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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

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RabbitCore RCM3365/RCM3375

C-Programmable Core Module
with NAND Flash Mass Storage and Ethernet

User's Manual

019-0150 • 080528-G

RabbitCore RCM3365/RCM3375 User's Manual

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1. INTRODUCTION

The RCM3365 and RCM3375 RabbitCore modules feature a compact module that incorporates the latest revision of the powerful Rabbit® 3000 microprocessor, flash memory, mass storage (NAND flash), static RAM, and digital I/O ports. The RCM3365 and RCM3375 present a new form of embedded flexibility with removable (“hot-swappable”) memory cards. The RCM3365 and RCM3375 both have an integrated 10/100Base-T Ethernet port, and provide for LAN and Internet-enabled systems to be built as easily as serial-communication systems.

In addition to the features already mentioned above, the RCM3365 and RCM3375 have two clocks (main oscillator and real-time clock), reset circuitry, and the circuitry necessary for management of battery backup of the Rabbit 3000’s internal real-time clock and the static RAM. Two 34-pin headers bring out the Rabbit 3000 I/O bus lines, parallel ports, and serial ports.

The RCM3365/RCM3375’s mass-storage capabilities make them suited to running the optional Dynamic C FAT file system module where data are stored and handled using the same directory file structure commonly used on PCs. A removable *xD-Picture Card* can be hot-swapped to transfer data quickly and easily using a standardized file system that can be read away from the RCM3365/RCM3375 installation.

The RCM3365 or RCM3375 receives +3.3 V power from the customer-supplied motherboard on which it is mounted. The RCM3365 and RCM3375 can interface with all kinds of CMOS-compatible digital devices through the motherboard.

The Development Kit has what you need to design your own microprocessor-based system: a complete Dynamic C software development system including the Dynamic C FAT File System module, and a Prototyping Board that allows you to evaluate the RCM3365 or RCM3375, and to prototype circuits that interface to the RCM3365 or RCM3375 module.

1.1 RCM3365 and RCM3375 Features

- Small size: 1.85" x 2.73" x 0.86"
(47 mm x 69 mm x 22 mm)
- Microprocessor: Rabbit 3000 running at 44.2 MHz
- 52 parallel 5 V tolerant I/O lines: 44 configurable for I/O, 4 fixed inputs, 4 fixed outputs
- Three additional digital inputs, two additional digital outputs
- External reset
- Alternate I/O bus can be configured for 8 data lines and 6 address lines (shared with parallel I/O lines), plus I/O read/write
- Ten 8-bit timers (six cascadable) and one 10-bit timer with two match registers
- 512K flash memory, 512K program execution SRAM, 512K data SRAM
- Fixed and hot-swappable mass-storage flash-memory options, which may be used with the standardized directory structure supported by the Dynamic C FAT File System module.
- Real-time clock
- Watchdog supervisor
- Provision for customer-supplied backup battery via connections on header J4
- 10-bit free-running PWM counter and four pulse-width registers
- Two-channel Input Capture (shared with parallel I/O ports) can be used to time input signals from various port pins
- Two-channel Quadrature Decoder accepts inputs from external incremental encoder modules
- Five or six 3.3 V CMOS-compatible serial ports with a maximum asynchronous baud rate of 5.525 Mbps. Three ports are configurable as a clocked serial port (SPI), and two ports are configurable as SDLC/HDLC serial ports (shared with parallel I/O ports).
- Supports 1.15 Mbps IrDA transceiver
- Supports Dynamic C RabbitSys, which supports Ethernet access for remote application updates, and remote monitoring and control of a RabbitSys-enabled RCM3365

The RCM3900/RCM3910 and RCM3365/RCM3375 RabbitCore modules are similar to the RCM3305/RCM3315 and RCM3309/RCM3319, but they use fixed NAND or removable media for their mass-storage memories instead of the fixed serial flash options of the RCM3305/RCM3315 and the RCM3309/RCM3319.

Table 1 below summarizes the main features of the RCM3365 and the RCM3375 modules.

Table 1. RCM3365/RCM3375 Features

Feature	RCM3365	RCM3375
Microprocessor	Rabbit 3000 running at 44.2 MHz	
SRAM	512K program (fast SRAM) + 512K data	
Flash Memory (program)	512K	
Flash Memory (mass data storage)	32MB (fixed)* + up to 128MB (removable) (NAND flash)	up to 128MB (removable) (NAND flash)
Serial Ports	6 shared high-speed, 3.3 V CMOS-compatible ports: <ul style="list-style-type: none"> • all 6 are configurable as asynchronous serial ports; • 4 are configurable as a clocked serial port (SPI) and 1 is configurable as an HDLC serial port; • option for second HDLC serial port at the expense of 2 clocked serial ports (SPI) 	

* RCM3365 modules sold before 2008 had 16MB fixed NAND flash memory.

NOTE: M-type *xD-Picture Cards* are **not** supported at this time.

The RCM3365 and RCM3375 are programmed over a standard PC serial port through a serial programming cable supplied with the Development Kit, and can also be programmed through a USB port with an RS-232/USB converter, or directly over an Ethernet link using the Dynamic C download manager with or without a RabbitLink; Dynamic C RabbitSys may also be used with a RabbitSys-enabled RCM3365 over an Ethernet link.

Appendix A provides detailed specifications for the RCM3365 and the RCM3375.

1.2 Comparing the RCM3900/RCM3910 and RCM3365/RCM3375

We can no longer obtain certain components for the RCM3365/RCM3375 RabbitCore modules that support the originally specified -40°C to $+70^{\circ}\text{C}$ temperature range. Instead of changing the design of the RCM3365/RCM3375 RabbitCore modules to handle available components specified for the original temperature range, we decided to develop a new product line — the RCM3900 series.

The RCM3900 series of RabbitCore modules is similar in form, dimensions, and function to the RCM3365/RCM3375 modules. We strongly recommend that existing RCM3365/3375 customers and designers of new systems consider using the new RCM3900 series RabbitCore modules.

This section compares the two lines of RabbitCore modules.

- **Temperature Specifications** — RCM3365/RCM3375 RabbitCore modules manufactured after May, 2008, are specified to operate at 0°C to $+70^{\circ}\text{C}$. The RCM3900/RCM3910, rated for -20°C to $+85^{\circ}\text{C}$, are offered to customers requiring a larger temperature range after May, 2008.
- **Removable Mass Storage** — The hot-swappable *xD-Picture Card*[™] mass storage device with up to 128MB of memory has been replaced with the *miniSD Card* with up to 1GB of memory. The *miniSD Card* is more readily available today, and is expected to remain readily available for a long time. In addition, *miniSD Cards* provide a significantly larger memory capacity, which has been requested by customers. The trade-off for the larger memory capacity is that the data transfer rate to/from the *miniSD Card* is about an order of magnitude slower than to/from the *xD-Picture Card*.

NOTE: RCM3365/RCM3375 RabbitCore modules may eventually be discontinued because of changes to the *xD-Picture Card*[™].

- **Serial Ports** — Serial Port B, available as either a clocked serial port or an asynchronous serial port on the RCM3365/RCM3375, is used by the RCM3900/RCM3910 as a clocked serial peripheral interface (SPI) for the *miniSD*[™] *Card*, and is not brought out for customer use.
- **General-Purpose I/O** — PD2, a configurable I/O pin on the RCM3365/RCM3375, is used to enable/disable the RabbitNet SPI interface when the RCM3365/RCM3375 is installed on the Prototyping Board. The RCM3900/RCM3910 use PD2 to detect whether the *miniSD*[™] *Card* is installed, and so PD2 is not brought out for customer use on the RCM3900/RCM3910.
- **Maximum Current** — The RCM3365/RCM3375 draws 250 mA vs. the 325 mA required by the RCM3900/RCM3910.
- **LEDs** — The **SPEED** and user (**USR/BSY**) LED locations have been swapped between the RCM3365/RCM3375 and the RCM3900/RCM3910, the **LNK/ACT** LEDs have been combined to one LED on the RCM3900/RCM3910, and the RCM3900/RCM3910 has an **FDX/COL** LED instead of the **FM** LED on the RCM3365/RCM3375. The LED placements on the boards remain unchanged.

- **Ethernet chip** — A different Ethernet controller chip is used on the RCM3900/RCM3910. The Ethernet chip is able to detect automatically whether a crossover cable or a straight-through cable is being used in a particular setup, and will configure the signals on the Ethernet jack interface.
- **Dynamic C** — As long as no low-level FAT file system calls or direct *xD-Picture Card* access calls to the **NFLASH.LIB** library were used in your application developed for the RCM3365/RCM3375, you may run that application on the RCM3900/RCM3910 after you recompile it using Dynamic C v. 9.60.

NOTE: The Dynamic C RabbitSys option for programming an RCM3365 over an Ethernet link is not supported for the RCM3900.

1.3 Advantages of the RCM3365 and RCM3375

- Fast time to market using a fully engineered, “ready-to-run/ready-to-program” micro-processor core.
- Competitive pricing when compared with the alternative of purchasing and assembling individual components.
- Easy C-language program development and debugging
- Program download utility (Rabbit Field Utility) and cloning board options for rapid production loading of programs.
- Generous memory size allows large programs with tens of thousands of lines of code, and substantial data storage.
- Integrated Ethernet port for network connectivity, with royalty-free TCP/IP software.
- Ideal for network-enabling security and access systems, home automation, HVAC systems, and industrial controls

1.4 Development and Evaluation Tools

1.4.1 RCM3365/RCM3375 Development Kit

The RCM3365/RCM3375 Development Kit contains the hardware you need to use your RCM3365 or RCM3375 module.

- RCM3365 module.
- Prototyping Board.
- AC adapter, 12 V DC, 1 A (included only with Development Kits sold for the North American market). A header plug leading to bare leads is provided to allow overseas users to connect their own power supply with a DC output of 8–30 V.)
- Serial programming cable with 10-pin header and DE9 connections.
- 2 CDs — *Dynamic C*[®] and *Dynamic C FAT File System* module — with complete product documentation on disk.
- *Getting Started* instructions.
- 32 MB *xD-Picture Card*[™].
- Accessory parts for use on the Prototyping Board.
- Screwdriver and Ethernet cables.
- *Rabbit 3000 Processor Easy Reference* poster.
- Registration card.

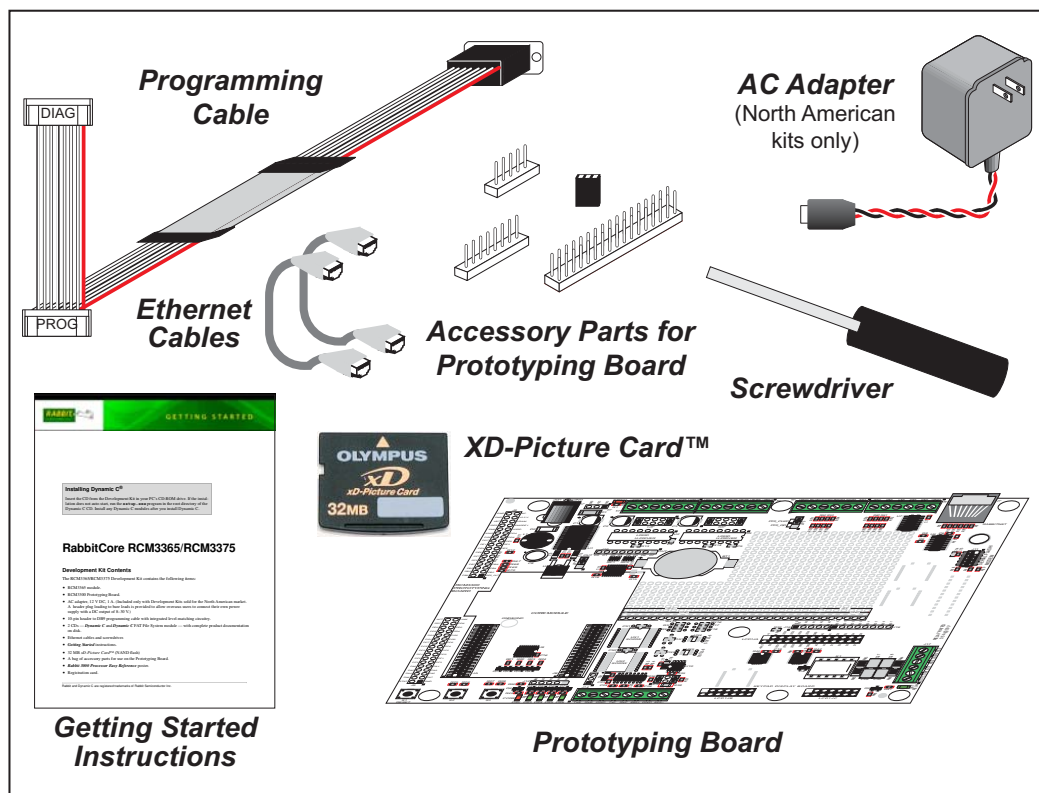


Figure 1. RCM3365/RCM3375 Development Kit

1.4.2 Software

The RCM3365 and the RCM3375 are programmed using version 9.24 or later of Dynamic C. A compatible version is included on the Development Kit CD-ROM.

Rabbit is also offering RCM3365 RabbitCore modules preloaded with Dynamic C RabbitSys firmware to allow these modules to run Dynamic C RabbitSys. Dynamic C RabbitSys requires Dynamic C version 9.30 or later, and allows the RCM3365 to be accessed via an Ethernet connection for remote application updates, and for remote monitoring and control. A RabbitSys Development Kit is available with all the hardware and software tools that are needed to develop a RabbitSys application.

Dynamic C v. 9.60 includes the popular μ C/OS-II real-time operating system, point-to-point protocol (PPP), FAT file system, RabbitWeb, and other select libraries that were previously sold as individual Dynamic C modules.

Rabbit also offers for purchase the Rabbit Embedded Security Pack featuring the Secure Sockets Layer (SSL) and a specific Advanced Encryption Standard (AES) library. In addition to the Web-based technical support included at no extra charge, a one-year telephone-based technical support subscription is also available for purchase. Visit our Web site at www.rabbit.com for further information and complete documentation, or contact your Rabbit sales representative or authorized distributor.

NOTE: Version 2.10 or later of the Dynamic C FAT file system module is required to use the FAT file system with the RCM3365 and RCM3375 models.

1.4.3 Accessories

Rabbit has available a USB Removable Memory Card Reader and a Connector Adapter Board.

- USB Removable Memory Card Reader (Part No. 20-101-1104)—allows you to read data from the *xD-Picture Card* via your PC.
- Connector Adapter Board (Part No. 151-0114)—allows you to plug the RCM3365/RCM3375 whose headers have a 2 mm pitch into header sockets with a 0.1" pitch.

Visit our Web site at www.rabbit.com or contact your Rabbit sales representative or authorized distributor for further information.

1.4.4 Online Documentation

The online documentation is installed along with Dynamic C, and an icon for the documentation menu is placed on the workstation's desktop. Double-click this icon to reach the menu. If the icon is missing, use your browser to find and load **default.htm** in the **docs** folder, found in the Dynamic C installation folder.

The latest versions of all documents are always available for free, unregistered download from our Web sites as well.

2. GETTING STARTED

This chapter explains how to set up and use the RCM3365/RCM3375 modules with the accompanying Prototyping Board.

NOTE: It is assumed that you have a Development Kit. If you purchased an RCM3365 or RCM3375 module by itself, you will have to adapt the information in this chapter and elsewhere to your test and development setup.

2.1 Install Dynamic C

To develop and debug programs for the RCM3365/RCM3375 (and for all other Rabbit hardware), you must install and use Dynamic C.

If you have not yet installed Dynamic C version 9.24 (or a later version), do so now by inserting the Dynamic C CD from the Development Kit in your PC's CD-ROM drive. If autorun is enabled, the CD installation will begin automatically.

If autorun is disabled or the installation otherwise does not start, use the Windows **Start | Run** menu or Windows Disk Explorer to launch **setup.exe** from the root folder of the CD-ROM.

The installation program will guide you through the installation process. Most steps of the process are self-explanatory.

Dynamic C uses a COM (serial) port to communicate with the target development system. The installation allows you to choose the COM port that will be used. The default selection is COM1. You may select any available port for Dynamic C's use. If you are not certain which port is available, select COM1. This selection can be changed later within Dynamic C.

NOTE: The installation utility does not check the selected COM port in any way. Specifying a port in use by another device (mouse, modem, etc.) may lead to a message such as **"could not open serial port"** when Dynamic C is started.

Once your installation is complete, you will have up to three icons on your PC desktop. One icon is for Dynamic C, one opens the documentation menu, and the third is for the Rabbit Field Utility, a tool used to download precompiled software to a target system.

If you have purchased the optional Dynamic C Rabbit Embedded Security Pack, install it after installing Dynamic C. You must install the Rabbit Embedded Security Pack in the same directory where Dynamic C was installed.

2.2 Hardware Connections

There are three steps to connecting the Prototyping Board for use with Dynamic C and the sample programs:

1. Attach the RCM3365/RCM3375 module to the Prototyping Board.
2. Connect the serial programming cable between the RCM3365/RCM3375 and the workstation PC or if you have an RCM3365 with RabbitSys firmware you may connect the RCM3365 and the PC using Ethernet cables.
3. Connect the power supply to the Prototyping Board.

2.2.1 Step 1 — Attach Module to Prototyping Board

Turn the RCM3365/RCM3375 module so that the Ethernet jack is facing the direction shown in Figure 2 below. Align the pins from headers J3 and J4 on the bottom side of the module into header sockets JA and JB on the Prototyping Board. The picture card (NAND flash) does not have to be inserted into connector J6 on the RCM3365/RCM3375 at this time.

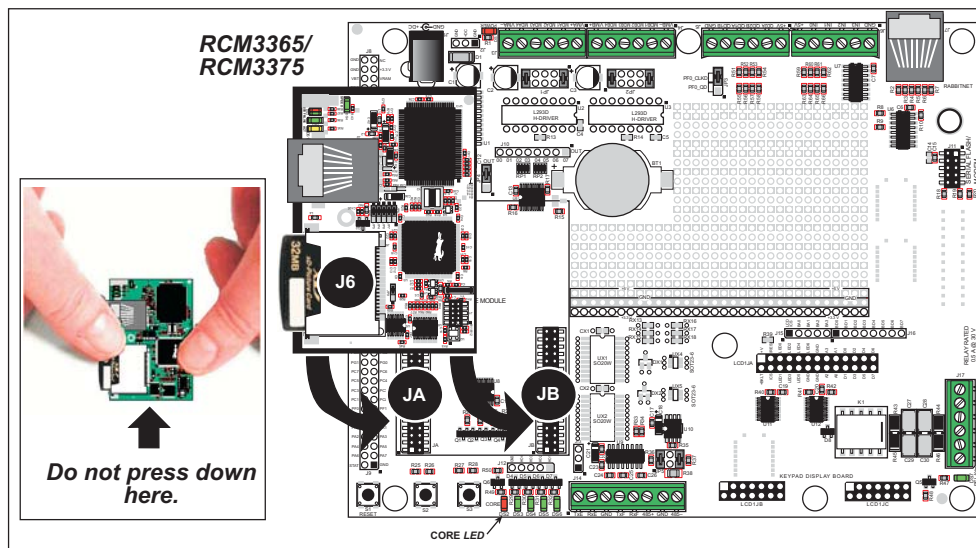


Figure 2. Install the RCM3365/RCM3375 Module on the Prototyping Board

NOTE: It is important that you line up the pins on headers J3 and J4 of the RCM3365/RCM3375 module exactly with the corresponding pins of header sockets JA and JB 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 header sockets—press down in the area above the header pins using your thumbs or fingers over the header pins as shown in Figure 2. Do not press down on the picture card connector (J6) unless the picture card is installed, but rather press down on the circuit board along the edge by the connector. Also, do not press down on the middle of the module to avoid flexing the module, which could damage the module or components on the module.

Should you need to remove the module, grasp it with your fingers along the sides by the connectors and gently work the module up to pull the pins away from the sockets where they are installed. Do not remove the module by grasping it at the top and bottom.

2.2.2 Step 2 — Connect Serial Programming Cable

The serial programming cable connects the RCM3365/RCM3375 to the PC running Dynamic C to download programs and to monitor the module during debugging.

Connect the 10-pin connector of the serial programming cable labeled **PROG** to header J1 on the RCM3365/RCM3375 module as shown in Figure 3. There is a small dot on the circuit board next to pin 1 of header J1. 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 used for a nonprogramming serial connection.)

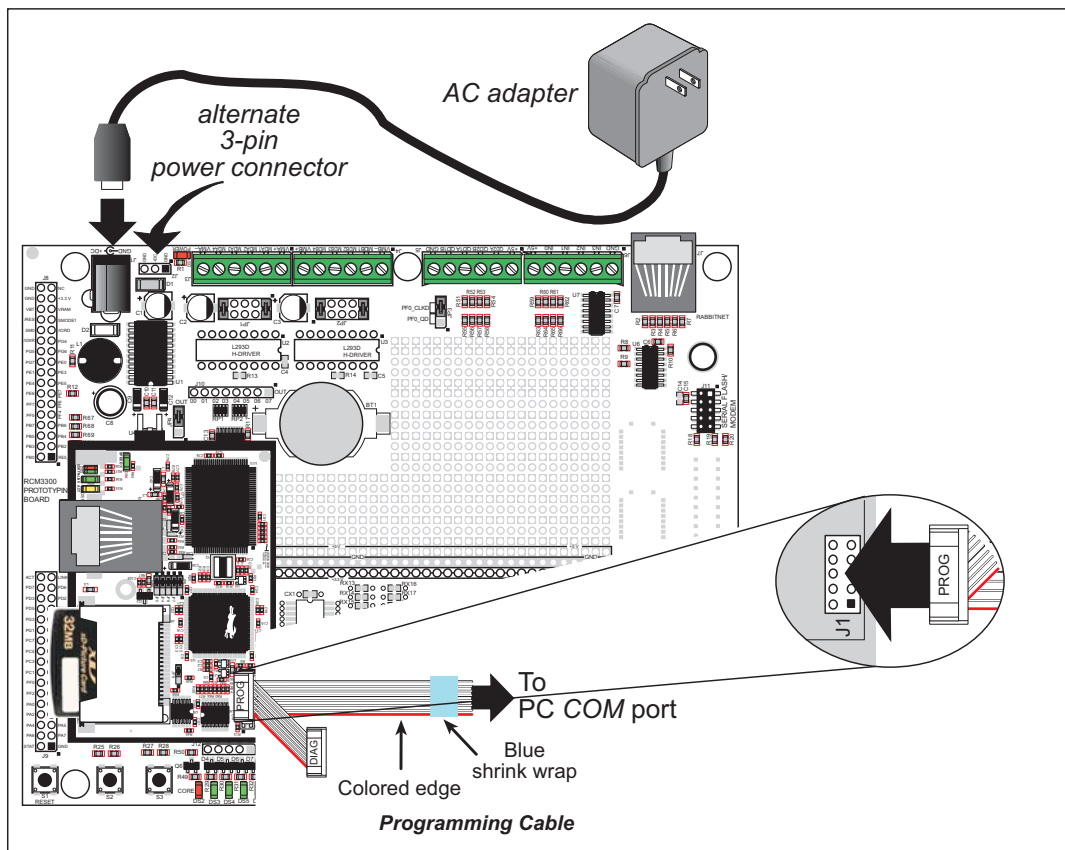


Figure 3. Connect Serial Programming Cable and Power Supply

NOTE: Be sure to use the serial programming cable (part number 101-0542) supplied with this Development Kit—the serial programming cable has blue shrink wrap around the RS-232 converter section located in the middle of the cable. Programming cables with clear or red shrink wrap from other Rabbit kits are not designed to work with RCM3365/RCM3375 modules.

Connect the other end of the serial programming cable to a COM port on your PC.

NOTE: Some PCs now come equipped only with a USB port. It may be possible to use an RS-232/USB converter (Part No. 20-151--0178) with the serial programming cable supplied with the RCM3365/RCM3375 Development Kit. Note that not all RS-232/USB converters work with Dynamic C.

2.2.2.1 Programming via Ethernet Option

An Ethernet cable connects a RabbitSys-enabled RCM3365 to the PC running Dynamic C with Dynamic C RabbitSys via a DHCP network to download programs and to monitor the RCM3365 module during debugging.

Use a straight-through CAT 5/6 Ethernet cable to connect the Ethernet jack on the RCM3365 to a DHCP-enabled network. Your PC should also be connected to this network—you will need a second straight-through CAT 5/6 Ethernet cable to connect the PC to the network since only one straight-through Ethernet cable is supplied with the Development Kit.

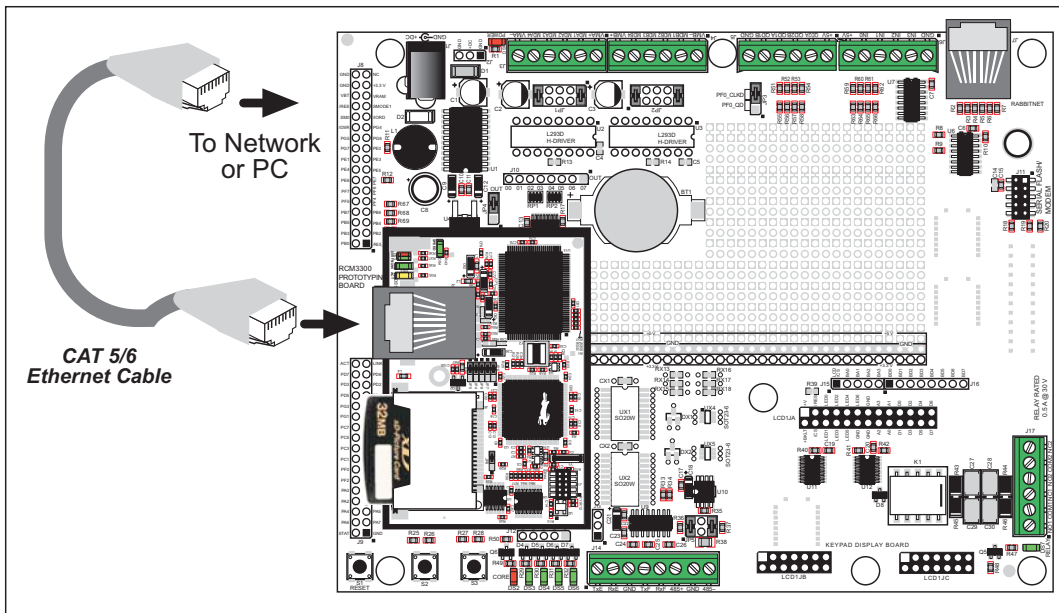


Figure 4. Connect Ethernet Cable for Ethernet Programming Option

You may also use a crossover CAT 5/6 Ethernet cable to connect the Ethernet jack on the RCM3365 directly to your PC, but there will be additional steps required to configure the TCP/IP parameters on the RCM3365 and on your PC if your PC does not have a DHCP server. These steps are described in Appendix E.

2.2.3 Step 3 — Connect Power

When all other connections have been made, you can connect power to the Prototyping Board. Connect the wall transformer to jack J1 on the Prototyping Board as shown in Figure 3.

Plug in the wall transformer. The core LED on the Prototyping Board should light up. The RCM3365/RCM3375 and the Prototyping Board are now ready to be used.

NOTE: A **RESET** button is provided on the Prototyping Board to allow a hardware reset without disconnecting power. The RCM3365/RCM3375 can also be reset from Dynamic C by pressing **<Ctrl-Y>** if your PC is connected to the RCM3365/RCM3375 via the serial programming cable.

2.2.3.1 Alternate Power-Supply Connections

All Development Kits include a header connector that may be used to connect your power supply to 3-pin header J2 on the Prototyping Board. The connector may be attached either way as long as it is not offset to one side—the center pin of J2 is always connected to the positive terminal, and either edge pin is negative. The power supply should deliver 8 V to 30 V DC at 8 W.

2.3 Starting Dynamic C

Once the RCM3365/RCM3375 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 Flash, Run in RAM** on the “Compiler” tab in the Dynamic C **Options > Project Options** menu. Click **OK**.

Section 2.3.1 explains the remaining Dynamic C configurations to run a sample program via the serial programming cable, and Section 2.3.2 explains the remaining Dynamic C configurations to run a sample program via an Ethernet cable.

2.3.1 Running Dynamic C via Serial Programming Cable

Dynamic C uses the serial port on your PC that you specified during installation.

If you are using a USB port to connect your computer to the RCM3365/RCM3375 module, choose **Options > Project Options** and select “Use USB to Serial Converter” on the **Communications** tab.

2.3.1.1 Run a Sample Program

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 **STUDIO** window will open on your PC and will display a small square bouncing around in a box.

This program shows that the CPU is working. The sample program described in Section 6.5, “Run the PINGME.C Sample Program,” tests the TCP/IP portion of the board.

2.3.1.2 Troubleshooting

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

- Check that the RCM3365/RCM3375 is powered correctly — the red **CORE** LED on the Prototyping Board should be lit when the RCM3365/RCM3375 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 RCM3365/RCM3375 with the marked (colored) edge of the programming cable towards pin 1 of the programming header.
- Ensure that the RCM3365/RCM3375 module is firmly and correctly installed in its connectors on the Prototyping Board.
- Dynamic C uses the COM port specified during installation. Select a different COM port within Dynamic C. From the **Options** menu, select **Project Options**, then select **Communications**. Select another COM port from the list, then click OK. Press **<Ctrl-Y>** to force Dynamic C to recompile the BIOS. If Dynamic C still reports it is unable to locate the target system, repeat the above steps until you locate the COM port used by the programming cable.

If Dynamic C appears to compile the BIOS successfully, but you then receive a communication error message when you compile and load the sample program, it is possible that your PC cannot handle the higher program-loading baud rate. Try changing the maximum download rate to a slower baud rate as follows.

- Locate the **Serial Options** dialog in the Dynamic C **Options > Project Options > Communications** menu. Select a slower Max download baud rate.

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. Try lowering the debugging baud rate as follows.

- Locate the **Serial Options** dialog in the Dynamic C **Options > Project Options > Communications** menu. Choose a lower debug baud rate.

2.3.2 Running Dynamic C via Ethernet Cables

The firmware needed to run RabbitSys has been preloaded on RCM3365 RabbitCore modules sold for use with Dynamic C RabbitSys. The software from the Dynamic C and the Dynamic C RabbitSys CDs must be installed on your PC. A system running RabbitSys can be connected to a DHCP network using straight-through Ethernet cables, or it can be connected directly to the PC via an Ethernet crossover cable.

- If you are connecting to a network with a DHCP server, use a CAT 5/6 straight-through Ethernet cable to connect the PC or workstation to the network, and connect the Ethernet jack on the RCM3365 to the network using a second CAT 5/6 straight-through Ethernet cable.
- If your PC or workstation is running a DHCP server, connect the CAT 5/6 Ethernet crossover cable from the PC or workstation directly to the Ethernet jack on the RCM3365. Follow the instructions below for a straight-through Ethernet cable.

TIP: It is recommended that you use one of the above options for a PC/workstation or network with a DHCP server or the serial cable programming option when you are using the RCM3365 for the first time since these options are easier to set up and run.

- If your PC/workstation does not have a DHCP server, you will have to enter the TCP/IP parameters into the RCM3365 module and on to the PC, notebook, or workstation. See Appendix E for more information on this option.

Using DHCP Network with Straight-Through Ethernet Cables

Enable separate instruction and data spaces and select “Compile program in RabbitSys user mode” from the Dynamic C **Options > Project Options > Compiler** menu.

Before you compile and run a program via the Ethernet for the first time via a DHCP network, you must run the rdiscover utility by double-clicking it on your PC desktop. Your PC must be connected to the same DHCP network as the RCM3365. The utility will open a window and list the MAC addresses for any RabbitSys boards connected to the network.

Select a board from the list to display additional information such as the board’s Internet address. This is the IP address to enter when you access the Dynamic C **Options > Project Options > Communications** menu to select “Use TCP/IP Connection.” You must also enter “32023” for the Control Port and the default login values of “admin” and “password.”

2.3.2.1 Run a Sample Program

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 **STUDIO** window will open on your PC and will display a small square bouncing around in a box.

This program shows that the CPU is working. The sample program described in Section 6.5, “Run the PINGME.C Sample Program,” tests the TCP/IP portion of the board.

2.3.2.2 Troubleshooting

If the rdiscover utility could not find your RCM3365:

- Check that your network has a DHCP server, and that the RCM3365 and your PC are connected to the same network.
- If you compiled and ran a sample program with the RabbitSys project option disabled, you may have overwritten the RabbitSys binary file. Use the serial programming cable to connect programming header J1 on the RCM3365 to your PC COM port to reload the RabbitSys binary file via the Dynamic C **Compile > Reload RabbitSys binary** menu.

If the rdiscover utility could not find your RCM3365, and you were unable to reload the RabbitSys binary file, your RCM3365 does not have the firmware to support Dynamic C RabbitSys and cannot be used with Dynamic C RabbitSys.

If Dynamic C returns an error message, check that the RCM3365 is powered correctly. The red **CORE** LED on the Prototyping Board should be lit when the RCM3365 is mounted on the Prototyping Board and the AC adapter is plugged in. Ensure that the RCM3365 module is firmly and correctly installed in its connectors on the Prototyping Board.

2.4 Where Do I Go From Here?

If the sample program ran fine, you are now ready to go on to other sample programs and to develop your own applications. The source code for the sample programs is provided to allow you to modify them for your own use. The *RCM3365/RCM3375 User's Manual* also provides complete hardware reference information and describes the software function calls for the RCM3365 and the RCM3375, the Prototyping Board, and the optional LCD/keypad module.

For advanced development topics, refer to the *Dynamic C User's Manual*, the *Dynamic C RabbitSys User's Manual*, and the *Dynamic C TCP/IP User's Manual*, also in the online documentation set.

2.4.1 Technical Support

NOTE: If you purchased your RCM3365/RCM3375 through a distributor or through a Rabbit partner, contact the distributor or partner first for technical support.

If there are any problems at this point:

- 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/.

3. RUNNING SAMPLE PROGRAMS

To develop and debug programs for the RCM3365/RCM3375 (and for all other Rabbit hardware), you must install and use Dynamic C.

3.1 Introduction

To help familiarize you with the RCM3365 and RCM3375 modules, Dynamic C includes several sample programs. Loading, executing and studying these programs will give you a solid hands-on overview of the RCM3365/RCM3375's capabilities, as well as a quick start using Dynamic C as an application development tool.

NOTE: The sample programs assume that you have at least an elementary grasp of the C programming language. If you do not, see the introductory pages of the *Dynamic C User's Manual* for a suggested reading list.

More complete information on Dynamic C is provided in the *Dynamic C User's Manual*.

In order to run the sample programs discussed in this chapter and elsewhere in this manual,

1. Your RCM3365/RCM3375 module must be plugged in to the Prototyping Board as described in Chapter 2, "Getting Started."
2. Dynamic C must be installed and running on your PC.
3. The RCM3365/RCM3375 module must be connected to your PC either through the serial programming cable or through an Ethernet cable/network if you have a RabbitSys-enabled RCM3365.
4. Power must be applied to the RCM3365/RCM3375 through the Prototyping Board.

Refer to Chapter 2, "Getting Started," if you need further information on these steps.

Since the RCM3365 and the RCM3375 run at 44.2 MHz and are equipped with a fast program execution SRAM, remember to allow the compiler to run the application in the fast program execution SRAM by selecting **Code and BIOS in Flash, Run in RAM** from the Dynamic C **Options > Project Options > Compiler** menu.

To run a sample program, open it with the **File** menu, then press function key **F9** to compile and run the program.