



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

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

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





Intellicom

Models OP6600 and OP6700

User's Manual

019-0078 • 090529-J

Intellicom User's Manual

Part Number 019-0078 • 090529-J • Printed in U.S.A.

©2000–2009 Digi International Inc. • All rights reserved.

No part of the contents of this manual may be reproduced or transmitted in any form or by any means without the express written permission of Digi International.

Permission is granted to make one or more copies as long as the copyright page contained therein is included. These copies of the manuals may not be let or sold for any reason without the express written permission of Digi International.

Digi International reserves the right to make changes and improvements to its products without providing notice.

Trademarks

Rabbit and Dynamic C are registered trademarks of Digi International Inc.

Rabbit 2000 and RabbitCore are trademarks of Digi International Inc.

The latest revision of this manual is available on the Rabbit Web site, www.rabbit.com, for free, unregistered download.

Digi International Inc.

www.rabbit.com

TABLE OF CONTENTS

Chapter 1. Introduction	1
1.1 Features	1
1.2 Development and Evaluation Tools.....	3
1.2.1 Tool Kit	3
1.2.2 Software	3
1.3 CE Compliance	4
1.3.1 Design Guidelines	5
1.3.2 Interfacing the Intellicom to Other Devices.....	5
Chapter 2. Getting Started	7
2.1 Power Supply Connections	8
2.2 Demonstration Program on Power-Up	10
2.3 Programming Cable Connections	12
2.4 Installing Dynamic C	13
2.5 Starting Dynamic C	14
2.6 PONG.C	15
2.7 Where Do I Go From Here?	16
Chapter 3. Subsystems	17
3.1 Intellicom Subsystems	18
3.1.1 Digital Inputs.....	19
3.1.2 Digital Outputs	19
3.2 Serial Communication	20
3.2.1 RS-232	23
3.2.2 RS-485	23
3.2.3 Programming Port	26
3.3 Programming Cable	27
3.3.1 Changing Between Program Mode and Run Mode	27
3.4 Memory	28
3.4.1 SRAM	28
3.4.2 Flash Memory	28
3.4.3 Dynamic C BIOS Source Files	28
3.5 Speaker.....	29
3.6 Vacuum Fluorescent Display	29
3.7 Other Hardware.....	30
3.7.1 Clock Doubler	30
3.7.2 Spectrum Spreader	30
Chapter 4. Software	31
4.1 Running Dynamic C	31
4.1.1 Upgrading Dynamic C	33
4.1.1.1 Patches and Bug Fixes.....	33
4.1.1.2 Upgrades.....	33
4.2 Sample Programs	34
4.2.1 General Intellicom Operation.....	34
4.3 Dynamic C Libraries.....	36

4.4 Intellicom Function Calls	37
4.4.1 Board Initialization	37
4.4.2 Digital I/O.....	37
4.4.3 Serial Communication	38
4.4.4 Keypad Controls.....	39
4.4.5 Display Controls.....	41
4.4.6 Speaker Controls	44
Chapter 5. Using the TCP/IP Features	45
5.1 TCP/IP Connections.....	45
5.2 Running TCP/IP Sample Programs.....	47
5.3 How to Set IP Addresses in the Sample Programs.....	49
5.4 How to Set Up Your Computer's IP Address For Direct Connect	50
5.5 Run the PINGME.C Demo.....	51
5.6 Running More Demo Programs With a Direct Connection	51
5.7 Where Do I Go From Here?.....	52
Appendix A. Intellicom Specifications	53
A.1 Electrical and Mechanical Specifications.....	54
A.2 Conformal Coating	56
A.3 Jumper Configurations	57
Appendix B. Keypad and Plastic Enclosure	59
B.1 Keypad Insert.....	60
B.2 Plastic Enclosure.....	62
B.2.1 Assembling Intellicom Enclosure	64
B.2.1.1 Custom Mounting In An Opening	64
B.2.1.2 Supplied Outer Casing	65
Appendix C. Power Management	67
C.1 Power Supplies	67
C.2 Batteries and External Battery Connections	68
C.2.1 Battery-Backup Circuit.....	68
C.2.2 Power to VRAM Switch.....	69
C.2.3 Reset Generator.....	70
C.2.4 Replacing the Backup-Battery Board	70
C.3 Chip Select Circuit.....	71
Appendix D. Running Sample Programs	73
D.1 Connecting Demonstration Board.....	74
D.2 Running Sample Program DEMOBRD1.C.....	75
D.2.1 Single-Stepping	76
D.2.1.1 Watch Expression	76
D.2.1.2 Break Point	76
D.2.1.3 Editing the Program.....	77
D.2.1.4 Watching Variables Dynamically.....	77
D.2.1.5 Summary of Features	77
D.2.2 Cooperative Multitasking	78
D.2.3 Advantages of Cooperative Multitasking	80
Index	81
Schematics	85



1. INTRODUCTION

The Intellicom intelligent terminal interface is a high-performance, C-programmable terminal that offers built-in I/O and Ethernet connectivity. A Rabbit[®] 2000 microprocessor operating at 18.5 MHz provides fast data processing.

1.1 Features

- C-programmable to create a custom user interface
- 4 protected logic-level digital inputs
- 4 protected sinking digital outputs
- High-visibility backlit 4 × 20 LCD
- 10Base-T Ethernet interface
- TCP/IP capability
- RS-232 and RS-485 serial ports
- 128K SRAM and 256K–512K flash EPROM
- Self-healing lens is scratch, impact, and abrasion-resistant
- Real-time clock
- Watchdog supervisor
- Voltage regulator
- Backup battery
- Can be programmed to emulate a serial terminal
- Splash-resistant when panel-mounted using the supplied gasket
- Can be wall-mounted or panel-mounted

Appendix A provides detailed specifications for the Intellicom.

Two versions of the Intellicom are available. Their standard features are summarized in Table 1.

Table 1. Intellicom Series Features

Model	Features
OP6600	Standard terminal <i>without</i> Ethernet interface and only 256K flash EPROM.
OP6700	Full-featured terminal <i>with</i> Ethernet interface and 512K flash EPROM.

Both models are available with a vacuum fluorescent display instead of the LCD.

Visit our [Web site](#) for up-to-date information about additional add-ons and features as they become available. The Web site also has the latest revision of this user's manual.

1.2 Development and Evaluation Tools

1.2.1 Tool Kit

The Tool Kit has the essentials that you need to understand and program your own Rabbit-based display unit.

The items in the Tool Kit and their use are as follows:

- *Intellicom Getting Started* instructions.
- *Dynamic C* CD-ROM, with complete product documentation on disk.
- Demonstration Board. The Demonstration Board includes pushbutton switches and LEDs, and can be connected to the Intellicom board. Programs that run on the Demonstration Board can be used to flash the LEDs and otherwise demonstrate the capabilities of the Intellicom terminal.
- Programming cable. The programming cable is used to connect your PC serial port to the Intellicom to write and debug C programs that run on the Intellicom board.
- Wire assembly to connect Intellicom board to Demonstration Board.
- Screwdriver.
- Universal AC adapter (includes Canada/Japan/U.S., Australia/N.Z., U.K., and European style plugs). The AC adapter is used to power the Intellicom board. A power supply of 12 V at up to 500 mA is recommended. The Intellicom can also be powered from any DC voltage source between 9.0 V and 40 V.

1.2.2 Software

The Intellicom is programmed using Rabbit's Dynamic C. A compatible version is included on the Tool Kit CD-ROM. 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.

1.3 CE Compliance

Equipment is generally divided into two classes.

CLASS A	CLASS B
Digital equipment meant for light industrial use	Digital equipment meant for home use
Less restrictive emissions requirement: less than 40 dB μ V/m at 10 m (40 dB relative to 1 μ V/m) or 300 μ V/m	More restrictive emissions requirement: 30 dB μ V/m at 10 m or 100 μ V/m

These limits apply over the range of 30–230 MHz. The limits are 7 dB higher for frequencies above 230 MHz. Although the test range goes to 1 GHz, the emissions from Rabbit-based systems at frequencies above 300 MHz are generally well below background noise levels.

The OP6700 operator interface has been tested and was found to be in conformity with the following applicable immunity and emission standards. The OP6600 operator interface is also CE qualified as it is a sub-version of the OP6700 operator interface. Boards that are CE-compliant have the CE mark.



NOTE: Earlier versions of the Intellicom sold before 2003 that do not have the CE mark are *not* CE-complaint.

Immunity

The Intellicom series of operator interfaces meets the following EN55024/1998 immunity standards.

- EN61000-4-2 (ESD)
- EN61000-4-3 (Radiated Immunity)
- EN61000-4-4 (EFT)
- EN61000-4-6 (Conducted Immunity)

Additional shielding or filtering may be required for a heavy industrial environment.

Emissions

The Intellicom series of operator interfaces meets the following emission standards emission standards with the Rabbit 2000 spectrum spreader turned on and set to the normal mode. The spectrum spreader is only available with Rev. C or higher of the Rabbit 2000 microprocessor. This microprocessor is used on the Intellicom operator interfaces that carry the CE mark.

- EN55022:1998 Class B
- FCC Part 15 Class B

Your results may vary, depending on your application, so additional shielding or filtering may be needed to maintain the Class B emission qualification.

1.3.1 Design Guidelines

Note the following requirements for incorporating the Intellicom series of operator interfaces into your application to comply with CE requirements.

General

- The power supply provided with the Tool Kit is for development purposes only. It is the customer's responsibility to provide a CE-compliant power supply for the end-product application.
- When connecting the Intellicom to outdoor cables, the customer is responsible for providing CE-approved surge/lighting protection.
- Rabbit recommends placing digital I/O or analog cables that are 3 m or longer in a metal conduit to assist in maintaining CE compliance and to conform to good cable design practices.
- When installing or servicing the Intellicom, it is the responsibility of the end-user to use proper ESD precautions to prevent ESD damage to the Intellicom.

Safety

- All inputs and outputs to and from the Intellicom must not be connected to voltages exceeding SELV levels (42.4 V AC peak, or 60 V DC).
- The lithium backup battery circuit on the Intellicom has been designed to protect the battery from hazardous conditions such as reverse charging and excessive current flows. Do not disable the safety features of the design.

1.3.2 Interfacing the Intellicom to Other Devices

Since the Intellicom operator interfaces are designed to be connected to other devices, good EMC practices should be followed to ensure compliance. CE compliance is ultimately the responsibility of the integrator. Additional information, tips, and technical assistance are available from your authorized Rabbit distributor, and are also available on our Web site at www.rabbit.com.



2. GETTING STARTED

Chapter 2 explains how to connect the power supply to the Intellicom board and how to connect the programming cable from the Intellicom board to your PC. Once you run a sample program to demonstrate that you have connected everything correctly, you will be ready to go on and finish developing your system.

2.1 Power Supply Connections

1. Remove and set aside outer casing and rubber gasket.

Before proceeding, remove and set aside the outer casing, rubber gasket, screws, and panel-mount brackets included with your Intellicom unit, shown in Figure 1. The outer casing and rubber gasket are not attached to the front panel when the Intellicom is shipped. Take care not to damage the rubber gasket.

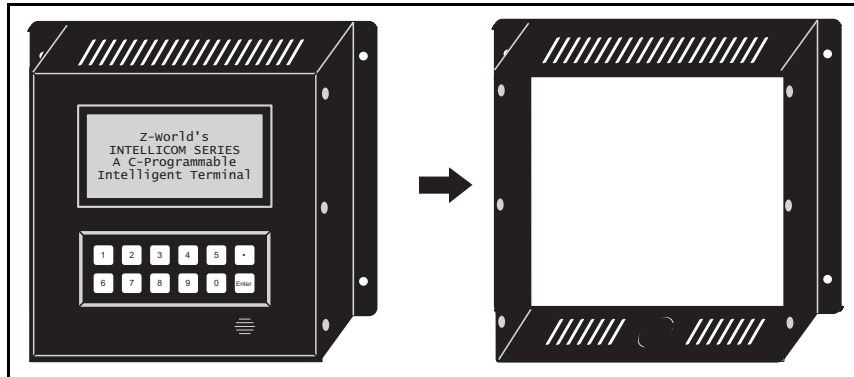


Figure 1. Remove and Set Aside Outer Casing and Accessory Parts

2. Position Intellicom board.

The Intellicom board is attached to the back of the front panel. Turn the front panel assembly over so that the Intellicom board is facing up as shown in Figure 2.

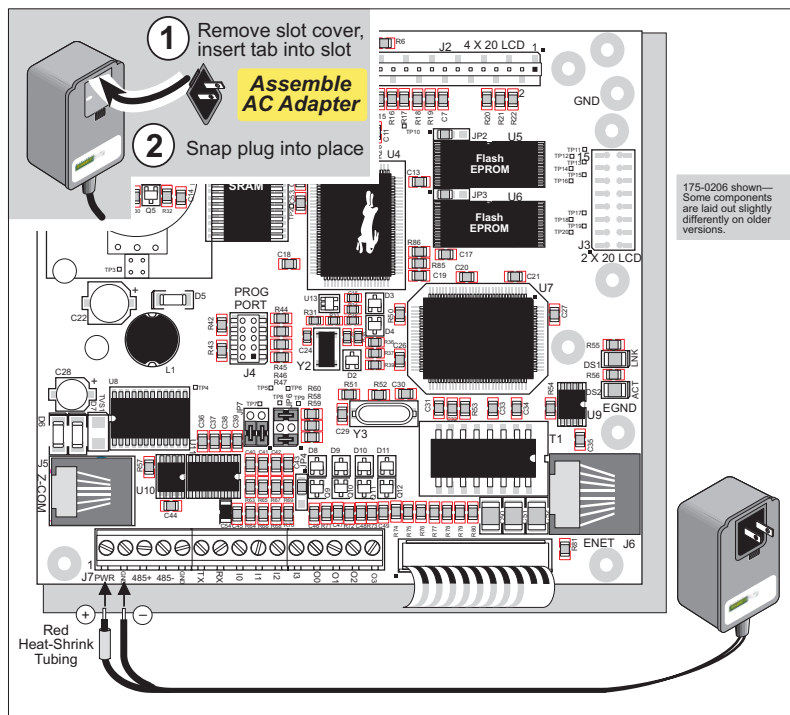
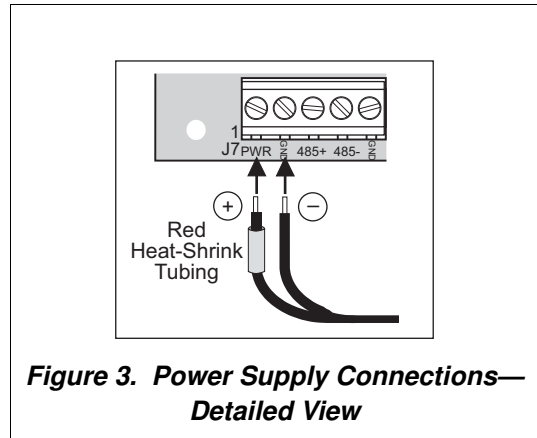


Figure 2. Power Supply Connections

3. Connect Power Supply to the Intellicom Board

First, prepare the AC adapter for the country where it will be used by selecting the plug. The Intellicom Tool 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 2, then press down on the spring-loaded clip below the plug assembly to allow the plug assembly to click into place.



Connect the positive lead (indicated with red heat-shrink tubing on the AC adapter included with the Tool Kit) to the PWR connector on header J7 on the Intellicom Board and connect the negative lead to GND on header J7 as shown in Figure 2 and Figure 3.



CAUTION: Be careful to hook up the positive and negative power leads *exactly* as described. Otherwise, the Intellicom board will not function.

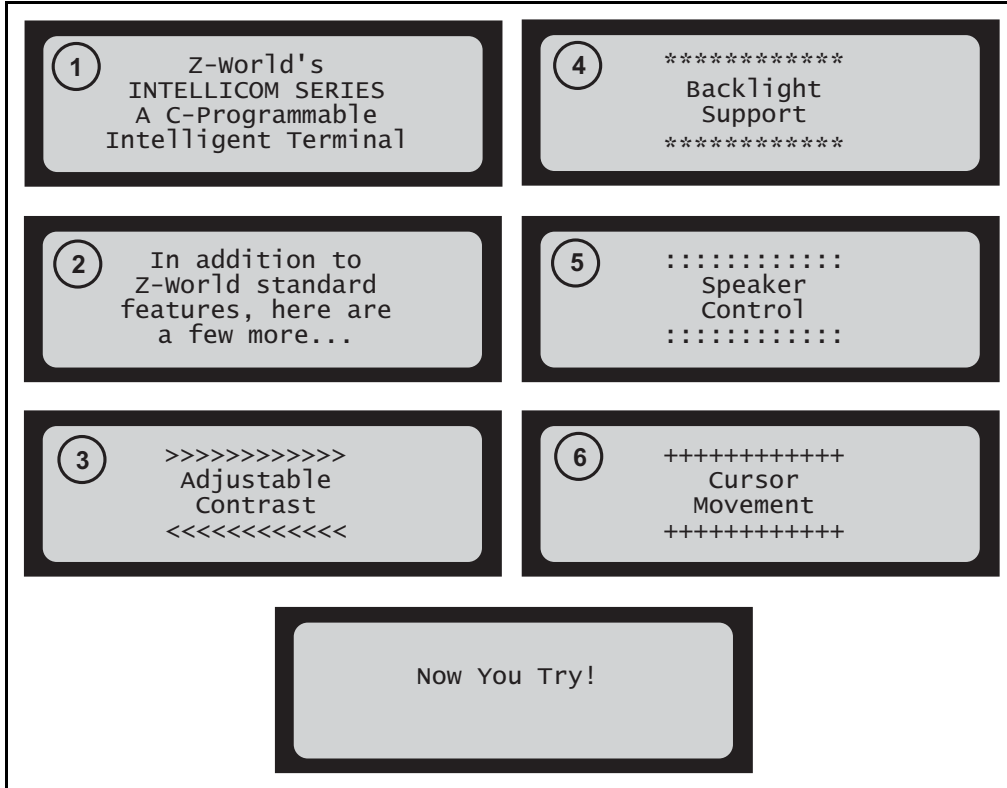
4. Apply power.

Plug in the AC adapter. The Intellicom board is now ready to be used.

NOTE: A hardware RESET is accomplished by unplugging the AC adapter, then plugging it back in.

2.2 Demonstration Program on Power-Up

The following sequence of messages will be displayed on the LCD when power is first applied to the Intellicom board. Note that the programming cable must *not* be connected.



The contrast, backlight, speaker volume, and cursor positions will change automatically through the demonstration. Then there is an opportunity for you to vary these settings by responding to prompts on the LCD.

1. Choose which feature (LCD contrast, backlight on/off, speaker, or cursor) you wish to change.
2. Press [1] to select the contrast adjustment demonstration.
3. Press [1] to increase contrast, press [6] to decrease contrast, or press [Enter] to get to choose another feature.
4. Press [2] to select the backlight demonstration. Press [2] to toggle backlight on or off, or press [Enter] to get to choose another feature.
5. Press [3] to select the speaker demonstration. Press [1]–[4] to set the desired speaker volume ([1] is min, [4] is max), press [5] or [0] to increase or decrease frequency, or press [Enter] to get to choose another feature. The volume and frequency are displayed.
6. Press [4] to select the cursor demonstration. Press keys as shown to move cursor, or press [Enter] to get to choose another feature.

```
Press [1] Contrast
Press [2] Backlight
Press [3] Speaker
Press [4] Cursor
```

```
Kick it up a notch!
Press [1]
```

```
Bring it back down
Press [6]
Press [Enter] to end
```

```
Light on
Light off
Press [2]
Press [Enter] to end
```

```
Volume: Press [1]–[4]
Freq: Press [5] or [0]
Volume level
Freq level
```

```
[4]
[8] Press keys [0]
[9]
Press [Enter] to end
```

This demonstration will be replaced by a new program when the programming cable is attached and the new program is compiled and run. The demonstration is available for future reference in the Dynamic C `SAMPLES` directory as `ICOMDEMO.C`.

2.3 Programming Cable Connections

1. Connect the programming cable to the Intellicom board.

Connect the 10-pin **PROG** connector of the programming cable to header J4 on the Intellicom board as shown in Figure 4. Be sure to orient the red edge of the cable towards pin 1 of the connector. (Do not use the **DIAG** connector, which is used for a normal serial connection.)

NOTE: Never disconnect the programming cable by pulling on the ribbon cable. Carefully pull on the connector to remove it from the header.

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 programming cable supplied with the Intellicom Tool Kit. Note that not all RS-232/USB converters work with Dynamic C.

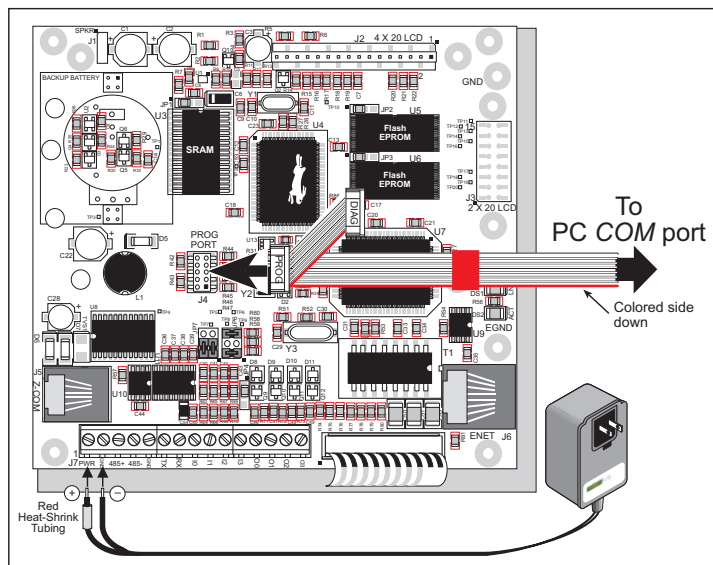


Figure 4. Programming Cable Connections

NOTE: Be sure to use the programming cable (Part No. 101-0513) supplied with the Intellicom Tool Kit—the programming cable has red shrink wrap around the RS-232 converter section located in the middle of the cable. Programming cables from other Rabbit kits are not designed to work with the Intellicom.

2. Apply power.

Reset the Intellicom by unplugging the AC adapter, then plugging it back in. The Intellicom board is now ready to be used.

NOTE: A hardware RESET is accomplished by unplugging the AC adapter, then plugging it back in.

To power down the Intellicom, unplug the AC adapter. You should disconnect power before making any circuit adjustments or changing any connections to the board.

2.4 Installing Dynamic C

If you have not yet installed Dynamic C, do so now by inserting the Dynamic C CD from the Intellicom Tool Kit in your PC's CD-ROM drive. The CD will auto-install unless you have disabled auto-install on your PC.

If the CD does not auto-install, click **Start > Run** from the Windows **Start** button and browse for the Dynamic C **setup.exe** file on your CD drive. Click **OK** to begin the installation once you have selected the **setup.exe** file.

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, create a new desktop icon that points to **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.

The *Dynamic C User's Manual* provides detailed instructions for the installation of Dynamic C and any future upgrades.

NOTE: If you have an earlier version of Dynamic C already installed, the default installation of the later version will be in a different folder, and a separate icon will appear on your desktop.

2.5 Starting Dynamic C

Once the Intellicom is connected to your PC and to a power source, start Dynamic C by double-clicking on the Dynamic C icon on your desktop or in your **Start** menu.

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

Dynamic C defaults to using the serial port on your PC that you specified during installation. If the port setting is correct, Dynamic C should detect the Intellicom and go through a sequence of steps to cold-boot the Intellicom and to compile the BIOS. (Some versions of Dynamic C will not do the initial BIOS compile and load until the first time you compile a program.)

If you receive the message **No Rabbit Processor Detected**, the programming cable may be connected to the wrong COM port, a connection may be faulty, or the target system may not be powered up. First, check both ends of the programming cable to ensure that it is firmly plugged into the PC and the programming port with the marked (colored) edge of the programming cable towards pin 1 of the programming header.

If there are no faults with the hardware, select a different COM port within Dynamic C. From the **Options** menu, 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 active COM port. You should receive a **Bios compiled successfully** message once this step is completed successfully.

If Dynamic C appears to compile the BIOS successfully, but you then receive a communication error message when you compile and load a 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 > 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 > Communications** menu. Choose a lower debug baud rate.

2.6 PONG.C

You are now ready to test your set-up by running a sample program.

Find the file **PONG.C**, which is in the Dynamic C **SAMPLES** folder. To run the program, open it with the **File** menu (if it is not still open), compile it using the **Compile** menu, and then run it by selecting **Run** in the **Run** menu. The **STDIO** window will open and will display a small square bouncing around in a box.

This program does not test the serial ports, the I/O, or the TCP/IP part of the board, but does ensure that the board is basically functional. The sample program in Section 5.5, “Run the PINGME.C Demo,” tests the TCP/IP portion of the board.

2.7 Where Do I Go From Here?

NOTE: If you purchased your Intellicom through a distributor or 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/.

If the sample program ran fine, you are now ready to go on to explore other Intellicom features and develop your own applications.

Chapter 3, “Subsystems,” provides a description of the Intellicom board’s features, Chapter 4, “Software,” describes the Dynamic C software libraries and introduces some sample programs, and Chapter 5, “Using the TCP/IP Features,” explains the TCP/IP features.



3. SUBSYSTEMS

Chapter 3 describes the principal subsystems for the Intellicom.

- Intellicom Subsystems
- Serial Communication
- Memory
- Speaker
- Other Hardware

3.1 Intellicom Subsystems

Figure 5 shows the Rabbit-based subsystems designed into the Intellicom.

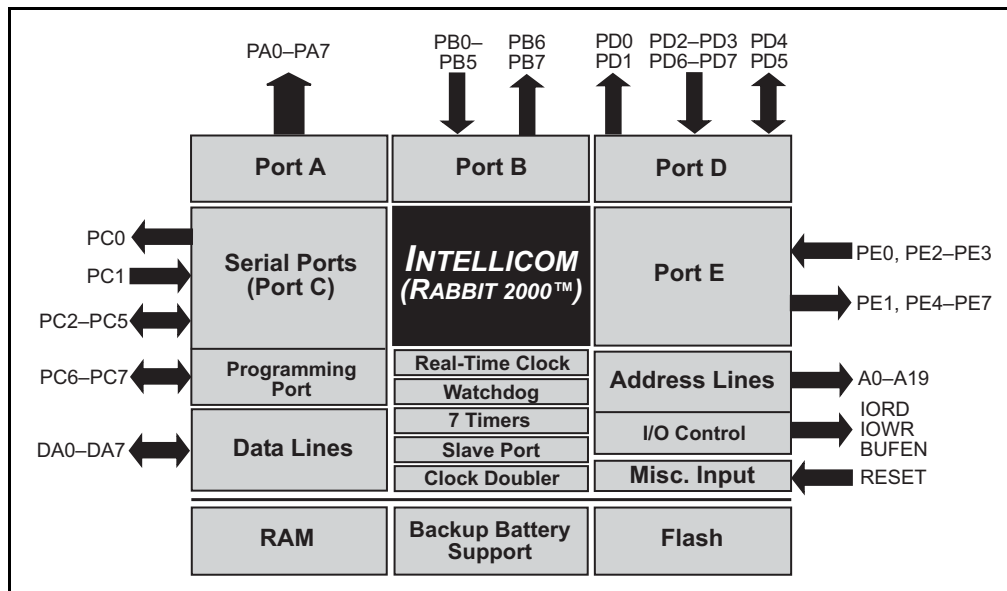


Figure 5. Intellicom Rabbit-Based Subsystems

The Intellicom board has 15 pins on header J7, one RJ-12 jack for RS-232 or RS-485 serial communication, and one Ethernet jack (OP6700 only). The pinouts are shown in Figure 6.

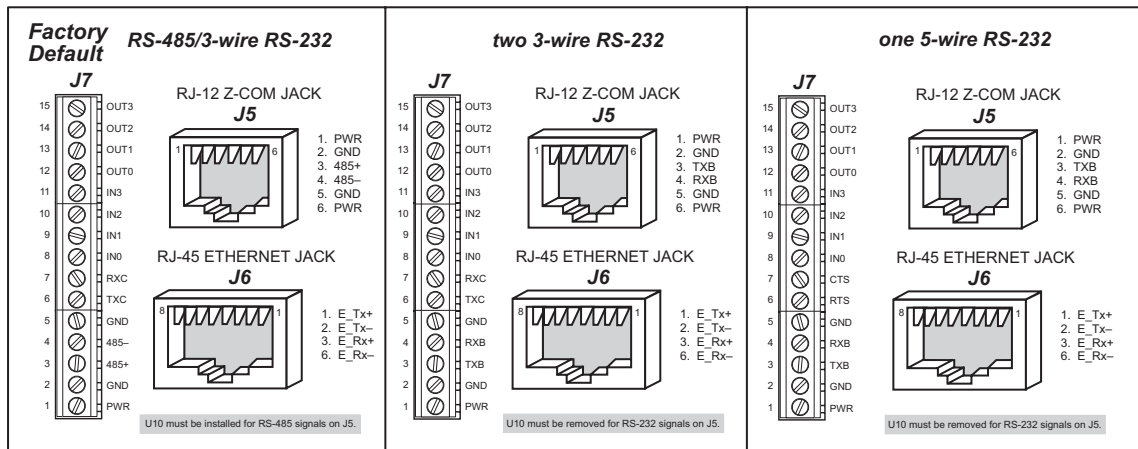


Figure 6. Intellicom I/O Pinout

RJ-45 pinouts are sometimes numbered opposite to the way shown in Figure 6. Regardless of the numbering convention followed, the pin positions relative to the spring tab position (located at the bottom of the RJ-45 jack in Figure 6) are always absolute, and the RJ-45 connector will work properly with off-the-shelf Ethernet cables.

3.1.1 Digital Inputs

Pins 8–11 on header J7 have the four digital inputs IN0–IN3. Each of the four digital 0 V to 5 V inputs is protected over a range of –36 V to +36 V. The Intellicom is factory-configured for the digital inputs to be pulled up to +5 V, but the digital inputs can also be pulled down by moving the surface-mounted jumper at JP4. The jumper settings and the location of JP4 are shown in Figure 7.

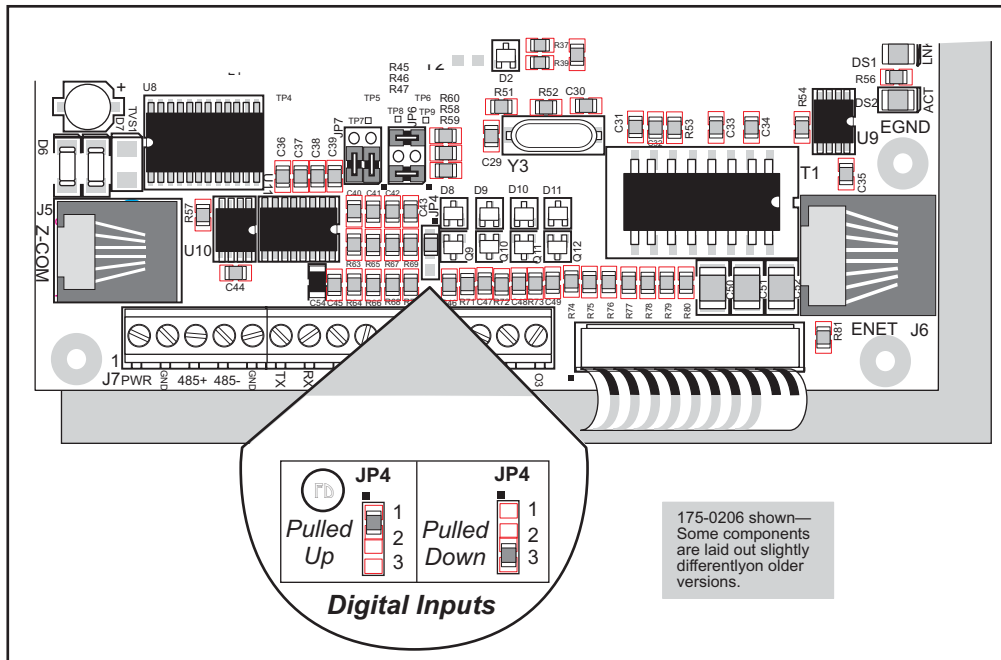


Figure 7. Surface-Mounted Jumper Configurations for Selecting Pullup/Pulldown on the Digital Inputs

3.1.2 Digital Outputs

Pins 12–15 on header J7 have the four digital outputs OUT0–OUT3. Each of the four open-collector digital outputs can sink up to 200 mA at 40 V DC.

3.2 Serial Communication

In the factory-default configuration, the Intellicom has one RS-232 (3-wire) serial channel, one RS-485 serial channel, and one synchronous CMOS serial channel. The Intellicom may be configured for 5-wire RS-232 or two 3-wire RS-232 channels. The exact configuration instructions depend on the version of Intellicom board you have. This information is etched on the bottom side of the printed circuit board, or you can readily determine your version by examining the diagrams below to find the one that matches your board.

Version 175-0188 Rev. A & B

The RS-232 transceiver may be used as a 5-wire RS-232 channel or as two 3-wire RS-232 channels at the expense of the RS-485 channel by adding $0\ \Omega$ surface-mounted resistors at R61 and R62 as shown in Figure 8(a). The RS-485 chip (U10) and the associated bias and termination resistors (R58, R59, and R60) shown in Figure 9(a) must be removed when configuring the Intellicom for either one 5-wire RS-232 or two 3-wire RS-232.

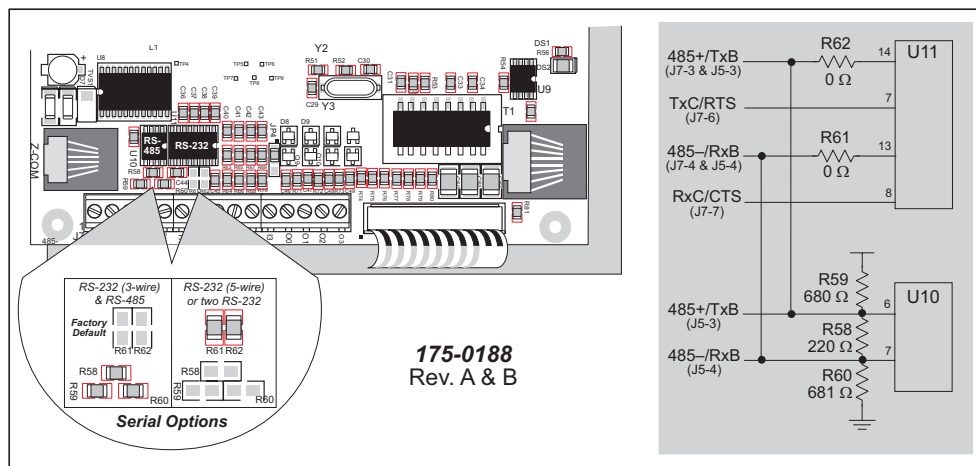



Figure 8(a). Intellicom RS-232/RS-485 Serial Communication Options

Table 2(a) summarizes the options. Note that the parameters in the `serMode` software function call must also be set to match the hardware configuration being used.

Table 2(a). Serial Communication Configurations (Version 175-0188 Rev. A & B)

Item		One 3-wire RS-232 & RS-485	Two 3-wire RS-232	One 5-wire RS-232
R58–R60		In	Out	Out
R61–R62		Out	In	In
U10		In	Out	Out
J7-3 & J5-3		RS-485+	TxB	TxB
J7-4 & J5-4		RS-485–	RxB	RxB
J7-6		TxC	TxC	RTS
J7-7		RxC	RxC	CTS

Version 175-0188 Rev. C

The RS-232 transceiver may be used as a 5-wire RS-232 channel or as two 3-wire RS-232 channels at the expense of the RS-485 channel, which is connected through 0 Ω surface-mounted resistors at R82 and R83 as shown in Figure 8(b). R82 and R83, shown in Figure 8(b), must be removed when configuring the Intellicom for either one 5-wire RS-232 or two 3-wire RS-232. U10 and the associated bias and termination resistors (R58, R59, and R60) must also be removed, but R82 and R83 are left installed, if you wish the TxB and RxB RS-232 signals to be available on header J5.

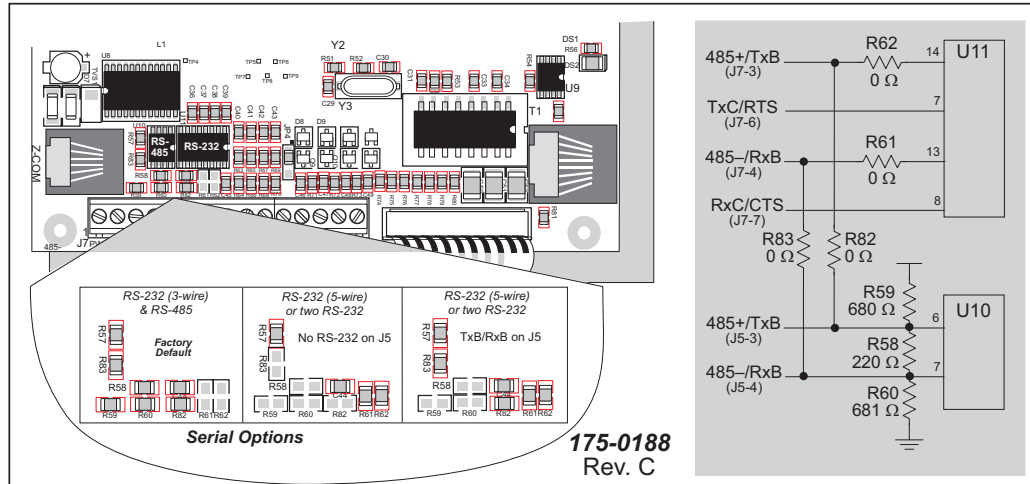



Figure 8(b). Intellicom RS-232/RS-485 Serial Communication Options

Table 2(b) summarizes the options. Note that the parameters in the `serMode` software function call must also be set to match the hardware configuration being used.

Table 2(b). Serial Communication Configurations (Version 175-0188 Rev. C)

Item		One 3-wire RS-232 & RS-485	Two 3-wire RS-232	One 5-wire RS-232	RS-232 on J5
R58–R60		In	—	—	Out
R61–R62		Out	In	In	In
R82–R83		In	Out	Out	In
U10		In	In	In	Out
J7-3		RS-485+	TxB	TxB	TxB
J7-4		RS-485–	RxB	RxB	RxB
J7-6		TxC	TxC	RTS	TxC or RTS
J7-7		RxC	RxC	CTS	RxC or CTS
J5-3		RS-485+	—	—	TxB
J5-4		RS-485–	—	—	RxB