for Cortex-M3 architecture.



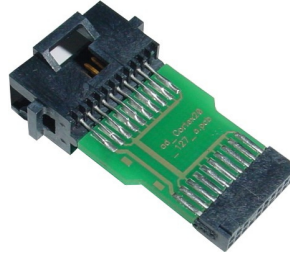
The default Cortex iCARD debug connector is the 20-pin AMPMODU connector (1.27m pitch). It's used when the target features Cortex single wire debug interface and has populated 20-pin AMPMODU debug connector.

A one to one adapter from the 20-pin AMPMODU connector to the standard 20-pin Cortex connector (2.54mm pitch) is shipped with the iCARD and can be identified by the sticker labeled 'CORTEX 20 pin'. This connector uses the same pinout as the default 20-pin AMPMODU connector. This adapter is required when the target features Cortex single wire debug interface and has populated 20-pin Cortex 2.54mm debug connector.



CORTEX 20-pin (2.54) adapter

Also available but not shipped with the iCARD is an adapter which is functionally identical to the CORTEX 20 pin (2.54) adapter, except that the 20-pin target connector has 1.27mm pitch. It can be ordered under IAP20P20CORTEX ordering code. It's used when the target features Cortex single wire debug interface and has populated 20-pin Cortex 1.27mm debug connector.



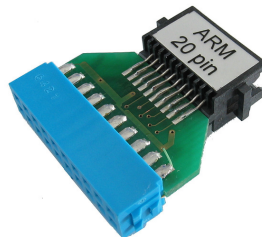
IAP20P20CORTEX

The following pinout is valid on the target side featuring Cortex single wire debug interface:

Signal direction	Signal description	Signal	Pin	Pin	Signal	Signal description	Signal direction
Input	Reference voltage	VTref	1	2	TMS	Standard JTAG	Output
	Ground	GND	3	4	TCK	Standard JTAG	Output
	Ground	GND	5	6	TDO	Standard JTAG	Input
	Ground	GND	7	8	TDI	Standard JTAG	Output
	Ground	GND	9	10	nSRST	System Reset	In/Out
	Ground	GND	11	12	TRCLK	Trace Clock	Output
	Ground	GND	13	14	TRD0	Trace Data 0	Output
	Ground	GND	15	16	TRD1	Trace Data 1	Output
	Ground	GND	17	18	TRD2	Trace Data 2	Output
	Ground	GND	19	20	TRD3	Trace Data 3	Output

Above pinout is valid for the 20-pin AMPMODU connector, 20-pin Cortex connector (2.54mm pitch) and 20-pin Cortex connector (1.27mm pitch).

An adapter for the standard 2.54mm pitch ARM 20-pin pinout is also shipped with the iCard and can be identified by the sticker labeled 'ARM 20 pin'. It's used when the target features Cortex JTAG debug interface and has populated 20-pin ARM 2.54mm debug connector.



ARM 20-pin (2.54) adapter

With the ARM 20-pin adapter, 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

Since the Cortex adapter does not provide the nTRST line, this line (pin 3) is pulled up with a 10k resistor to the TVcc line (pin 2).

Troubleshooting

Please, visit the following link for troubleshooting information: <http://www.isystem.com>, press the Support button and open the FAQ section.

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