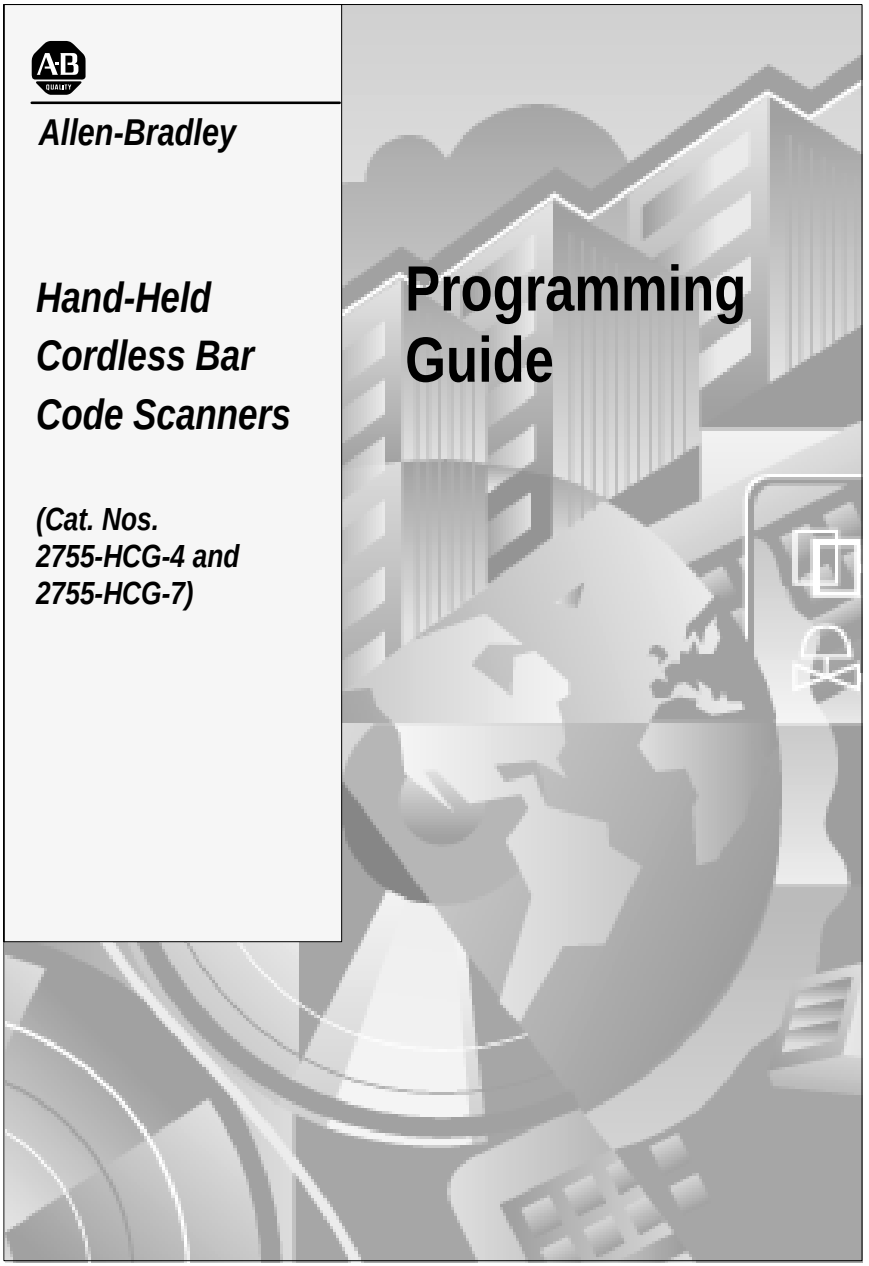

Allen-Bradley

Hand-Held Cordless Bar Code Scanners

(Cat. Nos. 2755-HCG-4 and 2755-HCG-7)

Programming Guide

Important User Information

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attention statements help you to:

- identify a hazard
- avoid the hazard
- recognize the consequences

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PLC-5 is a registered trademark of Allen-Bradley Company, Inc.
DeviceNet is a trademark of the open DeviceNet Vendor Association

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Read this preface to familiarize yourself with the rest of the manual. This preface covers the following topics:

- intended audience
- contents of this manual
- related publications
- configuration bar codes

Intended Audience

No special knowledge is required to understand this document or use of the scanner. Cordless scanners may be used with a variety of host devices. You should be familiar with the host's communication ports.

Contents of this Manual

The following table briefly describes the contents of each section.

Chapter	Title	Contents
Preface		Describes the purpose, background, and scope of this manual. Also provides a list of related publications.
1	Basic Bar Codes	Provides the basic bar codes that can be used with the scanners.
2	Advanced Data Format Bar Codes	Provides the advanced bar codes that can be used with the scanners.
Appendix A	Application Examples	Provides examples on using the standard and long range hand-held cordless bar code scanners.
Appendix B	ASCII Table	Lists ASCII conversion chart including Code 39 Full ASCII encoded characters.

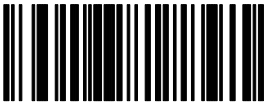
Related Publications

Below is a list of related publications you may need to refer to when using the cordless scanners.

Publication No.	Title
2755-6.3	Hand-Held Cordless Bar Code Scanners User Manual
2755-921	Bar Code Basics

Configuration Bar Codes

The configuration bar code symbols are Code 128. The scanner is always enabled to read Code 128 bar codes. Default settings are indicated by an asterisk*. Refer to the example below.



9600*

Basic Bar Codes

This chapter lists the basic bar codes you can use with the standard and long range scanners (Catalog Nos. 2755-HCG-4 and 2755-HCG-7). The table starting below lists the bar codes or bar code categories found within this chapter.

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Parameter	Page Location
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Table continued on the next page.

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International Keypad Emulation Fast Xmit	1–39
National Keyboard Types	1–40
Set Transmission Frequency (Channel)	1–41
Wait for Host Interface Response Time	1–43

Set Defaults

The following table lists the default settings for the standard and extended range scanners.

Description	Default Setting
Host Interface	None
Code Types	All Enabled
Code Lengths	
Code 39	1 to 55
Code 128	3 to 55
Codabar	2 to 55
I 2 of 5	14
D 2 of 5	14
MSI Plessey	1 to 55
Decode Options	
Transmit UPC-A Check Digit	Enabled
Transmit UPC-E Check Digit	Enabled
Convert UPC-E to UPC-A	Disabled
EAN Zero Extend	Disabled
Transmit No Decode Message	Disabled
Decode UPC/EAN Supplemental	Disabled
ITF-14/EAN-13 Conversion	Enabled
Transmit Code 39 Check Digit	Disabled
MSI Plessey Check Digit	1
Buffer Code 39	Disabled
Beeper Volume	High

Table continued on the next page.

Description	Default Setting
Beep After Good Decode	Enabled
UPC/EAN Security Level	0
Decode Redundancy	0
UPC-A Preamble	System Character
UPC-E Preamble	System Character
Pause Duration	0
Prefix Value	None
Suffix Value	7013 (<Enter> for wedges, <CR/LF> for serial devices)
Scan Data Transmission Format	Data As Is
Laser Control	
Laser On Time-Out	3 Seconds
RS-232C Options	
Baud Rate	9600
Parity	Odd
Check Parity	Enabled
Hardware Handshaking	None
Software Handshaking	None
Serial Response Time-out	2 Seconds
Stop Bit Select	2
ASCII Data Format	7-bit
RTS Line State	Low
Intercharacter Delay	0
Transmit Code ID Character	Disabled
Transmit AIM Code ID	Disabled
Ignore Unknown Characters	Enabled
International Keypad Emulation	Disabled

Table continued on the next page.

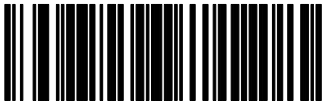
Description	Default Setting
International Keypad Emulation Fast Xmit	Disabled
National Keyboard Type	U.S. English
Set Transmission Frequency (Channel)	50
Wait for Host Interface Response Time	00

Scan this bar code to set the default settings.

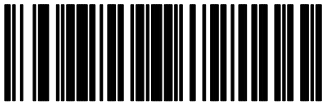
Set Defaults

Host Interface Code

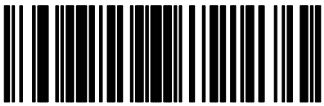
Scan the appropriate bar code below to select the host type you are using.



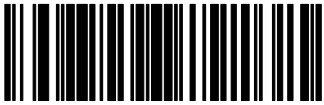
Single Port RS-232



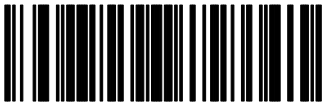
IBM PC/AT PS2-50, -55sx, -60, -70, -80 and Clones



IBM PC/XT and Clones



IBM PS2-30 and Clones



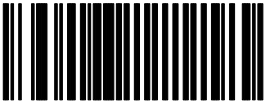
DEC VT 2xx/3xx/4xx

Code Types

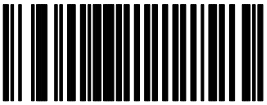
Scan the appropriate bar code below to select the code type.

Enable All Code Types

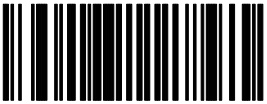
Disable All Code Types



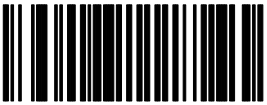
Add Code 39



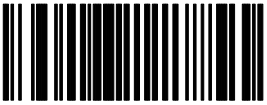
Delete Code 39



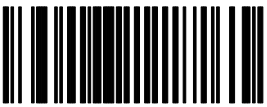
Add Code 39 Full ASCII



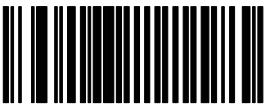
Delete Code 39 Full ASCII



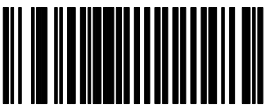
Add UPC/EAN



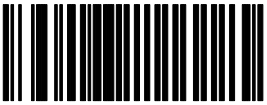
Delete UPC/EAN



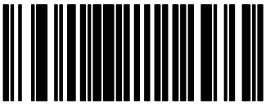
Add Code 128



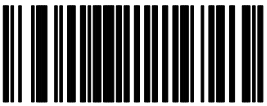
Delete Code 128



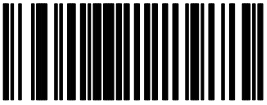
Add EAN 128



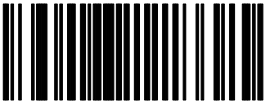
Delete EAN 128



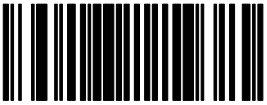
Add D 2 of 5



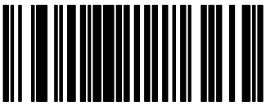
Delete D 2 of 5



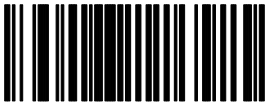
Add I 2 of 5



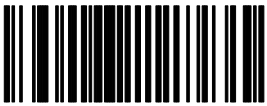
Delete I 2 of 5



Add Codabar



Delete Codabar



Add MSI Plessey

Delete MSI Plessey

Code Lengths

Scan the appropriate bar codes to select the length type and number. Each length must have two digits. For example, the number three is comprised of the zero and 3 bar codes. The number 12 is comprised of the 1 and 2 bar codes.

Code 39 – Any Length

Code 39 – Length Within Range

Code 39 – 1 Discrete Length

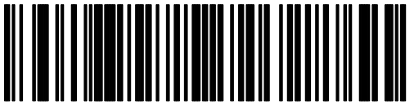
Code 39 – 2 Discrete Lengths

Code 128 – Any Length

Codabar – Any Length

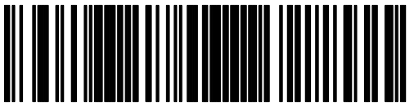
Codabar – Length Within Range

Codabar – 1 Discrete Length

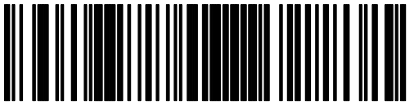


Codabar – 2 Discrete Lengths

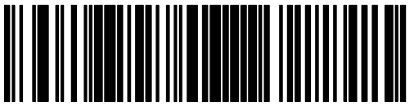
I 2 of 5 – Any Length



I 2 of 5 – Length Within Range



I 2 of 5 – 1 Discrete Length



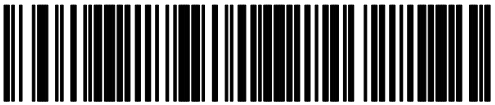
I 2 of 5 – 2 Discrete Lengths

D 2 of 5 – Any Length

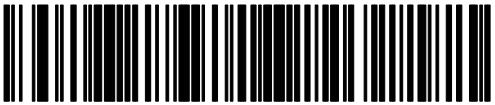
D 2 of 5 – Length Within Range

D 2 of 5 – 1 Discrete Length

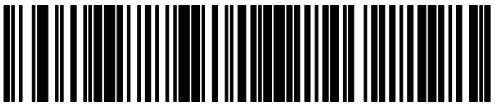
D 2 of 5 – 2 Discrete Lengths



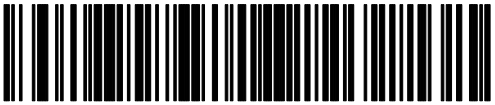
MSI Plessey – Any Length



MSI Plessey – Length Within Range



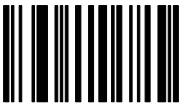
MSI Plessey – 1 Discrete Length



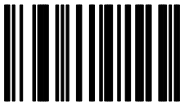
MSI Plessey – 2 Discrete Lengths

0

1



2



3

4

5

6

7

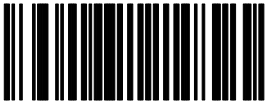
8

9

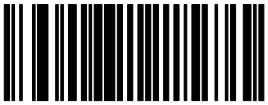
Cancel

Decode Options

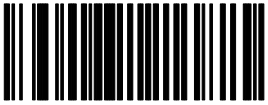
Scan the appropriate bar code to enable or disable the decode option.



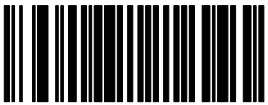
Transmit UPC-A Check Digit*



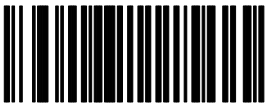
Do Not Transmit UPC-A Check Digit



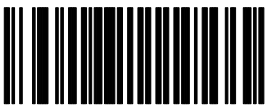
Transmit UPC-E Check Digit*



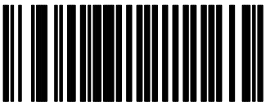
Do Not Transmit UPC-E Check Digit



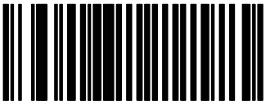
Enable 1 MSI Plessey Check Digit*



Enable 2 MSI Plessey Check Digits



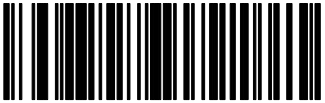
Convert UPC-E to UPC-A



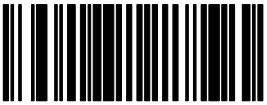
Do Not Convert UPC-E to UPC-A*

Decode UPC/EAN Supplementals

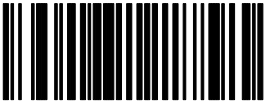
Ignore UPC/EAN Supplementals



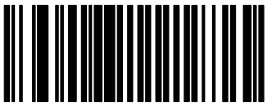
Autodiscriminate UPC/EAN Supplementals



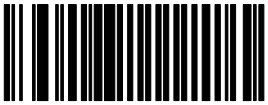
Enable EAN Zero Extend



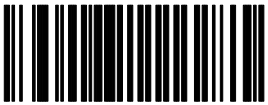
Disable EAN Zero Extend*



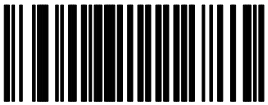
Transmit No Decode Message



Do Not Transmit No Decode Message*



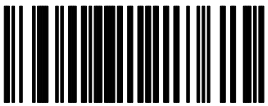
ITF14/EAN-13 Conversion Enabled*



ITF14/EAN-13 Conversion Disabled

Buffer Code 39

Do Not Buffer Code 39*

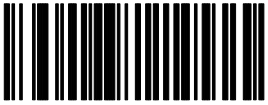


Verify Code 39 Check Digit

Do Not Verify Code 39 Check Digit*

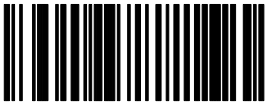
Bi-directional Redundancy Enabled*

Bi-directional Redundancy Disabled

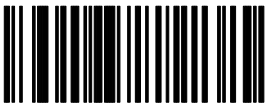


Beep After Good Decode*

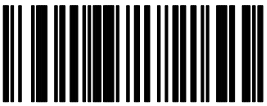
Do Not Beep After Good Decode



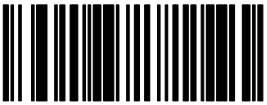
Low Beeper Volume



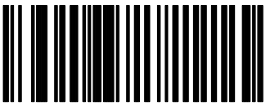
High Beeper Volume*



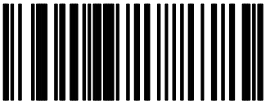
UPC/EAN Security Level 0*



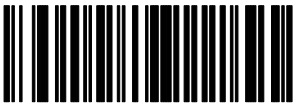
UPC/EAN Security Level 1



UPC/EAN Security Level 2



UPC/EAN Security Level 3



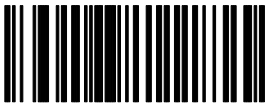
Decode Redundancy 1

Decode Redundancy 2

Decode Redundancy 3

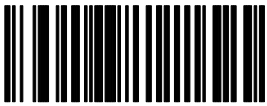
UPC-A Preamble

Scan the appropriate bar code to select one preamble option.



None

System Character*

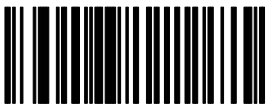


System Character and Country Code

UPC-E Preamble

Scan the appropriate bar code to select one preamble option.

None

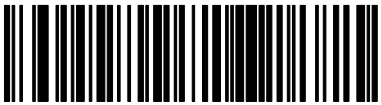


System Character*

System Character and Country Code

Pause Duration

Scan the Pause Duration bar code and then scan two numbered bar codes which represent the desired pause. The pause is measured in 0.1 second increments. If you make an error, scan the Cancel bar code and start again.



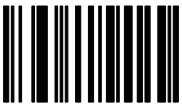
Pause Duration

0*

1

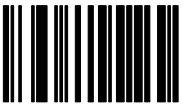
2

3

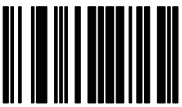


4

5

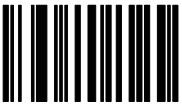


6

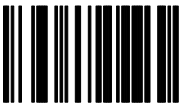


7

8



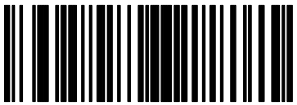
9



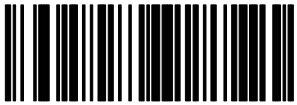
Cancel

Prefix and Suffix

Scan the Prefix or Suffix bar code and then scan 4 numbered bar codes which represent the desired prefix or suffix. The Enter key (7013) is the default for all options. If you make an error, scan the Cancel bar code and start again.



Scan Suffix (Value 1)



Scan Prefix (Value 2)

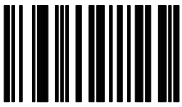
0

1

2

3

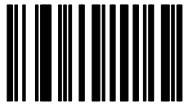
4



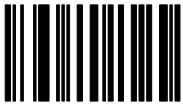
5

6

7



8



9

Cancel

Data Transmission Formats

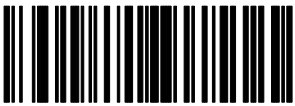
Scan the:

1. Scan Options bar code.
2. bar code corresponding to the desired converted data format.
3. Enter bar code.

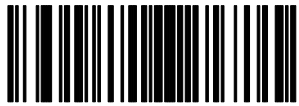
If you make an error, scan the Cancel bar code and start again.

Scan Options

Data As Is*



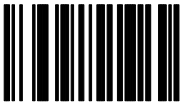
<Prefix><Data>



<Data><Suffix>

<Prefix><Data><Suffix>

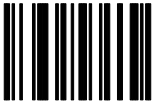
Enter



Erase All Formats

Erase Last Entered Format

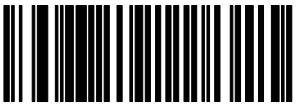
Cancel



Enter

Laser Control

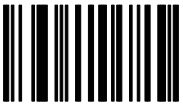
Scan the Laser On Time-Out bar code and then the two bar codes corresponding to the desired time. The pause is measured in 0.5 second increments from 0.5 seconds to 6.0 seconds. If you make an error, scan the Cancel bar code and start again.



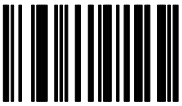
Laser On Time-Out

0

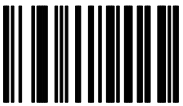
1



2

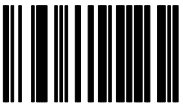


3



4

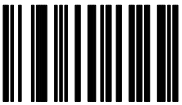
5



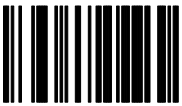
6

7

8



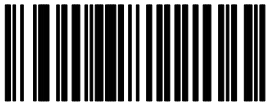
9



Cancel

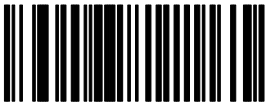
Baud Rate

Scan one of the following bar codes to select the appropriate baud rate for RS-232 transmission.

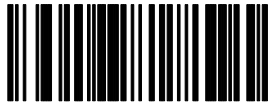


110

300

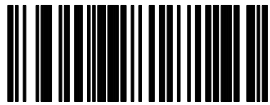


600



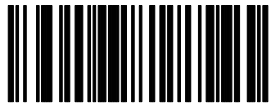
1200

2400



4800

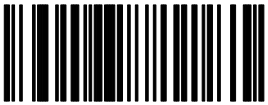
9600*



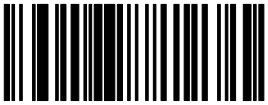
19200

Parity

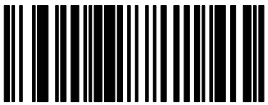
Scan the appropriate bar code to set the parity of RS-232 transmissions.



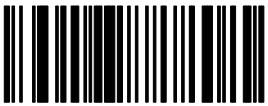
Odd*



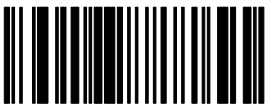
Even



Mark



Space

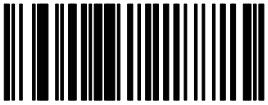


None

Check Parity

Scan the appropriate bar code to check parity of RS-232 transmissions.

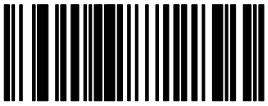
Check Parity*



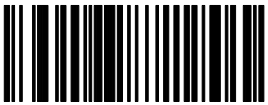
Do Not Check Parity

Hardware Handshaking

Scan the appropriate bar code to select an RS-232 hardware handshaking protocol.



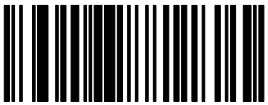
None*



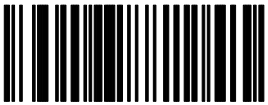
RTS/CTS

Software Handshaking

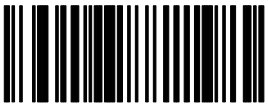
Scan the appropriate bar code to select an RS-232 software handshaking protocol.



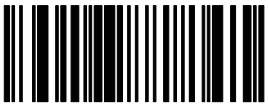
None*



ACK/NAK



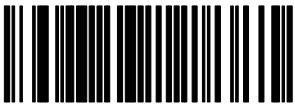
ACK/NAK with ENQ



ENQ Only

Serial Response Time-Out

Scan the Serial Response Time-Out bar code and then the two bar codes corresponding to the desired time-out. The delay can range from zero seconds to 9.9 seconds. If you make an error, scan the Cancel bar code and start again.



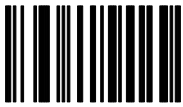
Serial Response Time-Out

0

1

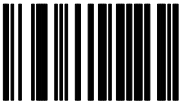
2

3

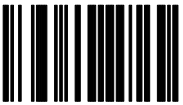


4

5

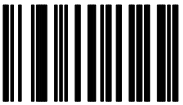


6



7

8



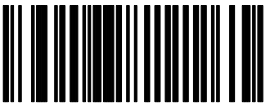
9

Cancel

Stop Bit Select

Scan the appropriate bar code to select the number of stop bits for RS-232 communication.

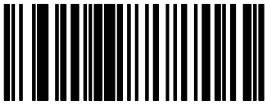
1 Stop Bit



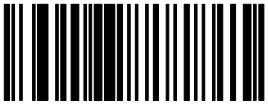
2 Stop Bits*

ASCII Format

Scan the appropriate bar code to select either a 7-bit or 8-bit ASCII format for RS-232 communication.



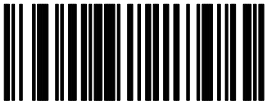
7-bit*



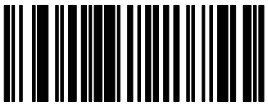
8-bit

RTS Line State

Scan the appropriate bar code to select the desired option.



Line High



Line Low*

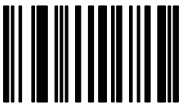
Intercharacter Delay

Scan the Intercharacter Delay bar code and then the two bar codes corresponding to the desired delay. The delay can range from zero seconds to 0.0099 seconds. If you make an error, scan the Cancel bar code and start again.

Intercharacter Delay

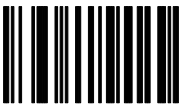
0

1



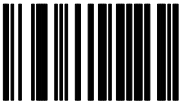
2

3

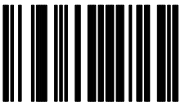


4

5

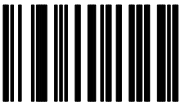


6

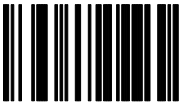


7

8



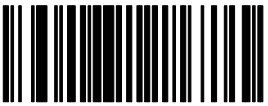
9



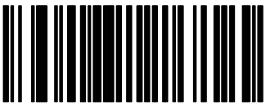
Cancel

Transmit Code ID Character

Scan the appropriate bar code to enable or disable this parameter.



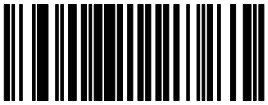
Transmit Code ID Character



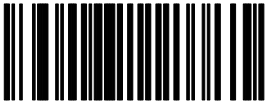
Do Not Transmit Code ID Character *

Transmit AIM Code ID

Scan the appropriate bar code to enable or disable this parameter.



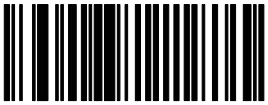
Transmit AIM Code ID



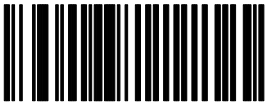
Do Not Transmit AIM Code ID*

Ignore Unknown Characters

Scan the appropriate bar code to enable or disable this parameter.



Enable*

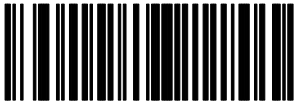


Disable

International Keyboard Emulation

Scan the appropriate bar code to enable or disable this parameter.

Enable

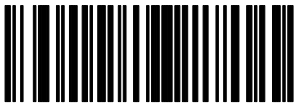


Disable*

International Keyboard Emulation Fast Transmit

Scan the appropriate bar code to enable or disable this parameter.

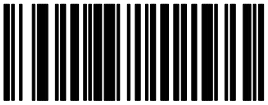
Enable



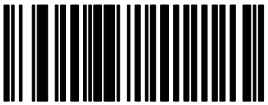
Disable*

National keyboard Types

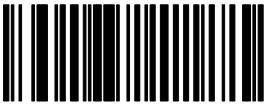
Scan the appropriate bar code to select a keyboard type.



US English*

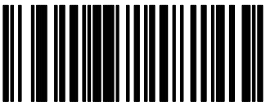


French

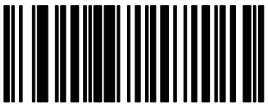


German

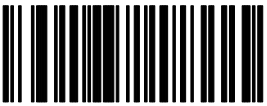
French International



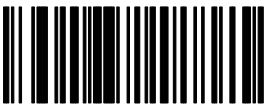
Spanish



Italian



Swedish



UK English

Set Transmission Frequency

Scan the Set Transmission Frequency bar code and then the two bar codes to set the two digit channel number. If you make an error, scan the Cancel bar code and start again.

Select Channel Number

0

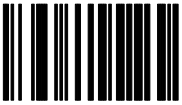
1

2

3

4

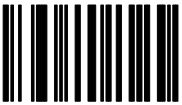
5



6

7

8



9

Cancel

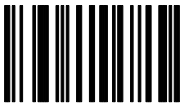
Wait for Host Interface Response Time

Scan the Wait for Host Interface Response Time bar code and then the two bar codes to set the two digit response time. The delay can range from zero seconds to 99 seconds. If you make an error, scan the Cancel bar code and start again. Programming a zero enables the automatic Wait for a Host Response Timeout calculation feature.

Wait for Host Interface Response Time

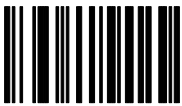
0

1



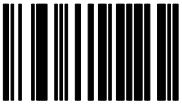
2

3



4

5



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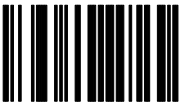

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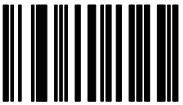


9

Cancel

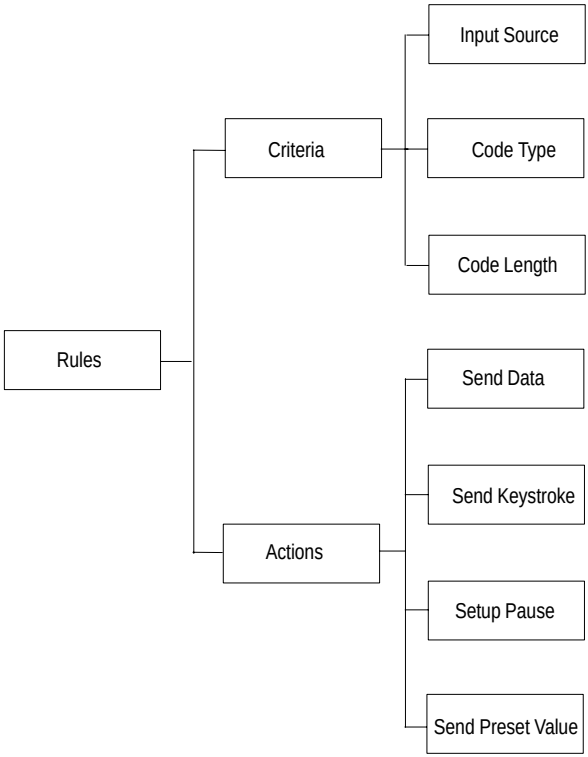
Advanced Data Format Bar Codes

This chapter explains what Advanced Data Format (ADF) is and lists the bar codes you can use with the standard range and long range scanners (Catalog Nos. 2755-HCG-4 and 2755-HCG-7). The following table lists the bar code categories within this chapter.

Parameter	Page Location
Criteria	2–4
Special Commands	2–10
Actions	2–11
Numeric Keypad	2–52
Alphanumeric Keypad	2–54

ADF Overview

ADF allows you to customize input before it is transmitted to your host device. For example, instead of having a direct read of a bar code, you can now attach a message to it. ADF is implemented with a series of bar codes that have selectable parameters. (You do not have to type in the individual characters for your message but rather scan in the appropriate bar code located in this chapter.) This series of bar codes is called a Rule and is used to evaluate input from the scanner. Rules are comprised of Criteria and Actions. Criteria are composed of an Input Source, Code Type, and Code Length. Actions are composed of Send Data, Send Keystroke, Setup Pause, and Send Preset Value. Criteria, Actions, and entire Rules may be erased by scanning the appropriate bar code.



Criteria

Criteria are used to select the bar codes that the Actions act upon. Criteria are composed of an Input Source, Code Type, and Code Length. Input Source is the source affected by using using ADF and is selected prior to creating any ADF rules. Code Type is the symbology selected. All code types must be scanned in succession prior to selecting other criteria. If you don't select a code type, all code types are affected. Code Length allows you to define the number of characters the selected code type must contain. You can select multiple lengths for each rule. If you do not select a code length, selected code types of any length are affected.

Actions

Actions allow you to select how to format data for transmission. Actions are composed of Send Data, Send Keystroke, Setup Pause, and Send Preset Value. Send Data allows you to send all the data that follows, send all the data up to a specific character selected from the alphanumeric keyboard bar code, or send the next number of characters (1 to 254) selected from the alphanumeric keyboard. Send Keystroke allows you to scan the bar code for the keystroke you wish to send. Setup Pause allows you to set the pause duration parameter prior to entering ADF. Send Preset Value allows you to send values 1 or 2 by scanning the appropriate bar code.

- value 1 = scan suffix
- value 2 = scan prefix

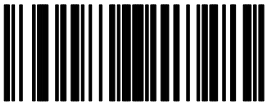
Rules Hierarchy

The last rule entered is the first rule read by the scanner. The scanner reads the information and determines what needs to be accomplished. If the last rule read is valid, the scanner may not go on to the other rules so positioning of the rules is very important.

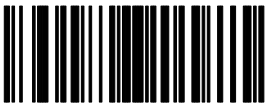
Criteria

Scan:

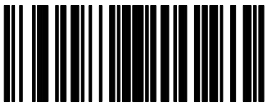
1. the code types together before selecting other Criteria.
2. the input source.
3. one length per Rule.



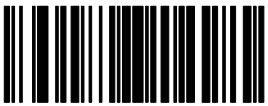
Code 39



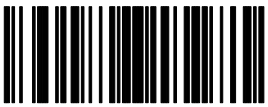
Code 128



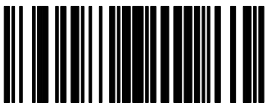
I 2of 5



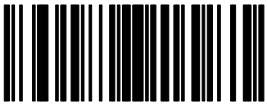
Codabar



D 2 of 5



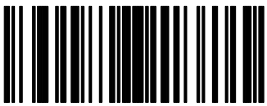
UPC-A



UPC-E

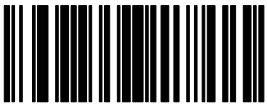
EAN-8

EAN-13

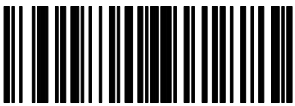


UPC/EAN

Any Source



Scanner Port



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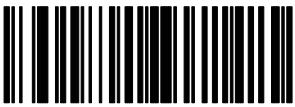

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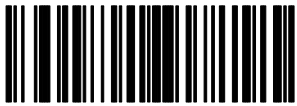

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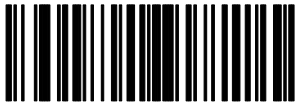

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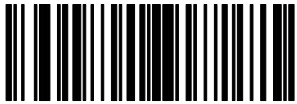

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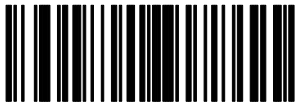

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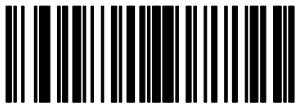

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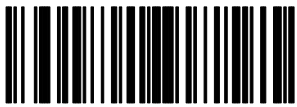

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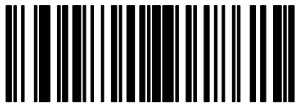

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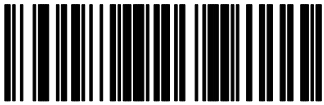

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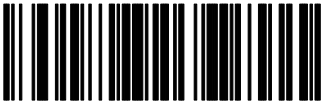

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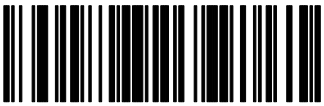

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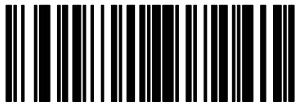

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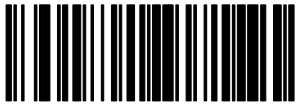

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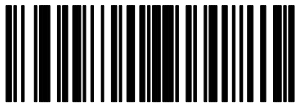

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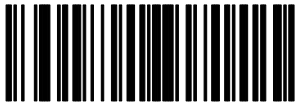

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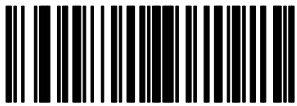

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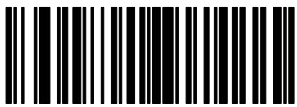

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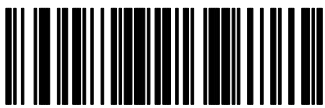

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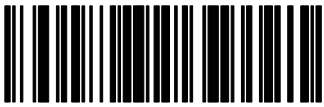

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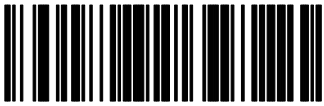

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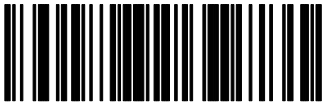

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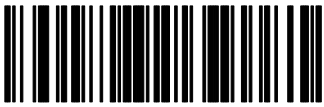
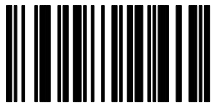


30

Special Commands

Scan the appropriate bar code below after scanning a criteria.

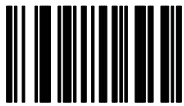


Erase Criteria and Start Again

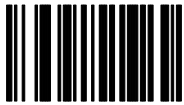
Erase Actions and Start Again

Quit Entering Rules

Save Rule



Erase Previously Saved Rule

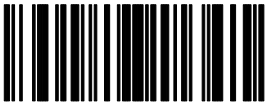


Erase All Rules

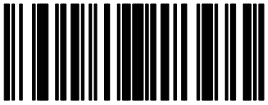
Actions

Scan the appropriate bar code to enable the desired action.

Send Pause



Send Value 1



Send Value 2

Send Value 3

Send Value 4

Send All Data That Remains

Send Next Character

Send Next 2 Characters

Send Next 3 Characters

Send Next 4 Characters

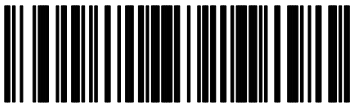
Send Next 5 Characters

Send Next 6 Characters

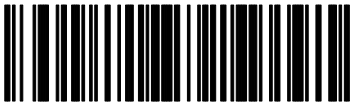
Send Next 7 Characters

Send Next 8 Characters

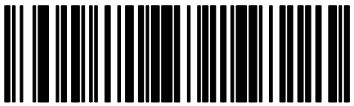
Send Next 9 Characters



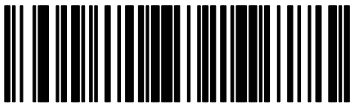
Send Next 10 Characters



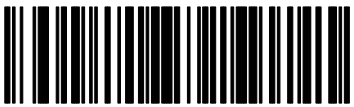
Send Next 11 Characters



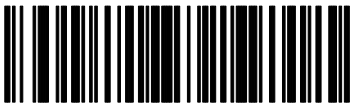
Send Next 12 Characters



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

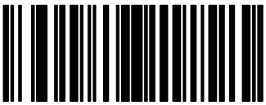
Send Next 20 Characters

Send Account Number

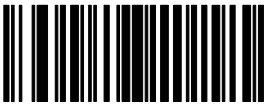
Send Exp Date (MMYY)

Send Exp date (YYMM)

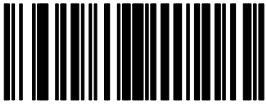
Send Customer Name



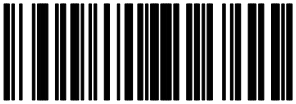
Select Track 1 Data



Select Track 2 Data



Select Track 3 Data



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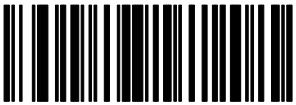

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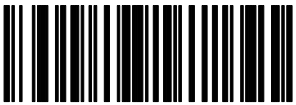

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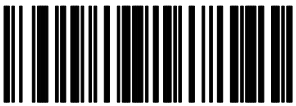

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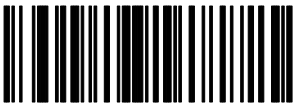

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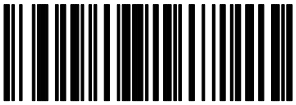
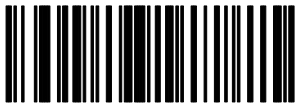


Skip Ahead 5 Characters

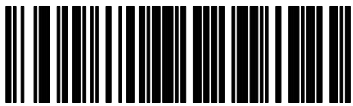
Skip Ahead 6 Characters

Skip Ahead 7 Characters



Skip Ahead 8 Characters

Skip Ahead 9 Characters



Skip Ahead 10 Characters

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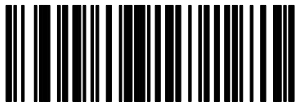

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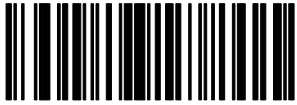

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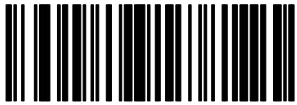

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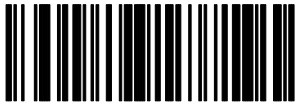

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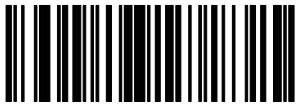
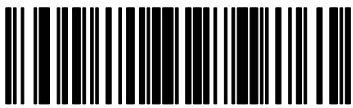


Send Control F

Send Control G

Send Control H

Send Control I



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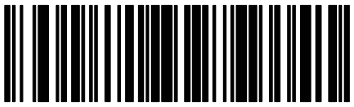

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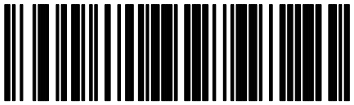

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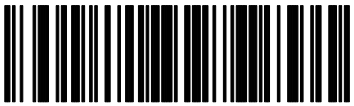

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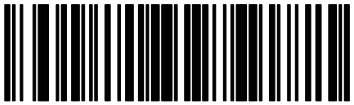

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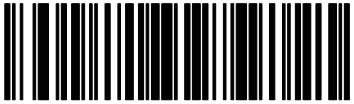

Send Control O

Send Control P

Send Control Q

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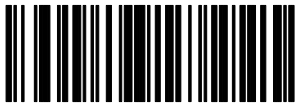

Send Control S

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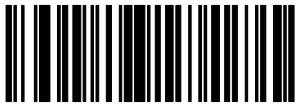

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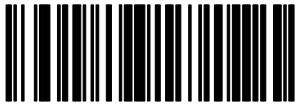

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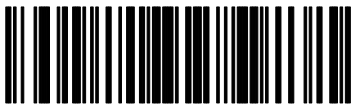

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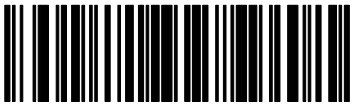

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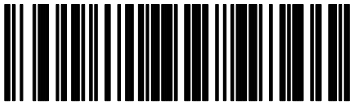

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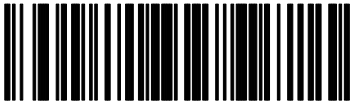

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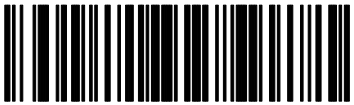

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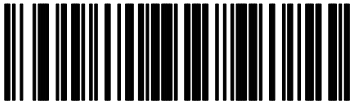

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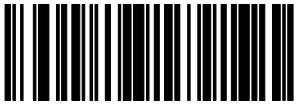

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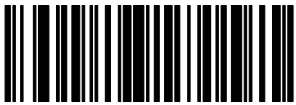

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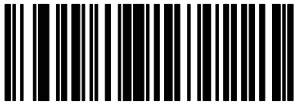

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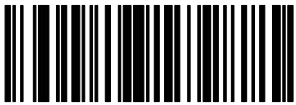

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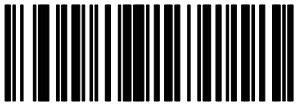

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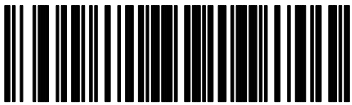

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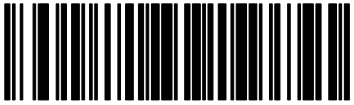

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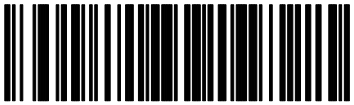

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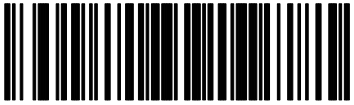

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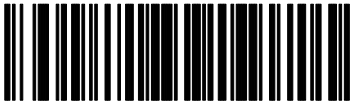

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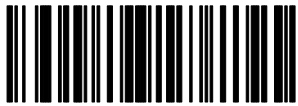

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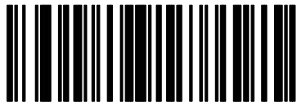

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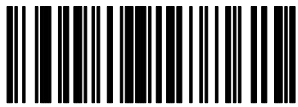

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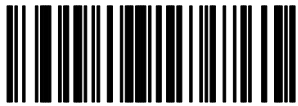

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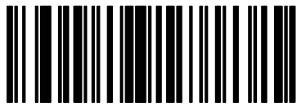

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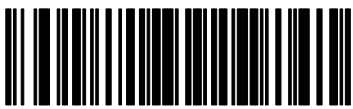

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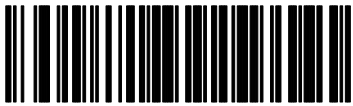

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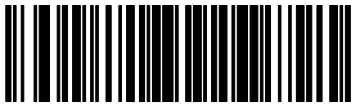

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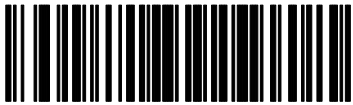

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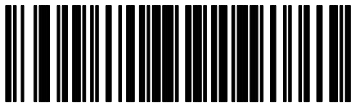

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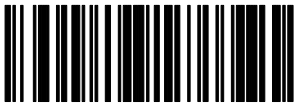

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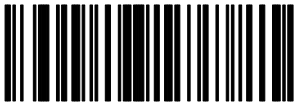

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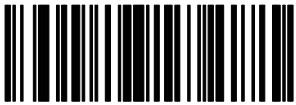

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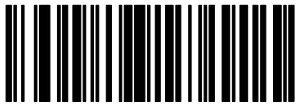

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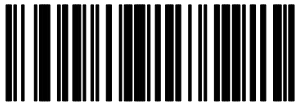

Send D

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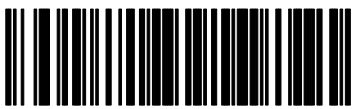

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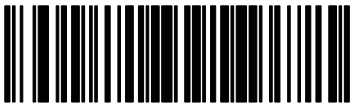

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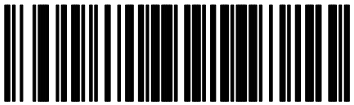

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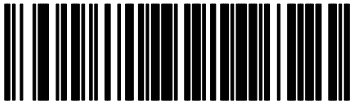

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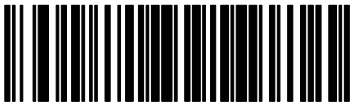

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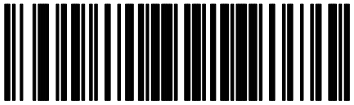

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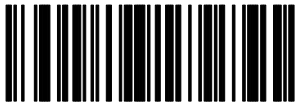

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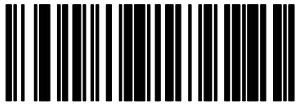

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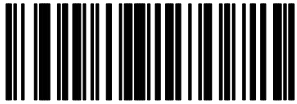

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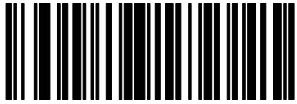

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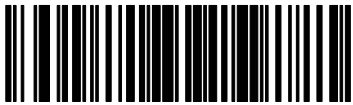

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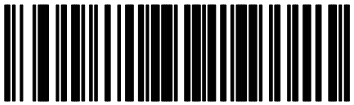

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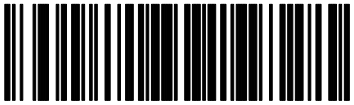

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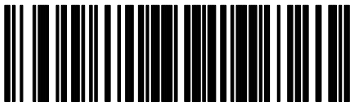

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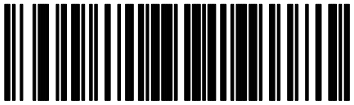

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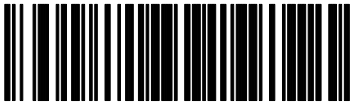

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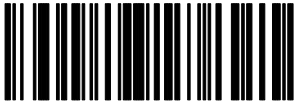

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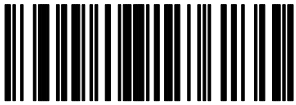

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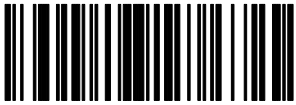

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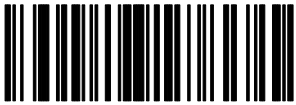

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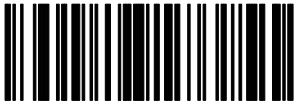

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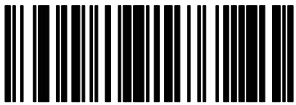

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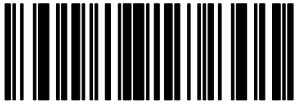

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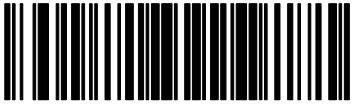

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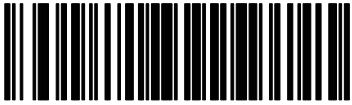

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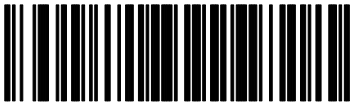

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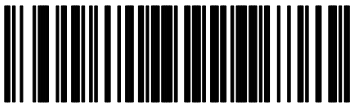

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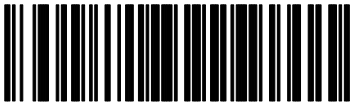

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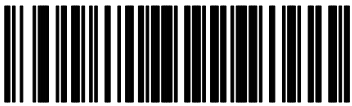

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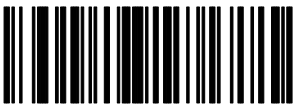

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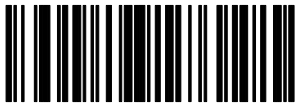

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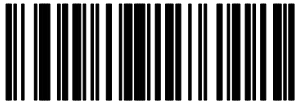

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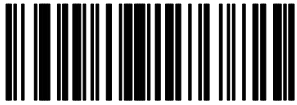

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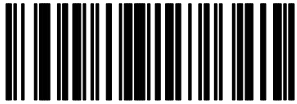

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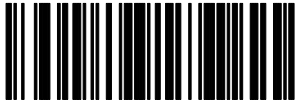

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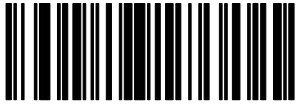

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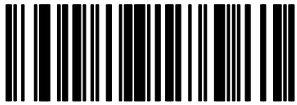

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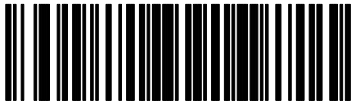

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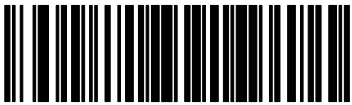

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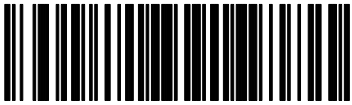

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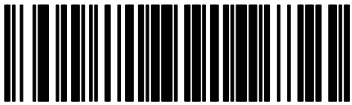

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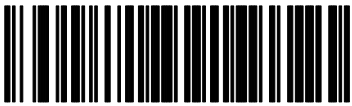

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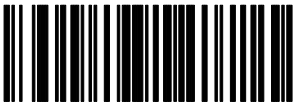

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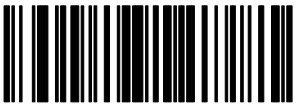

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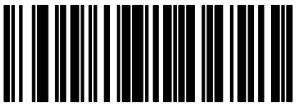

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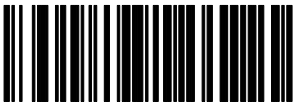

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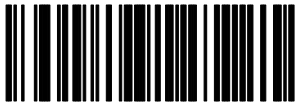

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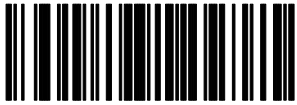

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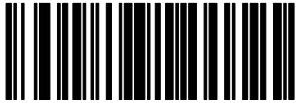

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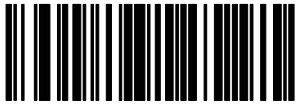

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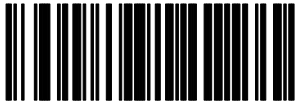

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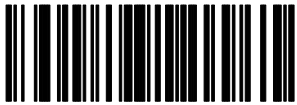

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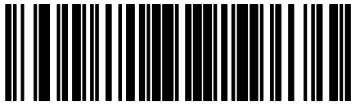

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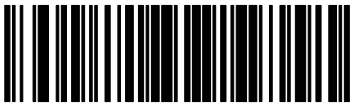

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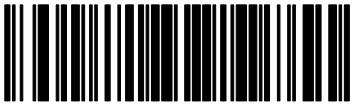

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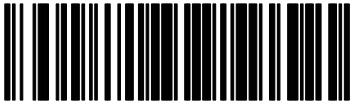

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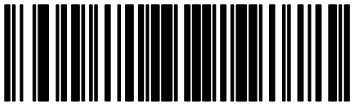

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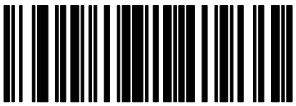

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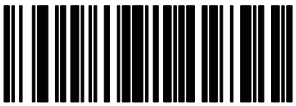

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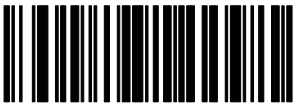

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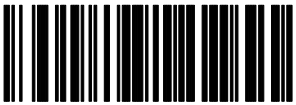

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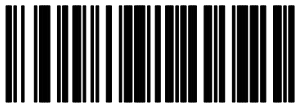

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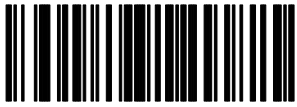

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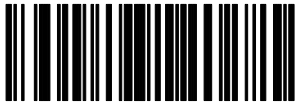

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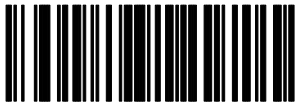

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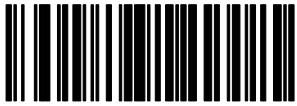

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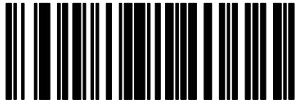

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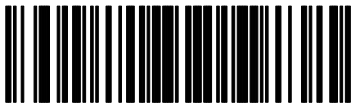

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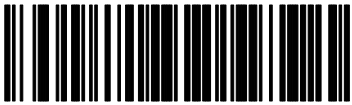

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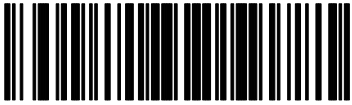

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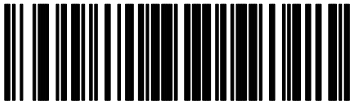

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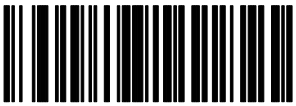

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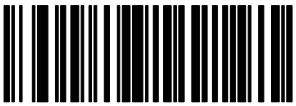

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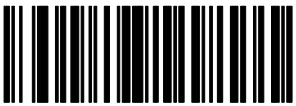

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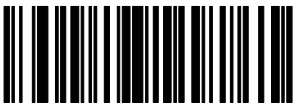

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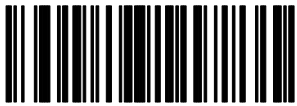

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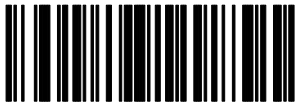

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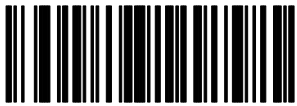

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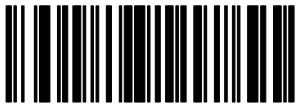

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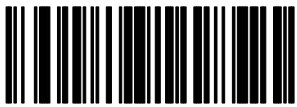

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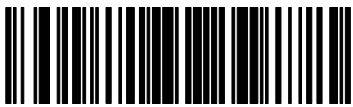

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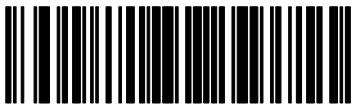

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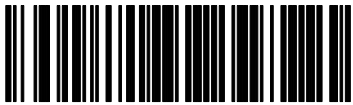

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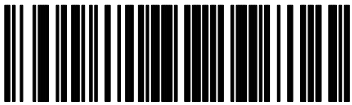

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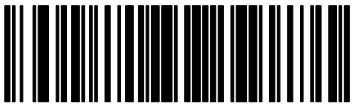

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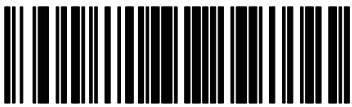

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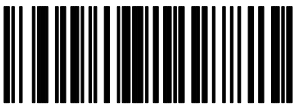

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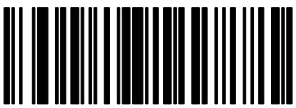

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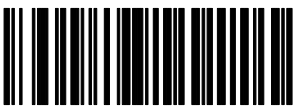

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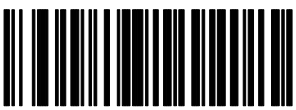

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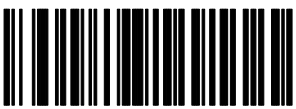

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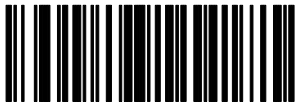

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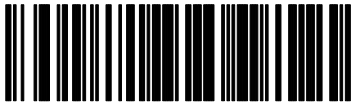

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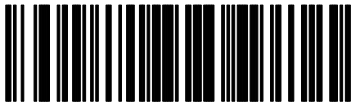

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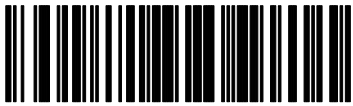

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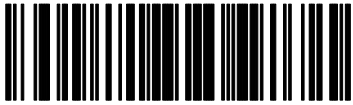

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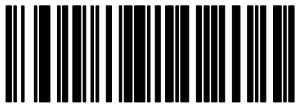

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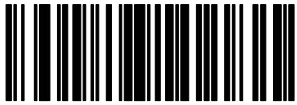

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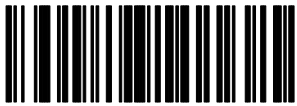

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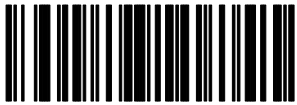

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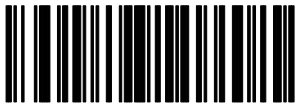

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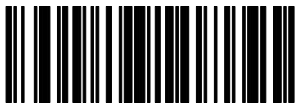

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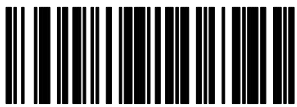

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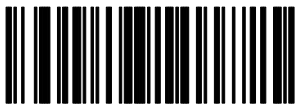

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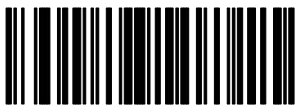

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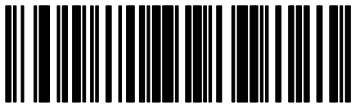
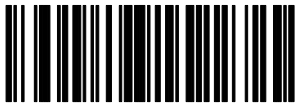


Send Keypad Enter

Send Keypad Num Lock



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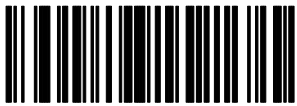

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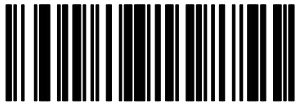

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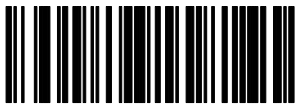

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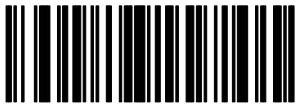
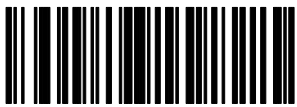


Send Page Down Key



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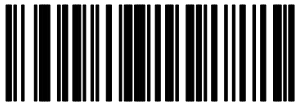

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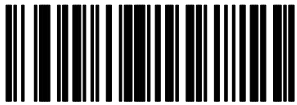

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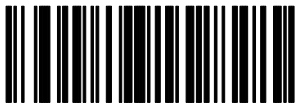
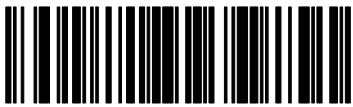
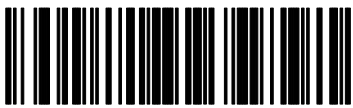


Send Tab Key



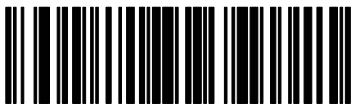
Send Print Screen Key

Send Insert Key

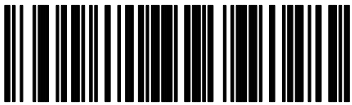


Send Home Key

Send Enter Key



Send Escape Key



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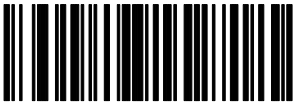

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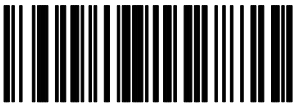

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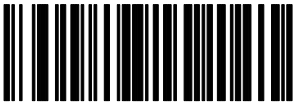

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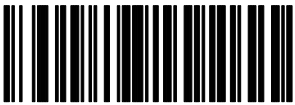

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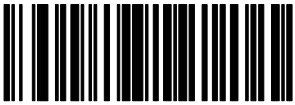

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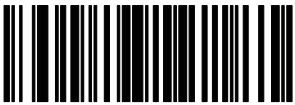

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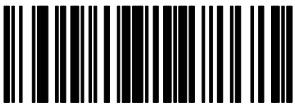

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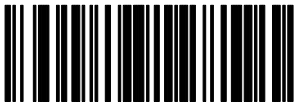

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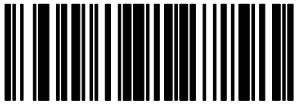

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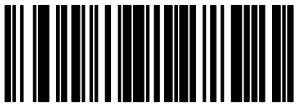

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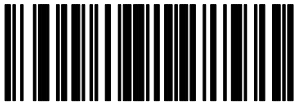

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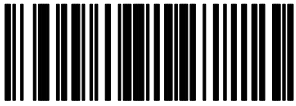

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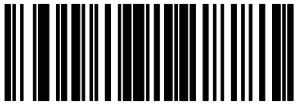

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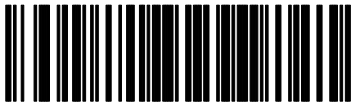

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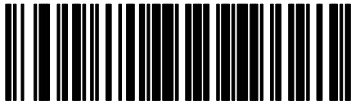

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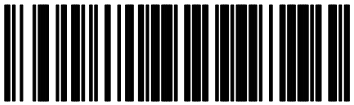

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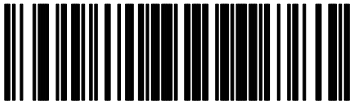

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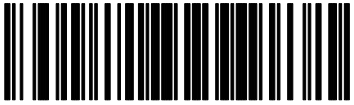

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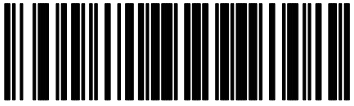

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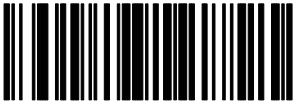

Send F16 Key

Send F17 Key

Send F18 Key

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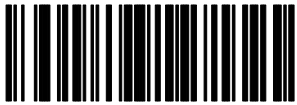

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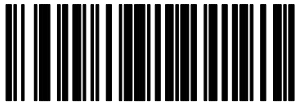

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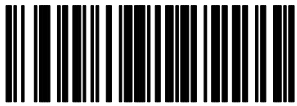

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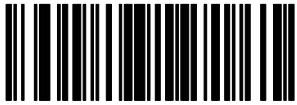

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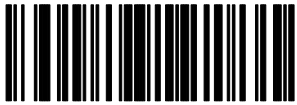

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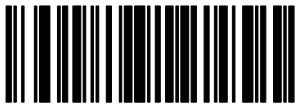

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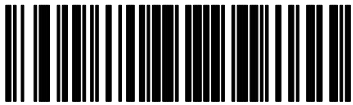

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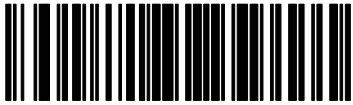

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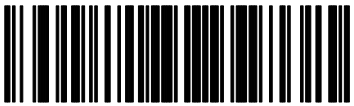

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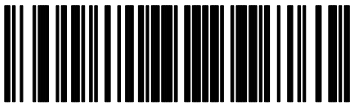

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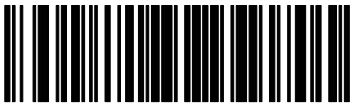

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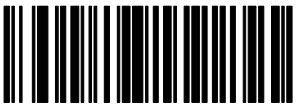

Send PF1 Key

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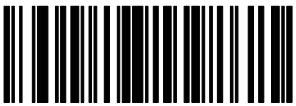

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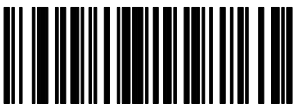

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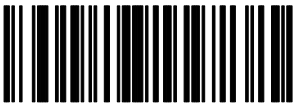

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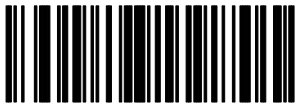

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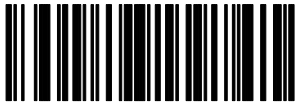

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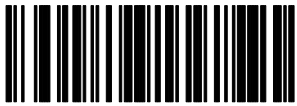

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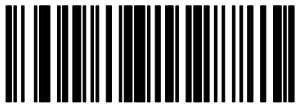

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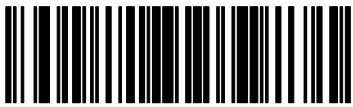

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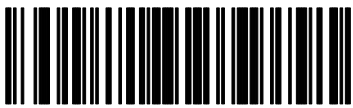

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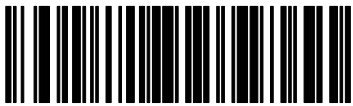

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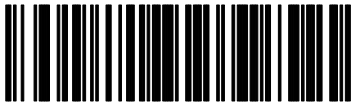

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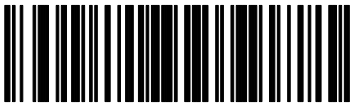

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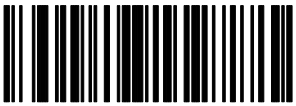
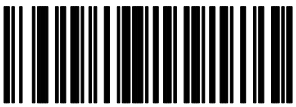


Send PF16 Key

Send PF17 Key

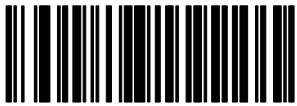
Send PF18 Key

Send PF19 Key



Send PF20 Key

Send PF21 Key



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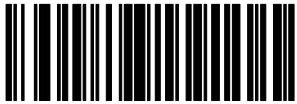

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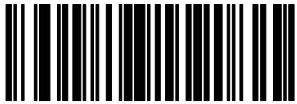
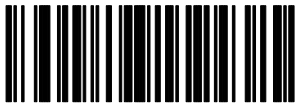
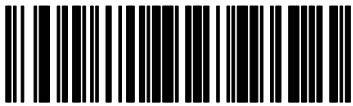


Send PF24 Key

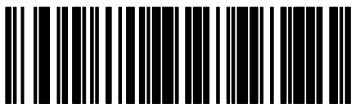


Send PF25 Key

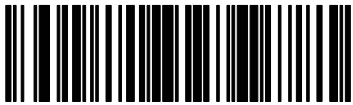
Send PF26 Key



Send PF27 Key



Send PF28 Key



Send PF29 Key

Send PF30 Key

Numeric Keypad

These keys are the not the same as those on an alphanumeric keypad.

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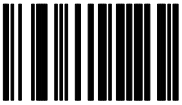

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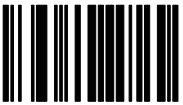

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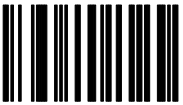

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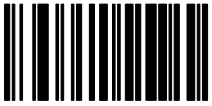
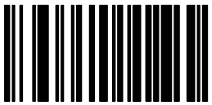
Alphanumeric Keypad

These keys are the not the same as those on a numeric keypad.



Space



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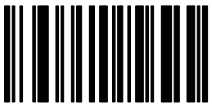

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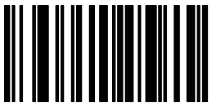

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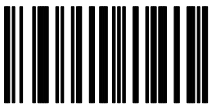

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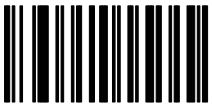

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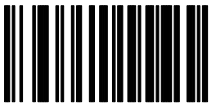

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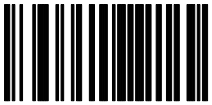

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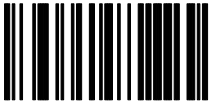

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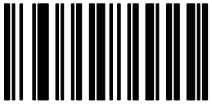

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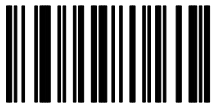

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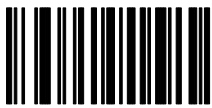

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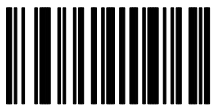

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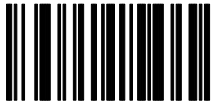

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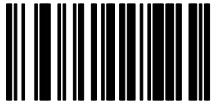

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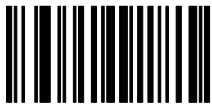

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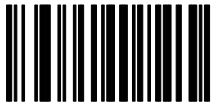

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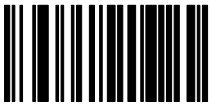

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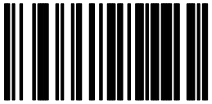

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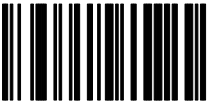

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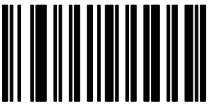

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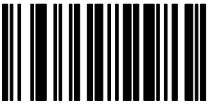

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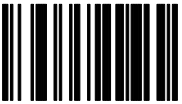
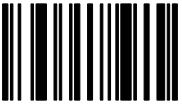


Cancel



End of Message

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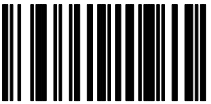

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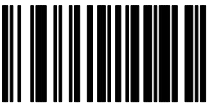

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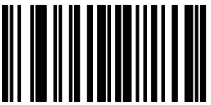

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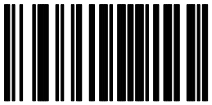

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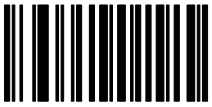

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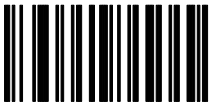

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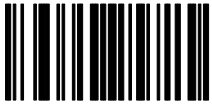

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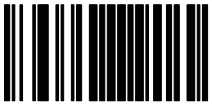

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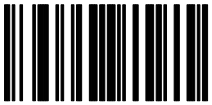

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Application Examples

This appendix is designed to illustrate various applications for the standard and long range cordless scanners (Catalog Nos. 2755-HCG-4 and 2755-HCG-7). Application examples include:

- enhanced decoder
- flexible interface module
- SLC 5/03™ and SLC 5/04™ controllers
- PLC-5® controller
- AdaptaScan™ pass-through
- DTAM™ Plus DeviceNet™

Because of the variety of uses for this information, the user of and those responsible for applying this information must satisfy themselves as to the acceptability of each application. In no event will Allen–Bradley Company be responsible or liable for indirect or consequential damages resulting from the use of application of this information.

The examples shown in this appendix are intended solely to illustrate the principles of the scanners and some of the methods used to apply them. Particularly because of the many requirements associated with any particular installation, Allen–Bradley Company cannot assume responsibility or liability for actual use based upon the illustrative uses and applications.

Enhanced Decoder

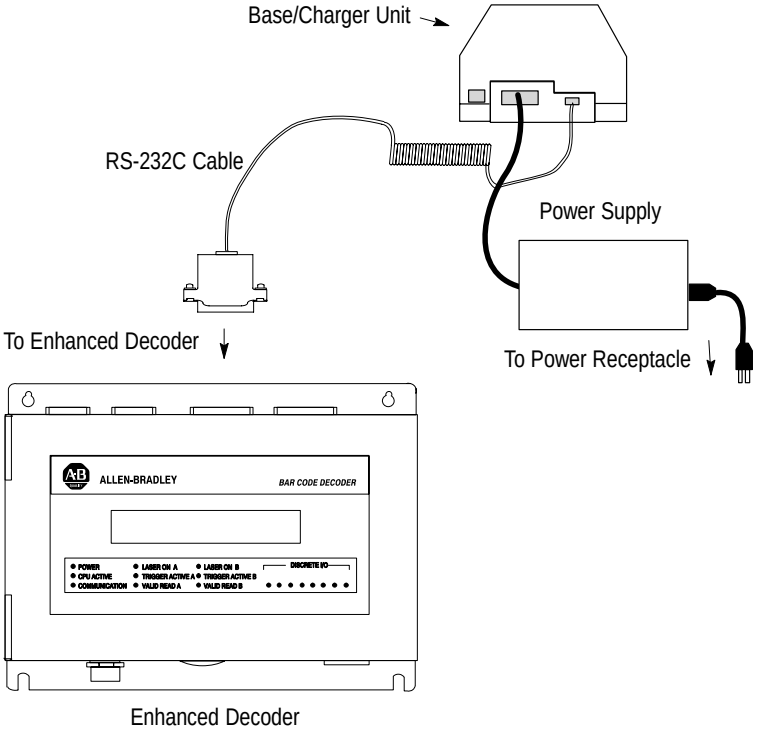
This application example describes how to configure and operate the scanners when using an RS-232 cable connected to the AUX port of an Allen-Bradley Enhanced Decoder (Catalog No. 2755-DD/DS). This application example also provides configuration information for an Auxiliary Port Pass-Through application for the enhanced decoder.

ATTENTION: Do not install the RS-232 cable with power applied to either the base/charger unit or enhanced decoder. Failure to follow this caution may result in damage to the scanner, base/charger unit, or enhanced decoder.

Refer to the *Enhanced Decoder User Manual* (Publication No. 2755-833) for additional information on the enhanced decoder.

Hardware Connections for AUX Port Pass-Through

The base/charger unit connects to an input port on the enhanced decoder with an RS-232 cable (Catalog No. 2755-HCC-BR1-06).

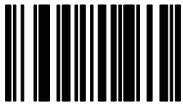


Enhanced Decoder

Configuration Codes for the AUX Port Pass-Through

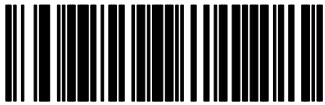
After making the necessary connections, scan the bar codes starting below to set up the scanner for use with the enhanced decoder.

1. Scan the Set Defaults bar code.



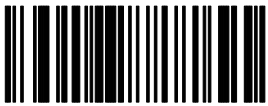
Set Defaults

2. Scan the Single Port RS-232 bar code.



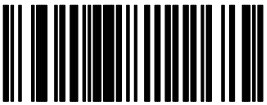
Single Port RS-232

3. Scan the Parity bar code.



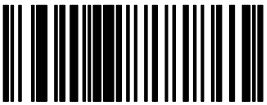
None

4. Scan the Stop Bit Select bar code.



1 Stop Bit

5. Scan the ASCII Format bar code.



8-bit

Enhanced Decoder Setup for the AUX Port Pass-Through

You need to configure the enhanced decoder. Follow the steps below or refer to the *Enhanced Decoder User Manual* (Publication No. 2755-833).

1. Select Aux Terminal Data Entry (Screen 8) from the Main Menu.

2. Set Enable Keyboard Entry = **Yes**

3. Save and Exit the configuration.

4. Move internal selector (jumper) to the data entry position on the system board (B-5, B-6).

5. Make sure the hand-held scanner baud rate = **9600**, parity = **N**one, data bits = **8**, and stop bits = **1**.

6. See Chapter 13 of *Enhanced Decoder User Manual* (Publication No. 2755-833) for additional information.

Flexible Interface Module

This application example describes how to configure and operate the scanners when using an RS-232 cable connected to the flexible interface module (Catalog No. 2760-RB).

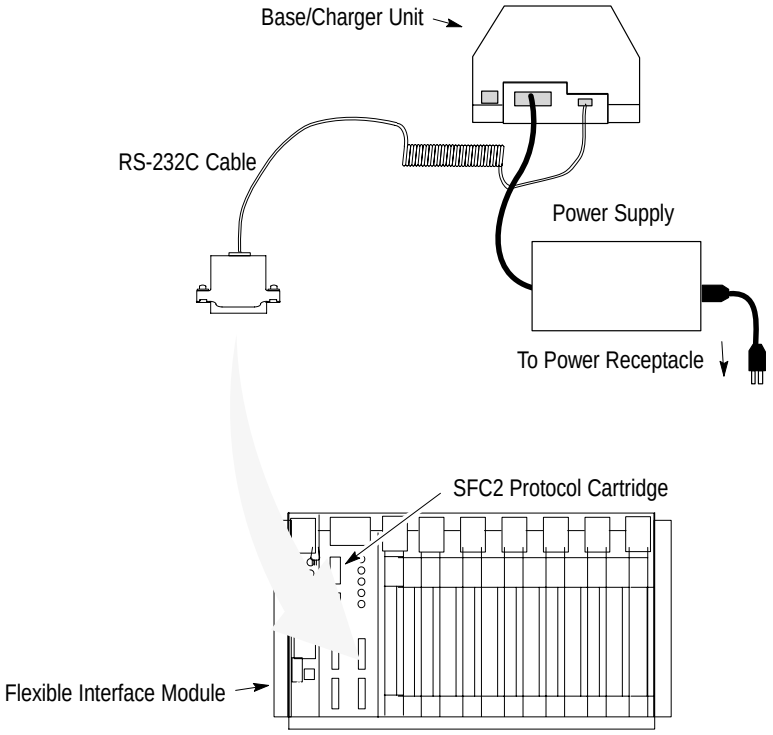
ATTENTION: Do not install the RS-232 cable with power applied to either the base/charger unit or flexible interface module. Failure to follow this caution may result in damage to the scanner, base/charger unit, or flexible interface module.

Refer to the following publications for additional information.

- *Flexible Interface Module User Manual* (Publication No. 2760-ND001)
- *SFC1 or SFC2 Protocol Cartridge User Manuals* (Publication Nos. 2760-ND002 or 2760-822)

Hardware Connections for the Flexible Interface Module

The base/charger unit connects to one of the three communication ports on the flexible interface module with an RS-232 cable (Catalog No. 2755-HCC-BR2-06). The interface module requires an SFC2 Protocol Cartridge.



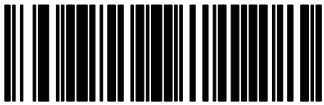
Configuration Codes for the Flexible Interface Module

After making the necessary connections, scan the bar codes starting below to set up the scanner for use with the flexible interface module.

1. Scan the Set Defaults bar code.

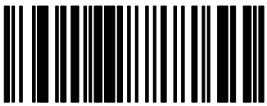
Set Defaults

2. Scan the Single Port RS-232 bar code.



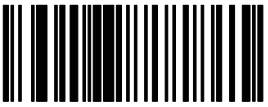
Single Port RS-232

3. Scan the Parity bar code.



None

4. Scan the ASCII Format bar code.



8-bit

The cable defaults work with the flexible interface module. Your application may have specific requirements. If you change a communication setting, make sure the flexible interface module is configured to accept the change.

Flexible Interface Module Setup

You need to configure the flexible interface module. Follow the steps below or refer to the *Flexible Interface Module User Manual* (Publication No. 2760-ND001) or the *SFC1 or SFC2 Protocol Cartridge User Manuals* (Publication Nos. 2760-ND002 or 2760-822).

1. Select 90B to reset the configuration to factory defaults.

2. Configure screens 3, 21, and 11 (in this order) as shown on the following pages.

```
        2760–RB        SERIES A  REVISION J
    COPYRIGHT 1989                ALLEN–BRADLEY COMPANY, INC.
    ____________________________________________________

1X  – CONFIGURATION PARAMETERS        2X  – IDENTIFICATION NUMBERS
3   – DEVICE PORT PROTOCOL NAMES      4DM – MATCH CODE ENTRIES
5I  – DISCRETE BYTE INPUT ENTRIES     6   – THE DATA MATRIX ENTRIES
7   – THE PASS THROUGH ENTRIES        8   – NON–VOLATILE SCRATCH PAD AREA
9XF – RB MODULE FUNCTIONS            AX  – HARDWARE DIAGNOSTICS
BX  – SOFTWARE DIAGNOSTICS            C   – EXIT CONFIGURATION MODE

WHERE X (0 TO 7) AND D (1 TO 3) ARE PORT NUMBERS WHICH ARE DEFINED BELOW :

0 – RB CMMND PRCSS   2 – SERIAL PORT 2   4 – CONFIG PORT     6 – I/O RACK SLT 1
1 – SERIAL PORT 1    3 – SERIAL PORT 3   5 – I/O RACK SLT 0   7 – RESERVED

WHERE F (A TO E) ARE FUNCTIONS THAT RB CAN PERFORM WHICH ARE DEFINED BELOW :

A – RESET   B – SET DEFAULTS   C – FLUSH   D – INITIALIZE   E – CLEAR DIAGS

WHERE M (A TO T) AND I (A TO H) ARE ENTRY NUMBERS FOR THE SELECTION MADE ABOVE.

            ENTER A MAIN MENU SELECTION:
```

```
            ENTER A MAIN MENU SELECTION: 3

PORT 1 = COPYRIGHT 1989          ALLEN–BRADLEY COMPANY, INC.
 2760–SFC1 DT    , SERIES A , REVISION B    (YES/NO) = YES.

PORT 2 = COPYRIGHT 1989          ALLEN–BRADLEY COMPANY, INC.
2760–SFC1 DT    , SERIES A , REVISION B    (YES/NO) = YES.

PORT 3 = COPYRIGHT 1989          ALLEN–BRADLEY COMPANY, INC.
2760–SFC1 DT    , SERIES A , REVISION B    (YES/NO) = YES.

EDIT THIS SELECTION (YES/NO) ?
```

```
ENTER A MAIN MENU SELECTION: 21

DUMB TERM. UNSPECIFIED PROTOCOL, 13fh (YES/NO) = YES.

EDIT THIS SELECTION (YES/NO) ?
```

```
ENTER A MAIN MENU SELECTION: 11

MODEM CONTROL (ENABLE/DISABLE) = DISABLE.
9600 BITS PER SECOND (YES/NO) = YES.
8 BITS NO PARITY (YES/NO) = YES.
XON/XOFF (ENABLE/DISABLE) = DISABLE.
RS232 (YES/NO) = YES.
RECEIVE MATRIXING (ENABLE/DISABLE) = DISABLE.
BYTE SWAPPING (ENABLE/DISABLE) = ENABLE.
BINARY DATA NO CONVERSIONS (YES/NO) = YES.
HDR/TLR ON OUTPUT (ENABLE/DISABLE) = ENABLE.
HEADER BYTE LENGTH (DEC 0...4) = 0.
HEADER DATA[0] (HEX 0...ff) = 0.
HEADER DATA[1] (HEX 0...ff) = 0.
HEADER DATA[2] (HEX 0...ff) = 0.
HEADER DATA[3] (HEX 0...ff) = 0.
TRAILER BYTE LENGTH (DEC 0...4) = 2.
TRAILER DATA[0] (HEX 0...ff) = a.
TRAILER DATA[1] (HEX 0...ff) = d.
TRAILER DATA[2] (HEX 0...ff) = 0.
TRAILER DATA[3] (HEX 0...ff) = 0.
MAX DATA BYTE LENGTH (DEC 0...124) = 0.
MIN DATA BYTE LENGTH (DEC 0...124) = 0.

CONTINUE THIS SELECTION (YES/NO) ?
```

3. Make sure PLC program is written to access Flexible Interface Module data.

SLC 5/03 and SLC 5/04 Controllers

This application example describes how to configure and operate the scanners when using an RS-232 cable connected to the SLC 5/03 (Catalog No. 1747-L532) and SLC 5/04 controllers (Catalog Nos. 1747-L541, 1747-L542, and 1747-L543).

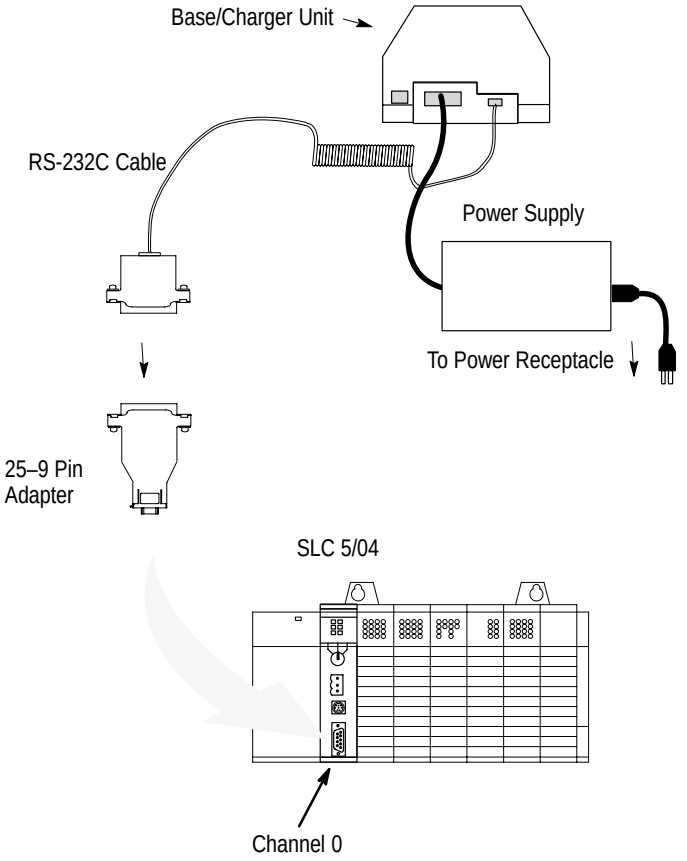
ATTENTION: Do not install the RS-232 cable with power applied to either the base/charger unit or SLC 5/03 or SLC 5/04 controllers. Failure to follow this caution may result in damage to the scanner, base/charger unit, or SLC 5/03 or SLC 5/04 controllers.

Refer to the following publications for additional information.

- *SLC 500 Modular Hardware Style Installation and Operation Manual* (Publication No. 1747-6.2)
- *SLC 500 and MicroLogix™ 1000 Instruction Set Reference Manual* (Publication No. 1747-6.15)
- *Advanced Programming Software User Manual* (Publication No. 9399-APSUM-11.15.95)

Hardware Connections for the SLC 5/03 and SLC 5/04 Controllers

The base/charger unit connects to one of the communication ports on the SLC 5/03 or SLC 5/04 controllers with an RS-232 cable (Catalog No. 2755-HCC-BR1-06). You need to use a 25–9 pin connector as shown below.



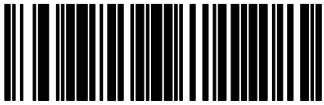
Configuration Codes for the SLC 5/03 and SLC 5/04 Controllers

After making the necessary connections, scan the bar codes starting below to set up the scanner for use with the SLC 5/03 and SLC 5/04 controllers.

1. Scan the Set Defaults bar code.

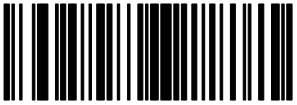
Set Defaults

2. Scan the Single Port RS-232 bar code.

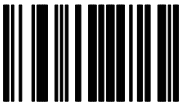


Single Port RS-232

3. Scan the following bar codes.



Scan Suffix (Value 1)



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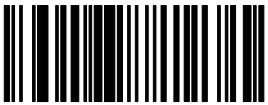
4. Scan the Data Transmission Format bar code.

<Data><Suffix>

5. Scan the Parity bar code.



Even

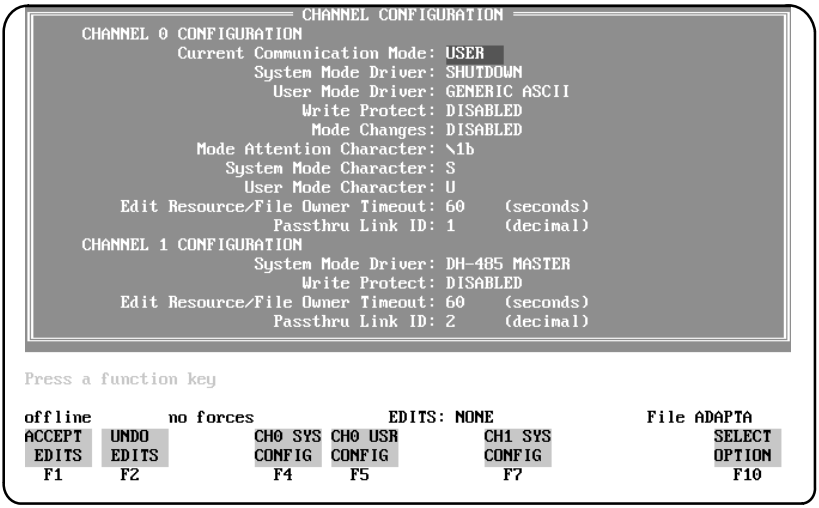
The cable defaults work with the SLC 5/03 and SLC 5/04 controllers. Your application may have specific requirements. If you change a communication setting, make sure the SLC 5/03 and SLC 5/04 controllers are configured to accept the change.

SLC 5/03 and SLC 5/04 Controllers Setup

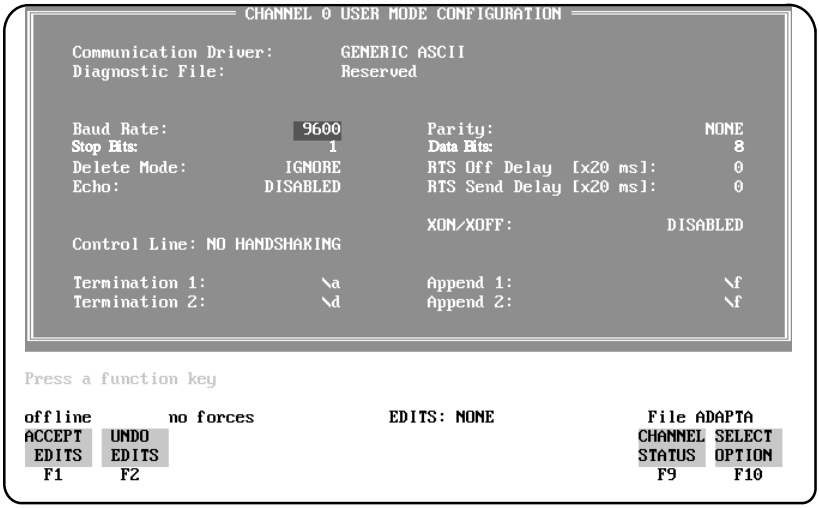
You need to configure the SLC 5/03 and SLC 5/04 controllers. Follow the steps starting below or refer to the following publications:

- *SLC 500 Modular Hardware Style Installation and Operation Manual* (Publication No. 1747-6.2)
- *SLC 500 and MicroLogix™ 1000 Instruction Set Reference Manual* (Publication No. 1747-6.15)
- *Advanced Programming Software User Manual* (Publication No. 9399-APSUM-11.15.95)

1. Set the SLC Channel 0 to **User** in the Channel 0 Configuration screen



2. Configure Channel 0 in the Channel 0 User Mode Configuration screen.

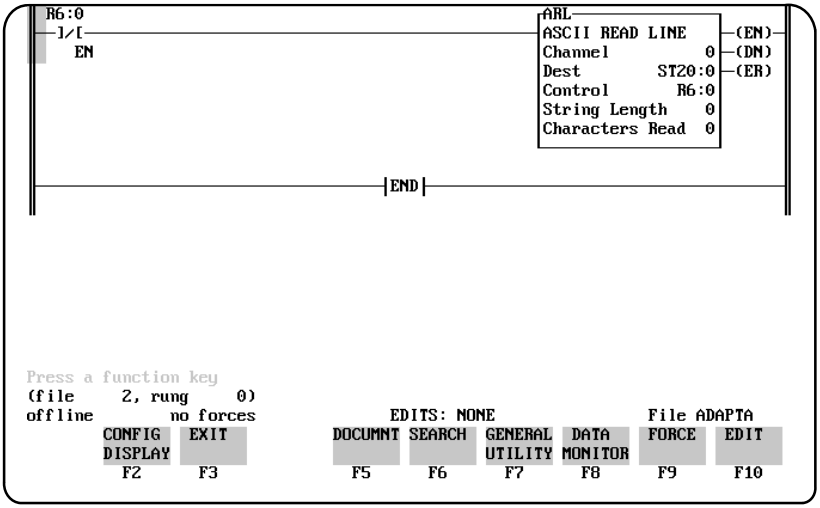


Note that Termination 1 is set for **\a** or Line Feed **[LF]**, and Termination 2 is set for **\d** or Carriage Return **[CR]**. These terminators, along with the **ARL** instruction in the SLC, allow you to read one message at a time with **[CR] [LF]** terminators.

SLC Program

The sample ladder logic listing below instructs the SLC 5/03 and SLC 5/04 controllers to:

Rung 2:0 – Read one string of ASCII data terminated with a **[CR] [LF]**.



PLC-5 Controllers

This application example describes how to configure and operate the scanners when using an RS-232 cable connected to the PLC-5 controllers (Catalog Nos. 1785-L11B, 1785-L20B, 1785-L30B, 1785-L40B, 1785-L60B, and 1785-L80B).

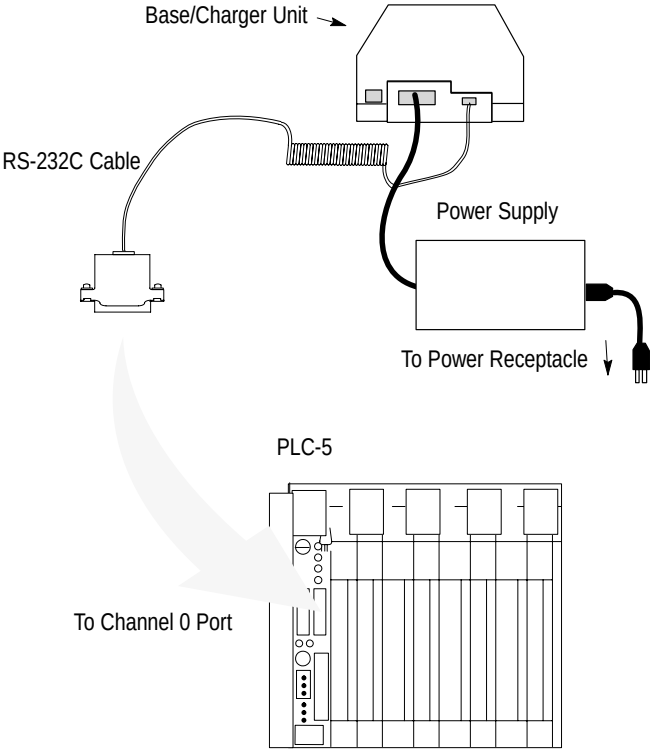
ATTENTION: Do not install the RS-232 cable with power applied to either the base/charger unit or PLC-5 controllers. Failure to follow this caution may result in damage to the scanner, base/charger unit, or PLC-5 controllers.

Refer to the following publications for additional information.

- *Classic PLC-5 Family Programmable Controllers Hardware Installation Manual* (Publication No. 1785-6.6.1)
- *PLC-5 Programming Software Instruction Set Reference Manual* (Publication No. 6200-6.4.11)
- *PLC-5 Programming Software Configuration and Maintenance Manual* (Publication No. 6200-6.4.6)

Hardware Connections for the PLC-5 Controllers

The base/charger unit connects to the PLC-5 controllers with an RS-232 cable (Catalog No. 2755-HCC-BR2-06).



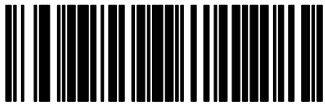
Configuration Codes for the PLC-5 Controllers

After making the necessary connections, scan bar codes starting below to set up the scanner for use with the PLC-5 controllers.

1. Scan the Set Defaults bar code.

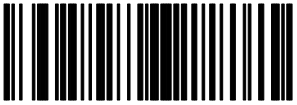
Set Defaults

2. Scan the Single Port RS-232 bar code.

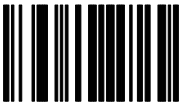


Single Port RS-232

3. Scan the following bar codes.



Scan Suffix (Value 1)



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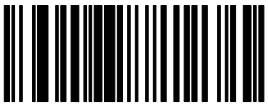
3

4. Scan the Data Transmission Format bar code.

<Data><Suffix>

5. Scan the Parity bar code.



Even

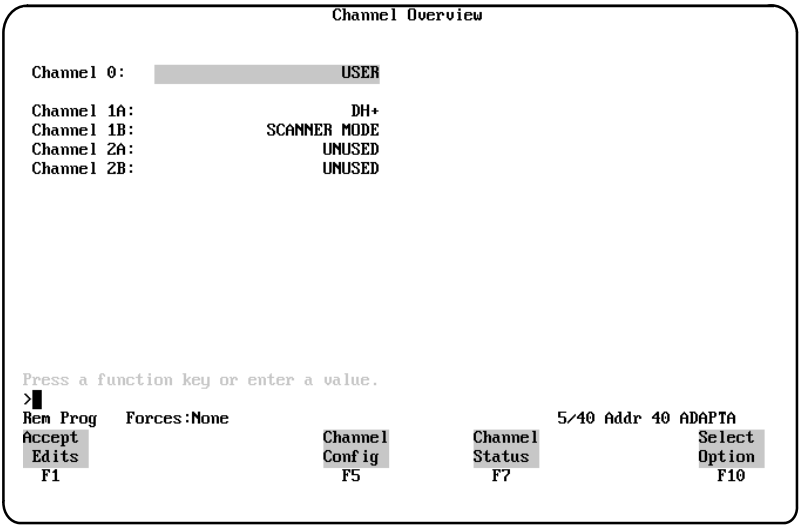
The cable defaults work with the PLC-5 controllers. Your application may have specific requirements. If you change a communication setting, make sure the PLC-5 controllers are configured to accept the change.

PLC-5 Controllers Setup

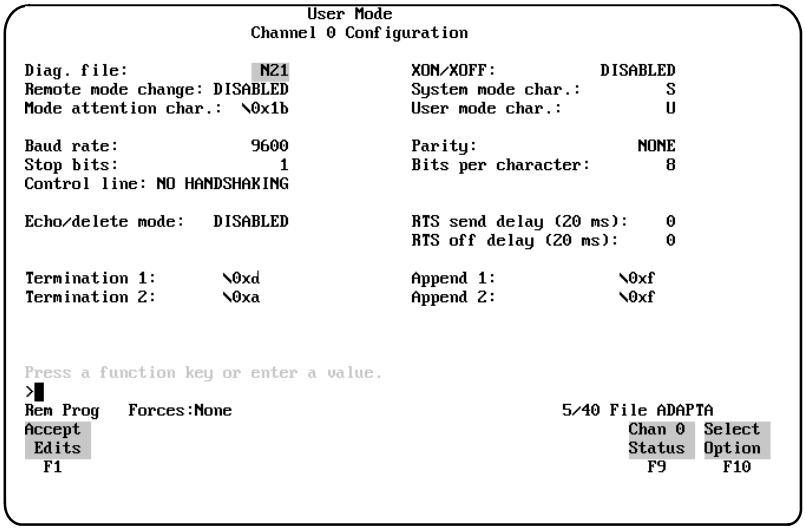
You need to configure the Channel 0 port of the PLC-5 controllers. Follow the steps below or refer to the following publications:

- *Classic PLC-5 Family Programmable Controllers Hardware Installation Manual* (Publication No. 1785-6.6.1)
- *PLC-5 Programming Software Instruction Set Reference Manual* (Publication No. 6200-6.4.11)
- *PLC-5 Programming Software Configuration and Maintenance Manual* (Publication No. 6200-6.4.6)

1. Set the PLC-5 Channel 0 to **User** in the Channel 0 Configuration screen.



2. Configure Channel 0 in the User Mode Channel 0 Configuration screen.

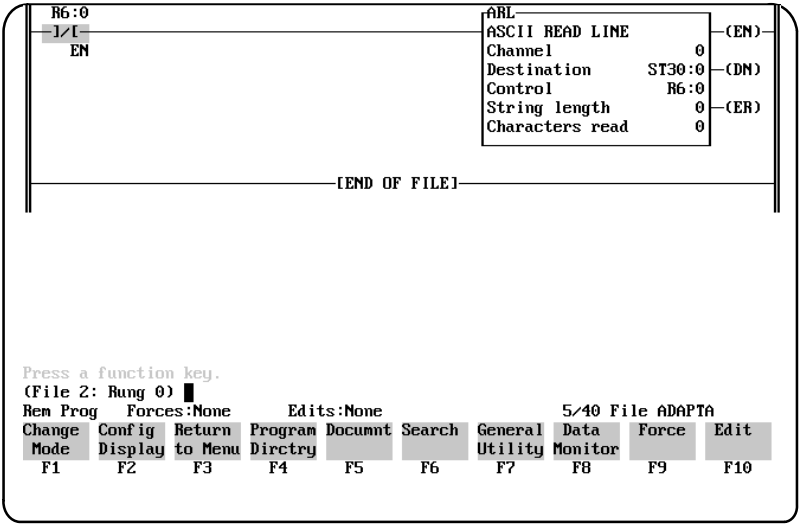


Note that Termination 1 is set for **\0xa** or Line Feed **[LF]**, and Termination 2 is set for **\0xd** or Carriage Return **[CR]**. These terminators, along with the **ARL** instruction in the PLC-5 controllers, allow you to read one message at a time with **[CR] [LF]** terminators.

PLC Program

The sample ladder logic listing below instructs the PLC-5 controllers to:

Rung 2:0 – Read one string of ASCII data terminated with a **[CR] [LF]**.



AdaptaScan Pass-Through

This application example describes how to configure and operate the scanners when using an RS-232 cable connected to the AdaptaScan bar code reader (Catalog Nos. 2755-SN3, 2755-SN5, and 2755-SN8).

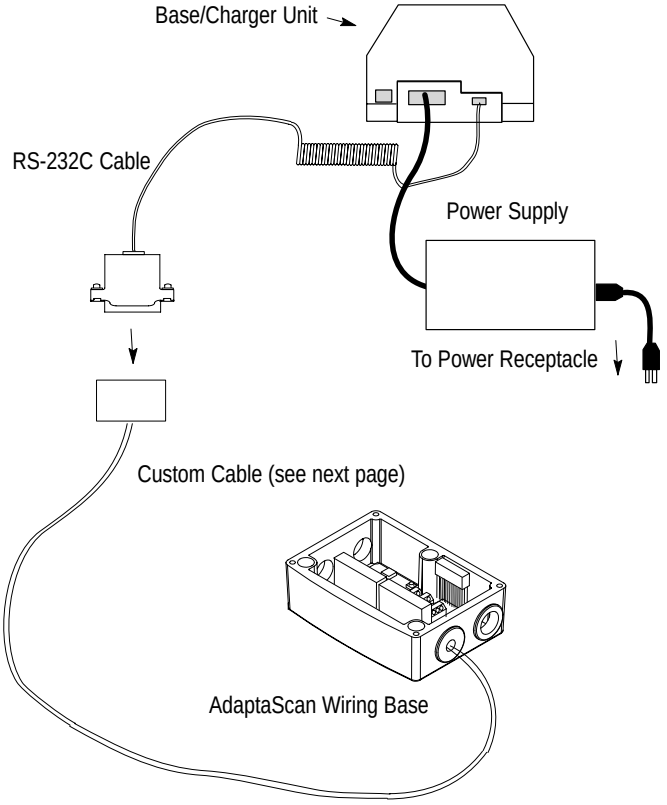
ATTENTION: Do not install the RS-232 cable with power applied to either the base/charger unit or AdaptaScan. Failure to follow this caution may result in damage to the scanner, base/charger unit, or AdaptaScan.

Refer to the following publications for additional information.

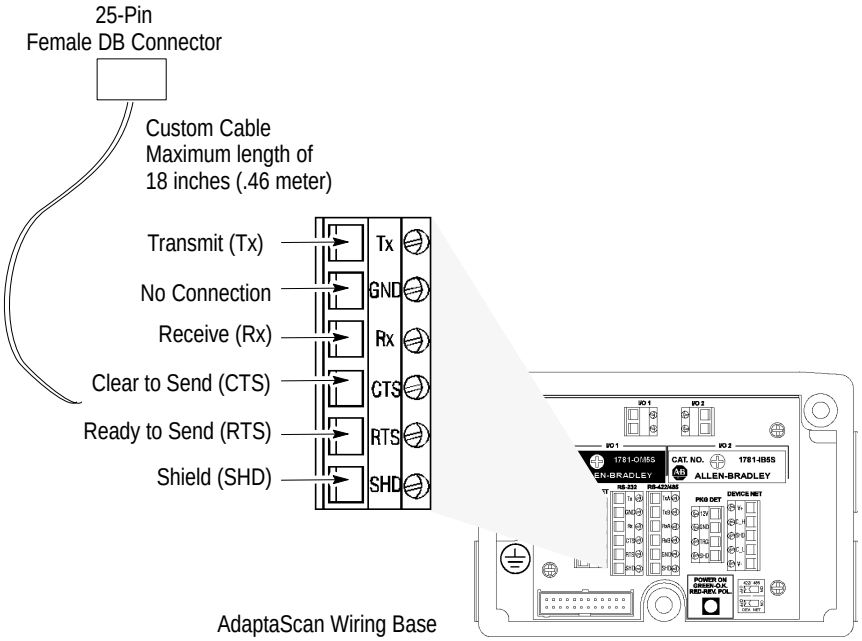
- *AdaptaScan Bar Code Readers User Manual* (Publication No. 2755-837)
- *AdaptaScan Software User Manual* (Publication No. 2755-838)

Hardware Connections for the AdaptaScan Bar Code Reader

The scanner connects to the AdaptaScan wiring base with a custom cable connected to the RS-232 cable (Catalog No. 2755-HCC-BR1-06).



The custom cable for the AdaptaScan Pass-Through Cable connects to the RS-232 and package detect terminals in the AdaptaScan wiring base.



The following table provides the pinout connections for the cable (DB 25-pin female connector).

Pass-Through Cable Pin Number	Function	AdaptaScan Terminal Connection
2	Receive Data Input	Tx (RS-232 Terminal Block)
3	Transmit Data Output	Rx (RS-232 Terminal Block)
4	CTS Input	RTS (RS–232 Terminal Block)
5	RTS Output	CTS (RS-232 Terminal Block)
Shield	Shield Ground	SHD (RS-232 Terminal Block)

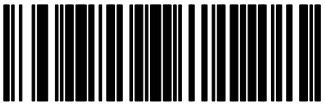
Configuration Codes for the AdaptaScan Bar Code Readers

After making the necessary connections, scan the bar codes starting below to set up the scanner for use with the AdaptaScan.

1. Scan the Set Defaults bar code.

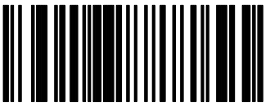
Set Defaults

2. Scan the Single Port RS-232 bar code.



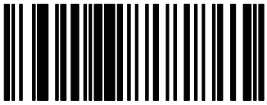
Single Port RS-232

3. Scan the Parity bar code.



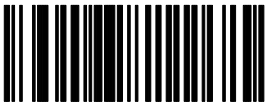
None

4. Scan the ASCII Format bar code.



8-bit

5. Scan the Stop Bit Select bar code.

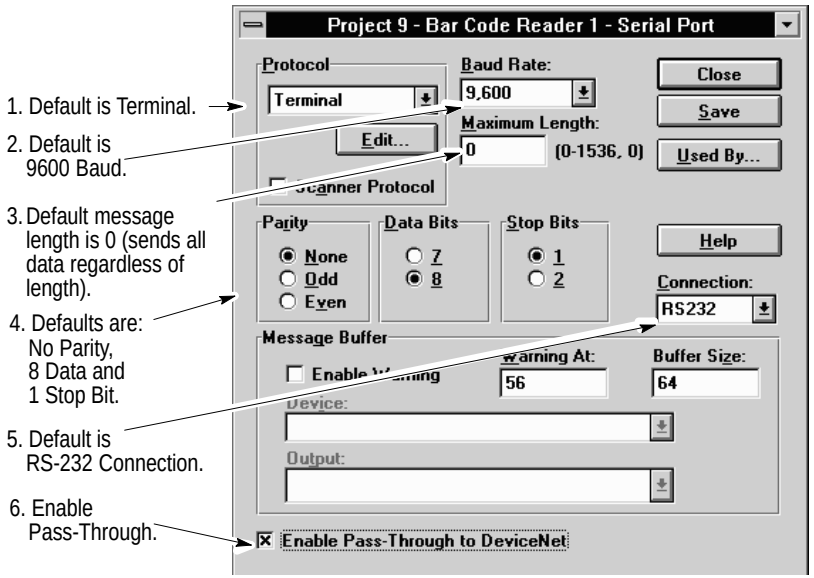


1 Stop Bit

The cable defaults work with the AdaptaScan. Your application may have specific requirements. If you change a communication setting, make sure the AdaptaScan is configured to accept the change.

AdaptaScan Bar Code Readers Setup

You may need to configure the AdaptaScan RS-232 port to accept the scanner data. Verify that the AdaptaScan serial port is configured as shown below. All settings use the default values except for the Enable Pass-Through to DeviceNet check box. Refer to the *AdaptaScan Software User Manual* (Publication No. 2755-838) for additional information.



DTAM Plus DeviceNet

This application example describes how to configure and operate the scanners when using an RS-232 cable connected to a DTAM Operator Interface (Catalog Nos. 2707-L8P1, 2707-L8P2, 2707-L40P1, 2707–L40P2, 2707–L40P4, 2707-V40P1, 2707-V40P2, or 2707-V40P2N) on a DeviceNet network.

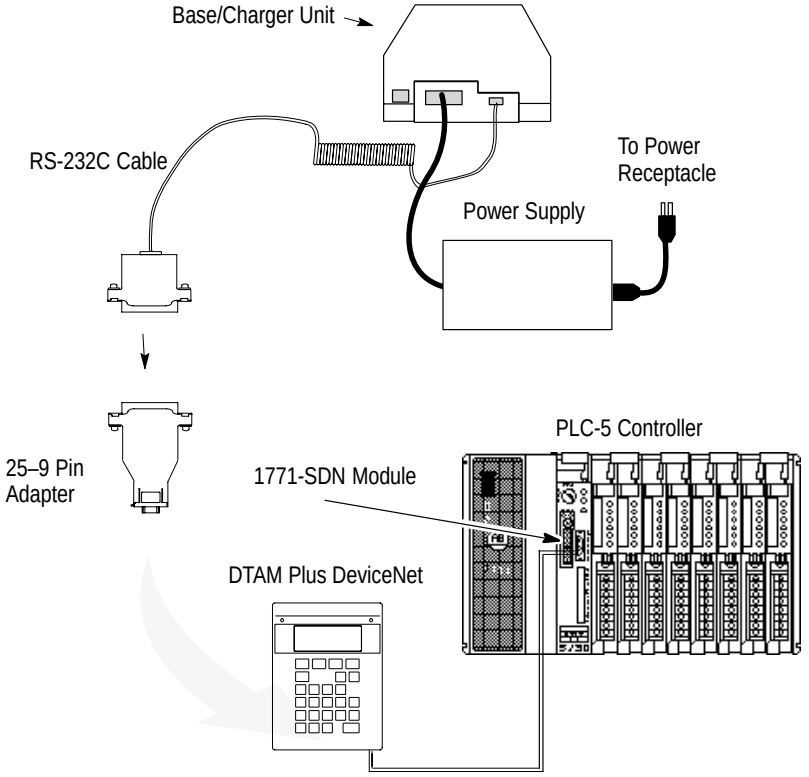
ATTENTION: Do not install the RS-232 cable with power applied to either the base/charger unit or DTAM Operator Interface. Failure to follow this caution may result in damage to the scanner, base/charger unit, or DTAM Operator Interface.

Refer to the following publications for additional information.

- *DTAM Plus Operator Interface Module User Manual* (Publication No. 2707-800)
- *DTAM Plus Devicenet Operator Interface Document Update* (Publication No. 2707-800.5)
- *DTAM Programming Software Programming Manual* (Publication No. 2707-802)
- *Getting Started with DTAM Plus User Manual* (Publication No. 2707-802)

Hardware Connections for the DTAM Plus Operator Interface

The scanners connect to the DTAM Plus Operator Interface with the RS-232 cable (Catalog No. 2755-HCC-BR1-06). You need to use a 25–9 pin connector as shown below.



Configuration Codes for the DTAM Plus Operator Interface

After making the necessary connections, scan the bar codes starting below to set up the scanner for use with the DTAM Operator Interface.

1. Scan the Set Defaults bar code.

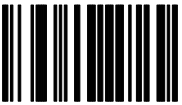
Set Defaults

2. Scan the Single Port RS-232 bar code.

Single Port RS-232

3. Scan the following bar codes.

Scan Suffix (Value 1)



7

0

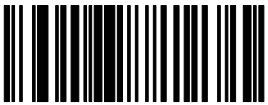
1

3

4. Scan the Data Transmission Format bar code.

<Data><Suffix>

5. Scan the Parity bar code.



Even

The cable defaults work with the DTAM Plus Operator Interface. Your application may have specific requirements. If you change a communication setting, make sure the DTAM Plus Operator Interface is configured to accept the change.

DTAM Plus Operator Interface Setup

You may need to configure the DTAM Plus Operator Interface RS-232 port to accept the scanner data. Follow the steps below or refer to the *DTAM Programming Software Programming Manual* (Publication No. 2707-802).

1. Open Screen Builder.

2. Open Create Screen.

3. Open Data Entry Screen.

4. Select Set Up Screen.

5. Select Data Entry.

6. Select ASCII Input.

7. Set up DTAM.

DeviceNet Operation

The DTAM Plus DeviceNet operates as a Group 2 Server on the DeviceNet network. It supports the Unconnected Message Manager (UCMM). The DTAM Plus DeviceNet implements the predefined master/slave connection set, operating as a slave device. It does not initiate communications except for a Duplicate Node Address check on power-up.

The DTAM Plus DeviceNet supports the polled I/O method of exchanging data with a master, in the following sequence:

1. The designated master writes an output image to the DTAM Plus DeviceNet using the Poll Command message.
2. The DTAM Plus DeviceNet responds to the poll command by returning an input image back to the master in a Poll Response message.

   Note: The size of the input and output images (also referred to as files) are individually configurable from 0 words to 121 words each, to optimize DeviceNet network loading.
3. The DTAM Plus DeviceNet application program interacts with data contained in the input and output files.
4. Data Display screens are used to view input and output data.
5. Data Entry screens are used to modify input and output data from the scanner.

ASCII Table

This appendix lists the following key values:

- ASCII
- ALT
- miscellaneous
- PF
- F key
- numeric
- extended keypad

ASCII Key Values

ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke	ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke
1000	%U	CTRL 2	1022	$V	CTRL V
1001	$A	CTRL A	1023	$W	CTRL W
1002	$B	CTRL B	1024	$X	CTRL X
1003	$C	CTRL C	1025	$Y	CTRL Y
1004	$D	CTRL D	1026	$Z	CTRL Z
1005	$E	CTRL E	1027	%A	CTRL[
1006	$F	CTRL F	1028	%B	CTRL \
1007	$G	CTRL G	1029	%C	CTRL]
1008	$H	CTRL H	1030	%D	CTRL 6
1009	$I	CTRL I	1031	%E	CTRL _
1010	$J	CTRL J	1032	SP	SP
1011	$K	CTRL K	1033	/A	!
1012	$L	CTRL L	1034	/B	“
1013	$M	CTRL M	1035	/C	#
1014	$N	CTRL N	1036	/D	$
1015	$O	CTRL O	1037	/E	%
1016	$P	CTRL P	1038	/F	&
1017	$Q	CTRL Q	1039	/G	’
1018	$R	CTRL R	1040	/H	(
1019	$S	CTRL S	1041	/I	)
1020	$T	CTRL T	1042	/J	*
1021	$U	CTRL U	1043	/K	+

Table continued on the next page.

ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke	ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke
1044	/L	,	1069	E	E
1045	-	-	1070	F	F
1046	.	.	1071	G	G
1047	/	/	1072	H	H
1048	0	0	1073	I	I
1049	1	1	1074	J	J
1050	2	2	1075	K	K
1051	3	3	1076	L	L
1052	4	4	1077	M	M
1053	5	5	1078	N	N
1054	6	6	1079	O	O
1055	7	7	1080	P	P
1056	8	8	1081	Q	Q
1057	9	9	1082	R	R
1058	/Z	:	1083	S	S
1059	%F	;	1084	T	T
1060	%G	<	1085	U	U
1061	%H	=	1086	V	V
1062	%I	>	1087	W	W
1063	%J	?	1088	X	X
1064	%V	@	1089	Y	Y
1065	A	A	1090	Z	Z
1066	B	B	1091	%K	[
1067	C	C	1092	%L	\
1068	D	D	1093	%M	]

Table continued on the next page.

ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke	ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke
1094	%N	^	1111	+O	o
1095	%O	_	1112	+P	p
1096	%W	'	1113	+Q	q
1097	+A	a	1114	+R	r
1098	+B	b	1115	+S	s
1099	+C	c	1116	+T	t
1100	+D	d	1117	+U	u
1101	+E	e	1118	+V	v
1102	+F	f	1119	+W	w
1103	+G	g	1120	+X	x
1104	+H	h	1121	+Y	y
1105	+I	i	1122	+Z	z
1106	+J	j	1123	%P	{
1107	+K	k	1124	%Q	|
1108	+L	l	1125	%R	}
1109	+M	m	1126	%S	~
1110	+N	n	1127		Undefined

ALT Key Values

ALT Key Value	Keystroke	ALT Key Value	Keystroke	ALT Key Value	Keystroke
2064	ALT 2	2075	ALT K	2086	ALT V
2065	ALT A	2076	ALT L	2087	ALT W
2066	ALT B	2077	ALT M	2088	ALT X
2067	ALT C	2078	ALT N	2089	ALT Y
2068	ALT D	2079	ALT O	2090	ALT Z
2069	ALT E	2080	ALT P	2091	ALT [
2070	ALT F	2081	ALT Q	2092	ALT \
2071	ALT G	2082	ALT R	2093	ALT]
2072	ALT H	2083	ALT S	2094	ALT 6
2073	ALT I	2084	ALT T	2095	ALT -
2074	ALT J	2085	ALT U		

Miscellaneous Key Values

Misc. Key Value	Keystroke	Misc. Key Value	Keystroke	Misc. Key Value	Keystroke
3001	PA 1	3009	CMD 7	3017	°
3002	PA 2	3010	CMD 8	3018	$^1/_2$
3003	CMD 1	3011	CMD 9	3019	¶
3004	CMD 2	3012	CMD 10	3020	§
3005	CMD 3	3013	¥	3021	|
3006	CMD 4	3014	£	3022	0/00
3007	CMD 5	3015	□		
3008	CMD 6	3016	–		

PF Key Values

PF Key Value	Keystroke	PF Key Value	Keystroke	PF Key Value	Keystroke
4001	PF 1	4009	PF 9	4017	PF 17
4002	PF 2	4010	PF 10	4018	PF 18
4003	PF 3	4011	PF 11	4019	PF 19
4004	PF 4	4012	PF 12	4020	PF 20
4005	PF 5	4013	PF 13	4021	PF 21
4006	PF 6	4014	PF 14	4022	PF 22
4007	PF 7	4015	PF 15	4023	PF 23
4008	PF 8	4016	PF 16	4024	PF 24

F Key Values

F Key Value	Keystroke	F Key Value	Keystroke	F Key Value	Keystroke
5001	F 1	5014	F 14	5027	F 27
5002	F 2	5015	F 15	5028	F 28
5003	F 3	5016	F 16	5029	F 29
5004	F 4	5017	F 17	5030	F 30
5005	F 5	5018	F 18	5031	F 31
5006	F 6	5019	F 19	5032	F 32
5007	F 7	5020	F 20	5033	F 33
5008	F 8	5021	F 21	5034	F 34
5009	F 9	5022	F 22	5035	F 35
5010	F 10	5023	F 23	5036	F 36
5011	F 11	5024	F 24	5037	F 37
5012	F 12	5025	F 25	5038	F 38
5013	F 13	5026	F 26	5039	F 39

Numeric Key Values

Numeric Key Value	Keystroke	Numeric Key Value	Keystroke	Numeric Key Value	Keystroke
6042	*	6049	1	6056	8
6043	+	6050	2	6057	9
6044	Undefined	6051	3	6058	Enter
6045	–	6052	4	6059	Num Lock
6046	.	6053	5	6060	00
6047	/	6054	6		
6048	0	6055	7		

Extended Keypad Key Values

Numeric Key Value	Keystroke	Numeric Key Value	Keystroke	Numeric Key Value	Keystroke
7001	Break	7008	Backspace	7015	Up Arrow
7002	Delete	7009	Tab	7016	Down Arrow
7003	Page Up	7010	Print Screen	7017	Left Arrow
7004	End	7011	Insert	7018	Right Arrow
7005	Page Down	7012	Home	7019	Back Tab
7006	Pause	7013	Enter		
7007	Scroll Lock	7014	Escape		

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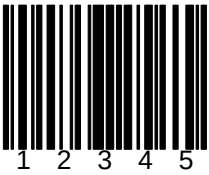
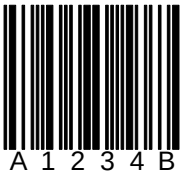
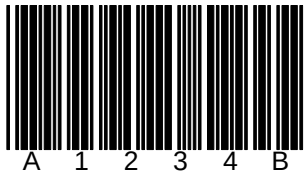


Code 128

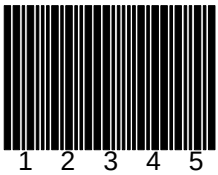
Code 93



Codabar



Code 39



Discrete 2 of 5

EAN 128

EAN 13

EAN 8

Interleaved 2 of 5

UPC A

UPC E

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