



# Embedded Control

## Color Touchscreen Application Kit Getting Started

### Application Kit Contents

- **Dynamic C®** CD-ROM, with complete product documentation on disk.
- Supplemental CD with sample programs and information related to Color Display Application Kit.
- Reach Technologies supplemental CD with software for color display.
- RCM3720 RabbitCore module.
- RCM3720 Prototyping Board with RS-232 circuits installed.
- Reach Technology SLCD controller board and color TFT touchscreen with screw-terminal power connector and assembled serial cable interface.
- Two AC adapters: 24 V DC (500 mA) with bare leads and 12 V DC, 1 A with 3-pin connector.  
(AC adapters are included only with Application Kits sold for the North American market).
- Programming cable with level-matching circuitry.
- DE9 to 10-pin serial adapter cable.
- 4 standoffs.
- **Getting Started** instructions.
- **Rabbit 3000 Processor Easy Reference** poster.
- Registration card.

### Installing Dynamic C®

Insert the Dynamic C 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. Install the software from the Dynamic C supplemental CD after you install Dynamic C

## Hardware Connections

To facilitate handling the Prototyping Board, snap in the four standoffs to the four holes at the corners on the bottom side of the Prototyping Board before continuing with the remaining steps.

### 1. Attach Module to Prototyping Board

Turn the RCM3720 module so that the Ethernet jack is on the left as shown in Figure 1 below. Insert the module's J1 header into the J5 socket on the Prototyping Board. The shaded corner notch at the bottom right corner of the RCM3720 module should face the same direction as the corresponding notch below it on the Prototyping Board.

**NOTE:** It is important that you line up the pins on header J1 of the RCM3720 module exactly with the corresponding pins of the J5 socket 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.

### 2. Connect Programming Cable

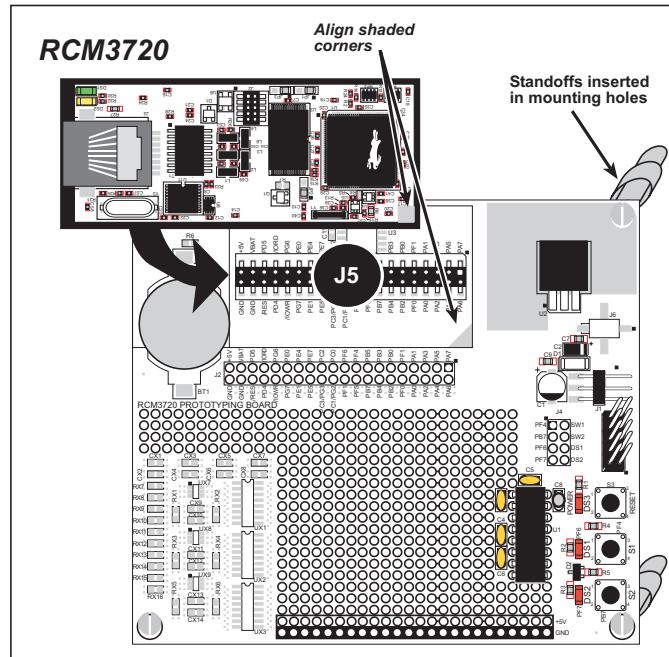
The programming cable connects the RCM3720 to the PC running Dynamic C to download programs and to monitor the RCM3720 module during debugging.

Attach the DE9 connector end of the programming cable to a COM (serial) port on the PC. Dynamic C uses a COM port to communicate with the target system. The default selection is COM1, but you can select a different COM port when you install Dynamic C or when you run it.

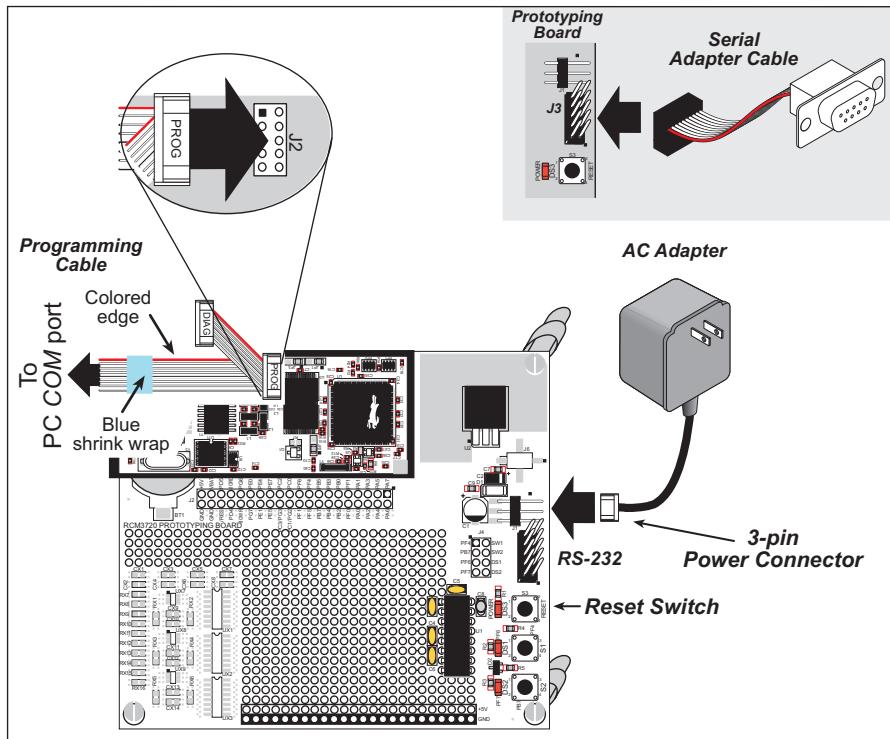
Connect the 10-pin connector of the programming cable labeled **PROG** to header J2 on the RCM3720 as shown in Figure 2. Be sure to orient the marked (usually red) edge of the cable towards pin 1 of header J2. (Do not use the **DIAG** connector, which is used for a regular serial connection.)

**NOTE:** Be sure to use the programming cable (part number 101-0542) supplied with this kit that has blue shrink wrap around the RS-232 converter section located in the middle of the cable. Programming cables from other Z-World or Rabbit Semiconductor kits were not designed to work with RCM3720 modules.

**NOTE:** Some PCs now come equipped only with a USB port. It may be possible to use some RS-232/USB converters with the programming cable supplied with the Ethernet Connection Kit. An RS-232/USB converter is available through the Z-World Web store.



**Figure 1. Install the RCM3720 Module on the Prototyping Board**



**Figure 2. Connect Programming Cable and Power Supply**

### 3. Connect Power

When all other connections have been made, you can connect power to the Prototyping Board. Connect the AC adapter with the 3-pin connector to 3-pin header J1 on the Prototyping Board as shown in Figure 2 above. 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 negative.

Plug in the AC adapter. The power LED beside the **RESET** button on the Prototyping Board should light up. The RCM3720 and the Prototyping Board are now ready to be used. The **RESET** button is provided on the Prototyping Board to allow a hardware reset without disconnecting power.

#### Alternate Power-Supply Connections

The 3-pin connector allows you to connect your own power supply—connect the center pin to the positive terminal, and connect either edge pin to the negative terminal. The power supply should deliver at least 200 mA at 7.5 V–15 V DC.

### Starting Dynamic C

Once the RCM3720 is connected as described in the preceding pages, start Dynamic C by double-clicking on the Dynamic C icon or by double-clicking on **dcrabXXXX.exe** in the Dynamic C root directory, where **XXXX** are version-specific characters. Dynamic C uses the serial port specified during installation.

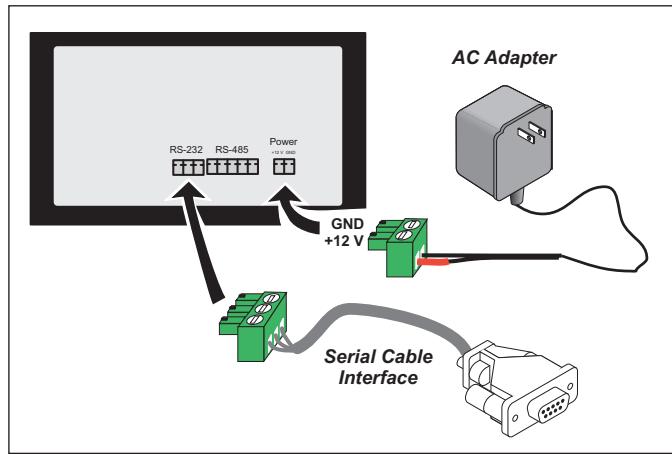
If you are using a USB port to connect your computer to the RCM3720, choose **Options > Project Options** and select “Use USB to Serial Converter.”

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

## Using the Reach Technology Display

1. Locate the power-supply connector and connect it to the bare leads of an AC adapter as shown in Figure 2. Pay attention to the polarity of the power-supply connections. Attach the power-supply connector to the display and plug in the AC adapter.
2. Use the serial cable interface to connect the Reach Technologies display to an available COM port on your PC. You may have to use a DE9 extension cable since the serial cable interface is short.
3. Start the **BMPload.exe** program on the *Reach Technology* supplemental CD. Select the serial COM port you are using and a baud rate of 115200. Press the **Load BMP List** button and select the **demo.1st** file from the **Samples\ColorTouchscreen\BMP\_Macro** folder on the *Dynamic C* supplemental CD. Next, press the **Add Macro File** button and select the **Macros.mac** file from the same folder on the *Dynamic C* supplemental CD. Finally press the **Store into SLCD** button to move these files to the Reach Technology display—this may take a few minutes. Press the **Quit** button to exit the **BMPload.exe** program when done.
4. Disconnect the serial cable interface from your PC COM port and use the serial adapter cable to connect header J3 on the Prototyping Board to the serial cable interface as shown in Figure 2 to establish a serial connection with the RCM3720. Reconnect the programming cable to the PC COM port if you had to disconnect it in order to use the PC COM port for the serial connection to the Reach Technology display in the above steps.
5. Open the sample program **LCD\_PONG1.C**, which is in the *Dynamic C* **SAMPLES\ColorTouchscreen** folder. Press function key **F9** to compile and run the program. The Reach display will show a ball bouncing around in a rectangle, leaving a multi-colored trail behind it.



**Figure 3. Reach Technology Display Connections**

## Where Do I Go From Here?

You are now ready to go on to other sample programs and to develop your own applications. Application Note AN411, **Color Touchscreen Application Kit**, takes you through loading and using the sample programs included with the *Dynamic C* supplemental CD, and describes Z-World's software drivers. The **RCM3700 User's Manual** provides complete hardware reference information and describes the software function calls for the RCM3720 and the Prototyping Board. The Reach Technology supplemental CD contains additional information about the display and its specifications.

## Troubleshooting

- The files used with the Reach Technology display should be from the *Dynamic C* supplemental CD.
- Use the *Dynamic C* **Help** menu to get further assistance with *Dynamic C*.
- Check the Z-World/Rabbit Semiconductor Technical Bulletin Board at [www.zworld.com/support/bb/](http://www.zworld.com/support/bb/).
- Use the Technical Support e-mail form at [www.zworld.com/support/](http://www.zworld.com/support/).

**NOTE:** If you purchased your Color Touchscreen Kit through a distributor or through a Z-World or Rabbit Semiconductor partner, contact the distributor or partner first for technical support.