CR16C JOWI iCARD Debug Module

Ordering code	IC30113

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iCard General Notes

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.

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 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.

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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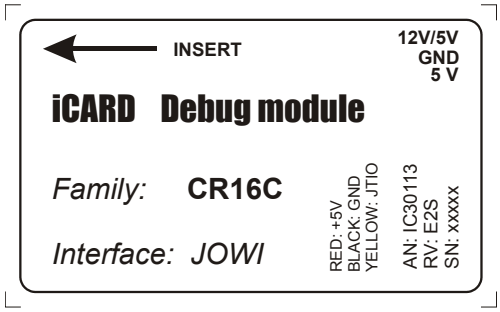
Dimensions (WxLxH, mm)	54x84x5



Supported CPUs
SC 14428

Note: for the latest list of supported CPUs please check the iSYSTEM Web site.

This iCARD uses only one line (JTIO) for JTAG communication, on which the data is transferred serially.

The iCARD is connected to the target using three wires:

- Red - +5V/300mA output for target power supply
- Black – GND
- Yellow – JTIO

The JOWI module must be initialized when the CPU is powered on. To do this, the JTIO line must be low at power-up. If the JTIO line is high, the JOWI module will be disabled and can not be enabled later.

If the 5V power supply from the iCARD is used (the red wire), the system will take care of line levels at power-up. If the target has its own power supply, the emulator must be turned on first, then the target. Before the target is initialized, no emulator initialisation must occur (no download or reset), since the emulator forces the JTIO to 0 until it is initialized.

Flash Programming

Internal CPU flash is programmed using normal debug download and there is no need to use FLASH menu in winIDEA. FLASH menu is used used only when programming external flash device(s).

Hot Attach

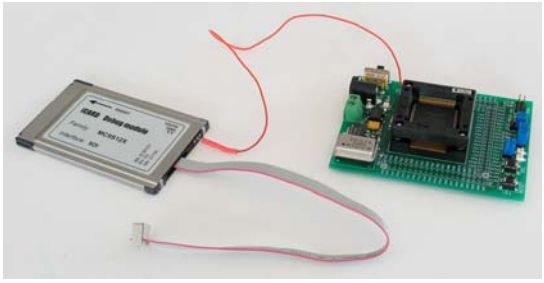
Hot Attach is supported for Motorola HC12, HCS12, S12X, HCS08 and National Semiconductor CR16 CPU families (status on June 2004). It allows attachment of the debugger to a running target system without affecting

its operation. Refer to the Hardware User's Guide for more details on Hot Attach use and necessary winIDEA configuration.

Hardware Considerations

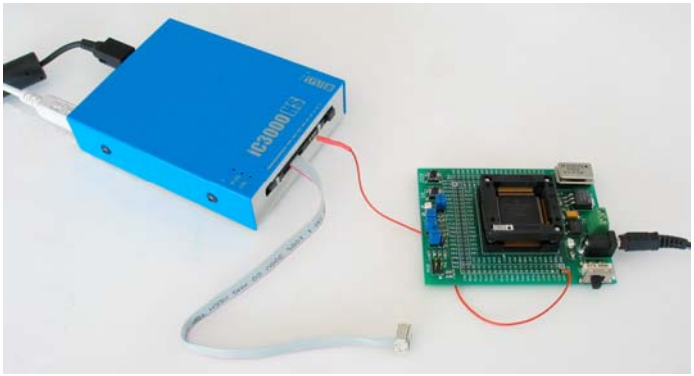
When using Hot Attach make sure that Emulator GND and Target GND are connected before the debug iCARD cable is connected to the target debug connector. The debug iCARD can be damaged if this connection is not established prior to applying the power to the emulator and the target.

Before applying the power to the target and the emulator, take a wire and connect it to the target GND. On the other side, connect it to the emulator GND (Picture 1). The emulator has GND accessible at the edge of the debug iCARD.



Picture 2 depicts a system ready for the Hot Attach use. Next, insert the iCARD into the emulator, switch on the emulator and then apply the power to the target.

The target should be running now (Picture 3) and ready for Hot Attach..



winIDEA Configuration

- Check the ‘Hot attach to target’ option in the ‘Hardware/Emulation Options/Hardware’ tab.
- Execute Download debug command.
- Connect the debug iCARD cable to the target system
- Select the 'Attach' debug command in the ‘Debug’ menu to attach to the target system.
- Now, the debugger should display run status and the application can be stopped and debugged if necessary.

Important iCard information

Note that 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.