# ADVANCED DATA FORMATTING (ADF) PROGRAMMER GUIDE

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For the complete Zebra hardware product warranty statement, go to:

http://www.zebra.com/warranty.

## **Revision History**

Changes to the original manual are listed below:

Change	Date	Description
-01 Rev. A	10/2004	Initial release.
-01 Rev. B	5/2006	Correct rule setup instruction.
-02 Rev. A	4/2009	Motorola rebranding, add beeper indications, add new imager-supported symbology bar codes, add specific string search and new move cursor options bar codes.
-03 Rev. A	4/2011	Add Korean 3 of 5, RFID, and Parsed Driver's License code type criteria bar codes.
-04 Rev. A	4/2015	Add Han Xin, OCR, GS1 DataMatrix and GS1 QR type bar codes; add Bar Code Encoding Scheme (Code Page) action bar codes; Zebra rebranding.

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## **ABOUT THIS GUIDE**

## Introduction

The Advanced Data Formatting Guide provides bar codes that allow advanced programming of a Zebra scanner, and instructions for using them.

## **Chapter Descriptions**

- Chapter 1, Advanced Data Formatting (ADF) describes how to customize scanned data before transmitting to the host.
- Chapter 2, ADF Bar Codes contains the bar codes for advanced data formatting.

## **Notational Conventions**

The following conventions are used in this document:

- Bullets (•) indicate:
  - · action items
  - · lists of alternatives
  - lists of required steps that are not necessarily sequential.
- Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.



NOTE This symbol indicates something of special interest or importance to the reader. Failure to read the note will not result in physical harm to the reader, equipment or data.



CAUTION This symbol indicates that if this information is ignored, the possibility of data or material damage may

### **Related Documents**

The *Quick Reference Guide* and *Product Reference Guide* for Zebra scanners provide general information to help get started and use the scanner. They include basic set up, connection, and operation instructions.

For the latest version of this guide and all Zebra guides, go to: http://www.zebra.com/support.

## **Service Information**

If you have a problem using the equipment, contact your facility's technical or systems support. If there is a problem with the equipment, they will contact the Zebra Technologies Global Customer Support Center at: http://www.zebra.com/support.

When contacting Zebra Technologies support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software type and version number.

Zebra responds to calls by e-mail, telephone or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Technologies support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your business product from a Zebra Technologies business partner, contact that business partner for support.

# CHAPTER 1 ADVANCED DATA FORMATTING

### Introduction

Advanced Data Formatting (ADF) is a means of customizing data before transmission to the host device. Use ADF to edit scan data to suit requirements.

Implement ADF by scanning a related series of bar codes in *Chapter 2, ADF Bar Codes*, or by installing the 123Scan utility (see the scanner's *Product Reference Guide*) which allows programming the device with ADF rules.

Avoid using ADF formatting with bar codes containing more than 60 characters. To add a prefix or suffix value for such bar codes, use the **Add Prefix/Suffix** setting from the scanner's *Product Reference Guide*. Using ADF with longer bar codes transmits the bar code in segments of length 252 or less (depending on the host selected), and applies the rule to each segment.

## **Rules: Criteria Linked to Actions**

ADF uses **rules** to customize data. These rules perform detailed actions when the data meets certain criteria. One rule may consist of single or multiple criteria applied to single or multiple actions.

For instance, a data formatting rule could be:

Criteria: When scan data is Code 39, length 12, and data at the start position is the string "129",

**Actions**: pad all sends with zeros to length 8,

send all data up to X,

send a space.

Scanning a Code 39 bar code of 1299X1559828 transmits the following: 00001299<space>. If you scan a Code 39 bar code of 1299X15598, this rule is ignored because the bar code didn't meet the length criteria.

The rule specifies the editing conditions and requirements before data transmission occurs.

## **Using ADF Bar Codes**

When programming a rule, make sure the rule is logically correct. Plan ahead before scanning.

To program each data formatting rule:

- Start the Rule. Scan the Begin New Rule bar code on page 2-3.
- Specify Criteria. Scan the bar codes for all pertinent criteria. Criteria can include code type (e.g., Code 128), code length, or data that contains a specific character string (e.g., the digits "129"). See Criteria on page 2-10.
- Select Actions. Scan all actions related to, or affecting, these criteria. The actions of a rule specify how
  to format the data for transmission. See Actions on page 2-63.
- Save the Rule. Scan the Save Rule bar code on page 2-4. This places the rule in the "top" position in the rule buffer.
- Use special-purpose bar codes to correct errors during this process. Erase criteria, actions, and entire rules by scanning the appropriate bar code starting on page 2-4.

## **ADF Bar Code Menu Example**

This section provides an example of how to enter ADF rules for scan data.

An auto parts distribution center wants to encode manufacturer ID, part number, and destination code into their own Code 128 bar codes. The distribution center also has products that carry UPC bar codes, placed there by the manufacturer. The Code 128 bar codes have the following format:

#### **MMMMMPPPPPDD**

Where: M = Manufacturer ID

P = Part Number
D = Destination Code

The distribution center uses a PC with dedicated control characters for manufacturer ID <CTRL M>, part number <CTRL P>, and destination code <CTRL D>. At this center the UPC data is treated as manufacturer ID code.

The following rules must be entered:

When scanning data of code type Code 128, send the next 5 characters, send the manufacturer ID key <CTRL M>, send the next 5 characters, send the part number key <CTRL P>, send the next 2 characters, send the destination code key <CTRL D>.

When scanning data of code type UPC/EAN, send all data, send the manufacturer ID key <CTRL M>.

To enter these rules, use the following steps:

## **Rule 1: The Code 128 Scanning Rule**

Step	Bar Code	On Page	Beep Indication
1	Begin New Rule	2-3	High High
2	Code 128	2-12	High High
3	Send next 5 characters	2-66	High High
4	Send <ctrl m=""></ctrl>	2-134	High High
5	Send next 5 characters	2-66	High High
6	Send <ctrl p=""></ctrl>	2-136	High High
7	Send next 2 characters	2-64	High High
8	Send <ctrl d=""></ctrl>	2-130	High High
9	Save Rule	2-4	High Low High Low

## **Rule 2: The UPC Scanning Rule**

Step	Bar Code	On Page	<b>Beep Indication</b>
1	Begin New Rule	2-3	High High
2	UPC/EAN	2-15	High High
3	Send all remaining data	2-63	High High
4	Send <ctrl m=""></ctrl>	2-134	High High
5	Save Rule	2-4	High Low High Low

To correct any errors made while entering this rule, scan the *Quit Entering Rules bar code on page 2-6*. If you already saved the rule, scan the *Erase Previously Saved Rule bar code on page 2-5*.

### **Alternate Rule Sets**

Group ADF rules into one of four alternate sets which you can turn on and off when needed. This is useful to format the same message in different ways. For example, a Code 128 bar code contains the following information:

Class (2 digits), Stock Number (8) digits, Price (5 digits)

The bar code might look like this:

245671243701500

where:

Class = 24

Stock Number = 56712437

Price = 01500

Ordinarily, data transmits as follows:

24 (class key)

56712437 (stock key)

01500 (enter key)

But, when there is a sale, send only the following:

24 (class key)

56712437 (stock key)

and the cashier keys the price manually.

To implement this, first enter an ADF rule that applies to the normal situation, such as:

Scan Rule Belongs to Set 1. When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key, send the data that remains, send the Enter key.

The "sale" rule may look like this:

Scan Rule Belongs to Set 2. When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key.

To switch between the two sets of rules, program a "switching rule" that specifies the type of bar code to be scanned to switch between the rule sets. For example, in the case of the "sale" rule above, the rule programmer wants the cashier to scan the bar code "M" before a sale. To do this, enter the following rule:

When scanning a bar code of length 1 that begins with "M", select rule set number 1.

Program another rule to switch back.

When scanning a bar code of length 1 that begins with "N", turn off rule set number 1.

Or include the switching back rules in the "sale" rule:

When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key, turn off rule set 1.

For optimal results, scan the *Disable All Rule Sets bar code on page 2-9* after programming a rule belonging to an alternate rule set.

In addition to enabling and disabling rule sets within the rules, enable or disable them by scanning the appropriate bar codes on *page 2-7*.

## **Rules Hierarchy (in Bar Codes)**

The order of programming individual rules is important. Program the most general rule first.

All programmed rules are stored in a buffer. As they are programmed, they are stored at the "top" of a rules list. If you create three rules, the list is configured as follows:

Third Rule

Second Rule

First Rule

When you scan data, the rules list is checked from top to bottom to determine if the criteria matches (and therefore, if the actions occur). Input is modified into the data format specified by the first matching set of criteria it finds. Be sure to program the most general rule first.

For example, if the THIRD rule states:

When scanning a bar code of any length, send all data, then send the ENTER key.

and the SECOND rule states:

When scanning a Code 128 bar code of length 12, send the first four characters, then send the ENTER key, then send all remaining data.

and you scan a Code 128 bar code of length 12, the THIRD rule applies and the SECOND rule appears to not function.

Note that using the standard data editing functions also creates ADF rules. Scan options are entered as ADF rules, and the previous hierarchy also applies to them. For the device, this applies to prefix/suffix programming in the **Scan Data Transmission Format** parameter in the scanner *Product Reference Guide*.

These rules reside in the same "rule list" as ADF rules, so the order of their creation is also important.

#### **Default Rules**

Every unit has a default rule to send all scan data. Units with custom software can have one or more default rules burned in. The rules hierarchy checks user programmable rules first, then the default rules. Disable default rules by entering the following general rule in the user programmable buffer:

When receiving scan data, send all data.

Since this rule always applies, ADF never enters the default rules.

## **Beeper Indications**

The decoding device emits the beeps indicated in *Table 1-1* during ADF programming. Indications may vary depending on the device.

Table 1-1 ADF Programming Beeper Indications

Beeper Sequenc	Indication
High/low beeps	Enter another digit. Add leading zeros to the front if necessary.
Low/low beeps	Enter another alphabetic character or scan the End of Message bar code.
High/high beeps	Enter another criterion or action, or scan the Save Rule bar code.
High/low/high/low beeps	Rule saved. Rule entry mode exited.
High/low/low beeps	All criteria or actions cleared for current rule, continue entering rule.
Low beep	Delete last saved rule. The current rule is left intact.
Low/high/high beeps	All rules are deleted.
Low/high/low/high beeps	Out of rule memory. Erase some existing rules, then try to save rule again.
Low/high/low beeps	Cancel rule entry. Rule entry mode exited because of an error or the user asked to exit rule entry.
Low/high beeps	Entry error, wrong bar code scanned, or criteria/action list is too long for a rule. Re-enter criterion or action.



## **CHAPTER 2 ADF BAR CODES**

## **ADF Bar Code Reference Table**

Table 2-1 lists the bar codes available through ADF.

Table 2-1 ADF Bar Codes

Parameter	Page Number
Special Commands	2-3
Pause Duration	2-3
Begin New Rule	2-3
Save Rule	2-4
Erase	2-4
Quit Entering Rules	2-6
Disable Rule Set	2-7
Criteria	2-10
Code Types	2-10
Code Lengths	2-38
Specific String at Start	2-53
Specific String, Any Location	2-54
Specific String Search (not supported by all devices)	2-54
Any Message OK	2-54
Numeric Keypad	2-55
Rule Belongs To Set	2-61

Table 2-1 ADF Bar Codes (Continued)

Parameter	Page Number
Actions	2-63
Send Data	2-63
Send Data Up To Character	2-63
Send All Data That Remains	2-63
Send Next Character	2-64
Setup Field(s)	2-74
Move Cursor	2-75
Send Pause	2-79
Skip Ahead	2-80
Skip Back	2-85
Send Preset Value	2-90
Modify Data	2-91
Remove All Spaces	2-91
Crunch All Spaces	2-91
Stop Space Removal	2-92
Remove Leading Zeros	2-92
Stop Zero Removal	2-93
Pad Data with Spaces	2-94
Pad Data with Zeros	2-110
Beeps	2-126
Send Keystroke (Control Characters and Keyboard Characters)	2-128
Keyboard Characters	2-144
Send ALT Characters	2-192
Send Keypad Characters	2-208
Send Function Key	2-226
Send Right Control Key	2-253
Send Graphic User Interface (GUI) Characters	2-254
Turn On/Off Rule Sets	2-297
Bar Code Encoding Scheme Specification (Code Pages)	2-272
Alphanumeric Keyboard	2-301
End of Message	2-334

## **Special Commands**

### **Pause Duration**

This parameter, along with *Send Pause on page 2-79*, inserts a pause in the data transmission. Set the pause by scanning a two-digit number (i.e., two bar codes) representing a 0.1 second interval in the range of 0.1 to 9.9. For example, scan bar codes **0** and **1** to insert a 0.1 second pause; **0** and **5** to insert a 0.5 second delay. The default is 1 second. See *Numeric Keypad on page 2-55*. To correct an error or change a selection, scan *Cancel on page 2-60*.



**Pause Duration** 

## **Begin New Rule**

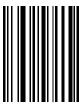
Scan the bar code below to start entering a new rule.



**Begin New Rule** 

## **Save Rule**

Scan the bar code below to save the rule.



Save Rule

## **Erase**

Use these bar codes to erase criteria, actions, or rules.



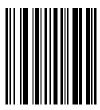
**Erase Criteria And Start Again** 

## **Erase (continued)**

Use these bar codes to erase criteria, actions, or rules.



**Erase Actions And Start Again** 



**Erase Previously Saved Rule** 

## **Erase (continued)**

Use these bar codes to erase criteria, actions, or rules.



**Erase All Rules** 

## **Quit Entering Rules**

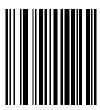
Scan the bar code below to quit entering rules.



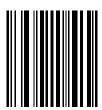
**Quit Entering Rules** 

## **Disable Rule Set**

Use these bar codes to disable rule sets.



Disable Rule Set 1



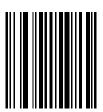
Disable Rule Set 2

## **Disable Rule Set (continued)**

Use these bar codes to disable rule sets.



**Disable Rule Set 3** 



Disable Rule Set 4

## **Disable Rule Set (continued)**

Use these bar codes to disable rule sets.



**Disable All Rule Sets** 

## **Criteria**

## **Code Types**

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



Code 39



Codabar

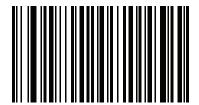
Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



GS1 DataBar-14



**GS1 DataBar Limited** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**GS1 DataBar Expanded** 



Code 128

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



Discrete 2 OF 5

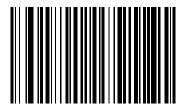


IATA 2 of 5

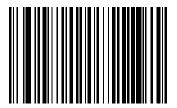
Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



Interleaved 2 of 5



Code 93

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**UPC-A** 



**UPC-E** 

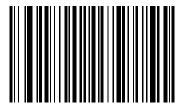
Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



EAN-8



**EAN-13** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**ISSN** 



MSI

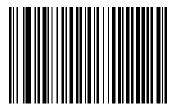
Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



GS1-128

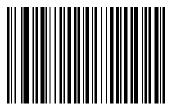


UPC-E1

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**Bookland EAN** 



**Trioptic Code 39** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



Code 11



Code 32

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**ISBT 128** 



**Coupon Code** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



Chinese 2 of 5



Matrix 2 of 5

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



Korean 3 of 5

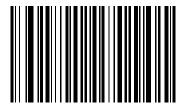
Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**US Postnet** 



**US Planet** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**UK Postal** 



Japan Postal

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**Australian Postal** 



**Netherlands KIX Code** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**USPS 4CB/One Code/Intelligent Mail** 



**UPU FICS Postal** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**PDF417** 



**MicroPDF** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**Macro PDF** 



**Macro MicroPDF** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



MaxiCode



**Data Matrix** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**QR Code** 



MicroQR

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**TLC 39** 



**UPC/EAN Composites** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**GS1 DataBar and EAN128 Composites** 



Aztec

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**Aztec Rune** 



Han Xin

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.

When selecting composite bar codes, enable AIM IDs if parsing UPC or EAN composite data, or data from an application that uses symbol separators.



**Parsed Driver's License** 



**NOTE** Only use this bar code to create rules on parsed driver's license data when configured for Embedded Driver's License Parsing.



**OCR** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



**RFID Raw** 



**RFID URI** 

Select all code types to be affected by the rule. Scan all selected codes in succession, before selecting other criteria. *To select all code types, do not scan any code type*.



**NOTE** Not all code types are supported by every product.



GS1 QR



**GS1 Datamatrix** 

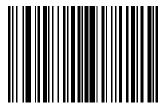
## **Code Lengths**



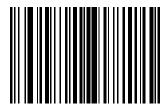
1 Character



2 Characters



3 Characters



4 Characters



**5 Characters** 



**6 Characters** 



7 Characters



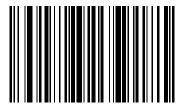
8 Characters



9 Characters



10 Characters



11 Characters



12 Characters



13 Characters



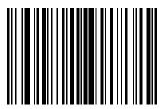
14 Characters



15 Characters



16 Characters



17 Characters



18 Characters



19 Characters



20 Characters



21 Characters



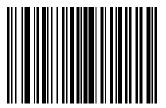
22 Characters



23 Characters



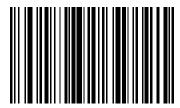
24 Characters



25 Characters



26 Characters



27 Characters



28 Characters



29 Characters



30 Characters

#### **Message Containing A Specific Data String**

Use this feature to select whether the formatting affects data that begins with a specific character or data string, or contains a specific character or data string.

There are five features:

- Specific String at Start
- Specific String, Any Location
- Specific String Search (not supported by all devices)
- Any Message OK
- Rule Belongs to Set

#### **Specific String at Start**

- 1. Scan the following bar code.
- 2. Scan the bar codes representing the desired character or characters (up to a total of 8) using the *Alphanumeric Keyboard on page 2-301*.
- 3. Scan End of Message on page 2-334.



**Specific String At Start** 

#### **Specific String, Any Location**

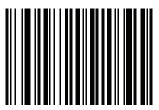
- 1. Scan the following bar code.
- 2. Enter a location by scanning a two-digit number representing the **position** (use a leading "zero" if necessary) using the *Numeric Keypad on page 2-55*.
- 3. Scan the bar codes representing the desired character or characters (up to a total of 8) using the *Alphanumeric Keyboard on page 2-301*.
- 4. Scan End of Message bar code on page 2-334.



**Specific String Any Location** 

#### Specific String Search (not supported by all devices)

- 1. Scan the following bar code.
- 2. Scan the bar codes representing the desired character or characters (up to a total of 10) using the *Alphanumeric Keyboard on page 2-301*.
- 3. Scan End of Message bar code on page 2-334.



**Specific String Search** 

#### **Any Message OK**

Do not scan a bar code to format all selected code types, regardless of information contained.

## **Numeric Keypad**

Do not confuse bar codes on this page with those on the alphanumeric keyboard.



U

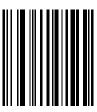


## **Numeric Keypad (continued)**

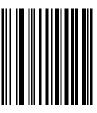
Do not confuse bar codes on this page with those on the alphanumeric keyboard.



2



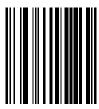
Do not confuse bar codes on this page with those on the alphanumeric keyboard.



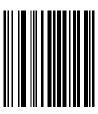
4



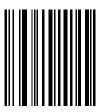
Do not confuse bar codes on this page with those on the alphanumeric keyboard.



6



Do not confuse bar codes on this page with those on the alphanumeric keyboard.



8



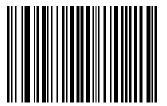
Do not confuse bar codes on this page with those on the alphanumeric keyboard.



Cancel

### **Rule Belongs To Set**

Select the set to which a rule belongs. There are four possible rule sets. See *Alternate Rule Sets on page 1-3* for more information about rule sets.



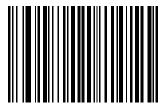
**Rule Belongs To Set 1** 



Rule Belongs To Set 2

### Rule Belongs To Set (continued)

Select the set to which a rule belongs. There are four possible rule sets. See *Alternate Rule Sets on page 1-3* for more information about rule sets.



**Rule Belongs To Set 3** 



**Rule Belongs To Set 4** 

### **Actions**

Select how to format the data for transmission...



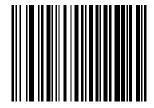
NOTE If specifying a bar code encoding scheme in the ADF rule, ensure the encoding scheme is the first action in order to ensure the UTF-8 bar code is converted before the rules apply. See Bar Code Encoding Scheme Specification (Code Pages) on page 2-272.

### **Send Data**

Send all data that follows, send all data up to a specific character selected from the Alphanumeric Keyboard on page 2-301, or send the next X characters. Note that only bar codes for **Send Next 1** to **20** appear here, and can be scanned multiple times to send values greater then 20. For instance, to send the next 28 characters, scan Send Next 20 Characters, then Send Next 8 Characters.



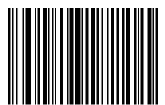
Send Data Up To Character



**Send All Data That Remains** 



**Send Next Character** 



**Send Next 2 Characters** 



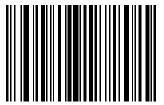
**Send Next 3 Characters** 



**Send Next 4 Characters** 



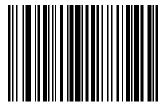
**Send Next 5 Characters** 



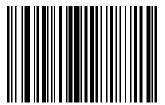
**Send Next 6 Characters** 



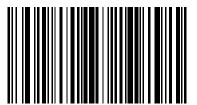
**Send Next 7 Characters** 



**Send Next 8 Characters** 



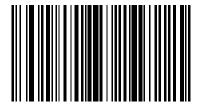
**Send Next 9 Characters** 



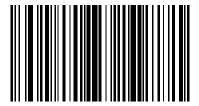
**Send Next 10 Characters** 



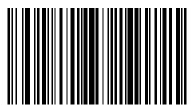
**Send Next 11 Characters** 



**Send Next 12 Characters** 



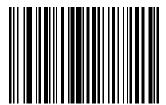
**Send Next 13 Characters** 



**Send Next 14 Characters** 



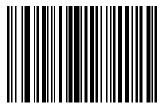
**Send Next 15 Characters** 



**Send Next 16 Characters** 



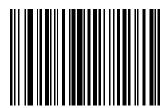
**Send Next 17 Characters** 



**Send Next 18 Characters** 



**Send Next 19 Characters** 



**Send Next 20 Characters** 

# Setup Field(s)

 Table 2-2
 Setup Field(s) Definitions

Parameter	Description	Page
Move Cursor		ı
Move Cursor To a Character	Scan Move Cursor To Character, then any printable ASCII character from the Alphanumeric Keyboard on page 2-301. This moves the cursor to the position after the matching character. If the character is not there, the rule fails and ADF tries the next rule.	2-75
Move Cursor to Start of Data	Scan this bar code to move cursor to the beginning of the data.	2-76
Move Cursor Past a Character	This action moves the cursor past all sequential occurrences of a selected character. For example, if the selected character is 'A', then the cursor moves past 'A', 'AA', 'AAA', etc. Scan <i>Move Cursor Past Character</i> , then select a character from the <i>Alphanumeric Keyboard</i> . If the character is not there, the cursor does not move (i.e., has no effect).	2-76
Move Cursor Past a Specific String*	This action moves the cursor past the first occurrence of a selected string. Scan Move Cursor Past Specific String (not supported by all devices), then select the character(s) (up to 10) using the Alphanumeric Keyboard. Scan the End of Message bar code on page 2-334.	2-77
Move Cursor to Specific String and Replace*	This action moves the cursor to the first occurrence of a selected string and replaces the string with another user-defined string. Scan Move Cursor to Specific String and Replace (not supported by all devices), then enter an alphanumeric string representing the character(s) (up to 10) to match and delete using the Alphanumeric Keyboard. Scan the End of Message bar code on page 2-334. Enter another alphanumeric string representing the character(s) (up to 10) to insert using the Alphanumeric Keyboard. Scan End of Message.	2-77
Move Cursor to Last Occurrence of String and Replace All*	This action replaces all occurrences of a selected string with another user-defined string, and moves the cursor to the beginning of the last occurrence. Scan Move Cursor to Last Occurrence of String and Replace All (not supported by all devices), then enter an alphanumeric string representing the character(s) (up to 10) to match and delete using the Alphanumeric Keyboard. Scan the End of Message bar code on page 2-334. Enter another alphanumeric string representing the character(s) (up to 10) to insert using the Alphanumeric Keyboard. Scan End of Message.	2-78
Skip to End*	Scan Skip to End (not supported by all devices) to move cursor to the end of the data.	2-78

 Table 2-2
 Setup Field(s) Definitions (Continued)

Parameter	Description	Page
Skip Ahead "N" Characters	Scan one of these bar codes to select the number of positions ahead to move the cursor.	2-80
Skip Back "N" Characters	Scan one of these bar codes to select the number of positions back to move the cursor.	2-85
Send Preset Value	Send Values 1 through 6 by scanning the appropriate bar code. Set these values using the prefix/suffix values in the scanner's  Product Reference Guide.  Value 1 = Scan Suffix  Value 2 = Scan Prefix  Values 3-6 are not applicable	2-85

<sup>\*</sup>Not supported by all devices.

### **Move Cursor**

Scan one of the following bar codes to move the cursor in relation to a specified character. Then enter a character by scanning a bar code from the *Alphanumeric Keyboard on page 2-301*.



**NOTE** If there is no match and the rule fails, the next rule is checked.



**Move Cursor To Character** 

# **Setup Field(s) (continued)**



**Move Cursor To Start** 

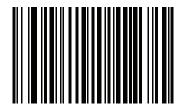


**Move Cursor Past Character** 

## Setup Field(s) (continued)

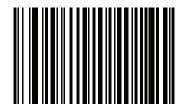


Move Cursor Past Specific String (not supported by all devices)



Move Cursor to Specific String and Replace (not supported by all devices)

## **Setup Field(s) (continued)**



Move Cursor to Last Occurrence of String and Replace All (not supported by all devices)



Skip to End (not supported by all devices)

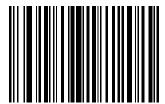
### **Send Pause**

Scan the bar code below to insert a pause in the transmission of data. *Pause Duration on page 2-3* controls the length of this pause.

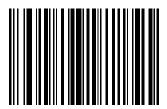


**Send Pause** 

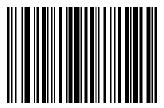
## **Skip Ahead**



Skip Ahead 1 Character



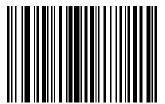
**Skip Ahead 2 Characters** 



**Skip Ahead 3 Characters** 



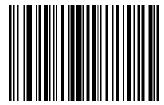
**Skip Ahead 4 Characters** 



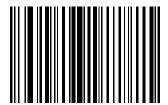
**Skip Ahead 5 Characters** 



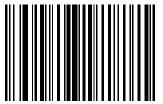
**Skip Ahead 6 Characters** 



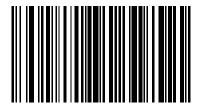
**Skip Ahead 7 Characters** 



**Skip Ahead 8 Characters** 



**Skip Ahead 9 Characters** 

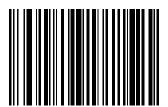


**Skip Ahead 10 Characters** 

## **Skip Back**



Skip Back 1 Character



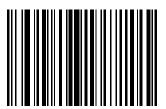
**Skip Back 2 Characters** 



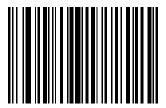
**Skip Back 3 Characters** 



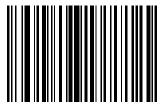
Skip Back 4 Characters



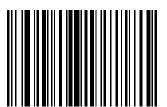
**Skip Back 5 Characters** 



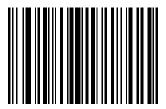
**Skip Back 6 Characters** 



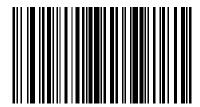
**Skip Back 7 Characters** 



**Skip Back 8 Characters** 



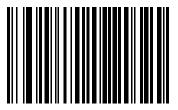
**Skip Back 9 Characters** 



**Skip Back 10 Characters** 

### **Send Preset Value**

Use these bar codes to send preset values. Set these values using the Scan Prefix and Scan Suffix bar codes on *page 2-90*.



**Send Prefix** 



**Send Suffix** 

### **Modify Data**

Modify data as described below. The following actions work for all send commands that follow it within a rule. Programming *pad zeros to length 6, send next 3 characters, stop padding, send next 5 characters* adds three zeros to the first send, and the next send is unaffected by the padding. These options do not apply to the **Send Keystroke** or **Send Preset Value** options.

### **Remove All Spaces**

To remove all spaces in the send commands that follow, scan the bar code below.



**Remove All Spaces** 

### **Crunch All Spaces**

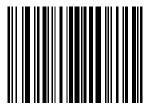
To leave one space between words, scan the bar code below. This also removes all leading and trailing spaces.



**Crunch All Spaces** 

### **Stop Space Removal**

Scan the bar code below to disable space removal.



**Stop Space Removal** 

### **Remove Leading Zeros**

Scan the bar code below to remove all leading zeros.



**Remove Leading Zeros** 

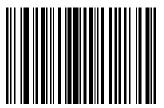
#### **Stop Zero Removal**

Scan the bar code below to disable the removal of zeros.

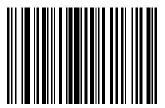


**Stop Zero Removal** 

#### **Pad Data with Spaces**



Pad Spaces To Length 1



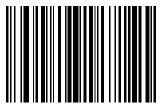
Pad Spaces To Length 2



Pad Spaces To Length 3



Pad Spaces To Length 4



Pad Spaces To Length 5



Pad Spaces To Length 6



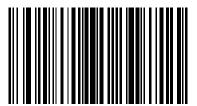
Pad Spaces To Length 7



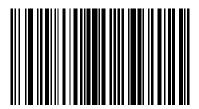
Pad Spaces To Length 8



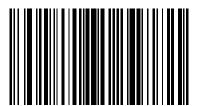
Pad Spaces To Length 9



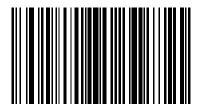
Pad Spaces To Length 10



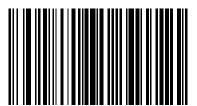
Pad Spaces To Length 11



Pad Spaces To Length 12



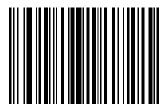
Pad Spaces To Length 13



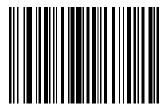
Pad Spaces To Length 14



Pad Spaces To Length 15



Pad Spaces To Length 16



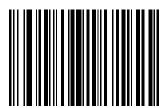
Pad Spaces To Length 17



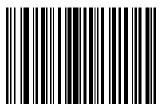
Pad Spaces To Length 18



Pad Spaces To Length 19



Pad Spaces To Length 20



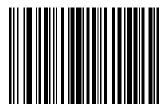
Pad Spaces To Length 21



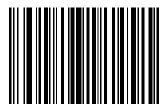
Pad Spaces To Length 22



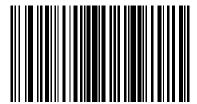
Pad Spaces To Length 23



Pad Spaces To Length 24



Pad Spaces To Length 25



Pad Spaces To Length 26



Pad Spaces To Length 27



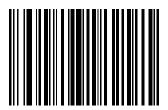
Pad Spaces To Length 28



Pad Spaces To Length 29



Pad Spaces To Length 30



**Stop Pad Spaces** 

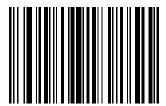
#### **Pad Data with Zeros**



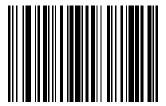
Pad Zeros To Length 1



Pad Zeros To Length 2



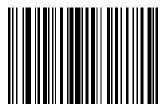
Pad Zeros To Length 3



Pad Zeros To Length 4



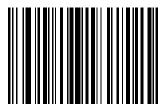
Pad Zeros To Length 5



Pad Zeros To Length 6



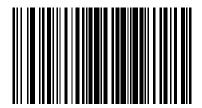
Pad Zeros To Length 7



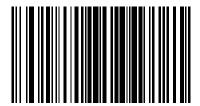
Pad Zeros To Length 8



Pad Zeros To Length 9



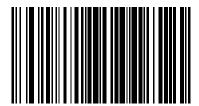
Pad Zeros To Length 10



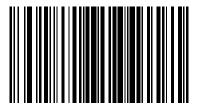
Pad Zeros To Length 11



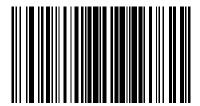
Pad Zeros To Length 12



Pad Zeros To Length 13



Pad Zeros To Length 14



Pad Zeros To Length 15



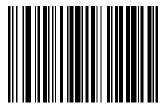
Pad Zeros To Length 16



Pad Zeros To Length 17



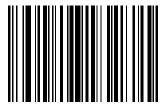
Pad Zeros To Length 18



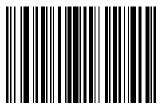
Pad Zeros To Length 19



Pad Zeros To Length 20



Pad Zeros To Length 21



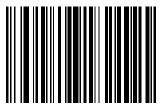
Pad Zeros To Length 22



Pad Zeros To Length 23



Pad Zeros To Length 24



Pad Zeros To Length 25



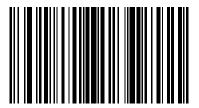
Pad Zeros To Length 26



Pad Zeros To Length 27



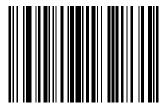
Pad Zeros To Length 28



Pad Zeros To Length 29



Pad Zeros To Length 30



**Stop Pad Zeros** 

# **Beeps**

Select a beep sequence for each ADF rule.



**Beep Once** 



**Beep Twice** 

# **Beeps (continued)**

Select a beep sequence for each ADF rule.



**Beep Three Times** 

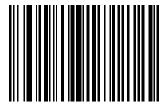
# **Send Keystroke (Control Characters and Keyboard Characters)**

#### **Control Characters**

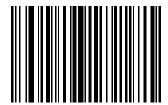
Scan a **Send** bar code for the keystroke to send.



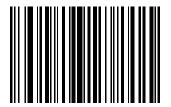
Send Control 2



Send Control A



Send Control B



Send Control C



Send Control D



Send Control E



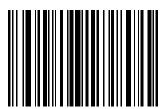
Send Control F



**Send Control G** 



**Send Control H** 



Send Control I



Send Control J



Send Control K



Send Control L



**Send Control M** 



Send Control N



**Send Control O** 



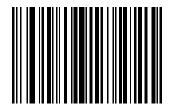
**Send Control P** 



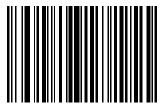
Send Control Q



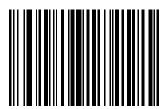
Send Control R



Send Control S



**Send Control T** 



**Send Control U** 



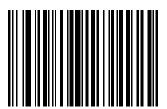
Send Control V



**Send Control W** 



Send Control X



**Send Control Y** 



Send Control Z



Send Control [



Send Control \



Send Control ]

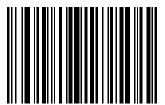


**Send Control 6** 



**Send Control -**

# **Keyboard Characters**



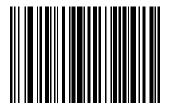
**Send Space** 



Send!



Send "



Send #



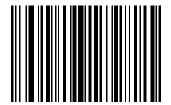
Send \$



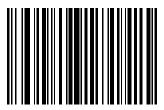
Send %



Send &



Send '



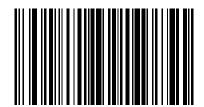
Send (



Send)



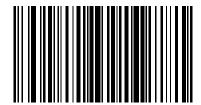
Send \*



Send +



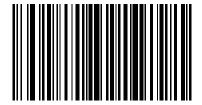
Send,



Send -



Send .



Send /



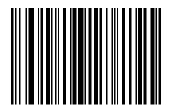
Send 0



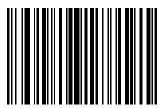
Send 1



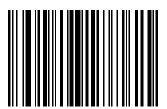
Send 2



Send 3



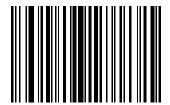
Send 4



Send 5



Send 6



Send 7



Send 8



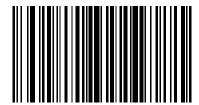
Send 9



Send:



Send;



Send <



Send =



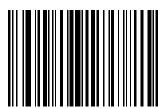
Send >



Send?



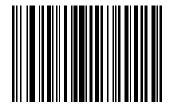
Send @



Send A



Send B



Send C



Send D



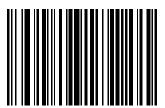
Send E



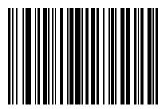
Send F



Send G



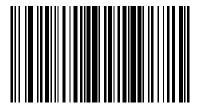
Send H



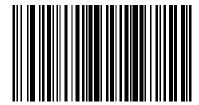
Send I



Send J



Send K



Send L



Send M



Send N



Send O



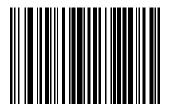
Send P



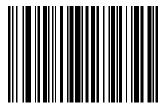
Send Q



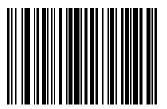
Send R



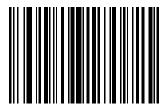
Send S



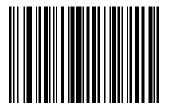
Send T



Send U



Send V



Send W



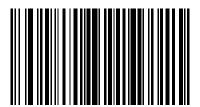
Send X



Send Y



Send Z



Send [



Send \



Send ]



Send ^



Send \_



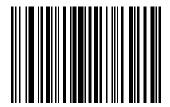
Send `



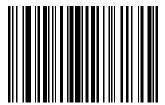
Send a



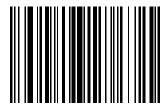
Send b



Send c



Send d



Send e



Send f



Send g



Send h



Send i



Send j



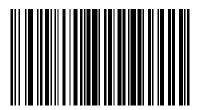
Send k



Send I



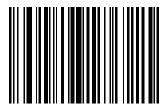
Send m



Send n



Send o



Send p



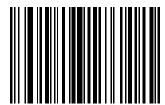
Send q



Send r



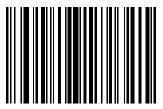
Send s



Send t



Send u



Send v



Send w



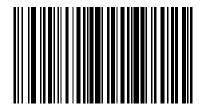
Send x



Send y



Send z



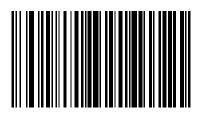
Send {



Send |

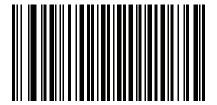


Send }

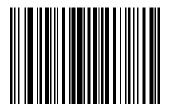


Send ~

#### **Send ALT Characters**



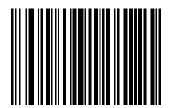
Send Alt 2



Send Alt A



Send Alt B



Send Alt C



Send Alt D



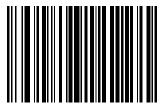
Send Alt E



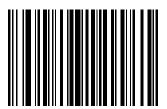
Send Alt F



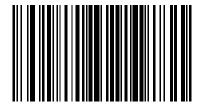
Send Alt G



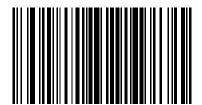
Send Alt H



Send Alt I



Send Alt J



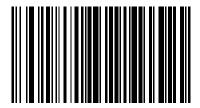
Send Alt K



Send Alt L



Send Alt M



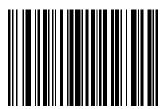
Send Alt N



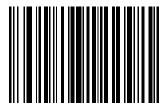
Send Alt O



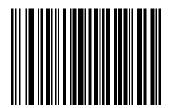
Send Alt P



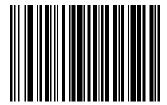
Send Alt Q



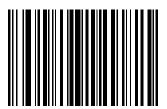
Send Alt R



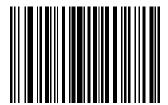
Send Alt S



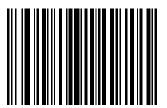
Send Alt T



Send Alt U



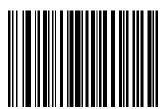
Send Alt V



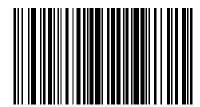
Send Alt W



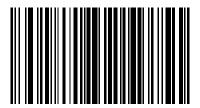
Send Alt X



Send Alt Y



Send Alt Z



Send Alt [



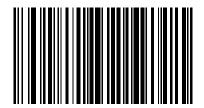
Send Alt \



Send Alt ]

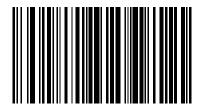


Send Alt @

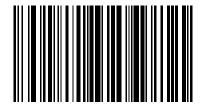


Send Alt -

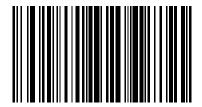
## **Send Keypad Characters**



Send Keypad \*



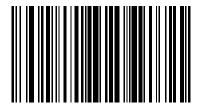
Send Keypad +



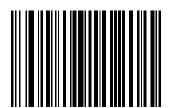
Send Keypad -



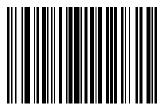
Send Keypad .



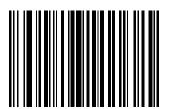
Send Keypad /



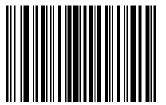
Send Keypad 0



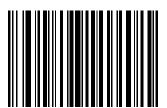
Send Keypad 1



Send Keypad 2



Send Keypad 3



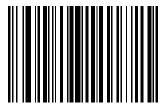
Send Keypad 4



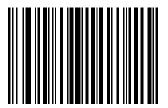
Send Keypad 5



Send Keypad 6



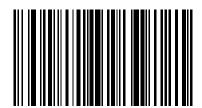
Send Keypad 7



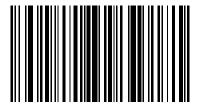
Send Keypad 8



Send Keypad 9



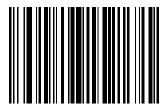
Send Keypad Enter



Send Keypad Numlock



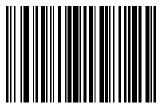
Send Break Key



Send Delete Key



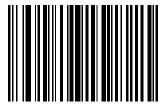
Send Page Up Key



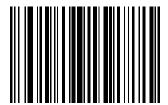
Send End Key



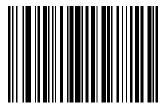
Send Page Down Key



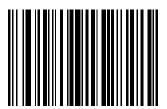
Send Pause Key



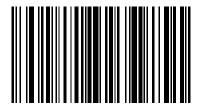
Send Scroll Lock Key



Send Backspace Key



Send Tab Key



Send Print Screen Key



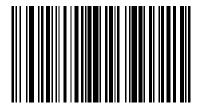
Send Insert Key



Send Home Key



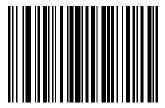
Send Enter Key



Send Escape Key



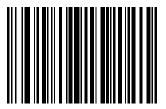
Send Up Arrow Key



Send Down Arrow Key

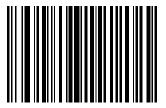


Send Left Arrow Key

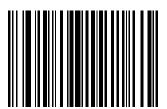


Send Right Arrow Key

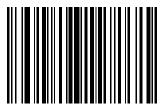
## **Send Function Key**



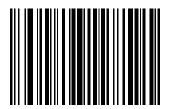
Send F1 Key



Send F2 Key



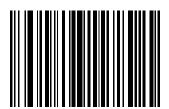
Send F3 Key



Send F4 Key



Send F5 Key



Send F6 Key



Send F7 Key



Send F8 Key



Send F9 Key



Send F10 Key



Send F11 Key



Send F12 Key



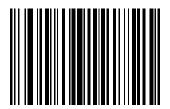
Send F13 Key



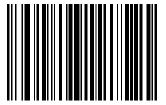
Send F14 Key



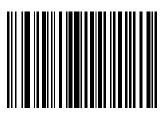
Send F15 Key



Send F16 Key



Send F17 Key



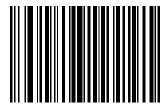
Send F18 Key



Send F19 Key



Send F20 Key



Send F21 Key



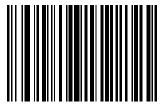
Send F22 Key



Send F23 Key



Send F24 Key



Send PF1 Key



Send PF2 Key



Send PF3 Key



Send PF4 Key



Send PF5 Key



Send PF6 Key



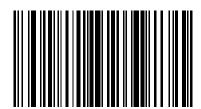
Send PF7 Key



Send PF8 Key



Send PF9 Key



Send PF10 Key



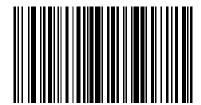
Send PF11 Key



Send PF12 Key



Send PF13 Key



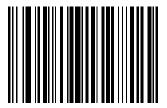
Send PF14 Key



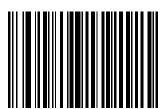
Send PF15 Key



Send PF16 Key



Send PF17 Key



Send PF18 Key



Send PF19 Key



Send PF20 Key



Send PF21 Key



Send PF22 Key



Send PF23 Key



Send PF24 Key



Send PF25 Key



Send PF26 Key



Send PF27 Key



Send PF28 Key



Send PF29 Key



Send PF30 Key

### **Send Right Control Key**

The Send Right Control Key action sends a tap (press and release) of the right Control key.



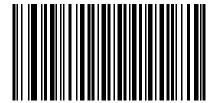
**Send Right Control Key** 

#### **Send Graphic User Interface (GUI) Characters**

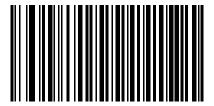
The **Send Graphic User Interface** character actions tap the specified key while holding the system-dependent Graphic User Interface (GUI) key. The definition of the Graphic User Interface key depends on the attached system.



Send GUI 0



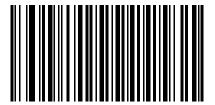
Send GUI 1



Send GUI 2



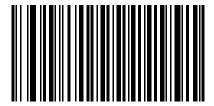
Send GUI 3



Send GUI 4



Send GUI 5



Send GUI 6



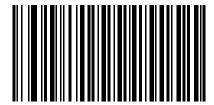
Send GUI 7



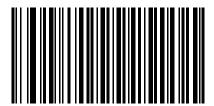
Send GUI 8



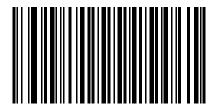
Send GUI 9



Send GUI A



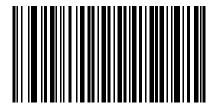
Send GUI B



Send GUI C



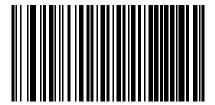
Send GUI D



Send GUI E



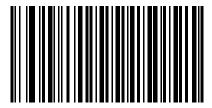
Send GUI F



Send GUI G



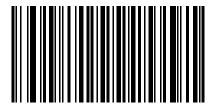
Send GUI H



Send GUI I



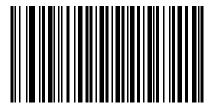
Send GUI J



Send GUI K



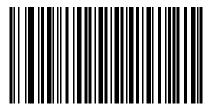
Send GUI L



Send GUI M



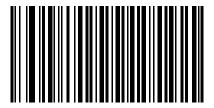
Send GUI N



Send GUI O



Send GUI P



Send GUI Q



Send GUI R



Send GUI S



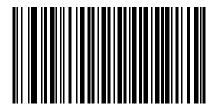
Send GUI T



Send GUI U



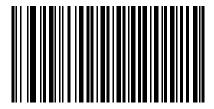
Send GUI V



Send GUI W



Send GUI X



Send GUI Y



Send GUI Z

#### **Bar Code Encoding Scheme Specification (Code Pages)**

The following actions specify the decoded bar code character encoding scheme (code page) and output the appropriate characters to the host.



**NOTE** If specifying an encoding scheme, ensure it is the first action in the ADF rule to ensure the UTF-8 bar code is converted before the rules apply.



Windows 1250 Latin 2, Central Europe



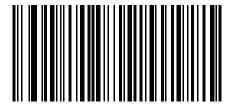
Windows 1251 Cyrillic, Slavic



Windows 1252 Latin 1, Western European



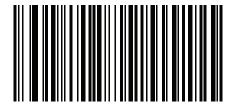
Windows 1253 Greek



Windows 1254 Latin 5, Turkish



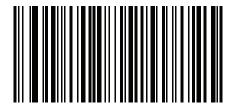
Windows 1255 Hebrew



Windows 1256 Arabic



Windows 1257 Baltic



Windows 1258 Vietnamese



Windows 874 Thai



Windows 20866 Cyrillic KOI8-R



Windows 932 Japanese Shift-JIS



Windows 936 Simplified Chinese GBK



Windows 54936 Simplified Chinese GB18030



Windows 949 Korean Hangul



Windows 950 Traditional Chinese Big5



Mac CP10000 Mac Roman



MS-DOS 437 Latin US



MS-DOS 737 Greek



MS-DOS 775 Baltic



MS-DOS 850 Latin 1



MS-DOS 852 Latin 2



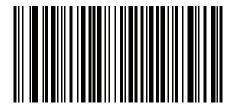
MS-DOS 855 Cyrillic



MS-DOS 857 Turkish



MS-DOS 860 Portuguese



MS-DOS 861 Icelandic



MS-DOS 862 Hebrew



MS-DOS 863 French Canada



MS-DOS 865 Nordic



MS-DOS 866 Cyrillic



MS-DOS 869 Greek 2



ISO 8859-1 Latin 1, Western European



ISO 8859-2 Latin 2, Central European



ISO 8859-3 Latin 3, South European



ISO 8859-4 Latin 4, North European



ISO 8859-5 Cyrillic



ISO 8859-6 Arabic



ISO 8859-7 Greek



ISO 8859-8 Hebrew



ISO 8859-9 Latin 5, Turkish



ISO 8859-10 Latin 6, Nordic



ISO 8859-11 Thai



ISO 8859-13 Latin 7, Baltic



ISO 8859-14 Latin 8, Celtic



ISO 8859-15 Latin 9

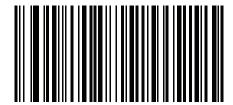


ISO 8859-16 Latin 10, South-Eastern European



UTF-8

Note: Not valid for specifying CJK bar code.



UTF-16\_LE UTF-16 Little Endian

Note: Not valid for specifying CJK bar code.



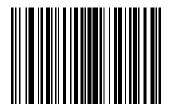
UTF-16\_BE UTF-16 Big Endian

Note: Not valid for specifying CJK bar code.

### **Turn On/Off Rule Sets**



Turn On Rule Set 1



Turn On Rule Set 2

### Turn On/Off Rule Sets (continued)

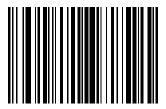


Turn On Rule Set 3



Turn On Rule Set 4

### Turn On/Off Rule Sets (continued)



Turn Off Rule Set 1



Turn Off Rule Set 2

### Turn On/Off Rule Sets (continued)



**Turn Off Rule Set 3** 

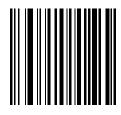


Turn Off Rule Set 4

# **Alphanumeric Keyboard**



Space





\$



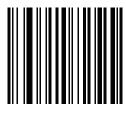






(Dash)



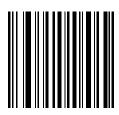


, (Comma)





ļ







(Single Close Quote)







:



;



<





>















(Underscore)



(Single Open Quote)



**NOTE** Do not confuse the numeric bar codes in this section with those on the numeric keypad.







**NOTE** Do not confuse the numeric bar codes in this section with those on the numeric keypad.







**NOTE** Do not confuse the numeric bar codes in this section with those on the numeric keypad.







**NOTE** Do not confuse the numeric bar codes in this section with those on the numeric keypad.







**NOTE** Do not confuse the numeric bar codes in this section with those on the numeric keypad.







Α

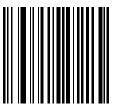


В



С





Е



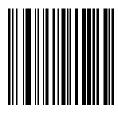


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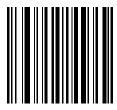
U





Q



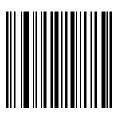


s





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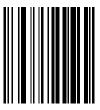
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Cance



**End of Message** 



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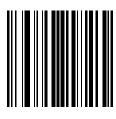


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