DSE Software Programming Guide
Version 1.4

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Revision History

Version	Date	Description
1.0	11/07/16	Original Version
1.1	12/05/16	All Sections
1.2	11/16/17	Add illumination control cmds
1.3	12/04/18	Added Direct Commands
1.4	02/15/19	Update all sections

Table of Contents

About this manual

This DSE Software Programming Guide is intended for programmers who have the need to programmatically configure the DSE scanner family. The manual provides an overview on the programming Syntax and the codes needed to configure all aspects of the reader operation. Alternatively, the DSE scanner may be configured prior to operation utilizing the Aladdin programming software which is available for download from the www.diamondt.com website.

The DSE scanner family includes RS232, UART, and USB image based barcode readers. Some programming codes are specific to the DSE model you may have; as an example RS232 commands are specific to RS232 and UART model readers and USB commands are specific to USB model readers. The DSE family includes high performance image based readers which provide excellent reading on 1D, 2D barcodes including damaged and poorly printed codes. The readers have various configuration parameters and settings which can be modified before and during operation.

Interface Selection

Since your scanner should have shipped with the correct interface (RS232 or USB), the interface type should already be defined. If you need to change the interface type, go to Table 1 below and scan the appropriate bar code in that section.

Each reader model will support one of the following sets of host interfaces:

RS232 and UART Models

1. RS232-STD Standard interface
2. RS232-WN Wincor-Nixdorf
3. RS232-OPOS OPOS/UPOS/Java POS

USB Models

1. USB-COM Simulate RS232
2. USB-OEM OPOS/UPOS/Java POS
3. USB-Composite USB KBD
4. USB-Keyboard ALT Alternate USB Keyboard
5. USB-KBD USB Keyboard standard key encoding
6. USB-KBD-APPLE Apple Keyboard

If your installation requires you to programmatically customize your reader, see Software Configuration Strings listed below.

Unlike some programming features and options, interface selections require that you scan only one programming bar code label. DO NOT scan an ENTER/EXIT bar code prior to scanning an interface selection bar code.

Table 1. Available Interfaces

RS-232		FEATURES
RS-232 standard interface	 Select RS232-STD	Set RS-232 Interface Features
 Select RS232-WN	RS-232 Wincor-Nixdorf	
RS-232 for use with OPOS/UPOS/JavaPOS	 Select RS-232 OPOS	

USB-COM		PAGE
USB COM to simulate RS-232 standard interface	 Select USB-COM-STD[a]	Set USB-COM Interface Features
USB-OEM		
 Select USB-OEM	USB-OEM (can be used for OPOS/UPOS/JavaPOS)	Set USB-OEM Interface Features
USB-COMPOSITE		
USB-Composite (combines USB-KBD emulation and USB-COM)	 Select USB-Composite	Set USB-COM Interface Features

KEYBOARD		FEATURES
USB Keyboard with alternate key encoding	 Select USB Alternate Keyboard	Set KEYBOARD Interface Features
 Select USB Keyboard	USB Keyboard with standard key encoding	
USB Keyboard for Apple computers	 Select USB-KBD-APPLE	
a. Download the correct USB Com driver from www.datalogic.com		

Software Direct Commands

The DSE family of readers support several direct commands. These commands only require that you send the actual character to the reader to receive a response. These commands are used for various purposes including triggering the reader, enabling, disabling, and informational messages such as reader health. These commands and the reader response are summarized in the table below.

Command	ASCII Code	Meaning
X	88 (58h)	PRESS trigger
T	84 (54h)	RELEASE trigger
E	69 (45h)	Enable the reader
D	68 (44h)	Disable the reader
i	105 (69h)	Info scanner fw, bootloader ver, config, serial number, interface type
h	104 (68h)	Reader health
F	70 (46h)	Not on File Beep
B	66 (42h)	Single Beep
R	82 (52h)	Reader Reset

Press (trigger scanner on) and Release (trigger scanner off) events can be issued by way of either RS232, UART or USB communication port (COM emulation only).

Software Configuration Strings

RS232, UART, and USB models can be configured programmatically using the serial strings contained in this guide.

To configure RS232 and UART models by using the configuration strings:

1. Connect your RS232 reader to a PC RS232 port. In the case of UART you will need to connect to an appropriate UART interface or alternatively you can purchase a UART to RS232 connector board from Diamond Technologies. Set the PC serial port or UART interface to the default RS232 communication parameters (see Appendix A Standard Defaults).

To configure the reader using configuration strings you must enter Service Mode, which automatically sets the reader communication to 115200 baud rate. You must therefore set the host accordingly for RS232 communications. Upon exiting Service Mode, the programmed baud rate will be restored.

2. Send all the necessary command strings according to your application's requirements.

To configure USB models (only for USB-COM Interface) by using the configuration strings:

USB models by default have the USB-COM Interface selected. They can be easily configured by reading the barcodes in Table 1 of this manual.

1. Download and install the USB-COM driver from https://www.diamondt.com/products/barcode-reading-solutions/barcode-readers-oem-machine/dse0420/.
2. Connect your reader to a PC USB port.
3. Change the interface to USB-COM by reading the barcode below.

USB-COM

4. Using a Terminal Emulation Program, send the Restore Current Interface (Custom) Default string to the reader using the syntax described on the next page.
5. Send all the necessary command strings according to your application's requirements.

Command Syntax

The following pages and examples provide an overview on the Command Syntax between the DSE reader and your Host PC.

1. Enter Service (Serial String Programming) Mode

$S<CR>

This command automatically sets the reader communication to 115200 baud rate. Before continuing, please set the baud rate of the Terminal Emulation Program to 115200.

Alternatively you may use the B00 command which will keep the reader in it's current baud rate for programming. The sequence to send in this case would be $S,B00<CR>

2. Send Command

$	*Command*	*Parameter*	*Value*	<CR>

Where:

Command:	**Description**
HA*XX*	Interface Selection
AA	Enable All Symbologies
AD	Disable All Symbologies
R	Reset Reader
C*XXXXXX*	Write Single Configuration Item to RAM
Parameter:	
XXXX	A 4-character ASCII string See Serial Configuration Strings Table
Value:	
XX	A 2-character Hex string See Serial Configuration Strings Table

3. Apply and Save Configuration to FLASH (permanent memory) and Exit Service Mode

$Ar<CR>

3. Note the reader will respond to commands with either a $> meaning the command was understood or with a $% meaning the command was not understood.

4. Apply and Save Configuration to FLASH (permanent memory) and Exit Service Mode

This command automatically returns to the programmed baud rate. Before continuing, please set the baud rate of the Terminal Emulation Program to the programmed baud rate.

Example 1:

1. **$S<CR>**

   Enter Service Mode.

2. **$CLFCA02<CR>**

   Write command "Convert to Lower Case" to current configuration.

3. **$Ar<CR>**

   Apply and Save Configuration to FLASH (permanent memory) and Exit Service Mode.

Each configuration parameter setting removes the condition previously active for that parameter.

Example 2:

1. **$S<CR>**

Enter Service Mode.

2. **$HA05<CR>**

Select RS232 Interface.

3. **$Ar<CR>**

Apply and Save Configuration to FLASH (permanent memory) and Exit Service Mode.

Example 3:

1. **$+$!<CR>**

Read Application Software Release.

Example 4:

Some parameters (ex. Strings) need to insert all the characters (typically 20 Chrs). For example, to append an Character “STX” (0x02) Prefix to all transmitted data:

1. **$S<CR>**

Enter Service Mode

2. **$CLFPR020000000000000000000000000000000000000<CR>**

Select the string:"STX" (02 = STX) as data Prefix. You must insert all the 20 Chrs (00 = one empty Chr)

3. **$Ar<CR>**

Apply and Save Configuration to FLASH (permanent memory) and Exit Service Mode.

SERIAL CONFIGURATION STRINGS

ENTER/EXIT CONFIGURATION COMMANDS	
Description	**Command**
Enter Service Mode (configuration) fixed 115200 Baud rate	**S**
Enter Service Mode (configuration) remain in current Baud rate	**S,B00**
Exit Service Mode (configuration) return to programmed Baud rate	**s**
Apply Configuration to RAM (temporary memory) and Exit Service Mode	**r01**
Apply and Save Configuration to FLASH (permanent memory) and Exit Service Mode	**Ar**

To configure the reader using configuration strings, it must be placed into Service Mode, which automatically sets the reader communication to 115200 baud rate. You must therefore set the host accordingly for RS232 communications. Upon exiting Service Mode, the programmed baud rate will be restored.

CONFIGURATION COMMANDS	
Description	**Command**
Write Single Configuration Item to RAM (temporary memory)	**Cxxxxxx**
Read Single Configuration Item from RAM (temporary memory)	**cxxxx**
Reset Reader	**R**
Read Application Software Release (does not require Enter/Exit Service Mode)	**$+$!**
Host Commands Obey	**CIFIH00**
Host Commands Ignore	**CIFIH01**
Enable All Symbologies	**AA**
Disable All Symbologies	**AD**

The Interface Selection commands store and load the new interface type with its factory defaults into the current configuration.

INTERFACE SELECTION COMMANDS	
Description	**Command**
Restore Current Interface (Custom) Default Configuration	**HA00**
RS232-STD	**HA05**
RS232-OPUS	**HA13**
USB-COM	**HA47**
RS232-Wincor-Nixdorf	**HA12**
USB-OEM	**HA45**
USB-POS	**HA44**
USB-KBD	**HA35**
USB-KBD-ALT	**HA2B**
USB KBD-APPLE	**HA2C**

To read a particular parameter setting from the reader, send the read parameter command without any value. The reader will respond with its currently configuredvalue.

The Read Application Software Release command is a direct command that does not require entering Service Mode.

RS-232 ONLY PARAMETERS			
Description		**Parameter**	**Value**
Baud Rate	1200	**R2BA**	**00**
	2400		**01**
	4800		**02**
	9600		**03**
	19200		**04**
	38400		**05**
	57600		**06**
	115200		**07**
Parity	none	**R2PA**	**00**
	even		**01**
	odd		**02**
Data Bits	7	**R2DA**	**00**
	8		**01**
Stop Bits	1	**R2ST**	**00**
	2		**01**
Handshaking Control	RTS	**R2HC**	**00**
	RTS/CTS	**R2HC**	**01**
	RTS/Xon/Xoff	**R2HC**	**02**
	RTS On/CTS	**R2HC**	**03**
	RTS/CTS Scan Control	**R2HC**	**04**

RS-232/USB-COM PARAMETERS			
Description		**Parameter**	**Value**
Intercharacter Delay	No delay or from 10 to 990 ms	**R2IC**	***a***
Disable Character	Host command character which disables the reader	**R2DC**	***b***
Enable Character	Host command character which enables the reader	**R2EC**	***b***
ACK/NAK Options	Disable	**R2AE**	**00**
	Enable for label transmission		**01**
	Enable for host command acknowledge		**02**
	Enable for label transmission and host command acknowledge		**03**
ACK Character	Selects character to be used as ACK	**R2AC**	***c***
NAK Character	Selects character to be used as NAK	**R2NA**	***c***
ACK/NAK Timeout Value	No timeout or from 200 to 15000 ms	**R2AT**	***d***
ACK/NAK Retry Count	From 0 to unlimited retries	**R2AR**	***e***
ACK/NAK Error Handling	Ignore errors detected	**R2EH**	**00**
	Process errors as valid ACK character		**01**
	Process errors as valid NAK character		**02**
Beep On ASCII BEL	Disable	**R2BB**	**00**
	Enable		**01**
Beep On Not-On-File	Disable	**BPNF**	**00**
	Enable		**01**
Indicate Transmission Failure	Disable	**R2TF**	**00**
	Enable		**01**

a = Hex value from **00** to **63** representing the decimal number *(00 = no delay; all others x10 ms)*

b = Hex value from **00** to **FE** representing the ASCII character

c = Hex value from **00** to **FF** representing the ASCII character

d =Hex value from **00** to **4B** representing the decimal number *(00 = timeout disabled; all others x200 ms)*

e = Hex value from **00** to **FF** representing the number of retries *(00 = no retries; 01-FE = 1- 254 retries; FF = unlimited retries)*

USB-KBD / USB-KBD-ALT / USB-KBD-APPLE PARAMETERS			
Description		**Parameter**	**Value**
Keyboard Country Mode	*US	**KBCO**	**00**
	*Belgium		**01**
	*Britain		**02**
	Croatia		**11**
	Czechoslovakia		**0E**
	Denmark		**03**
	*France		**04**
	*Germany		**05**
	Hungary		**0D**
	*Italy		**06**
	Japanese (106 key)		**0C**
	Norway		**07**
	Poland		**12**
	Portugal		**08**
	Romania		**10**
	Slovakia		**0F**
	*Spain		**09**
	*Sweden		**0A**
	Switzerland		**0B**
Send Control Characters	CTRL + KEY	**KBSC**	**00**
	CTRL + SHIFT + KEY		**01**
	Special Function KEY		**02**
USB Keyboard Speed	1 ms	**KBSP**	**01**
	2 ms		**02**
	3 ms		**03**
	4 ms		**04**
	5 ms		**05**
	6 ms		**06**
	7 ms		**07**
	8 ms		**08**
	9 ms		**09**
	10 ms		**0A**

* = Valid for USB-KBD-APPLE

READING PARAMETERS			
Description		**Parameter**	**Value**
Double Read Timeout	10 to 2,550 milliseconds (2.55 seconds) in 10ms increments (1-255)	**SNDR**	***f***
Illumination Brightness		**IPWL**	***g***
	High Brightness	**IPWL**	**0C**
	Medium Brightness		**06**
	Low Brightness		**03**
	Illumination off		**00**
Operating Modes	Trigger Single	**SNRM**	**00**
	Trigger Hold Multiple		**01**
	Trigger Pulse Multiple		**02**
	Flashing		**03**
	Always On		**04**
	Stand Mode		**05**
Stand Mode Sensitivity	High Sensitivity	**SMSE**	**02**
	Medium Sensitivity		**01**
	Low Sensitivity		**00**
Timeout (Scan Active Time)	1 to 255 seconds in 1 second intervals.	**SNET**	***h***
Pick Mode	Disable	**SNPM**	**00**
	Enable		**01**
Mobile Phone Mode	Enable	**SNPE**	**00**
	Disable		**01**
Label Programming Mode	Disabled	**FAPM**	**00**
	Enabled		**01**

f = Hex value from **01** to **FF** representing the minimum time between same labels

g= Hex value from **03** to **13** representing the illumination level lowest to highest, 3 standard levels given

h = Hex value from **02** to **FF** representing the decimal number *(x20 ms)*

i = Hex value from **00** to **FE** representing the ASCII character

DATA FORMAT COMMANDS			
Description		**Parameter**	**Value**
Case Conversion	Disable	**LFCA**	**00**
	Upper Case		**01**
	Lower Case		**02**
Global Prefix (Header)	Any string of characters (max 20) between 00-FE	**LFPR**	***k***
Global Suffix (Terminator)	Any string of characters (max 20) between 00-FE	**LFSU**	***k***
Character Conversion	An 8-character string between 00-FF	**LFCH**	***m***
Transmit AIM IDs	Disable	**AIEN**	**00**
	Enable		**01**
Transmit Custom Label IDs	Disable	**IDCO**	**00**
	Prefix		**01**
	Suffix		**02**
GS1-128 AIM ID	Disable	**U8AI**	**00**
	Enable		**01**

k = Hex value from **00** to **FE** representing the ASCII character

m = 8 Hex values from **00** to **FF** representing the 8 ASCII characters *(FF = no replacement or ignore*)

Custom Code Identifiers	Any string of characters (max 3) between 00-FE		
UPC-A		ABID	*k*
UPC-E		EBID	*k*
EAN-8		8BID	*k*
EAN-13		3BID	*k*
UPC-A/P2		A2ID	*k*
UPC-A/P5		A5ID	*k*
UPC-E/P2		E2ID	*k*
UPC-E/P5		E5ID	*k*
EAN-8/P2		82ID	*k*
EAN-8/P5		85ID	*k*
EAN-13/P2		32ID	*k*
EAN-13/P5		35ID	*k*
ISBN		ISID	*k*
ISSN		INID	*k*
GTIN for EAN/UPC w/o Add-On		GBID	*k*
GTIN for EAN/UPC w P2		G2ID	*k*
GTIN for EAN/UPC w P5		G5ID	*k*
Code 39		C3ID	*k*
Code 32		P3ID	*k*
Code 128		C8ID	*k*
GS1-128		U8ID	*k*
ISBT 128		I8ID	*k*
Interleaved 2 of 5		I2ID	*k*
Standard 2 of 5		S2ID	*k*
Industrial 2 of 5		U2ID	*k*
IATA		IAID	*k*
Codabar		CBID	*k*
ABC Codabar		ACID	*k*
GS1 Databar 14 (Omnidirectional)		4BID	*k*
GS1 Databar Expanded		XBID	*k*
GS1 Databar Limited		LBID	*k*

k = Hex value from **00** to **FE** representing the ASCII character

Custom Code Identifiers	Any string of characters (max 3) between 00-FE		
Code 93		C9ID	*k*
MSI		MSID	*k*
Plessey		PLID	*k*

k = Hex value from 00 to FE representing the ASCII character

LED AND BEEPER INDICATORS			
Description		**Parameter**	**Value**
Power On Alert	Disable	BPPU	00
	Enable		01
Indicate Good Read	After Decode	BPIN	00
	After Transmit		01
	After CTS switch I/A		02
Good Read Beep Type	Mono Tone Beep	BPTY	00
	Bitonal Beep		01
Good Read Beep Volume	Off	BPVO	00
	Low		01
	Medium		02
	High		03
Good Read Beep Frequency	Low	BPFR	00
	Medium		01
	High		02
Good Read Beep Length	Time length from 10 to 2550 ms	BPLE	*o*
Power on Alert	No Indication	BPPU	00
	Power-up Beep		01
Good Read Led Duration	Time length from 0 to 25,500 ms	LAGL	*f*
Green Spot Duration	Disable	LSSP	00
	Short 300ms		01
	Medium 500ms		02
	Long 800ms		03

o = Hex value from 01 to FF representing the decimal number *(x10 ms)*

f = Hex value from 00 to FF representing the decimal number *(00 = Disable; others x100ms)*

CODE SELECTION			
Description		**Parameter**	**Value**
UPC-A			
UPC-A	Disable	**ABEN**	**00**
	Enable		**01**
Check Character Tx	Disable	**ABCT**	**00**
	Enable		**01**
Expand to EAN-13	Disable	**AB3B**	**00**
	Enable		**01**
Number System Tx	Disable	**ABNS**	**00**
	Enable		**01**
Coupon Control	Allow all coupon barcodes to be decoded	**CPCL**	**00**
	Enable only UPC-A coupon decoding		**01**
	Enable only GS1 Databar coupon decoding		**02**
UPC-E			
UPC-E	Disable	**EBEN**	**00**
	Enable		**01**
Check Character Tx	Disable	**EBCT**	**00**
	Enable		**01**
Expand to UPC-A	Disable	**EBAB**	**00**
	Enable		**01**
Expand to EAN-13	Disable	**EB3B**	**00**
	Enable		**01**
Number System Tx	Disable	**EBNS**	**00**
	Enable		**01**
EAN-13			
EAN-13	Disable	**3BEN**	**00**
	Enable		**01**
Check Character Tx	Disable	**3BCT**	**00**
	Enable		**01**
ISBN Conversion	Disable	**3BIS**	**00**

CODE SELECTION			
Description		**Parameter**	**Value**
	Enable		**01**
ISSN Conversion	Disable	**3BIN**	**00**
	Enable		**01**
Flag 1 Character	Disable	**3BF1**	**00**
	Enable		**01**
Coupon Control	Allow all coupon barcodes to be decoded	**CPCL**	**00**
	Enable only UPC-A coupon decoding		**01**
	Enable only GS1 Databar coupon decoding		**02**
EAN-8			
EAN-8	Disable	**8BEN**	**00**
	Enable		**01**
Check Character Tx	Disable	**8BCT**	**00**
	Enable		**01**
Expand to EAN-13	Disable	**8B3B**	**00**
	Enable		**01**
Add-Ons			
P2 Add-On	Disable	**ADO2**	**00**
	Enable		**01**
P5 Add-On	Disable	**ADO5**	**00**
	Enable		**01**
Optional Add-On Timer	Timer disabled or from 10 to 300 ms	**ADOT**	***p***

p = Hex value from **00** to **1E** representing the decimal number *(00 = Timer disabled; all others x10 ms)*

CODE SELECTION			
Description		**Parameter**	**Value**
EAN/UPC Global Settings			
GTIN Format	Disable	**GBEN**	**00**
	Enable		**01**
Code 39			
Code 39	Disable	**C3EN**	**00**
	Enable		**01**
Code 39 Full ASCII	Disable	**C3FA**	**00**
	Enable		**01**
Code Length Control	Variable	**C3LC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 1 to 50 characters	**C3L1**	***q***
	Length 2 (or Max Length) 0 or from 1 to 50 characters	**C3L2**	***q***
Code 32 (Italian Pharma)	Disable	**P3EN**	**00**
	Enable		**01**
Code 32 Check Tx	Disable	**P3CT**	**00**
	Enable		**01**
Code 32 Start/Stop Tx	Disable	**P3SS**	**00**
	Enable		**01**
Check Options			
Check Calculation	Disable	**C3CC**	**00**
	Enable Standard Check		**01**
	Enable Mod-7 Check		**02**
	Enable Italian Post Check		**04**
	Enable Daimler Chrysler Check		**08**

q **=** Hex value from **00** to **32** representing the decimal number

CODE SELECTION			
Description		**Parameter**	**Value**
Code 39 Check Tx	Disable	**C3CT**	**00**
	Enable		**01**
Code 39 Start/Stop Tx	Disable	**C3SS**	**00**
	Enable		**01**
Decoding Options			
Quiet Zones	Quiet Zone on One Side	**C3LO**	**01**
	Quiet Zones on Two Sides		**02**
	Auto		**03**
	Virtual Quiet Zones on Two Sides		**04**
	Small Quiet Zones on Two Sides		**05**
Code 128 (GS1-128)			
Code 128	Disable	**C8EN**	**00**
	Enable		**01**
GS1-128 Enable	Enable (transmit labels in Code 128 data format)	**U8EN**	**00**
	Enable (transmit labels in GS1-128 data format)		**01**
	Disable		**02**
Code Length Control	Variable	**C8LC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 1 to 80 characters	**C8L1**	***s***
	Length 2 (or Max Length) 0 or from 1 to 80 characters	**C8L2**	***s***

r = Hex value from **00** to **0A** representing the decimal number of the interdigit space/module ratio *(00 = any ratio)*
s = Hex value from **00** to **50** representing the decimal number

CODE SELECTION			
Description		**Parameter**	**Value**
Expand to Code 39	Disable	**C8C3**	**00**
	Enable		**01**
Check Options			
Check Tx	Disable	**C8CT**	**00**
	Enable		**01**
Function Character Tx	Disable	**C8TF**	**00**
	Enable		**01**
Quiet Zones	No Quiet Zones	**C8LO**	**00**
	Quiet Zone on One Side		**01**
	Quiet Zones on Two Sides		**02**
	Auto		**03**
	Virtual Quiet Zones on Two Sides		**04**
ISBT 128			
ISBT 128 Concatenation	Disable	**I8CE**	**00**
	Enable		**01**
Concatenation Mode	Static	**I8CM**	**00**
	Dynamic		**01**
Dynamic Concat. Timeout	From 50 to 2550 ms	**I8DT**	***t***
Chain 0 - Chain 15	Contact Datalogic		

t = Hex value from **05** to **FF** representing the decimal number *(x10 ms)*

CODE SELECTION			
Description		**Parameter**	**Value**
Interleaved 2 of 5 (I 2 of 5)			
I 2 of 5	Disable	**I2EN**	**00**
	Enable		**01**
Code Length Control	Variable	**I2LC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 2 to 50 characters (only even numbers)	**I2L1**	***v***
	Length 2 (or Max Length) from 0 or from 2 to 50 characters (only even numbers)	**I2L2**	***v***
Check Options			
Check Calculation	Disable	**I2CC**	**00**
	Enable Standard(Mod 10)		**01**
	Enable German Parcel		**02**
	Enable DHL		**04**
	Enable Daimler Chrysler		**08**
	Enable Bosch		**10**
	Enable Italian Post		**20**
Check Tx	Disable	**I2CT**	**00**
	Enable		**01**

v = Hex value from **00** or **02** to **32** representing the decimal number

CODE SELECTION			
Description		**Parameter**	**Value**
Standard 2 of 5			
Standard 2 of 5	Disable	**S2EN**	**00**
	Enable		**01**
Code Length Control	Variable	**S2LC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 1 to 50 characters	**S2L1**	***v***
	Length 2 (or Max Length) 0 or from 1 to 50 characters	**S2L2**	***v***
Check Options			
Check Calculation	Disable	**S2CC**	**00**
	Enable		**01**
Check Tx	Disable	**S2CT**	**00**
	Enable		**01**
Industrial 2 of 5			
Industrial 2 of 5	Disable	**U2EN**	**00**
	Enable		**01**
Code Length Control	Variable	**U2LC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 1 to 50 characters	**U2L1**	***v***
	Length 2 (or Max Length) 0 or from 1 to 50 characters	**U2L2**	***v***
Check Options			
Check Calculation	Disable	**U2CC**	**00**
	Enable		**01**

v = Hex value from **00** or **02** to **32** representing the decimal number

CODE SELECTION			
Description		**Parameter**	**Value**
Check Tx	Disable	**U2CT**	**00**
	Enable		**01**
IATA			
IATA	Disable	**IAEN**	**00**
	Enable		**01**
Check Tx	Disable	**IACT**	**00**
	Enable		**01**

v = Hex value from **00** or **02** to **32** representing the decimal number

CODE SELECTION			
Description		**Parameter**	**Value**
Codabar			
Codabar	Disable	**CBEN**	**00**
	Enable		**01**
Code Length Control	Variable	**CBLC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 3 to 50 characters	**CBL1**	***v***
	Length 2 (or Max Length) 0 or from 3 to 50 characters	**CBL2**	***v***
ABC Codabar			
ABC Codabar	Disable	**CBAB**	**00**
	Enable		**01**
Concatenation Mode	Static	**CBCM**	**00**
	Dynamic		**01**
Dynamic Concat. Timeout	From 50 to 2550 ms	**CBDT**	***t***
Check Options			
Check Calculation	Disable	**CBCC**	**00**
	Enable AIM Standard Check		**01**
	Enable Mod-10 Check		**02**
Check Tx	Disable	**CBCT**	**00**
	Enable		**01**
Start/Stop Set	ABCD/TN*E	**CBSC**	**00**
	ABCD/ABCD		**01**
	abcd/tn*e		**02**
	abcd/abcd		**03**
Start/Stop Tx	Disable	**CBSS**	**00**
	Enable		**01**
Start/Stop Match	Disable	**CBSM**	**00**
	Enable		**01**
Decoding Options			

v = Hex value from **00** or **02** to **32** representing the decimal number

t = Hex value from **05** to **FF** representing the decimal number *(x10 ms)*

CODE SELECTION			
Description		**Parameter**	**Value**
Quiet Zones	Quiet Zone on One Side	**CBLO**	**01**
	Quiet Zones on Two Sides		**02**
	Auto		**03**
	Virtual Quiet Zones on Two Sides		**04**
	Small Quiet Zones on Two Sides		**05**
GS1 Databar Omnidirectional			
GS1 Databar Omnidirectional	Disable	**4BEN**	**00**
	Enable		**01**
GS1-128 Emulation	Disable	**4BU8**	**00**
	Enable		**01**
Omnidirectional Decoding Options			
GS1 Databar Expanded			
GS1 Databar Expanded	Disable	**XBEN**	**00**
	Enable		**01**
GS1-128 Emulation	Disable	**XBU8**	**00**
	Enable		**01**
Code Length Control	Variable	**XBLC**	**00**
	Fixed		**01**

r = Hex value from **00** to **0A** representing the decimal number of the interdigit space/module ratio *(00 = any ratio)*

CODE SELECTION			
Description		**Parameter**	**Value**
Set Length	Length 1 (or Min Length) from 1 to 74 characters	**XBL1**	***w***
	Length 2 (or Max Length) 0 or from 1 to 74 characters	**XBL2**	***w***
Expanded Decoding Options			
Coupon Control	Allow all coupon barcodes to be decoded	**CPCL**	**00**
	Enable only UPC-A coupon decoding		**01**
	Enable only GS1 Databar coupon decoding		**02**
GS1 Databar Limited			
GS1 Databar Limited	Disable	**LBEN**	**00**
	Enable		**01**
GS1-128 Emulation	Disable	**LBU8**	**00**
	Enable		**01**
Limited Decoding Options			
Code 93			
Code 93	Disable	**C9EN**	**00**
	Enable		**01**
Code Length Control	Variable	**C9LC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 1 to 50 characters	**C9L1**	***v***
	Length 2 (or Max Length) 0 or from 1 to 50 characters	**C9L2**	***v***
Check Options			
Check Calculation	Disable	**C9CC**	**00**
	Enable Check C		**01**
	Enable Check K		**02**
	Enable Check C and K		**03**
Check Tx	Disable	**C9CT**	**00**
	Enable		**01**
Decoding Options			

w = Hex value from **00** to **4A** representing the decimal number
v = Hex value from **00** or **02** to **32** representing the decimal number

CODE SELECTION			
Description		**Parameter**	**Value**
Quiet Zones	No Quiet Zones	**C9LO**	**00**
	Quiet Zone on One Side		**01**
	Quiet Zones on Two Sides		**02**
	Auto		**03**

	Virtual Quiet Zones on Two Sides		04
MSI			
MSI	Disable	MSEN	00
	Enable		01
Code Length Control	Variable	MSLC	00
	Fixed		01
Set Length	Length 1 (or Min Length) from 1 to 50 characters	MSL1	*v*
	Length 2 (or Max Length) 0 or from 1 to 50 characters	MSL2	*v*
	Check Options		
Check Calculation	Disable	MSCC	00
	Enable Mod 10		01
	Enable Mod 11/10		02
	Enable Mod 10/10		03
Check Tx	Disable	MSCT	00
	Enable		01
	Decoding Options		

v = Hex value from **00** or **02** to **32** representing the decimal number

CODE SELECTION			
Description		**Parameter**	**Value**
Plessey			
Plessey	Disable	**PLEN**	**00**
	Enable		**01**
Code Length Control	Variable	**PLLC**	**00**
	Fixed		**01**
Set Length	Length 1 (or Min Length) from 1 to 50 characters	**PLL1**	***v***
	Length 2 (or Max Length) 0 or from 1 to 50 characters	**PLL2**	***v***
Check Options			
Check Calculation	Disable	**PLCC**	**00**
	Standard		**01**
	Anker Calculation		**02**
	Standard and Anker Calculation		**03**
Check Tx	Disable	**PLCT**	**00**
	Enable		**01**
Decoding Options			

v = Hex value from **00** or **02** to **32** representing the decimal number

2D Codes

2D GLOBAL FEATURES			
Description		**Parameter**	**Value**
2D Max Decoding Time	10-2550 ms in 10ms intervals	**DETM**	***h***
2D Structured Append	Disabled	**DESA**	**00**
	Enabled		**01**
2D Normal/Inverse Symbol Control	Normal	**IPNR**	**00**
	Inverse		**01**
	Both Normal & Inverse		**02**

2D CODE SELECTION			
Aztec Code			
Aztec Code	Disabled	**AZEN**	**00**
	Enabled		**01**
Code Length Control	Variable	**AZLC**	**00**
	Fixed		**01**
Set Length	Length1 (Min for Variable) 1	**AZL1**	***q***
	Length2 (Max for Variable) 3832	**AZL2**	***q***
China Sensible Code			
China Sensible Code	Disabled	**CSEN**	**00**
	Enabled		**01**
Code Length Control	Variable	**CSLC**	**00**
	Fixed		**01**
Set Length	Length1 (Min for Variable) 1	**CSL1**	***r***
	Length2 (Max for Variable) 7827	**CSL2**	***r***
Data Matrix			
Data Matrix	Disabled	**DMEN**	**00**
	Enabled		**01**
Style	Square	**DMDM**	**3FFF0BDF**
	Rectangular		**0000F420**
	Both Square & Rectangular		**3FFFFFFF**
Code Length Control	Variable	**DMLC**	**00**
	Fixed		**01**

h = Hex value from **01-FF**
q = Hex value from **0001 - 0EF8**
r = Hex value from **0001 - 1E931**

Set Length	Length1 (Min for Variable) 1	**DML1**	***t***
	Length2 (Max for Variable) 3116	**DML2**	***t***
Maxicode			
Maxicode	Disabled	**MXEN**	**00**
	Enabled		**01**
Primary Message TX	Disabled	**MXPT**	**00**
	Enabled		**01**
Code Length Control	Variable	**MXLC**	**00**
	Fixed		**01**
Set Length	Length1 (Min for Variable) 1	**MXL1**	***u***
	Length2 (Max for Variable) 145	**MXL2**	***u***
PDF417			
PDF417	Disabled	**P4EN**	**00**
	Enabled		**01**
Code Length Control	Variable	**P4LC**	**00**
	Fixed		**01**
Set Length	Length1 (Min for Variable) 1	**P4L1**	***v***
	Length2 (Max for Variable) 2710	**P4L2**	***v***
Micro PDF417			
Micro PDF417	Disabled	**MIEN**	**00**
	Enabled		**01**
Code 128 GS1-128 Emulation	Micro PDF AIM ID and label type	**MIU8**	**00**
	Code 128 / EAN128 AIM ID and label type		**01**
Code Length Control	Variable	**MILC**	**00**
	Fixed		**01**
Set Length	Length1 (Min for Variable) 1	**MIL1**	***w***
	Length2 (Max for Variable) 366	**MIL2**	***w***
QR Code			
QR Code	Disabled	**QREN**	**00**
	Enabled		**01**
Code Length Control	Variable	**QRLC**	**00**
	Fixed		**01**

t = Hex value from **0001 - 0C2C** ***u*** = Hex value from **0001 - 0091** ***v*** = Hex value from **0001 - 0A96** ***w*** = Hex value from **0001 - 016E**

Set Length	Length1 (Min for Variable) 1	**QRL1**	***x***
	Length2 (Max for Variable) 7089	**QRL2**	***x***
Micro QR Code			
Micro QR Code	Disabled	**MQEN**	**00**
	Enabled		**01**
Code Length Control	Variable	**MQLC**	**00**
	Fixed		**01**
Set Length	Length1 (Min for Variable) 1	**MQL1**	***y***
	Length2 (Max for Variable) 35	**MQL2**	***y***
UCC Composite			
UCC Composite	Disabled	**CMEN**	**00**
	Enabled		**01**
Optional Composite Timer	Variable: 00 = disabled, 100-3000 ms in 100ms inter-vals	**CMOT**	***i***
Postal Codes			
Postal Code Selection		**POEN**	**00**
Postnet BB Control	Disabled	**POBB**	**00**
	Enabled		**01**

x = Hex value from **0001 - 1BB1** ***y*** = Hex value from **0001 - 0023** ***i*** = Hex value from **00 - 1E**

Appendix A Standard Defaults

The most common configuration settings are listed in the "Default" column of the table below. A column has also been provided for recording of your preferred default settings for these same configurable features.

Table 42. Standard Defaults

Parameter	Default	Your Setting
Host Commands — Obey/Ignore	Obey	
Baud Rate	9600	
Data Bits	8 Data Bits	
Stop Bits	1 Stop Bit	
Parity	None	
Handshaking Control	RTS	
Intercharacter Delay	No Delay	
Beep On ASCII BEL	Disable	
Beep On Not on File	Enable	
ACK NAK Options	Disable	
ACK Character	'ACK'	
NAK Character	'NAK'	
ACK NAK Timeout Value	200 ms	
ACK NAK Retry Count	3 Retries	
ACK NAK Error Handling	Ignore Errors Detected	
Indicate Transmission Failure	Enable	
Disable Character	'D'	

Parameter	Default	Your Setting
Enable Character	'E'	
USB Keyboard		
Country Mode	U.S. Keyboard	
Send Control Characters	00	
Intercode Delay	100 ms	
Intercode Delay	No Delay	
Caps Lock State	Caps Lock OFF	
USB Keyboard Speed	1 ms	
USB Keyboard Numeric Keypad	Standard Keys	
USB-OEM Device Usage	Handheld	
Transmit Labels in Code 39 Format	IBM Standard Format	
Interface Options	Ignore Scanner Configu-ration Host Commands	
Global Prefix/Suffix	No Global Prefix Global Suffix = 0x0D (CR)	
Global AIM ID	Disable	
Set AIM ID Individually for GS1-128	Enable	
Label ID: Pre-Loaded Sets	USA Set	
Individually Set Label ID	Disable	
Case Conversion	Disable	
Character Conversion	No Char Conversion	

Parameter	Default	Your Setting
Reading Parameters		
Double Read Timeout	.6 Second	
Power On Alert	Power-up Beep	
Good Read: When to Indicate	After Decode	
Good Read Beep Type	Mono	
Good Read Beep Frequency	High	
Good Read Beep Length	80 ms	
Good Read Beep Volume	High	
Scanning Features		
Scan Mode	Trigger Single	
Pick Mode	Disable	
Stand Mode Illumination off time	2 seconds	
Stand Mode Sensitivity	Medium	
Scanning Active Time	5 seconds	
Stand Illumination Control	Off	
Flash on Time	10=Flash is ON for 1 second	
Flash off Time	06=Flash is OFF for 600 ms	
Illumination Brightness	Enable	
Aiming Duration Timer	Aiming off after Decoding	

Parameter	Default	Your Setting
Green Spot Duration	300 ms	
Mobile Phone Mode	Enable	
Partial Label Reading Control	Enable	
Decode Negative Image	Disable	
Multiple Label Reading		
Multiple Labels per Frame	Disable	
Multiple Labels Ordering by Code Symbology	Random Order	
Multiple Labels Ordering by Code Length	Disable	
CODES SELECTION – 1D Symbologies		
Code EAN/UPC		
Coupon Control	Enable only UPCA coupon decoding	
UPC-A Enable/Disable	Enable	
UPC-A Check Character Transmission	Send	
Expand UPC-A to EAN-13	Don't Expand	
UPC-A Number System Character Transmission	Transmit	
UPC-A 2D Component	2D Component Not Required	
UPC-E Enable/Disable	Enable	
UPC-E Check Character Transmission	Send	
UPC-E 2D Component	2D Component Not Required	
Expand UPC-E to EAN-13	Don't Expand	
Expand UPC-E to UPC-A	Don't Expand	
UPC-E Number System Character Transmission	Transmit	

Parameter	Default	Your Setting
GTIN		
GTIN Formatting	Disable	
EAN 13 (Jan 13)		
EAN 13 Enable/Disable	Enable	
EAN 13 Check Character Transmission	Send	
EAN-13 Flag 1 Character	Transmit	
EAN-13 ISBN Conversion	Disable	
EAN-13 2D Component	2D Component Not Required	
ISSN		
ISSN Enable/Disable	Disable	
EAN 8		
EAN 8 Enable/Disable	Enable	
EAN 8 Check Character Transmission	Send	
Expand EAN 8 to EAN 13	Disable	
EAN 8 2D Component	2D Component Not Required	
UPC/EAN Global Settings		
UPC/EAN Price Weight Check	Disable	
UPC/EAN Quiet Zones	Two Modules	
Add-Ons		
Optional Add-ons	Disable P2, P5 and P8	
Optional Add-On Timer	70 ms	
Optional GS1-128 Add-On Timer	Disable	
Code 39		
Code 39 Enable/Disable	Enable	
Code 39 Check Character Calculation	Disable	
Code 39 Check Character Transmission	Send	
Code 39 Start/Stop Character Transmission	Don't Transmit	
Code 39 Full ASCII	Disable	
Code 39 Quiet Zones	Small Quiet Zones on two sides	
Code 39 Length Control	Variable	

Parameter	Default	Your Setting
Code 39 Set Length 1	2	
Code 39 Set Length 2	50	
Trioptic Code		
Trioptic Code Enable/Disable	Disable	
Code 32 (Italian Pharmaceutical Code)		
Code 32 Enable/Disable	Disable	
Code 32 Check Char Transmission	Don't Send	
Code 32 Start/Stop Character Transmission	Don't Transmit	
Code 39 CIP (French Pharmaceutical Code)		
Code 39 CIP Enable/Disable	Disable	
Special Codes		
Code 39 Danish PPT Enable/Disable	Disable	
Code 39 LaPoste Enable/Disable	Disable	
Code 39 PZN Enable/Disable	Disable	
Code 128		
Code 128 Enable/Disable	Enable	
Expand Code 128 to Code 39	Don't Expand	
Code 128 Check Character Transmission	Don't Send	
Code 128 Function Character Transmission	Don't Send	
Code 128 Quiet Zones	Small Quiet Zones on two sides	
Code 128 Length Control	Variable	
Code 128 Set Length 1	1	
Code 128 Set Length 2	80	
GS1-128		
GS1-128 Enable	Transmit in Code 128 Data Format	
GS1-128 2D Component	Disable	
ISBT-128		
ISBT 128 Concatenation	Disable	

Parameter	Default	Your Setting
ISBT 128 Force Concatenation	Disable	
ISBT 128 Concatenation Mode	Static	
ISBT 128 Dynamic Concatenation Timeout	200 msec	
Interleaved 2 of 5		
I 2 of 5 Enable/Disable	Disable	
I 2 of 5 Check Character Calculation	Disable	
I 2 of 5 Check Character Transmission	Send	
I 2 of 5 Length Control	Variable	
I 2 of 5 Set Length 1	6	
I 2 of 5 Set Length 2	50	
Interleaved 2 of 5 CIP HR		
Interleaved 2 of 5 CIP HR Enable/Disable	Disable	
Follett 2 of 5		
Follett 2 of 5 Enable/Disable	Disable	
Standard 2 of 5		
Standard 2 of 5 Enable/Disable	Disable	
Standard 2 of 5 Check Character Calculation	Disable	
Standard 2 of 5 Check Character Transmission	Send	
Standard 2 of 5 Length Control	Variable	
Standard 2 of 5 Set Length 1	8	
Standard 2 of 5 Set Length 2	50	
Industrial 2 of 5		
Industrial 2 of 5 Enable/Disable	Disable	
Industrial 2 of 5 Check Character Calculation	Disable	
Industrial 2 of 5 Check Character Transmission	Enable	
Industrial 2 of 5 Length Control	Variable	
Industrial 2 of 5 Set Length 1	1	
Industrial 2 of 5 Set Length 2	50	
Code IATA		
IATA Enable/Disable	Disable	

Parameter	Default	Your Setting
IATA Check Character Transmission	Enable	
Codabar		
Codabar Enable/Disable	Disable	
Codabar Check Character Calculation	Don't Calculate	
Codabar Check Character Transmission	Send	
Codabar Start/Stop Character Transmission	Transmit	
Codabar Start/Stop Character Set	abcd/abcd	
Codabar Start/Stop Character Match	Don't Require Match	
Codabar Quiet Zones	Small Quiet Zones on two sides	
Codabar Length Control	Variable	
Codabar Set Length 1	3	
Codabar Set Length 2	50	
ABC Codabar		
ABC Codabar	Disable	
ABC Codabar Enable/Disable	Disable	
ABC Codabar Concatenation Mode	Static	
ABC Codabar Dynamic Concatenation Timeout	200 msec	
ABC Codabar Force Concatenation	Disable	
Code 11		
Code 11 Enable/Disable	Disable	
Code 11 Check Character Calculation	Check C and K	
Code 11 Check Character Transmission	Send	
Code 11 Length Control	Variable	
Code 11 Set Length 1	4	
Code 11 Set Length 2	50	
GS1 DataBar Omnidirectional		
GS1 DataBar™ Omnidirectional Enable/Disable	Disable	
GS1 DataBar™ Omnidirectional GS1-128 Emulation	Disable	
GS1 DataBar™ Omnidirectional 2D Component	2D component not required	

Parameter	Default	Your Setting
GS1 DataBar Expanded		
GS1 DataBar™ Expanded Enable/Disable	Disable	
GS1 DataBar™ Expanded GS1-128 Emulation	Disable	
GS1 DataBar™ Expanded 2D Component	2D component not required	
GS1 DataBar™ Expanded Length Control	Variable	
GS1 DataBar™ Expanded Set Length 1	1	
GS1 DataBar™ Expanded Set Length 2	74	
GS1 DataBar Limited		
GS1 DataBar™ Limited Enable/Disable	Disable	
GS1 DataBar™ Limited GS1-128 Emulation	Disable	
GS1 DataBar™ Limited 2D Component	2D component not required	
Code 93		
Code 93 Enable/Disable	Disable	
Code 93 Check Character Calculation	Enable Check C and K	
Code 93 Check Character Transmission	Disable	
Code 93 Length Control	Variable	
Code 93 Set Length 1	1	
Code 93 Set Length 2	50	
Code 93 Quiet Zones	Small Quiet Zones on two sides	
MSI		
MSI Enable/Disable	Disable	
MSI Check Character Calculation	Enable Mod10	
MSI Check Character Transmission	Enable	
MSI Length Control	Variable	
MSI Set Length 1	1	
MSI Set Length 2	50	
Plessy		
Plessey Enable/Disable	Disable	

Parameter	Default	Your Setting
Plessey Check Character Calculation	Enable Plessey std. check char. verification	
Plessey Check Character Transmission	Enable	
Plessey Length Control	Variable	
Plessey Set Length 1	1	
Plessey Set Length 2	50	
CODE Selection – 2D Symbologies		
2D Maximum Decoding Time	350msec	
2D Structured Append	Disable	
2D Normal/Inverse Symbol Control	Normal	
Aztec Code Enable / Disable	Disable	
Aztec Code Length Control	Enable	
Aztec Code Length Control	Variable	
Aztec Code Set Length 1	1	
China Sensible Code Enable / Disable	Disable	
China Sensible Code Length Control	Variable	
China Sensible Code Set Length 1	1	
China Sensible Code Set Length 2	7,827	
Data Matrix Enable / Disable	Enable	
Data Matrix Square/Rectangular Style	Both Square and Rectangular style	
Data Matrix Length Control	Variable	
Data Matrix Set Length 1	1	
Data Matrix Set Length 2	3,116	
Maxicode Enable / Disable	Disable	
Maxicode Primary Message Transmission	Disable	
Maxicode Length Control	Variable	
Maxicode Set Length 1	1	
Maxicode Set Length 2	0145	
PDF417 Enable / Disable	Enable	
PDF417 Length Control	Variable	

Parameter	Default	Your Setting
PDF417 Set Length 1	1	
PDF417 Set Length 2	2,710	
Micro PDF417 Enable / Disable	Disable	
Micro PDF417 Code 128 GS1-128 Emulation	Micro PDF AIM ID and label type	
Micro PDF417 Length Control	Variable	
Micro PDF417 Set Length 1	1	
Micro PDF417 Set Length 2	0366	
QR Code Enable / Disable	Enable	
QR Code Length Control	Variable	
QR Code Set Length 1	1	
QR Code Set Length 2	7,089	
Micro QR Code Enable/Disable	Disable	
Micro QR Code Length Control	Variable	
Micro QR Code Set Length 1	0001	
Micro QR Code Set Length 2	0035	
UCC Composite Enable / Disable	Disable	
UCC Optional Composite Timer	Timer Disabled	
Postal Code Selection	Disable all Postal codes	
Postnet BB Control	Disable	

ASCII Chart

ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.
NUL	00	SP	20	@	40	‘	60
SOH	01	!	21	A	41	a	61
STX	02	“	22	B	42	b	62
ETX	03	#	23	C	43	c	63
EOT	04	$	24	D	44	d	64
ENQ	05	%	25	E	45	e	65
ACK	06	&	26	F	46	f	66
BEL	07	’	27	G	47	g	67
BS	08	(	28	H	48	h	68
HT	09	)	29	I	49	i	69
LF	0A	*	2A	J	4A	j	6A
VT	0B	+	2B	K	4B	k	6B
FF	0C	,	2C	L	4C	l	6C
CR	0D	-	2D	M	4D	m	6D
SO	0E	.	2E	N	4E	n	6E
SI	0F	/	2F	O	4F	o	6F
DLE	10	0	30	P	50	p	70
DC1	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3	13	3	33	S	53	s	73
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75
SYN	16	6	36	V	56	v	76
ETB	17	7	37	W	57	w	77
CAN	18	8	38	X	58	x	78
EM	19	9	39	Y	59	y	79
SUB	1A	:	3A	Z	5A	z	7A
ESC	1B	;	3B	[	5B	{	7B
FS	1C	<	3C	\	5C	|	7C
GS	1D	=	3D	]	5D	}	7D
RS	1E	>	3E	^	5E	~	7E
US	1F	?	3F	_	5F	DEL	7F