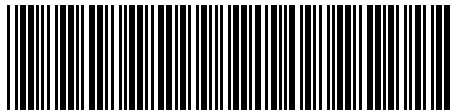


RF Modem 3010

Product Reference Guide

70-12074-01
Revision: A
Software Version: 1.00
September 1994



70-12074-01
Revision A — September 1994

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FCC Requirements

Regulatory information for this device is contained in Symbol's *Regulatory Addendum*, p/n 70-12111-01.

Symbol Support Centers

For service or warranty information or technical assistance, contact the support center in your area.

U.S.

Symbol Support Center

1-800-653-5350

Canada

Mississauga, Ontario

Canadian Headquarters

(905) 629-7226

Europe

Wokingham, England

European Headquarters

734-771-222 (Inside UK)

011-44-734-771222 (Outside UK)

Japan

Tokyo

Olympus Symbol, Inc.

011-81-3-3348-0211

About This Manual

Introduction

The *RF Modem 3010 Product Reference Guide* provides general care and use instructions, BIOS API information, and instructions for troubleshooting the RFM 3010.

Manual Structure

This manual consists of three chapters and three appendices. The following are brief descriptions of each chapter.

Chapter 1, *Introduction*, provides a brief product overview, describes the suggested environment for using the RFM 3010, and illustrates the various parts of the RFM 3010.

Chapter 2, *Maintaining the RFM 3010*, describes the best methods for cleaning the RFM 3010, and explains how to properly maintain the modem's batteries.

Chapter 3, *Operating the RFM 3010*, provides basic operational instructions for the RFM 3010.

Appendix A, *RFM 3010 BIOS API*, covers the LED services available with this modem and provides the boot sequences and ASCII and scan codes assigned.

Appendix B, *Error Recovery and Troubleshooting*, provides a table of many of the possible error messages you may receive while using your RFM 3010, and tips on recovering from errors.

Appendix C, *Port Pin-Outs*, provides the appropriate pin-outs for use with the scanner, COM1, and COM2 ports.

Related Publications

- *RFM 3010 Quick Reference Guide*, 70-12075-01
- *Series 3000 Application Programmer's Reference Manual*, 59045-00-93
- *Series 3000 Application Programmer's Guide*, 59045-00-92
- *Series 3000 System Software Manual*, 59045-00-94

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Introduction

Overview

The Radio Frequency Modem (RFM) 3010 is a portable computer which acts as an RS-232 bridge into the Spectrum One[®] network.

There are two RFM 3010 models:

- 3010-0T00
- 3010-0500

In this manual, references to the RFM 3010 apply to both models of the terminal. If a statement applies to only one of the models, that model is specified.

Both models have a standard RS-232/RS-422 port, an internal radio transmitter/receiver, and an RJ-41 port. The 3010-0T00 model has 256Kb of RAM. The 3010-0500 model has 512Kb of RAM and a DE-9 scanner port for bar code data input.

The RFM 3010 uses DR DOS[™], which is compatible with and extends the industry-standard IBM PC-DOS[™]. Using DR DOS provides access to a number of commercially available programming tools. Additional programming tools, available from Symbol, make programming the system easier and provide access to special features. Refer to the *Series 3000 Application Programmer's Reference Manual* for additional information.

Power is provided by either an AC Power Adapter or by a rechargeable nickel cadmium (NiCd) battery pack.

The auto-off power save mode reduces power consumption while the device waits for data input. This feature conserves battery power, lengthening the amount of operating time between charges.

Parts of the RFM 3010

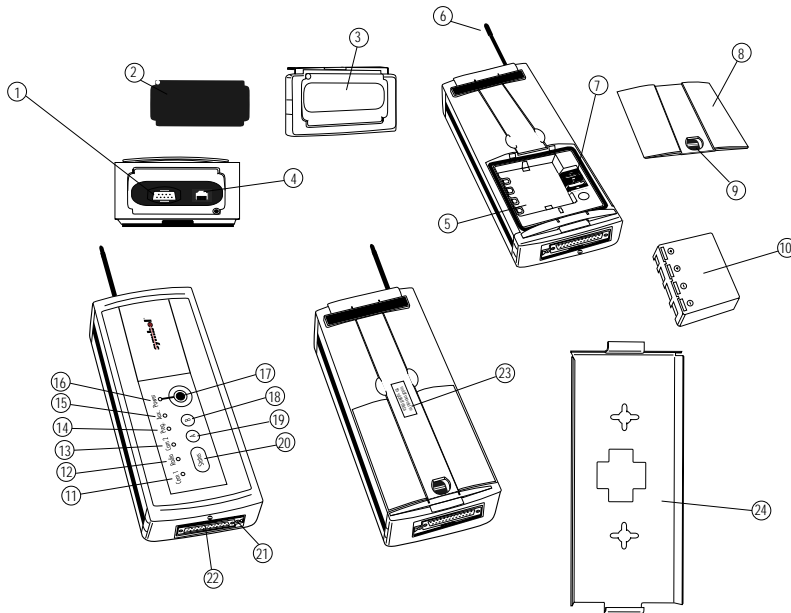


Figure 1-1. Parts of the RFM 3010

- | | |
|--|--------------------------------------|
| 1. Scanner Port (DE-9) available on RFM 3010-0500 only | 13. COM2 Indicator Light |
| 2. End Cap Seal | 14. PROG Indicator Light |
| 3. End Cap | 15. AUX Indicator Light |
| 4. COM2 Port (RJ-41) | 16. Power Indicator Light |
| 5. Battery Compartment | 17. Power Button |
| 6. Antenna | 18. B Button |
| 7. Serial ID Number Label | 19. A Button |
| 8. Battery Compartment Cover | 20. Status Button |
| 9. Battery Compartment Lock | 21. AC Power Jack |
| 10. Battery | 22. COM1 Port (RS-232/RS-422) |
| 11. COM1 Indicator Light | 23. Manufacturing Label |
| 12. Radio Indicator Light | 24. Wall Mounting Bracket (Optional) |

Accessories

Optional accessories available for the RFM 3010 are:

- NiCd battery pack
- Battery chargers
- Scanners
- Wall mounting bracket

Battery Chargers

Two battery chargers are available from Symbol:

1. A 15-Volt adapter charger which charges the battery pack while the pack is in the 3010. For additional information, refer to Chapter 2.
2. A 15-Volt Universal Battery Charger (UBC) which charges up to four NiCd battery packs at one time. The battery packs must be placed in adapter cartridges. The cartridges are placed in the charger.

Table 1-1. Battery Charging Accessories

15-Volt Adapter	3042-06M (US version)
Universal Battery Charger	3004-110 (US version) 3004-220 (Int'l version)
UBC Adapter Cartridge	3004-003

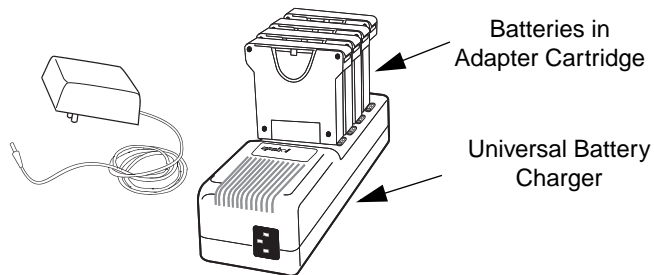


Figure 1-2. Battery Chargers

Scanners

Laser and contact wand scanners which can be used with the RFM 3010-0500 are listed in Table 1-2:

Table 1-2. Scanners for Use with the RFM 3010

Type of Scanner	Compatible Scanners Available from Symbol*
Laser Scanner	LS 2000
	LS 3000
	LS 5000
	LS 9100
	LT 1700
Contact Wand Scanner	LP 1500

** Contact your Symbol representative for specific configurations and part numbers.*

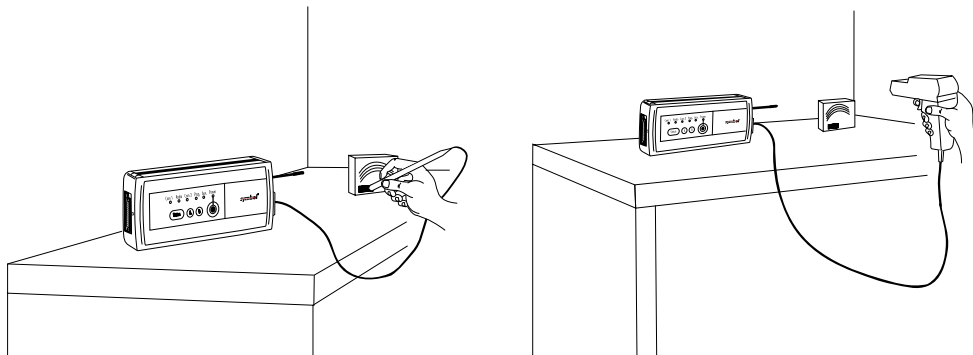


Figure 1-3. Using a Scanner with the RFM 3010-0500

Wall Mounting the RFM 3010

Use the wall mounting bracket with either model of the RFM 3010. To attach the wall mounting bracket to the RFM 3010:

1. Peel back both the left and right sides of the rubber pad on the back of the terminal, located just below the top end cap.
2. Remove the two screws located behind the rubber pad.
3. Lift the end cap off the top of the terminal.
4. Remove the rubber pad. It is not used while the RFM 3010 is attached to the wall mounting bracket. Store it in a secure place for future use.
5. Hook the U-shaped end of the mounting bracket onto the bottom of the terminal.
6. Place the L-shaped end of the mounting bracket into the space vacated by the end cap removed in step 3.
7. Put the end cap back on top of the terminal. The back part of the end cap must be on the outside of the L-shaped end of the mounting bracket.
8. Re-attach the screws removed in step 2.

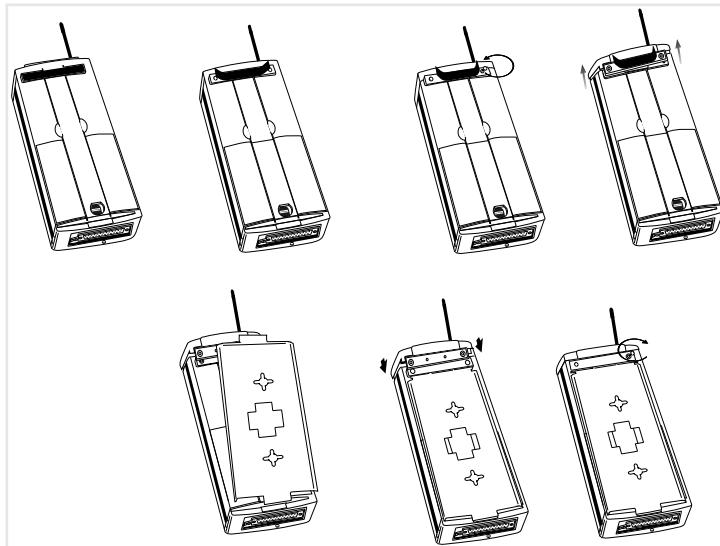


Figure 1-4. Attaching the Wall Mounting Bracket to the RFM 3010

To attach the wall mounting bracket to the wall:

1. Fasten two No. 10 screws 4 inches apart on the wall.
2. Align the mounting bracket grooves above the screws, push in and slide, firmly securing the terminal to the wall.

Or:

Place the center mounting bracket groove on top of a standard RF adapter plate (telephone wall mounting plate). RF adapter plates are available at local retail stores.

Environment

The RFM 3010 is intended for use in an industrial environment. The table below summarizes the intended operating conditions.

Table 1-3. Environmental Specifications

Condition	Range
Temperature Range	32° to 122°F (0° to 50°C)
Humidity	0 to 90% (non-condensing)
Max Static Discharge	15 kilovolts

Storage

If the RFM 3010 will not be used for longer than a week, store it in a cool, dry place, away from dust. Remove the battery pack and store the terminal in its original shipping container.

Maintaining the RFM 3010

Cleaning

The RFM 3010 requires little maintenance. To clean the terminal, use a soft cloth dampened with a mild cleaner, such as soap and water.

Note: *Do not pour, spray, or spill any liquid onto any part of the RFM 3010 or its peripheral devices.*

Maintaining Batteries

Primary battery pack life is affected by many factors, including temperature, the age of the batteries, and the data collection method. Battery life is shortened by use in very high or very low temperatures, by use of a scanning device, and by applications involving radio and modem communications.

Super Capacitor

The RFM 3010 has a super capacitor, which provides sufficient power to preserve the contents of the terminal's RAM for approximately 1 minute and 20 seconds. This prevents loss of data while replacing batteries. The super capacitor does not provide enough power to operate the system.

When to Replace or Recharge Batteries

When the battery is low, the `POWER` LED blinks red. At this level, the RFM 3010 continues to operate, but there is probably less than one hour of usable power left.

When the power becomes very low, the system powers off. Replace or recharge the batteries before continuing to use the RFM 3010.

If the RFM 3010 is plugged into the wall charger when the battery is low, the `POWER` light changes to solid red.

Replacement Batteries

NiCd battery packs are available from Symbol Technologies. For standard systems, the product numbers are 3045-008 (600mah) and 3045-010 (800mah).

Replacing the Battery Pack

To remove and replace the battery pack:

1. Power the terminal OFF.
2. Unlock the battery cover latch and remove the battery compartment cover.
3. Lift out the battery pack.

Note: *Dispose of dead batteries in accordance with battery label instructions.*

4. Install a fully charged battery pack in the battery compartment and replace the battery compartment cover.

Note: *Alkaline batteries should not be used in the RFM 3010.*

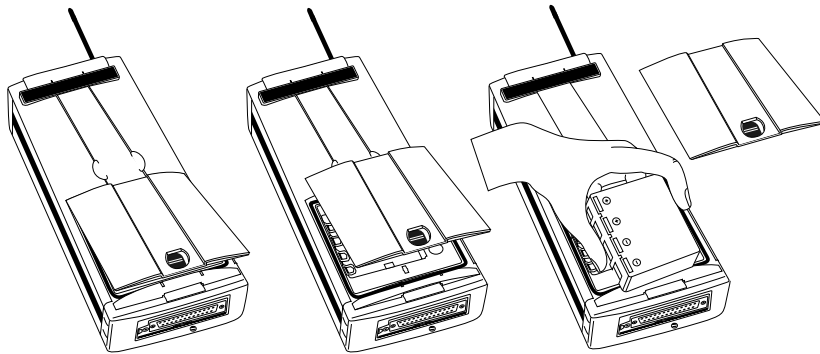


Figure 2-1. Removing Battery Pack

Charging the Battery

The NiCd battery pack can be recharged internally or externally to the terminal.

To charge the battery pack externally to the RFM 3010, use the Symbol Universal Battery Charger. Using this charger, up to four NiCd packs may be charged at one time.

To charge the NiCd batteries in the RFM 3010:

1. Power off the RFM 3010.
2. Plug the power plug of the AC Adapter Cable into the AC Power Jack Port on the RFM 3010. The Power Jack Port is adjacent to the COM1 Port (RS-232) on the bottom of the terminal. Plug the wall cube into the outlet.

If the RFM 3010 is not used while it is charging, leave the power off; otherwise, power on and continue operations.

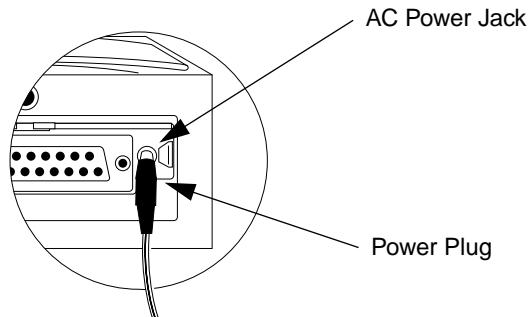


Figure 2-2. Close-up of Power Plug and AC Power Jack

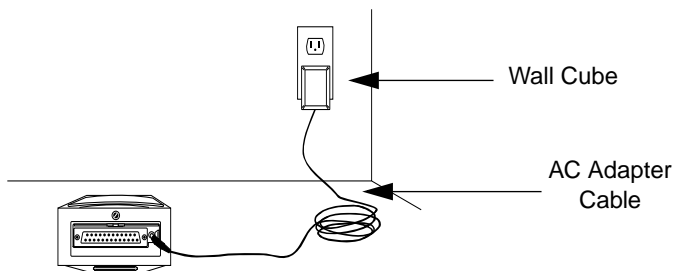


Figure 2-3. Charging NiCd Pack Using Adapter

Battery Charging Tips

For maximum capacity and battery life:

- Charge at temperatures between 10°C to 26°C (50°F to 80°F).
- Recharge as soon as you see the POWER LED blinking red.
- Recharge primary batteries after storage.
- If the battery pack begins to need recharging more often, let it discharge as completely as possible, then recharge it for at least 16 but not more than 24 hours. Undercharging and overcharging can shorten the life of the battery pack.

Operating the RFM 3010

Initializing the RFM 3010

The RFM 3010 must be initialized before use. During the initialization process, an application program is downloaded from the host computer to the RFM 3010 via a modem cable, which has a male DB-25 connector at one end and a female DE-9 connector at the other end. The application program is then stored in the terminal's nonvolatile memory (NVM, also called application EEPROM).

This procedure uses the `SENDHEX` command on the PC and the Program Loader function on the terminal. For details on the `SENDHEX` command, refer to the *Series 3000 Application Programmer's Reference Manual*. Other software may be used in place of `SENDHEX`.

Communication Parameters

The communication parameters on the host and the RFM 3010 must match. The following parameters are fixed on the RFM 3010:

- 19200 bps
- 7 bit data
- Odd parity
- Xon/Xoff flow control
- 1 stop bit

Do not use a version of `SENDHEX` earlier than 3.0. Versions of `SENDHEX` earlier than 3.0 do not support flow control.

Powering the RFM 3010 On and Off

To increase the amount of time that the RFM 3010 can be used before its batteries must be recharged or replaced, turn it off when not in use.

When powered off, the RFM 3010 saves power by not performing any processing functions. Powering the RFM 3010 on does not reset the system or its program; the program resumes in the same place as it was when it was powered off. The data stored in memory also remains intact.

Before the RFM 3010 powers up, it checks the batteries for enough power to ensure reliable operation and data storage.

Normal Power

To turn the RFM 3010 on or off, press <POWER>.

Automatic Power

A number of other events may turn the RFM 3010 on or off, depending on the application program.

- The system may power on when a key other than <POWER> is pressed. This feature can be set by modifying the software. For additional information, refer to the *Series 3000 System Software Manual*.
- The system may power on when the scanner trigger is pressed.
- The program may power on the system at a preset time to perform unattended operations such as an overnight communications session.
- The program may power on the system in response to a modem ring or an RS-232 device connecting to the DB-25 connector.
- The system may power off automatically if it is not used for a period of time. This feature can be set by modifying the software. For additional information, refer to the *Series 3000 System Software Manual*.

Forcing Power Off

If pressing <POWER> does not power off the terminal, the system can be forced to power off in order to reduce the drain on the batteries.

To force the system to power off, press and hold <POWER> for 20 seconds until the terminal powers off.

Do not attempt to power on the terminal and continue use. Return the terminal to your System Administrator to recover any data and correct the problem.

Booting the RFM 3010

Powering on the RFM 3010 does not boot the system and does not initialize either the program or data. When it is necessary to initialize the RFM 3010, perform either a warm boot or a cold boot.

Warm Boot

A warm boot resets the operating system while preserving the program and data on the RAM disk. This process is similar to pressing the <Ctrl+Alt+Del> keys on a PC, except that it does not clear the RAM disk.

To perform a warm boot:

1. Power off the system.
2. Press <STATUS> and <POWER> simultaneously.

Following a warm boot, the POWER LED is solid green if the terminal is plugged into the wall charger. If the terminal is operating on battery power, the POWER LED blinks green.

Cold Boot

A cold boot fully resets the system and clears memory, including clearing the RAM disk. Any programs and data stored in memory or on RAM Disk are deleted. The NVM is not affected.

CAUTION

This procedure erases all data and programs residing in dynamic memory and RAM Disk. All contents of the RAM disk are lost.

To perform a cold boot:

1. Power off the system.
2. Press <STATUS>, , and <POWER> simultaneously.

Following a cold boot, the POWER LED is solid green if the terminal is plugged into the wall charger. If the terminal is operating on battery power, the POWER LED blinks green.

Booting to Program Download Mode

Program Download mode transfers an application program from the host system to the RFM 3010. To prepare for Program Download mode:

1. Power off the host PC and the RFM 3010.
2. Verify that the RFM 3010 is plugged into the wall charger. The system cannot go into Program Download mode and the application cannot load unless the RFM 3010 is plugged into the wall charger.
3. Attach the DB-25 (male) connector to the RFM 3010's COM1 port and the DE-9 (female) connector to the host's serial port.

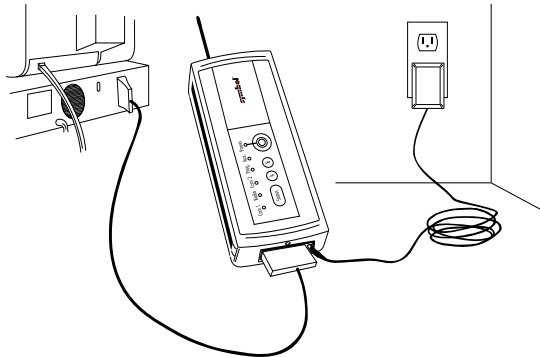


Figure 3-1. Communication and Charger Connections

4. Power on the PC.

Loading the Program

1. On the RFM 3010, press and hold <A>. Press and release <POWER>, then release <A>.

If the terminal is not plugged into the wall charger, the `POWER` LED blinks green. The terminal must be connected to the wall charger within 30 seconds or the `PROG` LED changes to solid red. If the `PROG` LED is solid red, power the terminal off, plug the terminal into the wall charger, and repeat step 1.

The terminal goes through a boot process and beeps twice.

If the `PROG` LED blinks green, the terminal is ready for the download. Proceed to step 3.

If the `PROG` LED blinks red, a program is currently stored in NVM. Continue with step 2.

2. Press <A> again to erase the existing NVM program. The `PROG` LED blinks orange while the program is being erased.

When the program has been completely erased, the RFM 3010 beeps and the `PROG` LED blinks green. The terminal is now ready for the download.

3. Start the communications program on the PC. If you use the `SENDHEX` command with the modem cable connected to `COM2`, enter:

```
sendhex pgmname 19200 com2
```

`PGNAME` is the name of the hex file being downloaded to the terminal and `COM2` is the port that the modem cable is connected to on the PC. It is not necessary to include the `.hex` extension on the program name.

4. Once the `SENDHEX` program has been started, press <ENTER> on the PC to begin communications.
5. On the RFM 3010, wait for the `PROG` LED to show solid green. This confirms a successful download. If the `PROG` LED is solid red, an error has occurred.
6. To exit Program Download mode, reboot the terminal.

Ending Communications

Turn the terminal off and detach the communications cable.

To start the software running, reboot the terminal using the cold boot sequence.

Cancelling Communication

At any time during the communication session, you may cancel communications by pressing <POWER> on the RFM 3010.

Scanning

The RFM 3010-0500 model supports the use of barcode scanning devices. The application program must implement routines for barcode scanning before scanning can actually be performed. Scanners supported by the RFM 3010 include all contact wand and laser scanners, with the exception of the LS 7000 (refer to Table 1-2 for a list of compatible scanners available from Symbol).

For scanner troubleshooting tips, refer to *Appendix B, Error Recovery and Troubleshooting*.

Attaching a Scanner

To attach a wand or laser scanner to a RFM 3010:

1. Power the system off.
2. Remove the rubber end cap seal from the end of the RFM 3010 where the antenna is, and plug the DE-9 connector in the scanner port.

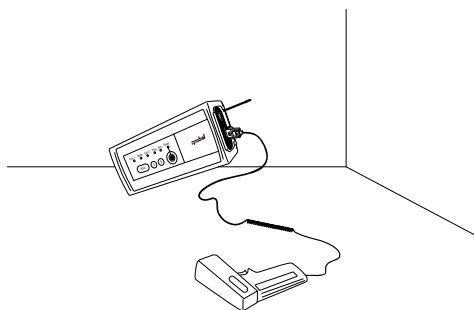


Figure 3-2. Connecting a Laser Scanner

If you are only using the scanner (DE-9) port, you may cut the rubber end cap seal along the seam in the middle, and discard the section of the cover which covers the DE-9 port. Similarly, if you are only using the RJ-41 port you may cut the rubber end cap seal along the seam in the middle and discard the section of the cover which covers the RJ-41 port.

Using a Laser Scanner

Only detachable laser scanners, such as the LS 2000, may be used with the RFM 3010-0500.

To use a laser scanner:

1. Power on the system and the scanner by pressing <POWER> or pulling the scanner trigger.
2. Point the scanner at the bar code, pull the trigger and adjust the aim so that the thin, red laser beam covers the entire length of the bar code.

For the optimal scanning distance of a scanner, consult the scanner operator's manual.

Using a Contact Wand Scanner

To use a contact wand scanner:

1. Power the terminal on.
2. Lightly touch the bar code with the tip of the wand, holding it at a 90- to 45-degree angle above or below the line of the bar code.
3. Draw the wand smoothly and at a moderate speed from right to left or from left to right across the entire bar code. Depending on the program, a tone indicates a successful scan.

The RFM 3010 Keyboard

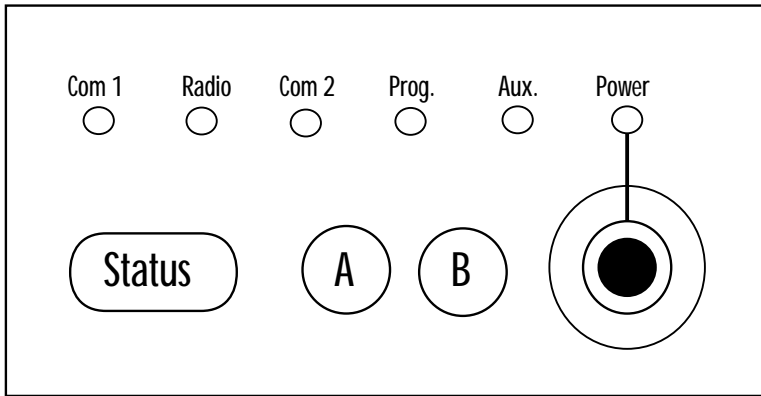


Figure 3-3. RF Modem Keyboard

LEDs

The LEDs are always enabled when the RFM 3010 is plugged into the wall charger. If the terminal is not connected to the wall charger, the LEDs, with the exception of POWER, are disabled unless the <STATUS> button is pressed. When <STATUS> is pressed, the LEDs are enabled for a default period of 20 seconds. This default time can be changed with modifications to the software. For additional information, refer to *Appendix A: RFM 3010 BIOS API* or the *Series 3000 System Software Manual*.

The COM1, RADIO, and COM2 LEDs are called status LEDs. Their sole function is to report the status of communications to and from the RFM 3010. Table 3-1 lists the functions associated with these LEDs.

Table 3-1. Status LED Communication Codes

LED Color	Meaning
Green (blinking)	RFM 3010 receiving data.
Red (blinking)	RFM 3010 transmitting data.
Red/Green/Orange (solid)	Hardware problem.

The `PROG` LED is used to indicate status during Program Download. Table 3-2 lists what the LED colors mean during Program Download.

Table 3-2. Program Download Communications Status Codes

LED Color	Meaning
Green (blinking)	Terminal is ready for download.
Red (blinking)	Program in NVM needs to be erased.
Orange (blinking)	Program in NVM is being erased.
Green (solid)	The download was successful.
Red (solid)	An error has occurred during download.

You can program the `AUX` LED through the application. For additional information, refer to *Appendix A, RFM 3010 BIOS API*.

The `POWER` LED shows whether or not the RFM 3010 is powered on and indicates low battery power. Table 3-3 lists what the `POWER` LED colors mean.

Table 3-3. Power Button Communications Status Codes

LED Color	Meaning
Green (solid)	Wall charger is plugged in; power is on and terminal is plugged into wall charger.
Green (blinking)	Terminal is warm or cold booting; power is on and terminal is running on battery power; terminal is not plugged into wall charger during Program Download.
Red (blinking)	Battery power is low.
Red (solid)	Battery power is low and terminal is plugged into wall charger.

Keys

Use the <A> key with <POWER> to boot the terminal to Program Download mode. You can program this key through the application. For additional information on programming this key, refer to the *Series 3000 ADK*.

Use the key with <STATUS> and <POWER> during cold boot sequences. You can program this key through the application. For additional information on programming this key, refer to the *Series 3000 ADK*.

The <STATUS> key displays the status of COM1, RADIO, and COM2 if the RFM 3010 is not plugged into the wall charger. It is also used during boot sequences.

Appendix A: RFM 3010 BIOS API

Serial Chip ID Number

Int AEh

Function 7(AH)

Description: Establishes serial chip ID number.

Input: AH = 7h
ES:DI = 6-byte buffer location

Output: ES:DI = 48-bit serial number
MSB of 48-bit serial number at lowest address

Enhanced LED Services For RFM 3010
Int B6h
Function 3(AH)

Description: Turns the decode LED on/off.

Input:

AH = 3h

AL = Sub-service code:

0 = OFF - turns off the LED specified in DL

1 = ON - turns on the LED specified in DL

2 = Set timeout - in CL for the LED specified in DL

3 = Reserved

4 = Toggle LED - toggles the LED specified in DL on and off

CL = Timeout in seconds (used only for set timeouts)

DL = LED selection:

0 = AUX

1 = PROG

2 = STATUS

CH = Color:

00 = orange

10 = red

01 = green

Note: *The default timeout of the STATUS key is set to 20 seconds.*

Note: *The default timeout of the AUX and PROG LEDs is set to 0 seconds.*

BIOS Version
Int AFh
Function None

Description: Provides the BIOS version used by the RFM 3010.

Input: None

Output: AH = Gate array revision
AL = Determines terminal class

Note: For the RFM 3010, AL = 4.

Note: Output values for the following registers are the same as for Series 3000 terminals (refer to the **Series 3000 System Software Manual**).

DS:SI = Serial number (Reserved)

DX = Length of serial number (Reserved)

ES:DI = Copyright message, null terminated

ES:BX = Version string address, null terminated

CS = Length of version string

Boot Sequence

RFM 3010 boot sequences are listed in Table A-1.

Table A-1. Boot Sequences

Boot Procedure	Key Sequence
Warm Boot	<STATUS> <POWER>
Cold Boot	<STATUS> <POWER>
Program Download	<A> <POWER>

ASCII and Scan Codes Assigned

ASCII and scan codes assigned for the RFM 3010 are listed in Table A-2.

Table A-2. ASCII and Scan Codes Assigned

Key	ASCII	Scan Code
<A>	49 (decimal)/ 31 (hex)	2 (decimal)
<STATUS>	50 (decimal)/ 32 (hex)	3 (decimal)
	51 (decimal)/ 33 (hex)	4 (decimal)

Appendix B: Error Recovery and Troubleshooting

Error Messages

Because the RFM 3010 does not have a video display, the LEDs change color to indicate problems. There is no specific LED color that indicates a problem for all RFM 3010 functions.

Note: *The LEDs indicate status activity only if the RFM 3010 is plugged into a wall charger or if you press the <STATUS> button.*

Troubleshooting

Table B-1. Troubleshooting Chart

Symptom	Possible Cause	Suggested Action
No POWER indicator	Battery pack is dead or missing, or terminal is not plugged into the wall charger.	Replace or recharge battery pack.
RFM 3010 does not respond when keys are pressed	<ul style="list-style-type: none"> - Application Program was not downloaded successfully. - No application present. - Application is not responding. 	<ul style="list-style-type: none"> - Repeat downloading. - Reboot. - Cold boot.
Scanner does not operate	Scanner connection is loose or disconnected.	Reconnect scanner cable.
	Scanner is broken.	Replace scanner.
	Scanning head needs cleaning.	Clean scanner head.
	<ul style="list-style-type: none"> - Bar codes do not meet industry standards. - No scanner enabling software. 	Try scanning a different bar code.
Time and date are incorrect	Real-time clock needs to be reset.	Refer to the <i>Series 3000 Application Programmer's Reference Manual</i> for additional information.
POWER LED is solid red	The battery is low.	Press <POWER> to return to power save mode, plug in the AC Adapter Cable, and charge as described in the section <i>Charging the Battery</i> in Chapter 2.

Startup Failures

If a cold boot does not successfully start the application, either the application, the system software, or the system is malfunctioning.

If you can boot the system to Program Download mode, use the Program Loader function to download a new version of the application software to NVM (refer to Chapter 3).

Scanning Problems

Bar code labels that do not meet established industry specifications may not scan successfully. These labels may include:

- Smudged labels
- Very dark or very light labels
- Labels with highly reflective surfaces or coatings
- Labels with poor color contrast

The following also may cause unsuccessful scans:

- Moving the wand too quickly
- Moving the wand too slowly
- Moving the wand at an uneven speed
- Moving the wand diagonally across the bar code

Appendix C: Port Pin-Outs

This Appendix provides reference information for RFM 3010 ports and mappings.

Scanner Port (DE-9)

The scanner port is located at the top of the RFM 3010, next to the COM2 (RJ-41) port. This port is only available on the RFM 3010-0500 model.

Table C-1. RFM 3010 Scanner Port Pin Descriptions

Pin	Name	Function	Direction
1	LASERDIR	Laser direction indicator*	input
2	BWD	Black/white data	input
3	WANDLED	Wand LED control	output
4	no connection		
5	LASERTRIGN	Laser trigger NOT	input
6	WANDEL	Wand electronics enable	output
7	GROUND	Logic/power ground	
8	GROUND	Logic/power ground	
9	WANDPWR	Wand power (+5V)	output
* Must be grounded on contact wand scanners			

COM1

Serial Port (DB-25)

The COM1 serial port is located at the bottom of the RFM 3010.

Table C-2. RFM 3010 COM1 Serial Port Pin Descriptions

Pin	Name	Signal	Direction
1	Not used		
2	RECEIVED DATA	RXD	IN*
3	TRANSMIT DATA	TXD	OUT*
4	CLEAR TO SEND	CTS	IN*
5	REQUEST TO SEND	RTS	OUT*
6	DATA TERMINAL READY	DTR	OUT*
7	SIGNAL GROUND	GND	— *
8	CARRIER DETECT	DCD	OUT
9	RS-422	TXD -	OUT
10	RS-422	TXD +	OUT
11-19	Not used		
20	DATA SET READY	DSR	IN*
21	Not used		
22	RING INDICATOR	RI	IN*
23	Not used		
24	RS-422	RXD -	IN
25	RS-422	RXD +	IN
*RS-232 signal			

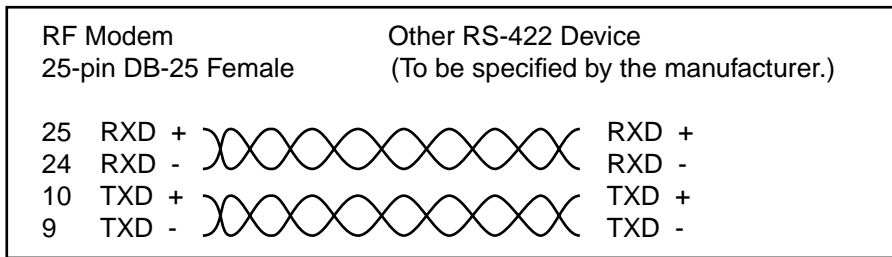


Figure C-1. RFM 3010 COM1 RS-422 Cable

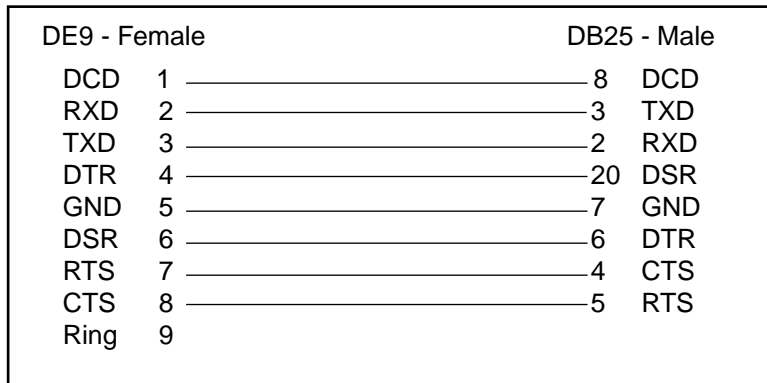


Figure C-2. RFM 3010 COM1 Modem Cable

COM2

Null Modem Cable

The COM2 null modem cable has a female DE-9 connector at one end and a male DB-25 connector at the other end.

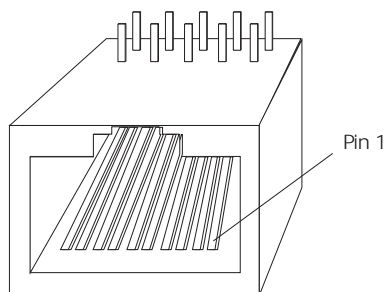


Figure C-3. RFM 3010 COM2 Jack (Upside Down)

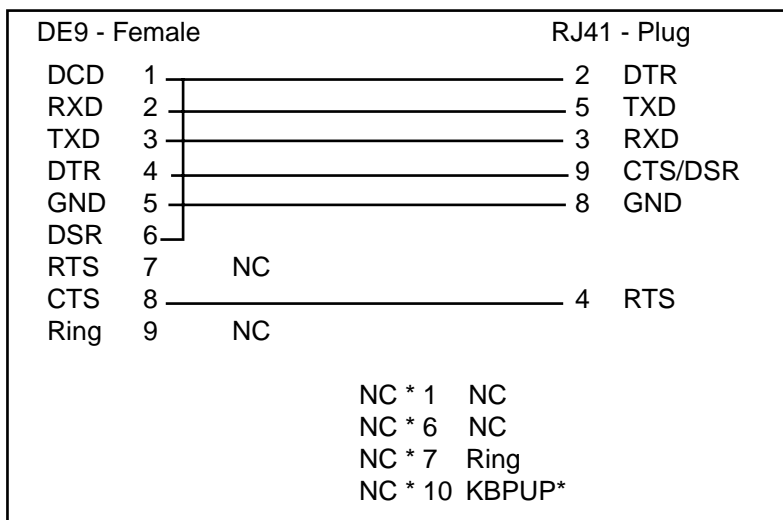


Figure C-4. RFM 3010 COM2 Null Modem Cable

COM2 Serial Port Connector (RJ-41)

The COM2 serial port is located at the top of the RFM 3010, next to the optional DE-9 scanner port (refer to Figure 1-1).

Table C-3. COM2 Serial Port Pin Descriptions

Pin	Signal	Direction
1	Not used	
2	+5 volts/DTR	OUT
3	RXD	IN
4	RTS	OUT
5	TXD	OUT
6	Not used	
7	Ring Indicator RI	
8	GND	
9	CTS/DSR	IN
10	Power-on	

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