Intermec

**User's
Manual**

9189 900MHz RF Gateway

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Before You Begin

This section introduces you to standard warranty provisions, safety precautions, warnings and cautions, document formatting conventions, and sources of additional product information.

Warranty Information

To receive a copy of the standard warranty provision for this product, contact your local Intermec sales organization. In the U.S. call (800) 755-5505, and in Canada call (800) 688-7043. Otherwise, refer to the Worldwide Sales & Service list that comes with this manual for the address and telephone number of your Intermec sales organization.

Safety Summary

Your safety is extremely important. Read and follow all warnings and cautions in this book before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

Do not repair or adjust alone   Do not repair or adjust energized equipment alone under any circumstances. Someone capable of providing first aid must always be present for your safety.

First aid   Always obtain first aid or medical attention immediately after an injury. Never neglect an injury, no matter how slight it seems.

Resuscitation   Begin resuscitation immediately if someone is injured and stops breathing. Any delay could result in death. To work on or near high voltage, you should be familiar with approved industrial first aid methods.

Energized equipment   Never work on energized equipment unless authorized by a responsible authority. Energized electrical equipment is dangerous. Electrical shock from energized equipment can cause death. If you must perform authorized emergency work on energized equipment, be sure that you comply strictly with approved safety regulations.

Warnings and Cautions

The warnings and cautions in this manual use the following format.

Warning
A warning alerts you of an operating procedure, practice, condition, or statement that must be strictly observed to avoid death or serious injury to the persons working on the equipment.

Avertissement
Un avertissement vous alerte d'une procédure de fonctionnement, d'une méthode, d'un état ou d'un rapport qui doit être strictement respecté pour éviter l'occurrence de mort ou de blessures graves aux personnes manupulant l'équipement.

Caution
A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.

Conseil
Une précaution vous avertit d'une procédure de fonctionnement, d'une méthode, d'un état ou d'un rapport qui doit être strictement respecté pour empêcher l'endommagement ou la destruction de l'équipement, ou l'altération ou la perte de données.

Notes: Notes are statements that either provide extra information about a topic or contain special instructions for handling a particular condition or set of circumstances.

About This Manual

All the information you need to install, configure, maintain, and troubleshoot the 9189 RF Gateway is in this manual. This manual is written for the person who will be installing and configuring this equipment. Many of the parameters need to be set by the network administrator. This manual assumes that you are familiar with your network and data communications.

Terms

- The Model 200 Controller is usually referred to as "the controller."

- "JANUS devices" refers to all the readers and vehicle-mount computers (VMC) in the JANUS family of data collection computers.

- "Data collection devices" refers to all the Intermec products including JANUS devices that can communicate through a controller.

Conventions

This manual uses these conventions to explain how to input data from a bar code and understand the special conventions for commands.

Input From a Data Collection Device Keypad

When you need to press keys on the data collection devices, they are illustrated with icons that resemble the keys. For example, "press ⎗" means you press the key labeled "Enter" on the device keypad.

Input From a Bar Code

You can scan the bar codes listed in this manual to enter data or perform a command. The bar code labels in this manual are printed in the Code 39 symbology. Each bar code includes the name and human-readable interpretation. For example:

Change Configuration ———— *Name*

‖‖‖‖‖‖‖‖‖‖‖ ——————— *Bar Code (Code 39)*

$+ ———————— *Human-readable Interpretation*   2020-50a

The asterisks (*) at the beginning and end of the human-readable interpretation are the start and stop codes for a Code 39 bar code label. If you are creating bar code labels with a bar code utility, it may automatically supply the asterisks as the start and stop code, so that you only need to type the actual text of the command. You can also create and print configuration labels and reader command labels in Code 93, which has its own start and stop codes.

Commands

Command syntax is shown in the text as it should be entered. For example, to see a list of directories on the JANUS device, type this command:

```
dir
```

If a command line includes both required and optional parameters, optional parameters are enclosed in braces [ ].

Configuration commands use the convention *data* to indicate variables. Replace the term *data* with one of the options listed with the command syntax. For example, the configuration command for beep volume is BV*data* where *data* can be a number from 0 through 4.

Other Intermec Manuals

You may need additional information for working with the 9189 RF Gateway in an Intermec data collection network. This list contains only some of the manuals for Intermec's more recent products that can communicate with this Intermec 900 MHz equipment. To order manuals, contact your local Intermec representative.

Manual	Intermec Part No.
Data Communications Reference Manual	044737
Model 200 Controller System Manual	063439
Model 200 Controller Technical Reference Manual	064398
RF System/9180 Controller User's Manual	054292
RF System/9185 Controller User's Manual	056543
9181 and 9183 User's Manual	066163
JANUS 2010 Hand-Held Computer User's Manual	058426
JANUS 2020 Hand-Held Computer User's Manual	059951
JANUS 2050 Vehicle Mount Computer User's Manual	062874

1

9189 RF Gateway

Learning About the 9189 RF Gateway

The 9189 RF Gateway provides non RF devices, such as printers, with the ability to send data over the RF channels in your data collection network. The gateway adds RF capability with all the features, without affecting the performance of the device.

Some of the Intermec devices commonly used with the gateway are:

- JANUS™ 2010 Hand-Held Data Collection Computer

- 94XX Portable Readers

- 951X Online Reader Series

- 9540 Industrial Terminal

- 9550 Transaction Manager

- 9560 Time and Attendance Terminal

- 86XX Printer Series

- 4XXX Printer Series

- 3XXX Printer Series

The gateway determines whether or not a data collection device is connected and properly configured by continuously polling the devices. If the device does not respond after six polling attempts, the gateway lowers its operating power, but continues polling the data collection devices. If a device eventually responds, full power and RF communications can begin.

Understanding the Gateway Components

This figure shows the components of the gateway. Four status LEDs, a
RS-232 interface connector, and the power switch are located on the top of the
gateway. You can access the rechargeable NiCad batteries through the lower
portion of the unit.

9189 Gateway Components

9189U.001
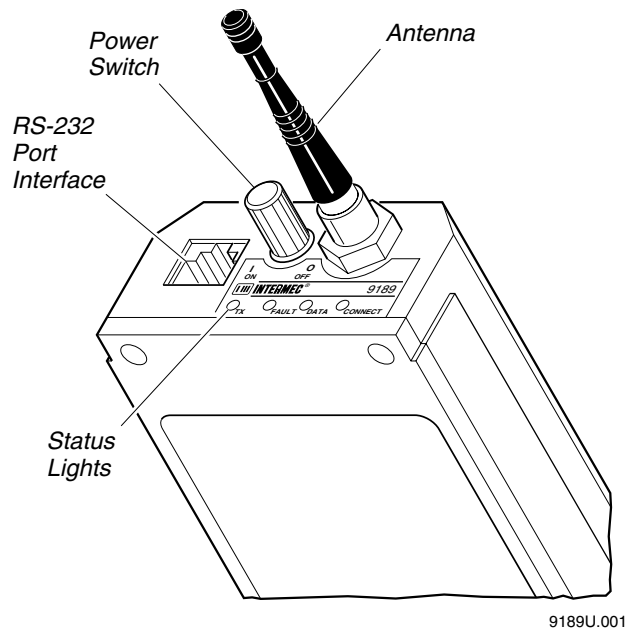
Caution
*The antenna must be attached before turning on the gateway. The internal
radio could be damaged if the antenna is not attached.*

Conseil
*Si l'antenna n'est pas attachée avant que la gateway soit mise sous tension, la
radio interne peut être endommagée.*

Understanding the Gateway Status LEDs

The gateway has four status LEDs. During power up and self tests, all LEDs are on. If all tests pass, the LEDs will show the status descrubed in the 9189 Status LEDs table. If any of the self tests fail, the LEDs blink in one of the patterns listed in the 9189 LED Patterns table.

9189 Status LEDs

LED	Description
Connect	Lights when the gateway has established communications with the 9180 controller. Turns off whenever the gateway cannot transmit to the controller.
Data	Lights when the gateway has data stored in its buffer.
Fault	Flashes when an error condition has been detected.
Tx	Lights when the gateway is transmitting data.

9189 LED Patterns

Fault	Connect	Data	Fault	Tx
ROM Test	blinking	blinking	blinking	blinking
RAM Test	blinking	blinking	blinking	off
Internal RAM	blinking	blinking	off	blinking

Caution
Do not turn the gateway off when the Data LED is on. Doing so may result in erroneous communications between the gateway and the rest of the system.

Conseil
N'éteignez pas la gateway lorsque la diode électroluminescente Données est allumée. Si vous l'éteignez, vous risquez de provoquer des communications erronées entre la gateway et le reste du système.

About the RS-232 Port Interface

The gateway connects to other devices with a 10-pin, RS-232 interface. This table lists the pin assignments for the interface.

Pin	Function	Pin	Function
1	Shield Ground	4	Request to Send
2	RFG Received Data	5	Clear to Send
3	RFG Transmitted Data	7	Ground

Supplying Power for the Gateway

The gateway is powered by an internal NiCad battery or an external power supply. The NiCad battery allows the gateway to be used with portable data collection devices. However, if the gateway is connected to a stationary device such as a printer, you should use the external power supply.

Installing the Internal Battery Pack

The internal battery pack contains NiCad batteries that you can recharge using Intermec's battery pack charger (40ZA02). Battery life is dependent on the gateway's activity. If the gateway transmits frequently, the batteries will drain faster. Typically, a fully charged NiCad pack will last 8 hours when the gateway is operating at a 50% duty cycle.

Caution
The internal battery pack must be installed in the gateway when using an external power supply. Failure to comply may result in equipment damage.

Conseil
Le jeu de piles interne doit être installé dans la gateway lors de l'utilisation d'une source de courant externe. Si ce n'est pas le cas, vous risquez d'endommager l'équipement.

To install the battery pack

•   Position the pack as shown in this figure and tighten the screw.

Battery
Pack

9189U.002
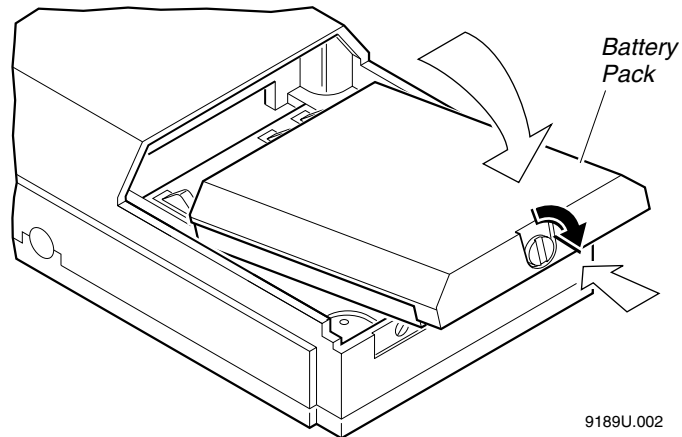
Connecting the External Power Supply

An external power supply can be attached to the connector on the side of the gateway, as shown in the figure on the next page. These Intermec power supplies are appropriate for use with the gateway:

•   120 VAC, 50/60 Hz (Intermec P/N 042684)

•   100 VAC, 50/60 Hz (Intermec P/N 043230)

•   220 VAC, 50/60 Hz (Intermec P/N 045652)

Caution
The internal battery pack must be installed in the gateway when using an external power supply. Failure to comply may result in equipment damage.

Conseil
Le jeu de piles interne doit être installé dans la gateway lors de l'utilisation d'une source de courant externe. Si ce n'est pas le cas, vous risquez d'endommager l'équipement.

Connecting an External Supply

9189U.003
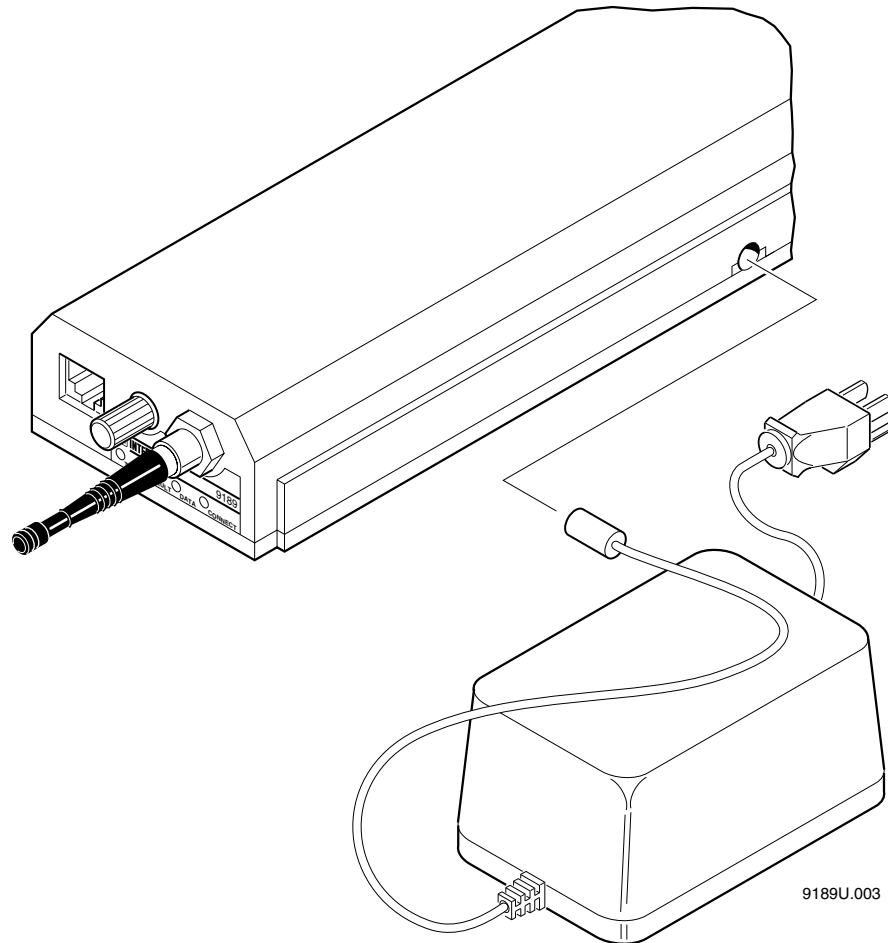
About the Accessories

Several accessories are available for use with the gateway. Contact your local Intermec representative for ordering information.

Carrying Case

When you use the gateway with a portable reader such as the Intermec TRAKKER 944X, you should protect it against accidental bumps and drops with a carrying case (Intermec P/N 055121). The belt of the case snaps around your waist to provide simple, out-of-the-way operation. A zippered flap lets you access the NiCad battery pack. Refer to the following figure.

Since you cannot see the LEDs when you wear the case, you should configure the gateway to relay low battery warnings to the device. For help, see the RFPC Error Reporting Mode command.

9189 Carrying Case

Battery Pack Access

9189U.004
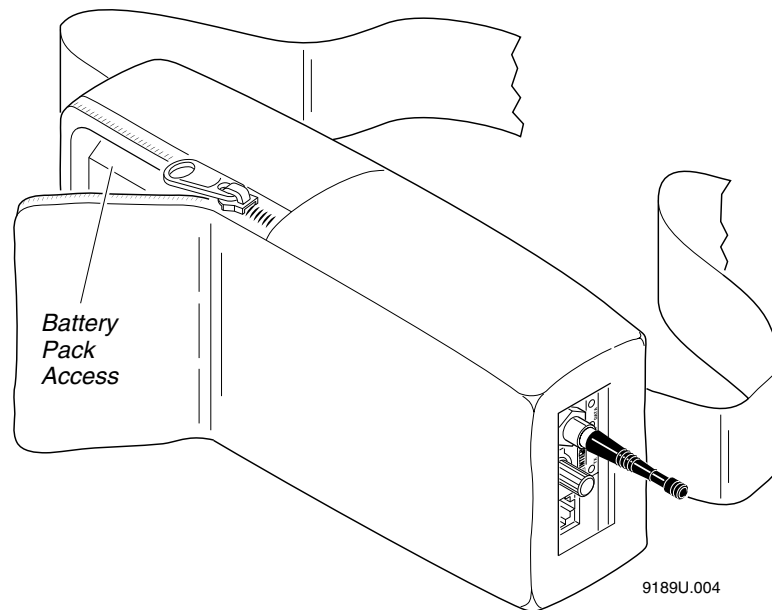
Cables

Each cable has one end that connects to the RS-232 port interface on the gateway and the other end has a connector specific to the device. Refer to the user's manual for the device for more information on RS-232 connections. To connect the gateway to a device, use one of the cables in this table.

Part Number	Data Collection Device
059775	J2010 reader, optical link cable
060076	J2010 reader, JD2010A communications dock
057458	944X TRAKKER reader
054647	9460/9462 TRAKKER reader
054648	4XXX, 86XX, and 3XXX printers and 95XX readers

Configuring the Gateway

You need to configure the gateway properly before it can communicate with the RFDC system. You can set the configuration parameters using a combination of DIP switches and software. Before you configure the gateway, you need this information:

- Local device address of the gateway.

  Note: The gateway's default local address is mA. To avoid addressing conflicts with other devices, assign an address other than mA.

- Initial RF channel. If you have two BRUs and you would like to be able to roam between them, you will need a second RF channel.

- Device-specific parameters. For help, see "Software Parameters" later in this chapter.

This table lists all the parameters and the method for setting them. Note that the RF Channel is set with both switches *and* software.

Parameter	Switches	Software
Data Bits	Yes	No
Default Configuration	Yes	Yes
Downline POL/SEL Delay	No	Yes
Device Line Speed	Yes	No
Device Protocol	Yes	No
Local Address	Yes	No
RF Channel	Yes	Yes
RF Duty Cycle Period	No	Yes
RF Hardware Duty Cycle	No	Yes
RF Interactive Response Delay	No	Yes
RF Repeat Count	No	Yes
RF Retry Limit	No	Yes
RFNC/BRU Address	No	Yes
RFPC Error Reporting Mode	No	Yes

To configure the gateway

1. Set the DIP switches. For help, see "Understanding the DIP Switches" later in this chapter.

2. Apply power through either the internal NiCad battery pack or the external power supply. For help, see "Supplying Power for the Gateway" earlier in this chapter.

3. Connect the data collection device. For help, see "Cables" earlier in this chapter.

4. Make sure these parameters on the device match those configured for the gateway:

   - Polling Mode D protocol

   - 19200, 9600, 4800, or 2400 baud

5. Set the software parameters. For help, see "Setting the Software Parameters" later in this chapter.

Note: If a TRAKKER 94XX is connected to the gateway using Polling Mode D, enable the Check CTS option.

Setting the RF Channels

To set the RF Channels on the gateway you need to configure both the DIP switches *and* software. This procedure ensures that the unit will still access the right channel if the gateway's RAM is cleared.

Understanding the DIP Switches

Inside the gateway are two banks of DIP switches, SW2 and SW3. These DIP switches control settings such as addresses and the RF channel.

For the gateway DIP switches, off indicates the switch is in the up position. On indicates the switch is in the down position. Refer to this figure.

9189 DIP Switches
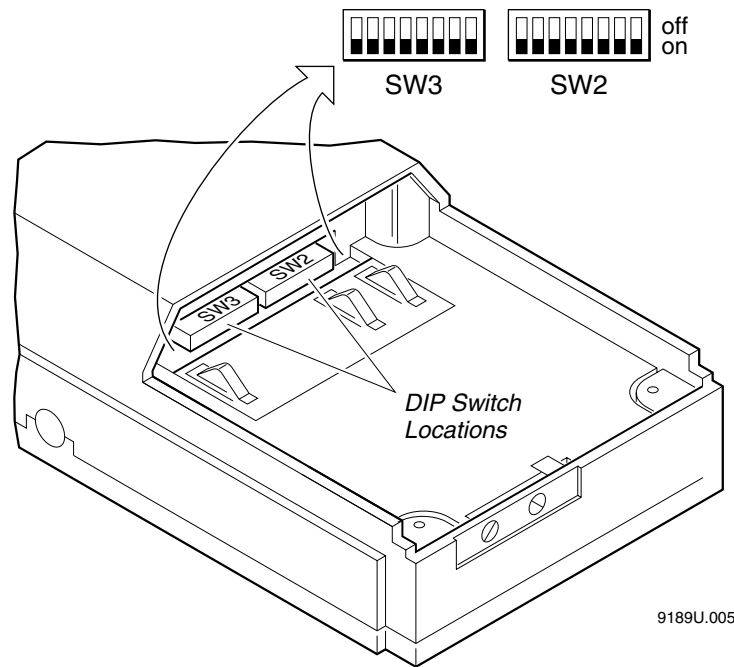
Setting the DIP Switches

⚠ **CAUTION**

Caution
Disconnect the external power supply before removing the internal battery pack. Failure to comply may result in equipment damage.

Conseil
Déconnectez la source de courant externe avant d'enlever le jeu de piles interne, faute de quoi vous risquez d'endommager l'équipement.

To reset the DIP switches

1. Turn the gateway's power switch off.

2. If an external power supply is being used, disconnect it.

3. Remove the internal NiCad battery pack by loosening the screw on the bottom of the gateway. The DIP switches are located in the rear of the battery compartment.

4. Use a pointed object to move switch 1 on SW2 to the on position.

5. Replace the NiCad battery pack and reconnect any equipment removed in the previous steps.

6. Turn the gateway's power switch on. All software parameters are now reset.

7. Turn the gateway's power switch off and remove the battery pack as described in Steps 1 through 3.

8. Use a pointed object to move switch 1 on SW2 to the off position.

9. Set DIP switches to any new configuration.

10. Turn the gateway's power switch on.

Note: After you change your DIP switch settings, you need to set your software parameters.

Restoring the Default Configuration

1. Turn the gateway's power switch off.

2. If an external power supply is being used, disconnect it.

3. Remove the internal NiCad battery pack by loosening the screw on the bottom of the gateway. The DIP switches are located in the rear of the battery compartment.

4. Use a pointed object to move switch 1 on SW2 to the on position.

5. Replace the NiCad battery pack and reconnect any equipment removed in the previous steps.

6. Turn the gateway's power switch on. All software parameters are now reset.

RF Channel

You need to set the RF channel using the DIP switches and the software command. Switches 2 through 4 on SW2 determine which of seven RF channels the gateway will operate on. For help, see "Channel Select" later in this chapter for the software command.

	SW2 Switches		
RF Channel	**2**	**3**	**4**
924 MHz	off	off	off
921 MHz	on	off	off
918 MHz	off	on	off
915 MHz	on	on	off
912 MHz	off	off	on
909 MHz	on	off	on
906 MHz	off	on	on

Baud Rate

Switches 5 and 6 of SW2 determine the baud rate at which the gateway communicates with the data collection device. There are four possible speeds.

	SW2 Switches	
Baud Rate	**5**	**6**
19200	off	off
9600	off	on
4800	on	off
2400	on	on

Protocol

Switch 7 on SW2 determines the protocol of the data collection device. Set the switch to off for Polling Mode D.

Data Bits

Switch 8 on SW2 sets the number of data bits for the gateway's communication. Set the switch to off for seven data bits and on for eight. If the device is configured to Polling Mode D, the gateway must be set to seven data bits.

Address

Switches 1 through 7 on SW3 set the gateway's address. The following tables list all 128 addresses and the corresponding switch settings.

9189 Address Switch Settings

ADDRESS		⌐ . . . . SW3 SWITCHES . . . . ¬						
LOCAL	HOST	1	2	3	4	5	6	7
1	MA	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	MB	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	MC	OFF	ON	OFF	OFF	OFF	OFF	OFF
4	MD	ON	ON	OFF	OFF	OFF	OFF	OFF
5	ME	OFF	OFF	ON	OFF	OFF	OFF	OFF
6	MF	ON	OFF	ON	OFF	OFF	OFF	OFF
7	MG	OFF	ON	ON	OFF	OFF	OFF	OFF
8	MH	ON	ON	ON	OFF	OFF	OFF	OFF
9	MI	OFF	OFF	OFF	ON	OFF	OFF	OFF
10	MJ	ON	OFF	OFF	ON	OFF	OFF	OFF
11	MK	OFF	ON	OFF	ON	OFF	OFF	OFF
12	ML	ON	ON	OFF	ON	OFF	OFF	OFF
13	MM	OFF	OFF	ON	ON	OFF	OFF	OFF
14	MN	ON	OFF	ON	ON	OFF	OFF	OFF
15	MO	OFF	ON	ON	ON	OFF	OFF	OFF
16	MP	ON	ON	ON	ON	OFF	OFF	OFF
17	MQ	OFF	OFF	OFF	OFF	ON	OFF	OFF
18	MR	ON	OFF	OFF	OFF	ON	OFF	OFF
19	MS	OFF	ON	OFF	OFF	ON	OFF	OFF
20	MT	ON	ON	OFF	OFF	ON	OFF	OFF
21	MU	OFF	OFF	ON	OFF	ON	OFF	OFF
22	MV	ON	OFF	ON	OFF	ON	OFF	OFF
23	MW	OFF	ON	ON	OFF	ON	OFF	OFF
24	MX	ON	ON	ON	OFF	ON	OFF	OFF
25	MY	OFF	OFF	OFF	ON	ON	OFF	OFF
26	MZ	ON	OFF	OFF	ON	ON	OFF	OFF
27	M0	OFF	ON	OFF	ON	ON	OFF	OFF
28	M1	ON	ON	OFF	ON	ON	OFF	OFF
29	M2	OFF	OFF	ON	ON	ON	OFF	OFF
30	M3	ON	OFF	ON	ON	ON	OFF	OFF
31	M4	OFF	ON	ON	ON	ON	OFF	OFF
32	M5	ON	ON	ON	ON	ON	OFF	OFF
33	NA	OFF	OFF	OFF	OFF	OFF	ON	OFF
34	NB	ON	OFF	OFF	OFF	OFF	ON	OFF
35	NC	OFF	ON	OFF	OFF	OFF	ON	OFF
36	ND	ON	ON	OFF	OFF	OFF	ON	OFF
37	NE	OFF	OFF	ON	OFF	OFF	ON	OFF
38	NF	ON	OFF	ON	OFF	OFF	ON	OFF
39	NG	OFF	ON	ON	OFF	OFF	ON	OFF
40	NH	ON	ON	ON	OFF	OFF	ON	OFF
41	NI	OFF	OFF	OFF	ON	OFF	ON	OFF
42	NJ	ON	OFF	OFF	ON	OFF	ON	OFF

9189 Address Switch Settings (continued)

ADDRESS		. . . . SW3 SWITCHES						
LOCAL	HOST	1	2	3	4	5	6	7
43	NK	OFF	ON	OFF	ON	OFF	ON	OFF
44	NL	ON	ON	OFF	ON	OFF	ON	OFF
45	NM	OFF	OFF	ON	ON	OFF	ON	OFF
46	NN	ON	OFF	ON	ON	OFF	ON	OFF
47	NO	OFF	ON	ON	ON	OFF	ON	OFF
48	NP	ON	ON	ON	ON	OFF	ON	OFF
49	NQ	OFF	OFF	OFF	OFF	ON	ON	OFF
50	NR	ON	OFF	OFF	OFF	ON	ON	OFF
51	NS	OFF	ON	OFF	OFF	ON	ON	OFF
52	NT	ON	ON	OFF	OFF	ON	ON	OFF
53	NU	OFF	OFF	ON	OFF	ON	ON	OFF
54	NV	ON	OFF	ON	OFF	ON	ON	OFF
55	NW	OFF	ON	ON	OFF	ON	ON	OFF
56	NX	ON	ON	ON	OFF	ON	ON	OFF
57	NY	OFF	OFF	OFF	ON	ON	ON	OFF
58	NZ	ON	OFF	OFF	ON	ON	ON	OFF
59	N0	OFF	ON	OFF	ON	ON	ON	OFF
60	N1	ON	ON	OFF	ON	ON	ON	OFF
61	N2	OFF	OFF	ON	ON	ON	ON	OFF
62	N3	ON	OFF	ON	ON	ON	ON	OFF
63	N4	OFF	ON	ON	ON	ON	ON	OFF
64	N5	ON	ON	ON	ON	ON	ON	OFF
65	OA	OFF	OFF	OFF	OFF	OFF	OFF	ON
66	OB	ON	OFF	OFF	OFF	OFF	OFF	ON
67	OC	OFF	ON	OFF	OFF	OFF	OFF	ON
68	OD	ON	ON	OFF	OFF	OFF	OFF	ON
69	OE	OFF	OFF	ON	OFF	OFF	OFF	ON
70	OF	ON	OFF	ON	OFF	OFF	OFF	ON
71	OG	OFF	ON	ON	OFF	OFF	OFF	ON
72	OH	ON	ON	ON	OFF	OFF	OFF	ON
73	OI	OFF	OFF	OFF	ON	OFF	OFF	ON
74	OJ	ON	OFF	OFF	ON	OFF	OFF	ON
75	OK	OFF	ON	OFF	ON	OFF	OFF	ON
76	OL	ON	ON	OFF	ON	OFF	OFF	ON
77	OM	OFF	OFF	ON	ON	OFF	OFF	ON
78	ON	ON	OFF	ON	ON	OFF	OFF	ON
79	OO	OFF	ON	ON	ON	OFF	OFF	ON
80	OP	ON	ON	ON	ON	OFF	OFF	ON
81	OQ	OFF	OFF	OFF	OFF	ON	OFF	ON
82	OR	ON	OFF	OFF	OFF	ON	OFF	ON
83	OS	OFF	ON	OFF	OFF	ON	OFF	ON
84	OT	ON	ON	OFF	OFF	ON	OFF	ON
85	OU	OFF	OFF	ON	OFF	ON	OFF	ON
86	OV	ON	OFF	ON	OFF	ON	OFF	ON
87	OW	OFF	ON	ON	OFF	ON	OFF	ON
88	OX	ON	ON	ON	OFF	ON	OFF	ON

9189 Address Switch Settings (continued)

ADDRESS		SW3 SWITCHES						
LOCAL	HOST	1	2	3	4	5	6	7
89	oY	OFF	OFF	OFF	ON	ON	OFF	ON
90	oZ	ON	OFF	OFF	ON	ON	OFF	ON
91	o0	OFF	ON	OFF	ON	ON	OFF	ON
92	o1	ON	ON	OFF	ON	ON	OFF	ON
93	o2	OFF	OFF	ON	ON	ON	OFF	ON
94	o3	ON	OFF	ON	ON	ON	OFF	ON
95	o4	OFF	ON	ON	ON	ON	OFF	ON
96	o5	ON	ON	ON	ON	ON	OFF	ON
97	PA	OFF	OFF	OFF	OFF	OFF	ON	ON
98	PB	ON	OFF	OFF	OFF	OFF	ON	ON
99	PC	OFF	ON	OFF	OFF	OFF	ON	ON
100	PD	ON	ON	OFF	OFF	OFF	ON	ON
101	PE	OFF	OFF	ON	OFF	OFF	ON	ON
102	PF	ON	OFF	ON	OFF	OFF	ON	ON
103	PG	OFF	ON	ON	OFF	OFF	ON	ON
104	PH	ON	ON	ON	OFF	OFF	ON	ON
105	PI	OFF	OFF	OFF	ON	OFF	ON	ON
106	PJ	ON	OFF	OFF	ON	OFF	ON	ON
107	PK	OFF	ON	OFF	ON	OFF	ON	ON
108	PL	ON	ON	OFF	ON	OFF	ON	ON
109	PM	OFF	OFF	ON	ON	OFF	ON	ON
110	PN	ON	OFF	ON	ON	OFF	ON	ON
111	PO	OFF	ON	ON	ON	OFF	ON	ON
112	PP	ON	ON	ON	ON	OFF	ON	ON
113	PQ	OFF	OFF	OFF	OFF	ON	ON	ON
114	PR	ON	OFF	OFF	OFF	ON	ON	ON
115	PS	OFF	ON	OFF	OFF	ON	ON	ON
116	PT	ON	ON	OFF	OFF	ON	ON	ON
117	PU	OFF	OFF	ON	OFF	ON	ON	ON
118	PV	ON	OFF	ON	OFF	ON	ON	ON
119	PW	OFF	ON	ON	OFF	ON	ON	ON
120	PX	ON	ON	ON	OFF	ON	ON	ON
121	PY	OFF	OFF	OFF	ON	ON	ON	ON
122	PZ	ON	OFF	OFF	ON	ON	ON	ON
123	P0	OFF	ON	OFF	ON	ON	ON	ON
124	P1	ON	ON	OFF	ON	ON	ON	ON
125	P2	OFF	OFF	ON	ON	ON	ON	ON
126	P3	ON	OFF	ON	ON	ON	ON	ON
127	P4	OFF	ON	ON	ON	ON	ON	ON
128	P5	ON	ON	ON	ON	ON	ON	ON

Setting the Software Parameters

In addition to the DIP switches, the gateway uses software configuration parameters. Since the gateway has no direct user interface, the software parameters must be entered from the host or from a data collection device. The device can send configuration commands with an input device such as a scanner, or with an IRL program. Default values for all software parameters are listed in the 9189 Default Parameters table on the next page.

Using a Data Collection Device

You cannot use the gateway to communicate with the RF system and host computer until you configure its parameters. Therefore, to program the software parameters, you must connect the gateway to a reader or other data collection device that can provide input to the gateway. This device may be any of these Intermec products:

- JANUS 2010 Hand-Held Data Collection Computer
- 944X Portable Reader Series
- 9460 Portable Reader
- 951X Online Reader Series
- 9540 Industrial Terminal
- 9550 Transaction Manager
- 9560 Time and Attendance Terminal

Once the gateway is configured, you can remove the reader and connect the gateway to any other device.

9189 Default Parameters

Parameter	Default
Acknowledgment Delay	0 (40 ms)
Channel Search	0, 0 (924 MHz, disabled)
Channel Select*	0 (924 MHz)
Downline POL/SEL Delay	0 (40 ms)
Duty Cycle Percent	5 (50% duty cycle on)
Duty Cycle Period	10 (1 second)
Local Address*	0 (disabled)
Loopback	0 (disabled)
Network ID	000

9189 Default Parameters (continued)

Parameter	Default
Repeat Count	0 (no repeats)
Retry Limit	0 (3 retries)
RFNC/BRU Address	0 (controller 0, BRU 0)
RFPC Error Reporting Mode	0 (disabled)
Time Broadcast Receipt	0 (disabled)

*switch dependent

Using Configuration Command Strings

You can set the software parameters by sending configuration command strings to the gateway.

Formatting Command Strings

All command strings, whether they are from the host or a data collection device, must adhere to a specific format:

1. Before you enter a command string, you must put the gateway into Configuration mode by entering the Enter Configuration command (..$+).

2. Enter the configuration command and applicable data.

    For example, to set the hardware duty cycle to 60%, the command is RY6.

3. Terminate the string with the Exit Configuration command ($-).

Combining these three components produces a string similar to the following:

```
..$+RY6$-
```

The command string may contain more than one parameter. For example, to set the hardware duty cycle to 60% and the retry limit to 4, construct the following string:

```
..$+RY6RL4$-
```

Entering Command Strings

There are three ways to send command strings to the gateway. Use the method that best suits the situation.

Entering commands from the host   The host application can send command strings directly to any gateway in the radio frequency data collection (RFDC) network. Since the host cannot perform the initial configuration of a gateway, you can only use this method after the gateway is functional within the network. By using group addressing, the host can configure more than one gateway at a time.

Keying in commands   If the gateway is connected to a device with a keypad, such as a TRAKKER 944X, you can enter command strings directly from the keypad.

Scanning in commands   To set parameters one at a time, use the bar codes listed on the following pages. Some of the commands using variable data values require scanning more than one bar code.

Note: Before using a reader to configure the gateway, ensure that the Preamble A, Preamble B, and Postamble C buffers are clear. Failure to clear these buffers before configuration will cause the gateway to report an error.

Scan this label to clear the buffers:

Clear Preamble A, Preamble B, Postamble C

+.+++%

For example, scanning the labels for setting the RFNC/BRU Address places the gateway in Accumulate mode and enters the Enter Configuration and RFNC/BRU Address commands. You need to scan two numeric labels from the Full ASCII chart in Appendix A that correspond to the desired RFNC/BRU Address. The reader is taken out of Configuration and Accumulate modes. The complete command string is transmitted to the gateway.

Hint: To make the configuration process quick and consistent, print a single bar code label that contains all the software configuration parameters. This allows all parameters to be set with a single scan. If possible, affix this label to the side of the gateway so it is always available.

About 9189 Commands

This section describes the 9189 software commands.

Note: The Code 39 bar code labels in this chapter show an asterisk (*) at the beginning and end of the human-readable interpretation to represent the start and stop codes. If you are creating your own Code 39 bar code labels, you may not have to include the asterisks because your bar code utility may automatically supply them as the start/stop code.

Entering Configuration Mode

Purpose: Puts the gateway in Configuration mode. Must be the first characters in a batch configuration string.

Format: ..$+

Exiting Configuration Mode

Purpose: Exits Configuration mode and triggers a soft reset to update all parameters. Any data following this command will be ignored.

Format: $-

Default Configuration

Purpose: Resets all parameters to their factory-set values and invokes diagnostic procedures.

Note: All data buffered in memory will be lost when the Default Configuration command is executed.

Format: ..$+.+

Scan:

..$+.+

Resetting Software Drivers

Purpose: Reinitializes all software drivers.

Format: ..$+$-

Scan:

```
*..$+$-*
```

Listing the Current Configuration

Purpose: Displays the current values of all radio configuration parameters. The output is of the following format:

```
053441 Ver x.x
RHxxxRLxxRMxxRQxxRSxRTxx
RUxRVxRWxxxRXxxxRYxR0xR1
xR2xR3xR4xR5xR6xNM02xNM0
3x
```

Each parameter is described below.

RHxxx	Local address
RLxx	Retry Limit
RMxxx	Acknowledgment delay
RQxx	POL/SEL delay
RSx	Error Report mode
RTxx	RFNC address
RUx	Repeat Count
RVx	Frequency over which the device communicates.
RWxxx	Network ID
RXxxx	RF Duty Cycle
RYx	Hardware Duty Cycle
R0x-R6x	Enables or disables the channel the device can search for when its channel (RVx) is busy.
NM02x	RF Loopback Mode enable
NM03x	Time Broadcast Receipt enable

Format: ..$+RZ

Scan:

Exit Full ASCII

||||||||||||||||||||||||

-$

List Configuration

||||||||||||||||||||||||||||||||||||||

..$+RZ$-

Acknowledgment Delay

Purpose: Whenever the gateway sends a frame that requires a response from the controller, a timeout is set. The expected response must be received within this timeout.

Format: RM*data*

Where values for *data* are 0 to 100. The value of *data* is multiplied by 5 to determine the delay in milliseconds.

Default: 0 (optimizes setting to 40 ms)

Scan: 1. Scan these labels

Exit Full ASCII/Enter Accumulate

||||||||||||||||||||||||

-$+/

Acknowledgment Delay

||||||||||||||||||||||||||||

..$+RM

2. Scan a numeric value for *data* from the Full ASCII chart in Appendix A, or enter a number from the keypad of the data collection device.

3. Scan these labels.

Exit Configuration

||||||||| ||| |||| |||

$-

Exit Accumulate

|||||| |||||| ||| | |||

-/

Channel Select

Purpose: Determines the channel over which the 9189 communicates with the controller. The channel selected must match the one established for the 9189 on the base radio unit.

*Note: RV*data *determines the initial channel over which the gateway will send data. The R*data *command determines additional channels over which the gateway can channel search.*

Format: RV*data*

Where values for *data* are 0 through 6, corresponding to these frequencies:

0	924 MHz	4	912 MHz
1	921 MHz	5	909 MHz
2	918 MHz	6	906 MHz
3	915 MHz		

Default: 0 (924 MHz)

Scan: 1. Scan this label.

Exit Full ASCII

|||||| |||||| ||| | |||| |||

-$

2. Scan one of the labels below.

924 MHz

||||||||||||||||||||||||||||||||||||||||||||||||||||

..$+RV0$-

921 MHz

||||||||||||||||||||||||||||||||||||||||||||||||||||

..$+RV1$-

918 MHz

||||||||||||||||||||||||||||||||||||||||||||||||||||

..$+RV2$-

915 MHz

||||||||||||||||||||||||||||||||||||||||||||||||||||

..$+RV3$-

912 MHz

||||||||||||||||||||||||||||||||||||||||||||||||||||

..$+RV4$-

909 MHz

||||||||||||||||||||||||||||||||||||||||||||||||||||

..$+RV5$-

906 MHz

||||||||||||||||||||||||||||||||||||||||||||||||||||

..$+RV6$-

Downline POL/SEL Delay

Purpose: Specifies the length of time the gateway will wait between invoking communication events.

Format: RQ*data*

Where values of *data* are 0 to 50. The value of *data* is multiplied by 5 to obtain the delay in milliseconds.

Default: 0 (40 ms)

Scan: 1. Scan these labels.

Exit Full ASCII/Enter Accumulate

||||||||||||||||||||||||||||||

-$+/

Downline POL/SEL Delay

||||||||||||||||||||||||||||||

..$+RQ

2. Scan a numeric value for *data* from the Full ASCII chart in Appendix A, or enter a number from the keypad of the data collection device.

3. Scan these labels.

Exit Configuration

|||||||||||||||||

$-

Exit Accumulate

|||||||||||||

-/

Channel Search

Purpose: Determines the channel that the gateway can switch to if its own channel is busy.

Format: R*data1data2*

Values for *data1* are 0 through 6, and correspond to the following:

0	924 MHz	4	912 MHz
1	921 MHz	5	909 MHz
2	918 MHz	6	906 MHz
3	915 MHz		

Values for *data2* are 0 and 1, and correspond to the following:

0	Disable the channel
1	Enable the channel

Default: 0 for all channels

Scan: 1.   Scan the Exit Full ASCII label.

Exit Full ASCII

||█||█||██|||||||█|||

-$

2.   Scan the appropriate bar code.

Enable Channels   **Disable Channels**

924 MHz   924 MHz

..$+R01$-   *..$+R00$-*

921 MHz   921 MHz

..$+R11$-   *..$+R10$-*

918 MHz   918 MHz

..$+R21$-   *..$+R20$-*

915 MHz   915 MHz

..$+R31$-   *..$+R30$-*

912 MHz   912 MHz

..$+R41$-   *..$+R40$-*

909 MHz   909 MHz

..$+R51$-   *..$+R50$-*

906 MHz   906 MHz

..$+R61$-   *..$+R60$-*

Duty Cycle Percent

Purpose: The gateway can be duty cycled to conserve battery power. The longer the duty cycle, the longer the response delays the operator will experience. Duty cycle is expressed against a time base set by the RF Duty Cycle Period. For example, if the RF Duty Cycle Period is set to 1 second, a 30% duty cycle means the hardware is on for 300 ms and then off for 700 ms.

Format: RY*data*

Where values for *data* are 0 through 9.

0	100% duty cycle on	5	50% duty cycle on
1	90% duty cycle on	6	40% duty cycle on
2	80% duty cycle on	7	30% duty cycle on
3	70% duty cycle on	8	20% duty cycle on
4	60% duty cycle on	9	10% duty cycle on

Default: 5 (50% duty cycle off)

Scan: 1. Scan these labels.

Exit Full ASCII/Enter Accumulate

-$+/

RF Hardware Duty Cycle

..$+RY

2. Scan a numeric value for *data* from the Full ASCII chart in Appendix A, or enter a number from the keypad of the data collection device.

3. Scan these labels.

Exit Configuration

$-

Exit Accumulate

-/

Duty Cycle Period

Purpose: Specifies the duty cycle period.

Format: RX*data*

Where values for *data* are numeric with the range 1 through 100. The value of *data* is multiplied by 100 to obtain the RF Duty Cycle period in milliseconds.

Default: 10 (1 second)

Scan: 1. Scan these labels.

Exit Full ASCII/Enter Accumulate

||||||||||||||||||||||||||||||

-$+/

RF Duty Cycle Period

||||||||||||||||||||||||||||||||

..$+RX

2. Scan a numeric value for *data* from the Full ASCII chart in Appendix A, or enter a number from the keypad of the data collection device.

3. Scan these labels.

Exit Configuration

||||||||||||||||||||

$-

Exit Accumulate

||||||||||||||||||

-/

Loopback

Purpose: Causes all messages transmitted from the controller to loop back to the controller. Messages sent from a data collection device continue to transmit to the controller.

Format: NM02*data*

Where values for *data* are 0 through 1.

0   Disabled
1   Enabled

Default: 0

Network ID

Purpose: Each data collection device must have a Network ID so it knows which specific controller/BRU combination to communicate with.

Format: RW*data*

Where values for *data* are 000 through 254.

Default: 000

Scan: 1.   Scan these labels.

Exit Full ASCII/Enter Accumulate

||||||||||||||||||||||||||||||||

-$+/

Network ID

||||||||||||||||||||||||||||||||

..$+RW

2.   Scan a numeric value for *data* from the full ASCII chart in Appendix A, or enter a number from the keypad of the device.

3.   Scan these labels.

Exit Configuration

||||||||||||||||||||

$-

Exit Accumulate

||||||||||||||||||||

-/

Repeat Count

Purpose: For Intermec version 1.x RF systems only. Specifies the maximum number of repeat hops that are allowed. This prevents a message from being repeated indefinitely.

Format: RU*data*

Where values for *data* are numeric with a range of 0 to 7.

Default: 0 (no repeats)

Scan: 1.   Scan these labels.

Exit Full ASCII/Enter Accumulate

|||||||||||||||||||||||||||||||

-$+/

RF Repeat Count

|||||||||||||||||||||||||||||||||||||

..$+RU

2.   Scan a numeric value for *data* from the Full ASCII chart in Appendix A, or enter a number from the keypad of the data collection device.

3.   Scan these labels.

Exit Configuration

|||||||||||||||||||||

$-

Exit Accumulate

|||||||||||||||||||

-/

Retry Limit

Purpose: Sets the number of times the gateway will attempt to send a packet. With each attempt, a counter is incremented. Once the counter reaches the retry limit, an error is reported.

Format: RL*data*

Where values for *data* are 0 through 15.

Default: 0 (optimizes setting to 3 retries)

Scan: 1. Scan these labels.

Exit Full ASCII/Enter Accumulate

||||||||||||||||||||||||||||||

-$+/

RF Retry Limit

||||||||||||||||||||||||||||||

..$+RL

2. Scan a numeric value for *data* from the Full ASCII chart in Appendix A, or enter a number from the keypad of the data collection device.

3. Scan these labels.

Exit Configuration

||||||||||||||||||||

$-

Exit Accumulate

||||||||||||||||||

-/

RFNC/BRU Address

Purpose: For Intermec version 1.x RF systems only. Specifies which RFNC and BRU address the gateway communicates with. There are 64 BRU addresses; each network controller can support two BRUs.

Format: RT*data*

Where values for *data* are numeric with a value of 0 through 63, corresponding to the addresses listed in the table on the next page.

Default: 0 (RFNC 0, BRU 0)

Scan: 1. Scan these labels.

Exit Full ASCII/Enter Accumulate

||||||||||||||||||||||||||

-$+/

RFNC/BRU Address

|||||||||||||||||||||||||||||

..$+RT

2. Scan a numeric decimal value for *data* from the Full ASCII chart in Appendix A, or enter a number from the keypad of the data collection device.

3. Scan these labels.

Exit Configuration

||||||||||||||||

$-

Exit Accumulate

|||||||||||||||

-/

Controller/BRU Addresses

<data>	Hex Address	Controller	BRU Port	<data>	Hex Address	Controller	BRU Port
0	A1	0	Dnln 1	32	C1	16	Dnln 1
1	A2	0	Dnln 2	33	C2	16	Dnln 2
2	A3	1	Dnln 1	34	C3	17	Dnln 1
3	A4	1	Dnln 2	35	C4	17	Dnln 2
4	A5	2	Dnln 1	36	C5	18	Dnln 1
5	A6	2	Dnln 2	37	C6	18	Dnln 2
6	A7	3	Dnln 1	38	C7	19	Dnln 1
7	A8	3	Dnln 2	39	C8	19	Dnln 2
8	A9	4	Dnln 1	40	C9	20	Dnln 1
9	AA	4	Dnln 2	41	CA	20	Dnln 2
10	AB	5	Dnln 1	42	CB	21	Dnln 1
11	AC	5	Dnln 2	43	CC	21	Dnln 2
12	AD	6	Dnln 1	44	CD	22	Dnln 1
13	AE	6	Dnln 2	45	CE	22	Dnln 2
14	AF	7	Dnln 1	46	CF	23	Dnln 1
15	B0	7	Dnln 2	47	D0	23	Dnln 2
16	B1	8	Dnln 1	48	D1	24	Dnln 1
17	B2	8	Dnln 2	49	D2	24	Dnln 2
18	B3	9	Dnln 1	50	D3	25	Dnln 1
19	B4	9	Dnln 2	51	D4	25	Dnln 2
20	B5	10	Dnln 1	52	D5	26	Dnln 1
21	B6	10	Dnln 2	53	D6	26	Dnln 2
22	B7	11	Dnln 1	54	D7	27	Dnln 1
23	B8	11	Dnln 2	55	D8	27	Dnln 2
24	B9	12	Dnln 1	56	D9	28	Dnln 1
25	BA	12	Dnln 2	57	DA	28	Dnln 2
26	BB	13	Dnln 1	58	DB	29	Dnln 1
27	BC	13	Dnln 2	59	DC	29	Dnln 2
28	BD	14	Dnln 1	60	DD	30	Dnln 1
29	BE	14	Dnln 2	61	DE	30	Dnln 2
30	BF	15	Dnln 1	62	DF	31	Dnln 1
31	C0	15	Dnln 2	63	E0	31	Dnln 2

RFPC Error Reporting Mode

Purpose: Specifies whether the gateway should report internal errors to the network controller or the data collection device. These error messages can be reported by the gateway:

Error Message	Code
Xbar NAK Retry Error	!:A
Xbar Bad LRC Error	!:B
Xbar Bad SOM Error	!:C
Xbar Bad RX Data	!:D
Xbar Overflow Error	!:E
Xbar Parity Error	!:F
Xbar Framing Error	!:G
Xbar Timeout Error	!:H
Xbar POL Retry Error	!:I
Xbar SEL Retry Error	!:J
Xbar Protocol Error	!:K
RFDL Underrun Error	!:O
RF Output Buffer Full	!:P
RF Input Buffer Full	!:Q
Bad Configuration Data	!:R
RFPC Default/Reset	!:S
Low NiCad Battery	!:T
Low Lithium Battery	!:U
RFPC Illegal Reset	!:V

Format: RS*data*

Where values for *data* are 0 through 3.

0   Disabled

1   Error beep and protected message to data collection device

2   Data collection device receives coded message

3   Host receives coded message

Default: 0 (Disabled)

Scan: 1.   Scan this label.

Exit Full ASCII

||||||||||||||||||||||||

-$

2.   Scan one of these labels.

Disabled

||||||||||||||||||||||||||||||||||||||||||||

..$+RS0$-

Error Beep and Protected Message to Device

||||||||||||||||||||||||||||||||||||||||||||

..$+RS1$-

Device Receives Coded Message

||||||||||||||||||||||||||||||||||||||||||||

..$+RS2$-

Host Receives Coded Message

||||||||||||||||||||||||||||||||||||||||||||

..$+RS3$-

Time Broadcast Receipt

Purpose: Enables or disables the ability of the gateway to receive the time broadcast from the controller.

Format: NM03*data*

Where values for *data* are 0 through 1.

0   Disabled
1   Enabled

Default: 0

A

Appendix A

This appendix lists each character in the full ASCII chart with a multiple-read Code 39 bar code label.

ASCII Bar Code Labels

Note: The Code 39 bar code labels in this chapter show an asterisk (*) at the beginning and end of the human-readable interpretation to represent the start and stop codes. If you are creating your own Code 39 bar code labels, you may not have to include the asterisks because your bar code utility may automatically supply them as the start/stop code.

To use these labels, you must set the gateway in Full ASCII Mode. Scan this label to enter Full ASCII Mode:

Enter Full ASCII Mode

‖‖‖‖‖‖‖‖‖‖‖‖‖

+$

Scan this label to exit full ASCII mode:

Exit Full ASCII Mode

‖‖‖‖‖‖‖‖‖‖‖‖‖

-$

Control Characters

ACK

$F

DEL

%T

FS

%B

SOH

$A

BEL

$G

DLE

$P

GS

%C

STX

$B

BS

$H

EM

$Y

HT

$I

SUB

$Z

CAN

$X

ENQ

$E

LF

$J

SYN

$V

CR

$M

EOT

$D

NAK

$U

US

%E

DC1

$Q

ESC

%A

NUL

%U

VT

$K

DC2

$R

ETB

$W

RS

%D

DC3

$S

ETX

$C

SI

$O

DC4

$T

FF

$L

SO

$N

Symbols

!
||||||||||||||||||||
/A

'(apostrophe)
||||||||||||||||||||
/G

<
||||||||||||||||||||
%G

/
||||||||||||||||||||
/O

(comma)
||||||||||||||||||||
/L

*
||||||||||||||||||||
/J

|
||||||||||||||||||||
%Q

%
||||||||||||||||||||
/E

"(quotationmarks)
||||||||||||||||||||
/B

(
||||||||||||||||||||
/H

=
||||||||||||||||||||
%H

&
||||||||||||||||||||
/F

-(dash)
||||||||||||||||||||
/M

+
||||||||||||||||||||
/K

}
||||||||||||||||||||
%R

)
||||||||||||||||||||
/I

#
||||||||||||||||||||
/C

^
||||||||||||||||||||
%N

>
||||||||||||||||||||
%I

: (colon)
||||||||||||||||||||
/Z

.(period)
||||||||||||||||||||
/N

]
||||||||||||||||||||
%M

~(tilde)
||||||||||||||||||||
%S

° (grave)
||||||||||||||||||||
%W

$
||||||||||||||||||||
/D

_(underline)
||||||||||||||||||||
%O

?
||||||||||||||||||||
%J

; (semicolon)
||||||||||||||||||||
%F

{
||||||||||||||||||||
* %P*

@
||||||||||||||||||||
%V

\
||||||||||||||||||||
%L

Space
||||||||||||||||||||
* *

[
||||||||||||||||||||
* %K*

Numbers

0

0

3

3

6

6

9

9

1

1

4

4

7

7

2

2

5

5

8

8

Uppercase Letters

A
|||||||||||||||||
A

H
|||||||||||||||||
H

O
|||||||||||||||||
O

V
|||||||||||||||||
V

B
|||||||||||||||||
B

I
|||||||||||||||||
I

P
|||||||||||||||||
P

W
|||||||||||||||||
W

C
|||||||||||||||||
C

J
|||||||||||||||||
J

Q
|||||||||||||||||
Q

X
|||||||||||||||||
X

D
|||||||||||||||||
D

K
|||||||||||||||||
K

R
|||||||||||||||||
R

Y
|||||||||||||||||
Y

E
|||||||||||||||||
E

L
|||||||||||||||||
L

S
|||||||||||||||||
S

Z
|||||||||||||||||
Z

F
|||||||||||||||||
F

M
|||||||||||||||||
M

T
|||||||||||||||||
T

G
|||||||||||||||||
G

N
|||||||||||||||||
N

U
|||||||||||||||||
U

Lowercase Letters

a

||||||||||||||||||||

+A

b

||||||||||||||||||||

+B

c

||||||||||||||||||||

+C

d

||||||||||||||||||||

+D

e

||||||||||||||||||||

+E

f

||||||||||||||||||||

+F

g

||||||||||||||||||||

+G

h

||||||||||||||||||||

+H

i

||||||||||||||||||||

+I

j

||||||||||||||||||||

+J

k

||||||||||||||||||||

+K

l

||||||||||||||||||||

+L

m

||||||||||||||||||||

+M

n

||||||||||||||||||||

+N

o

||||||||||||||||||||

+O

p

||||||||||||||||||||

+P

q

||||||||||||||||||||

+Q

r

||||||||||||||||||||

+R

s

||||||||||||||||||||

+S

t

||||||||||||||||||||

+T

u

||||||||||||||||||||

+U

v

||||||||||||||||||||

+V

w

||||||||||||||||||||

+W

x

||||||||||||||||||||

+X

y

||||||||||||||||||||

+Y

z

||||||||||||||||||||

+Z