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Secure Embedded Web Application Kit 2.0

The Secure Embedded Web Application Kit allows you to develop a secure embedded Web interface for your embedded systems. The Application Kit is based on the RCM4300 RabbitCore module, which features built-in Ethernet, a swappable flash memory device, and an optional A/D converter.

Application Kit Contents

- RabbitCore® RCM4300 module.
- Prototyping Board.
- 512 MB *miniSD™* Card with SD Card adapter
- Universal AC adapter, 12 V DC, 1 A (includes Canada/Japan/U.S., Australia/N.Z., U.K., and European style plugs).
- USB programming cable with 10-pin header.
- Cat. 5 Ethernet crossover cable.
- 10-pin header to DB9 serial cable.
- Secure Embedded Web Application Kit CD including *Dynamic C®*, FAT File System, RabbitWeb, Rabbit Embedded Security Pack, and sample programs and information related to the Secure Embedded Web Application Kit — with complete product documentation on disk.
- *Getting Started* instructions.
- Plastic and metal standoffs with 4-40 screws and washers.
- A bag of accessory parts for use on the Prototyping Board.
- *Rabbit 4000 Processor Easy Reference* poster.
- Registration card.

Visit our online Rabbit store at www.rabbit.com/store/ for the latest information on peripherals and accessories that are available for the RCM4300 RabbitCore modules.

Installing Dynamic C®

Insert the CD from the Application Kit in your PC's CD-ROM drive. If the installation does not auto-start, run the **setup.exe** program in the root directory of the Dynamic C CD.

Hardware Connections

Step 1 — Prepare the Prototyping Board

To facilitate handling the Prototyping Board, snap in the four standoffs to the four holes at the corners from the bottom side of the Prototyping Board as shown in Figure 1.

NOTE: The hole at the bottom left of the Prototyping Board is used to mount the RCM4300, so use the hole immediately above it for the standoff.

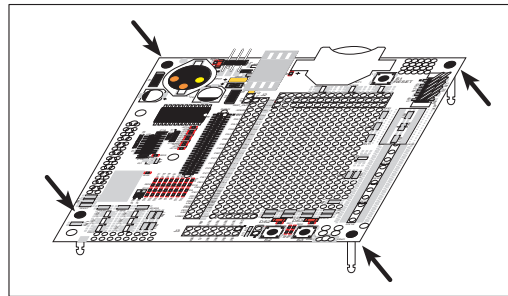
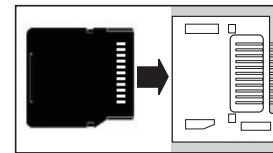


Figure 1. Insert Standoffs

Step 2 — Insert the *miniSD*™ Card

Insert the *miniSD*™ Card into the *miniSD* Card holder on the RCM4300. The card is designed to fit easily only one way — do *not* bend the card or force it into the slot. You will sense a soft click once the card is inserted completely.



CAUTION: You will sense a soft click once you insert the *miniSD*™ Card completely. To remove it, gently press the card towards the middle of the RCM4300 — you will sense a soft click and the card will be ready to be removed. Do *not* attempt to pull the card from the socket before pressing it in — otherwise the ejection mechanism will get damaged. The ejection mechanism is spring-loaded, and will partially eject the card when used correctly.

Step 3 — Attach RCM4300 Module to Prototyping Board

Turn the RCM4300 module so that the mounting holes line up with the corresponding holes on the Prototyping Board. Insert the metal standoffs as shown in Figure 2, secure them from the bottom using the three screws and washers, then insert the module's header J4 on the bottom side into socket RCM1 on the Prototyping Board.

NOTE: It is important that you line up the pins on header J4 of the module exactly with socket RCM1 on the Prototyping Board. The header pins may become bent or damaged if the pin alignment is offset, and the module will not work. Permanent electrical damage to the module may also result if a misaligned module is powered up.

Press the module's pins firmly into the Prototyping Board socket—press down in the area above the header pins. For additional integrity, you may secure the RCM4300 to the standoffs from the top using the remaining three screws and washers.

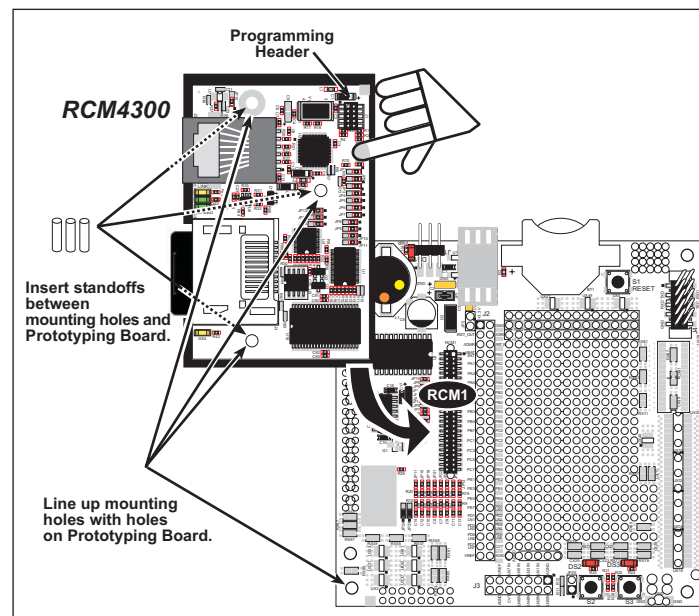


Figure 2. Install the RCM4300 Module on the Prototyping Board

Step 4 — Connect Programming Cable

The programming cable connects the RCM4300 to the PC running Dynamic C to download programs and to monitor the RCM4300 module during debugging.

Connect the 10-pin connector of the programming cable labeled **PROG** to header J1 on the RCM4300 as shown in Figure 3. Be sure to orient the marked (usually red) edge of the cable towards pin 1 of the connector. (Do not use the **DIAG** connector, which is presently not supported by the RCM4300.)

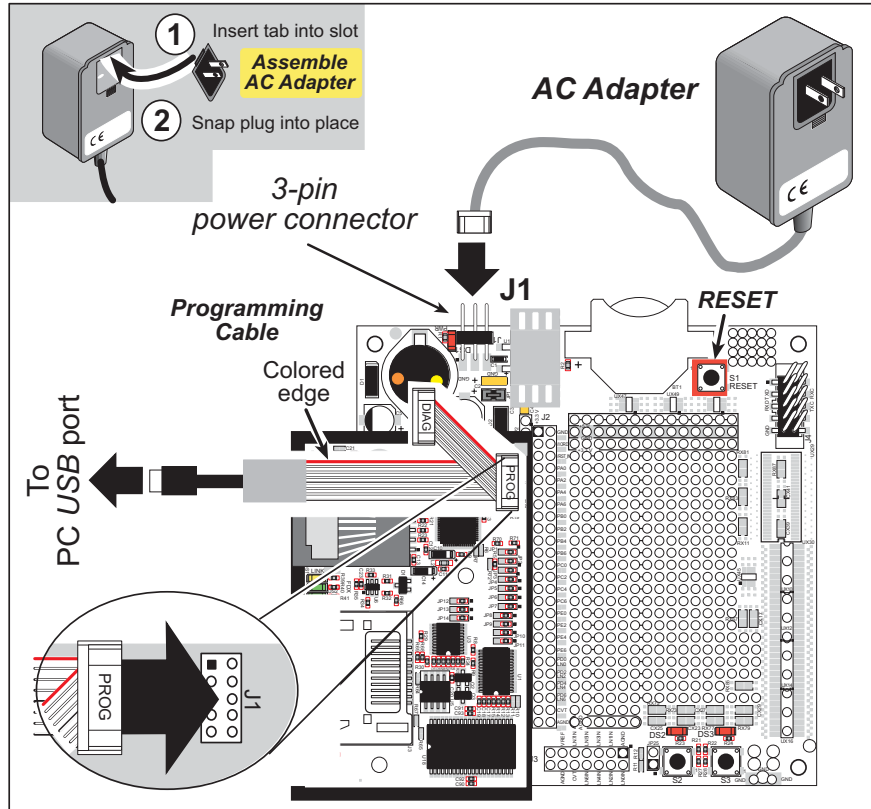


Figure 3. Connect Programming Cable and Power Supply

Connect the other end of the programming cable to an available USB port on your PC or workstation.

Your PC should recognize the new USB hardware, and the LEDs in the shrink-wrapped area of the USB programming cable will flash — if you get an error message, you will have to install USB drivers. Drivers for Windows XP are available in the Dynamic C `Drivers\Rabbit USB Programming Cable\WinXP_2K` folder — double-click `DPInst.exe` to install the USB drivers. Drivers for other operating systems are available online at www.ftdichip.com/Drivers/VCP.htm.

Step 5 — Connect Power

Once all the other connections have been made, you can connect power to the Prototyping Board.

First, prepare the AC adapter for the country where it will be used by selecting the plug. The RCM4300 Development Kit presently includes Canada/Japan/U.S., Australia/N.Z., U.K., and European style plugs. Snap in the top of the plug assembly into the slot at the top of the AC adapter as shown in Figure 3, then press down on the spring-loaded clip below the plug assembly to allow the plug assembly to click into place. Release the clip to secure the plug assembly in the AC adapter.

Connect the AC adapter to 3-pin header J1 on the Prototyping Board as shown in Figure 3. The connector may be attached either way as long as it is not offset to one side—the center pin of J1 is always connected to the positive terminal, and either edge pin is ground.

Plug in the AC adapter. The **PWR** LED on the Prototyping Board next to the power connector at J1 should light up. The RCM4300 and the Prototyping Board are now ready to be used.

NOTE: A **RESET** button is provided on the Prototyping Board next to the battery holder to allow a hardware reset without disconnecting power.

Run a Sample Program

Once the RCM4300 is connected as described in the preceding pages, start Dynamic C by double-clicking on the Dynamic C icon on your desktop or in your **Start** menu. Select **Code and BIOS in RAM** on the “Compiler” tab in the Dynamic C **Options > Project Options** menu. Then click on the “Communications” tab and verify that **Use USB to Serial Converter** is selected to support the USB programming cable. Click **OK**.

NOTE: The **Code and BIOS in RAM BIOS** memory compiler option is recommended while debugging for faster download times. Remember to recompile the working application using the **Code and BIOS in Flash, Run in RAM** option once you are ready to use the RCM4300 in a standalone installation.

Determine which COM port was assigned to the USB programming cable on your PC. Open **Control Panel > System > Hardware > Device Manager > Ports** and identify which COM port is used for the USB connection. In Dynamic C, select **Options > Project Options**, then select this COM port on the **Communications** tab, then click **OK**. You may type the COM port number followed by **Enter** on your computer keyboard if the COM port number is outside the range on the dropdown menu.

Use the **File** menu to open the sample program **PONG.C**, which is in the Dynamic C **SAMPLES** folder. Press function key **F9** to compile and run the program. The **STDIO** window will open on your PC and will display a small square bouncing around in a box.

Where Do I Go From Here?

If the sample program ran fine, you are now ready to go on to other sample programs, which are discussed in Application Note AN417, *Secure Embedded Web Application Kit 2.0*. The source code for the sample programs is provided to allow you to modify them for your own use. The *RCM4300 User's Manual* on the Dynamic C CD also provides complete hardware reference information and describes the software function calls for the RCM4300 RabbitCore modules and the Prototyping Board. Each Dynamic C module has complete documentation on the Dynamic C CD that describes the Dynamic C module and discusses the function calls and sample programs associated with the Dynamic C module.

Troubleshooting

If Dynamic C cannot find the target system (error message "**No Rabbit Processor Detected.**"):

- Check that the RCM4300 is powered correctly — the red **PWR** LED on the Prototyping Board should be lit when the RCM4300 is mounted on the Prototyping Board and the AC adapter is plugged in.
- Check both ends of the programming cable to ensure that they are firmly plugged into the PC and the **PROG** connector, not the **DIAG** connector, is plugged in to the programming port on the RCM4300 with the marked (colored) edge of the programming cable towards pin 1 of the programming header.
- Ensure that the RCM4300 module is firmly and correctly installed in its socket on the Prototyping Board.
- If a program compiles and loads, but then loses target communication before you can begin debugging, it is possible that your PC cannot handle the default debugging baud rate. Locate the **Serial Options** dialog in the Dynamic C **Options > Project Options > Communications** menu. Choose a lower debug baud rate.

Press **<Ctrl-Y>** to force Dynamic C to recompile the BIOS. You should receive a **Bios compiled successfully** message once these steps are completed successfully.

If there are any other problems:

- Use the Dynamic C **Help** menu to get further assistance with Dynamic C.
- Check the Rabbit Technical Bulletin Board and forums at www.rabbit.com/support/bb/ and at www.rabbit.com/forums/.
- Use the Technical Support e-mail form at www.rabbit.com/support/.

NOTE: If you purchased your Secure Embedded Web Application Kit through a distributor or through a Rabbit partner, contact the distributor or partner first for technical support.