

Configuration Control Document

CR8200 Firmware Version 1.10.2

CR950 Firmware Version 1.6.1

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1 Keyword Table

These keywords are used throughout the document to show relationships between settings.

Keyword	Description
#2Of5	All 2 of 5 symbologies
#AIMId	AIM Identifier (ISO/IEC standard 15424)
#Aztec	Aztec symbology
#BC412	BC412 symbology
#Codabar	Codabar symbology
#Codablock	Codablock symbology
#Code11	Code 11 symbology
#Code128	Code 128 symbology
#Code39	Code 39 symbology
#Code49	Code 49 symbology
#Code93	Code 93 symbology
#Communications	Used in changing the communication mode of the reader
#CompositeBarcodes	Settings that affect reading of barcodes with more than one part
#DataMatrix	Data Matrix symbology
#DataEncoding	Data Encoding
#DataFormatting	Data Formatting settings
#DuplicateBlock	Settings related to blocking duplicate barcodes
#EAN/JAN	EAN/JAN symbology
#GridMatrix	Grid Matrix symbology
#GS1DataBar	The GS1 DataBar family of symbologies
#HanXin	Han Xin symbology
#InterCharacterDelay	Settings controlling the USB keyboard inter-character delay
#Interleaved2Of5	Interleaved 2 of 5 symbology
#Maxicode	Maxicode symbology
#MSIPlessey	MSI Plessey symbology
#PDF417	PDF417 symbology
#Pharmacode	Pharmacode symbology
#Postal	Postal symbologies
#QR	QR Code symbology
#ReaderState	Settings that affect the transition from one state to another (i.e. Active to Idle)
#SerialComm	Settings related to serial communications mode
#Telepen	Telepen symbology
#Trioptic	Trioptic Symbology
#UPC	UPC symbology
#DataEncoding	Settings that affect incoming/outgoing data

2 Scope

This Configuration Control Document (CCD) specifies the Reader configuration commands.

3 Notations

The interface protocol is described as a set of grammars, indicated by different type styles and symbols. These indications are listed in the table below.

Example	Indication	Grammar
<i>Text-Command</i>	Italic type	Syntactic categories (non-terminals)
space	Bold type	Terminal symbols
%xx	Byte data	In Hex
0xFF	0x prefix indicating hexadecimal	Literal byte values
'X'	Single quotes	Literal ASCII characters
SOH	All caps	Non-printable ASCII characters
esc tab	Vertical bar	Alternatives (this or that)
<i>data</i> _{opt}	opt. (opt subscript)	Optional terminals and non-terminals
<i>crc16</i> _{nr}	nr (nr subscript)	Applies to packets sent in non-raw mode, i.e. in packet mode

4 Reader Command Overview

This section is intended to introduce users to the format of configuration commands a reader will accept to change and save configuration settings.

4.1 Configuration Command Architecture

Commands are defined as alphanumeric ASCII strings. For example, to enable Australian Post Symbology on the reader, the host will send the ASCII string SYAUPOSEN1. After the host sends a complete command, the reader will respond with a success or error message.

4.2 Command Format

Primary Category	Sub-Category	Action Code (S/P/R/G)	Parameter	Parameter Value (when action is S or P)
Example: SY, CM, etc.	Example: AZTC, SE etc.	S – Change and save P – Change but do not save R – Reset to default value G – Get value in effect	Example: AL, BA , [, etc.	String of decimal number or text

Example:

- SYAZTCSP01: This command sets the polarity to Inverse mode of the Aztec symbology and saves it to non-volatile memory. Here is the breakdown of the command:
 - SY = Symbology
 - AZTC = Aztec
 - S = Set
 - PO = Polarity
 - 1 = Inverse Mode

Each Primary Category can have compound actions in the same command

Example:

- SYAZTCSP01,MR1: This compound command sets the polarity to Inverse mode of the Aztec symbology and sets the ability to read mirrored Aztec codes. It saves both to non-volatile memory. Here is the breakdown of the command:
 - SY = Symbology
 - AZTC = Aztec
 - S = Set
 - PO = Polarity
 - 1 = Inverse Mode
 - MR = Mirror
 - 1 = Enable

4.3 Supported Commands

The CR8200 family of readers use a new command set as compared to the CR8000 family of readers. The default output style of the CR8200 readers is via XML.

For a full output of CR8200 settings, requested by issuing the CFG command, the XML contains the following elements:

```
<CFG>
  <CM>      ... </CM>      Communications
  <PM>      ... </PM>      Power Management
  <FC>      ... </FC>      Focus Testing
  <AG>      ... </AG>      Automatic Gain Control
  <CD>      ... </CD>      Decoder Control
  <SC>      ... </SC>      Scene Manager
  <SY>      ... </SY>      Symbologies
  <PK>      ... </PK>      Packet Protocol
  <IM>      ... </IM>      Imager Sensor
  <JS>      ... </JS>      JavaScript
  <FW>      ... </FW>      Firmware
  <RD>      ... </RD>      Reader
  <FB>      ... </FB>      Feedback
  <LA>      ... </LA>      Language
  <MD>      ... </MD>      Motion Detection
  <ST>      ... </ST>      Storage
  <Saved>   ... </Saved>   Saved Settings
  <Platform> ... </Platform> Platform Settings
</CFG>
```

Each of the above elements is a "Primary Category" in the command format and has its own configuration commands that start with the two-letter element name, which the following sections describe.

4.3.1 <CF> – Configuration Manager

There are other commands, besides G, in the Configuration Manager element as listed below:

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All Reader Parameters	CF		G		Returns all Reader parameter values in an XML element. Example: CFG
Get Saved Settings	CF		G	[^code]	[^CF] Returns all Saved Settings in an XML element Example: CFG[^CF]
Get Platform Settings	CF		G	[^code]	[^PL] Returns all Platform Settings in an XML element Example: CFG[^PL]
Save All Reader Parameters not at default values.	CF		S		Save all the reader settings in the local copy to flash(Commands issued with 'P' (SUPP_P) save to local copy) Example: CFS
Reset Reader Defaults - All	CF		R		Reset all Reader parameters to default values. (Note: removes all saved/non-platform changes but does not remove any platform customizations or licenses) Example: CFR

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Reset Reader Defaults - Specific	CF		R	[<i>^code</i>]	[<i>^PL</i>] Remove only platform parameters Example: CFR[<i>^PL</i>]
					[<i>^LC</i>] Remove only License files Example: CFR[<i>^LC</i>]
					[<i>^CF</i>] Remove only saved parameters Example: CFR[<i>^CF</i>]
					[<i>^AL</i>] Remove all saved, platform and license parameters/data. (Removes from the saved list and will not reset the values) Example: CFR[<i>^AL</i>]

4.3.2 <CM> – Communications Parameters

Example output from CR8200. See Appendices for current default values.

<CM>

```
<GE CR="5000" />
<MO CM="UN" />
<SE BA="115200" DB="8" PA="N" SB="1" FC="0" PO="1" />
<UB MF="Code" PN="CR8200" FS="0" />
<HD IC="0" IS="0" RL="0" CC="0" IE="0" OM="0" EA="0" />
<CP PM="0" />
<UK SN="1" NE="2" EM="3" IN="1000" />
<UN SN="1" IN="1000" />
<UP SN="1" />
<UV SN="0" />
<UC SN="0" />
```

</CM>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All Communications Parameters	CM	CM	G		Example: CMCMG Keywords: #Communications
Connection Retry Timeout (ms)	CM	GE	S/P/R/G	CR	If reader disconnects, it will try to reconnect after the timeout interval In Milliseconds. Example: CMGESCR5000 Keywords: #Communications
Communications Mode	CM	MO	S/P/R/G	CM	SE RS-232 Serial Example: CMMOSCMSE
					UK USB Keyboard Example: CMMOSCMUK
					UV USB VCOM Example: CMMOSCMUV
					UN USB HID Vendor (Similar to USB Native) Example: CMMOSCMUN
					UP USB HID POS Example: CMMOSCMUP
					UC USB CDC VCOM Example: CMMOSCMUC
					Keywords: #Communications

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
RS-232 Interface – Get All parameters	CM	SE	G		Returns all serial communication parameters values in an XML element Example: CMSEG Keywords: #Communications	
RS-232 Interface – Baud Rate	CM	SE	S/P/R/G	BA	1200	1200 Bits per second Example: CMSESBA1200
					2400	2400 Bits per second Example: CMSESBA2400
					4800	4800 Bits per second Example: CMSESBA4800
					9600	9600 Bits per second Example: CMSESBA9600
					19200	19200 Bits per second Example: CMSESBA19200
					38400	38400 Bits per second Example: CMSESBA38400
					57600	57600 Bits per second Example: CMSESBA57600
					115200	115200 Bits per second Example: CMSESBA115200
					Supported Baud Rate Keywords: #Communications	
RS-232 Interface – Data Bits	CM	SE	S/P/R/G	DB	8	Eight data bits Example: CMSESDB8
					The number of bits per character Note: The CR8200 family supports only 8 data bits at this time. Keywords: #Communications	
RS-232 Interface – Stop Bits	CM	SE	S/P/R/G	SB	1	One stop bit Example: CMSESSB1
					2	Two stop bits Example: CMSESSB2
					The number of stop bits sent Keywords: #Communications	
RS-232 Interface – Parity	CM	SE	S/P/R/G	PA	N	None – No parity bits Example: CMSESPAN
					E	Even parity bit Example: CMSESPAE
					O	Odd parity bit Example: CMSESPA0
					A parity bit, or check bit, is a bit added to a string of binary code to ensure that the total number of 1-bits in the string is even or odd. Keywords: #Communications	
RS-232 Interface – Flow Control	CM	SE	S/P/R/G	FC	0	Disable flow control Example: CMSESFC0
					1	Enable flow control Example: CMSESFC1
					2	Enable One Way flow control (Used in some POS terminals). Reader sets RTS high and waits for CTS high before sending data. Otherwise, RTS stays low. Example: CMSESFC2
					Transmit flow control Keywords: #Communications	

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
RS-232 Interface – Signal Polarity	CM	SE	S/P/R/G	PO	0 Standard or non-inverted UART0 signals Example: CMSESPO0
					1 Invert UART0 signals Example: CMSESPO1
					Note: UART1 does not have polarity control This allows the RS232 communication channel to communicate with a host using an inverted RS232 protocol. RS232 levels have a '1' as a negative voltage, and a '0' as a positive voltage. TTL levels define a '1' as VCC and a '0' as 0V. Thus non-inverted is RS232 levels and inverted is TTL levels. Keywords: #Communications
USB – Get All parameters	CM	UB	G		Returns all USB communication parameters values in an XML element Example: CMUBG Keywords: #Communications
USB – Manufacturer	CM	UB	S/P/R/G	MF	A string representing the manufacturer name for the product Example: CMUBSMFCODE Keywords: #Communications
USB – Part Number	CM	UB	S/P/R/G	PN	A string representing the part number or name for the product Example: CMUBSPNCR8200 Keywords: #Communications
USB – Full Speed	CM	UB	S/P/R/G	FS	0 Disable Full Speed USB communications Example: CMUBSFS0
					1 Enable Full Speed USB communications Example: CMUBSFS1
					Keywords: #Communications
HID Keyboard – Get All parameters	CM	HD	G		Returns all HID Keyboard parameters values in an XML element Example: CMHDG Keywords: #Communications
HID Keyboard – Inter Character Delay (ms)	CM	HD	S/P/R/G	IC	This is the time between sending consecutive characters to the host In Milliseconds Valid Range: 0 - 10000 Example: CMHDSIC4 Note: See Appendix A Keywords: #Communications
HID Keyboard – Inter Scan Delay (ms)	CM	HD	S/P/R/G	IS	This is the time between sending two non-zero scan codes In Milliseconds Valid Range: 0 - 10000 Example: CMHDSIS4 Note: See Appendix A Keywords: #Communications
HID Keyboard – Release Delay (ms)	CM	HD	S/P/R/G	RL	This is the time between the last non-zero scan code and sending release (all keys up) In Milliseconds Valid Range: 0 - 10000 Example: CMHDSRL4 Note: See Appendix A Keywords: #Communications
HID Keyboard Control Characters	CM	HD	S/P/R/G	CC	0 Use default language special keyboard character encoding Example: CMHDSGCC0
					1 Use Ctrl+<char> Example: CMHDSGCC1
					2 Use Alt+<Keypad> Example: CMHDSGCC2

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples								
					<table border="1"> <tr> <td>3</td> <td>Use Alt+0<Keypad> Example: CMHDSCC3</td> </tr> <tr> <td colspan="2">This setting tells the reader how to report special codes to the host in keyboard mode. All language settings apply only to keyboard mode and key mapping. Keywords: #DataEncoding</td> </tr> </table>	3	Use Alt+0<Keypad> Example: CMHDSCC3	This setting tells the reader how to report special codes to the host in keyboard mode. All language settings apply only to keyboard mode and key mapping. Keywords: #DataEncoding					
3	Use Alt+0<Keypad> Example: CMHDSCC3												
This setting tells the reader how to report special codes to the host in keyboard mode. All language settings apply only to keyboard mode and key mapping. Keywords: #DataEncoding													
HID Keyboard Decode Data Input Conversion	CM	HD	S/P/R/G	IE	<table border="1"> <tr> <td>0</td> <td>ASCII – No Conversion Example: CMHDSIE0</td> </tr> <tr> <td>1</td> <td>ASCII to Unicode Code point Example: CMHDSIE1</td> </tr> <tr> <td>2</td> <td>UTF-8 to Unicode Code point Example: CMHDSIE2</td> </tr> <tr> <td colspan="2">Keywords: #DataEncoding</td> </tr> </table>	0	ASCII – No Conversion Example: CMHDSIE0	1	ASCII to Unicode Code point Example: CMHDSIE1	2	UTF-8 to Unicode Code point Example: CMHDSIE2	Keywords: #DataEncoding	
					0	ASCII – No Conversion Example: CMHDSIE0							
					1	ASCII to Unicode Code point Example: CMHDSIE1							
					2	UTF-8 to Unicode Code point Example: CMHDSIE2							
Keywords: #DataEncoding													
HID Keyboard Decode Data Output Method	CM	HD	S/P/R/G	OM	<table border="1"> <tr> <td>0</td> <td>Unicode or ASCII as XML Lookup Example: CMHDSOM0</td> </tr> <tr> <td>1</td> <td>Unicode as Windows Alt-Sequence Note: This parameter is only relevant when HID Keyboard Decode Data Input Conversion is greater than 0 Example: CMHDSOM1</td> </tr> <tr> <td>2</td> <td>Output Unicode as Thai characters IEC8859.11 This requires that the control characters be output as Alt+<Keypad> Example: CDHDSOM2 CDHDSIE2 CDHDSCC2</td> </tr> <tr> <td colspan="2">Keywords: #DataEncoding</td> </tr> </table>	0	Unicode or ASCII as XML Lookup Example: CMHDSOM0	1	Unicode as Windows Alt-Sequence Note: This parameter is only relevant when HID Keyboard Decode Data Input Conversion is greater than 0 Example: CMHDSOM1	2	Output Unicode as Thai characters IEC8859.11 This requires that the control characters be output as Alt+<Keypad> Example: CDHDSOM2 CDHDSIE2 CDHDSCC2	Keywords: #DataEncoding	
					0	Unicode or ASCII as XML Lookup Example: CMHDSOM0							
					1	Unicode as Windows Alt-Sequence Note: This parameter is only relevant when HID Keyboard Decode Data Input Conversion is greater than 0 Example: CMHDSOM1							
					2	Output Unicode as Thai characters IEC8859.11 This requires that the control characters be output as Alt+<Keypad> Example: CDHDSOM2 CDHDSIE2 CDHDSCC2							
Keywords: #DataEncoding													
Communication Protocol	CM	CP	S/P/R/G	PM	<table border="1"> <tr> <td>0</td> <td>Raw Mode Example: CMCPSPM0</td> </tr> <tr> <td>1</td> <td>Packet Mode Example: CMCPSPM1</td> </tr> <tr> <td colspan="2">This option selects whether the reader will respond to the host in xml packets, or to respond with unformatted raw data in subsequent communications. Keywords: #Communications</td> </tr> </table>	0	Raw Mode Example: CMCPSPM0	1	Packet Mode Example: CMCPSPM1	This option selects whether the reader will respond to the host in xml packets, or to respond with unformatted raw data in subsequent communications. Keywords: #Communications			
					0	Raw Mode Example: CMCPSPM0							
					1	Packet Mode Example: CMCPSPM1							
This option selects whether the reader will respond to the host in xml packets, or to respond with unformatted raw data in subsequent communications. Keywords: #Communications													
USB Keyboard – Get All parameters	CM	UK	G		Returns all USB Keyboard parameters values in an XML element Example: CMUKG Keywords: #Communications								
USB Keyboard – Number of Endpoints	CM	UK	S/P/R/G	NE	<table border="1"> <tr> <td>1</td> <td>One endpoint (IN) Example: CMUKSNE1</td> </tr> <tr> <td>2</td> <td>Two endpoints (both IN and OUT) Example: CMUKSNE2</td> </tr> <tr> <td colspan="2">The USB HID class keyboard is designed with an IN endpoint that communicates keystrokes to the computer and an optional OUT endpoint that communicates the status of the keyboard's LEDs from the computer to the device Keywords: #Communications</td> </tr> </table>	1	One endpoint (IN) Example: CMUKSNE1	2	Two endpoints (both IN and OUT) Example: CMUKSNE2	The USB HID class keyboard is designed with an IN endpoint that communicates keystrokes to the computer and an optional OUT endpoint that communicates the status of the keyboard's LEDs from the computer to the device Keywords: #Communications			
					1	One endpoint (IN) Example: CMUKSNE1							
					2	Two endpoints (both IN and OUT) Example: CMUKSNE2							
The USB HID class keyboard is designed with an IN endpoint that communicates keystrokes to the computer and an optional OUT endpoint that communicates the status of the keyboard's LEDs from the computer to the device Keywords: #Communications													
USB Keyboard – Declaration Wait State	CM	UK	S/P/R/G	EM	<table border="1"> <tr> <td>0</td> <td>Declare enumeration when addressed Example: CMUKSEM0</td> </tr> <tr> <td>1</td> <td>Declare enumeration after receipt of output report Example: CMUKSEM1</td> </tr> <tr> <td>2</td> <td>Declare enumeration after receipt of get report descriptor Example: CMUKSEM2</td> </tr> <tr> <td>3</td> <td>Enumerate either after receiving output report or after Get report descriptor report is received Example: CMUKSEM3</td> </tr> </table>	0	Declare enumeration when addressed Example: CMUKSEM0	1	Declare enumeration after receipt of output report Example: CMUKSEM1	2	Declare enumeration after receipt of get report descriptor Example: CMUKSEM2	3	Enumerate either after receiving output report or after Get report descriptor report is received Example: CMUKSEM3
					0	Declare enumeration when addressed Example: CMUKSEM0							
					1	Declare enumeration after receipt of output report Example: CMUKSEM1							
					2	Declare enumeration after receipt of get report descriptor Example: CMUKSEM2							
3	Enumerate either after receiving output report or after Get report descriptor report is received Example: CMUKSEM3												

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
					Choose when to have the device declare enumeration as a keyboard, in the special case when the USB device doesn't require host keyboard response Keywords: #Communications
USB Keyboard – Use Serial Number for the USB identification string	CM	UK	S/P/R/G	SN	0 Disable Example: CMUKSSN0
					1 Enable Example: CMUKSSN1
					Use serial number, if it is set, uses the reader's actual serial number for the USB identification strings. In some cases, however, more than one device is connected to a modem, and needs to report a serial number of '0000000' in order to properly register on the modem. Keywords: #Communications
USB Keyboard – IN Endpoint Polling Interval (µs)	CM	UK	S/P/R/G	IN	Controls the USB HID Keyboard IN Endpoint Polling Interval Example: CMUKSIN1000 Keywords: #Communications
USB Vendor get all parameters	CM	UN	G		Returns all USB Vendor parameters values in an XML element Example: CMUNG Keywords: #Communications
USB Vendor – Use Serial Number for the USB identification string	CM	UN	S/P/R/G	SN	0 Disable Example: CMUNSSN0
					1 Enable Example: CMUNSSN1
					Use serial number, if it is set, uses the reader's actual serial number for the USB identification strings. In some cases, however, more than one device is connected to a modem, and needs to report a serial number of '0000000' in order to properly register on the modem. Keywords: #Communications
USB Vendor – IN Endpoint Polling Interval (µs)	CM	UN	S/P/R/G	IN	Controls the USB HID Vendor IN Endpoint Polling Interval Example: CMUNSIN1000 Keywords: #Communications
USB HIDPOS get all parameters	CM	UP	G		Returns all USB HIDPOS parameters values in an XML element Example: CMUPG Keywords: #Communications
USB HID POS – Use Serial Number for the USB identification string	CM	UP	S/P/R/G	SN	0 Disable Example: CMUPSSN0
					1 Enable Example: CMUPSSN1
					Use serial number, if it is set, uses the reader's actual serial number for the USB identification strings. In some cases, however, more than one device is connected to a modem, and needs to report a serial number of '0000000' in order to properly register on the modem. Keywords: #Communications
USB Vcom get all parameters	CM	UV	G		Returns all USB VCom parameters values in an XML element Example: CMUVG Keywords: #Communications
USB VCOM – Use Serial Number for the USB identification string	CM	UV	S/P/R/G	SN	0 Disable Example: CMUVSSN0
					1 Enable Example: CMUVSSN1
					Use serial number, if it is set, uses the reader's actual serial number for the USB identification strings. In some cases, however, more than one device is connected to a modem, and needs to report a serial number of '0000000' in order to properly register on the modem. Keywords: #Communications

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
USB CDC – Use Serial Number for the USB identification string	CM	UC	S/P/R/G	SN	0 Disable Example: CMUCSSN0
					1 Enable Example: CMUCSSN1
					Use serial number, if it is set, uses the reader's actual serial number for the USB identification strings. In some cases, however, more than one device is connected to a modem, and needs to report a serial number of '0000000' in order to properly register on the modem. Keywords: #Communications

4.3.3 <AG> – Automatic Gain Control (AGC) Parameters

Example output from CR8200. See Appendices for current default values.

<AG>

```
<CR CX="300" CY="300" CT="227" LT="8" LP="200" HT="85" HP="200" DL="11" ME="7"/>
<TM MN="5" MT="0x00000100" HQ="360" MQ="320" LQ="120" HP="80" MP="20" LP="10" />
<BY IL="50" EX="4000" GN="0" />
<FX BP="50" />
```

</AG>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All AGC Parameters	AG	AG	G		Returns all AGC parameters values in an XML element Example: AGAGG
Quality Low Threshold	AG	CR	S/P/R/G	LT	Used to control quality calculations Example: AGCRSLT8
Quality Low Factor	AG	CR	S/P/R/G	LP	Used to control quality calculations Example: AGCRSLP200
Quality High Threshold	AG	CR	S/P/R/G	HT	Used to control quality calculations Example: AGCRSHT85
Quality High Factor	AG	CR	S/P/R/G	HP	Used to control quality calculations Example: AGCRSHP200
Edge Detect Lines	AG	CR	S/P/R/G	DL	Used to control quality calculations Example: AGCRSDL11
Max Edges	AG	CR	S/P/R/G	ME	Used to control quality calculations Example: AGCRSME7
Maximum illumination during Motion Detection	AG	CR	S/P/R/G	MB	DEPRECATING – See MDPM command XI parameter.

4.3.4 <CD> – Decoder Parameters

Example output from CR8200. See Appendices for current default values.

<CD>

```
<DP BE="0" BD="0" PD="0" PL="0" LC="0" DP="0" BI="0" BH="0" SM="0" />
<DT TL="9830720" TF="30" CD="0" TD="0" />
<OP PR="1" RO="0" RL="0" RT="0" RW="0" RH="0" LC="1" ZR="0" EC="0" DL="0" SP="0" QD="0"
AS="0" CI="0" SE="0" AP="115" AT="0" SD="0" FQ="0" CE="0" UT="1" MD="0" DI="0" FO="1"
FD="" PX="" SX="/0d/0a" FC="0" FP="" RD="0" VF="0" GB="0" NC="0" N2="0" WN="0" SM="0"
GP="0" />
```

```
<VA TT="1600" BD="0" BT="0" EB="0" />
```

```
<IM ET="1" />
```

```
<TP TE="0" RO="0" AB="0" CB="0" XO="0" YO="0" WD="1280" HT="960" />
```

```
</CD>
```

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All Decoder Parameters	CD	CD	G		Returns all CortexDecoder parameters values in an XML element Example: CDCDG
Direct Part Mark Decoding	CD	DP	G		DPM parameters
Enable DPM Basic Etch	CD	DP	S/P/R/G	BE	Enable DPM Basic Etch Example: CDDPSBE0 Example: CDDPSBE1
Enable DPM Basic Dots	CD	DP	S/P/R/G	BD	Enable DPM Basic Dots Example: CDDPSBD0 Example: CDDPSBD1
Enable DPM Dot Peen DL	CD	DP	S/P/R/G	PD	Enable DPM Dot Peen DL Example: CDDPSPD0
Enable DPM Dot Peen LD	CD	DP	S/P/R/G	PL	Enable DPM Dot Peen LD Example: CDDPSPL0
Enable DPM Laser Chem	CD	DP	S/P/R/G	LC	Enable DPM Laser Chem Example: CDDPSLC0
Enable DPM Dot Peen 2LD	CD	DP	S/P/R/G	DP	Enable DPM Dot Peen 2LD Example: CDDPSDP0
Enable DPM Basic Inkjet	CD	DP	S/P/R/G	BI	Enable DPM Basic Inkjet Example: CDDPSBI0 Example: CDDPSBI1
Enable DPM Basic Handheld	CD	DP	S/P/R/G	BH	Enable DPM Basic Handheld Example: CDDPSBH0 Example: CDDPSBH1
Enable DPM DPM Small Mirrored	CD	DP	S/P/R/G	SM	Enable DPM DPM Small Mirrored Example: CDDPSSM0 Example: CDDPSSM1
Continuous scan image capture delay	CD	DT	S/P/R/G	CD	Limit the rate of image capturing during continuous scan. Example: CDDTSCD100 will limit the image capture rate to one every 100 ms.
Trigger mode image capture delay	CD	DT	S/P/R/G	TD	Limit the rate of image capturing during normal trigger mode.
Get All Decoder Operational Parameters	CD	OP	G		Returns all CortexDecoder Operational parameters values in an XML element Example: CDOPG
Maximum Decodes Per Read	CD	OP	S/P/R/G	PR	The reader will process up to this number of barcodes per read. If there are more barcodes in the field of view and target tolerance, only the first ones will be decoded. Valid Range: 1 to 16 Example: CDOPSPR2
Ensure Region of Interest	CD	OP	S/P/R/G	0	Disable ROI Example: CDOPSR00
				1	Enable ROI Example: CDOPSR01
					Ensure decoded barcodes are always inside the region of interest. When disabled, barcode may be decoded as long as it is partially inside the ROI See CortexDecoder API Documentation
Region of Interest Leftmost pixel	CD	OP	S/P/R/G	RL	ROI Left - See CortexDecoder API Documentation

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Region of Interest Topmost pixel	CD	OP	S/P/R/G	RT	ROI Top - See CortexDecoder API Documentation
Region of Interest width (pixels)	CD	OP	S/P/R/G	RW	ROI width - See CortexDecoder API Documentation
Region of Interest height (pixels)	CD	OP	S/P/R/G	RH	ROI height - See CortexDecoder API Documentation
Low Contrast Mode for 1D Barcodes	CD	OP	S/P/R/G	LC	0 Disable Low Contrast Mode Example: CDOPSLC0
					1 Enable Low Contrast Mode Example: CDOPSLC1
					Low contrast mode enable inverse images to be decoded more easily. See CortexDecoder API Documentation
Low Contrast Mode for 1D Barcodes	CD	OP	S/P/R/G	EC	0 Disable Enhance Contrast Mode Example: CDOPSEC0
					1 Enable Enhance Contrast Mode Example: CDOPSEC1
					Enhance contrast mode enable DPM images to be decoded more easily. See CortexDecoder API Documentation
Field of Interest (FOI) Zoom	CD	OP	S/P/R/G	ZR	0 Disable FOI Zoom Example: CDOPSZR0
					1 Enable FOI Zoom Example: CDOPSZR1
					Increase the FOI resolution to robustly decode small barcodes when FOI is set to sub-region of the entire FOI. For faster speed, set FOI width * FOI height < 320 * 480. See CortexDecoder API Documentation
Preprocessing Filter Type	CD	OP	S/P/R/G	PF	0 No preprocessing Example: CDOPSPF0
					1 Low pass filter 1 Example: CDOPSPF1
					2 Low pass filter 2 Example: CDOPSPF2
					3 and Higher Reserved
					Images are preprocessed with the filters to improve reading of barcodes with busy backgrounds See CortexDecoder API Documentation
Send Aim ID	CD	OP	S/P/R/G	AS	0 Disable Send Aim ID Example: CDOPAS0
					1 Enable Send Aim ID Example: CDOPAS1
					Keywords: #AIMID
Enable Cellphone Settings	CD	OP	S/P/R/G	CI	0 Enable Cellphone Settings Example: CDOPSCI0
					1 Disable Cellphone Settings Example: CDOPSCI1
					Keywords: #Cellphone
1D Barcode Aggressiveness	CD	OP	S/P/R/G	SE	0 Most Aggressive Example: CDOPSE0
					1 Less Aggressive for poorly printed 1D barcodes Example: CDOPSE1
					2 Least Aggressive for poorly printed 1D barcodes Example: CDOPSE2

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples														
					<table border="1"> <tr> <td>11</td> <td>Less Aggressive for 1D barcodes with low module size Example: CDOPSS11</td> </tr> <tr> <td>12</td> <td>Least Aggressive for 1D barcodes with low module size Example: CDOPSS12</td> </tr> </table> <p>This tells the decoder that it can enforce the barcode standard more or less aggressively on poorly printed codes.</p>	11	Less Aggressive for 1D barcodes with low module size Example: CDOPSS11	12	Least Aggressive for 1D barcodes with low module size Example: CDOPSS12										
11	Less Aggressive for 1D barcodes with low module size Example: CDOPSS11																		
12	Least Aggressive for 1D barcodes with low module size Example: CDOPSS12																		
Decode Attempt Timeout	CD	OP	S/P/R/G	AT	Scanning / Decode attempt timeout (was sticky time) Example: CDOPSA0														
Stop Decoding on Duplicate	CD	OP	S/P/R/G	SD	<table border="1"> <tr> <td>0</td> <td>Enable Stop Decoding on Duplicate Example: CDOPSSD0</td> </tr> <tr> <td>1</td> <td>Disable Stop Decoding on Duplicate Example: CDOPSSD1</td> </tr> </table> <p>Instruct the decoder to stop looking for decodes in the current image when a duplicate is found</p>	0	Enable Stop Decoding on Duplicate Example: CDOPSSD0	1	Disable Stop Decoding on Duplicate Example: CDOPSSD1										
0	Enable Stop Decoding on Duplicate Example: CDOPSSD0																		
1	Disable Stop Decoding on Duplicate Example: CDOPSSD1																		
Cellphone Mode Enable	CD	OP	S/P/R/G	CE	<table border="1"> <tr> <td>0</td> <td>Disable Cellphone reading mode Example: CDOPSC0</td> </tr> <tr> <td>1</td> <td>Enable Cellphone reading mode Example: CDOPSC1</td> </tr> </table> <p>Keywords: #Cellphone</p>	0	Disable Cellphone reading mode Example: CDOPSC0	1	Enable Cellphone reading mode Example: CDOPSC1										
0	Disable Cellphone reading mode Example: CDOPSC0																		
1	Enable Cellphone reading mode Example: CDOPSC1																		
Upload Images DEPRECATING (See FWIM for more options)	CD	OP	S/P/R/G	DI	<table border="1"> <tr> <td>0</td> <td>Disable uploading images Example: CDOPPD0</td> </tr> <tr> <td>1</td> <td>Enable uploading Example: CDOPPD1</td> </tr> </table>	0	Disable uploading images Example: CDOPPD0	1	Enable uploading Example: CDOPPD1										
0	Disable uploading images Example: CDOPPD0																		
1	Enable uploading Example: CDOPPD1																		
Decode Mode	CD	OP	S/P/R/G	MD	<table border="1"> <tr> <td>0</td> <td>Trigger Mode Example: CDOPSM0</td> </tr> <tr> <td>1</td> <td>Motion Detection Mode Example: CDOPSM1</td> </tr> <tr> <td>2</td> <td>Continuous scan Mode Example: CDOPSM2</td> </tr> </table> <p>These values dictate the scanning in which to run the reader right now</p>	0	Trigger Mode Example: CDOPSM0	1	Motion Detection Mode Example: CDOPSM1	2	Continuous scan Mode Example: CDOPSM2								
0	Trigger Mode Example: CDOPSM0																		
1	Motion Detection Mode Example: CDOPSM1																		
2	Continuous scan Mode Example: CDOPSM2																		
Data format option selection	CD	OP	S/P/R/G	FO	<table border="1"> <tr> <td>0</td> <td>Don't format data output Example: CDOPSF00</td> </tr> <tr> <td>1</td> <td>Format data with prefix/suffix or data configuration string Example: CDOPSF01</td> </tr> <tr> <td>2 / 12</td> <td>2 - Perform match string validation 12 - Perform match string validation and Data Formatting Example: CDOPSF02</td> </tr> <tr> <td>3 / 13</td> <td>3 - Perform GS1 validation 13 - Perform GS1 validation and Data Formatting Note: Requires a license Example: CDOPSF03</td> </tr> <tr> <td>4 / 14</td> <td>4 - Perform UDI validation 14 - Perform UDI validation and Data Formatting Note: Requires a license Example: CDOPSF04</td> </tr> <tr> <td>5 / 15</td> <td>5 - Perform ISO15434 validation 15 - Perform ISO15434 validation and Data Formatting Example: CDOPSF05</td> </tr> <tr> <td>6 / 16</td> <td>6 - Perform ISO15434 & ISO15418 validation 16 - Perform ISO15434 & ISO15418 validation and Data Formatting Example: CDOPSF06</td> </tr> </table>	0	Don't format data output Example: CDOPSF00	1	Format data with prefix/suffix or data configuration string Example: CDOPSF01	2 / 12	2 - Perform match string validation 12 - Perform match string validation and Data Formatting Example: CDOPSF02	3 / 13	3 - Perform GS1 validation 13 - Perform GS1 validation and Data Formatting Note: Requires a license Example: CDOPSF03	4 / 14	4 - Perform UDI validation 14 - Perform UDI validation and Data Formatting Note: Requires a license Example: CDOPSF04	5 / 15	5 - Perform ISO15434 validation 15 - Perform ISO15434 validation and Data Formatting Example: CDOPSF05	6 / 16	6 - Perform ISO15434 & ISO15418 validation 16 - Perform ISO15434 & ISO15418 validation and Data Formatting Example: CDOPSF06
0	Don't format data output Example: CDOPSF00																		
1	Format data with prefix/suffix or data configuration string Example: CDOPSF01																		
2 / 12	2 - Perform match string validation 12 - Perform match string validation and Data Formatting Example: CDOPSF02																		
3 / 13	3 - Perform GS1 validation 13 - Perform GS1 validation and Data Formatting Note: Requires a license Example: CDOPSF03																		
4 / 14	4 - Perform UDI validation 14 - Perform UDI validation and Data Formatting Note: Requires a license Example: CDOPSF04																		
5 / 15	5 - Perform ISO15434 validation 15 - Perform ISO15434 validation and Data Formatting Example: CDOPSF05																		
6 / 16	6 - Perform ISO15434 & ISO15418 validation 16 - Perform ISO15434 & ISO15418 validation and Data Formatting Example: CDOPSF06																		

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
					<p>7 - Perform Simple Age verification using configuration string 17 - Perform Simple Age verification using configuration string and Data Formatting Note: Requires a license Example: CDOPSF07 REPLACED - See commands CDOPSF08/CDOPSF018</p>
					<p>8/18 8 - Perform Simple Age verification 18 - Perform Simple Age verification and Data Formatting Note: Requires a license Example: CDOPSF08</p>
					<p>9/19 9 - Perform DL Parsing with configuration string 19 - Perform DL Parsing with configuration string and Data Formatting Note: Requires a license Example: CDOPSF09</p>
					<p>10/20 10 - Perform DL Parsing without configuration 20 - Perform DL Parsing without configuration and Data Formatting Note: Requires a license Example: CDOPSF010</p>
					<p>11 Perform Success & Raw validation. Success & Raw means return both parsed data and raw data [4 chars parsed data length][parsed data][raw data] Example: CDOPSF011</p>
					<p>Keyword: #DataFormatting</p>
Prefix	CD	OP	S/P/R/G	PX	<p>Prefix added to start of the data decoded from a barcode. The prefix string must be enclosed in double quotes and it is recommended that any non-alphanumeric values be represented by hexadecimal values denoted by a forward slash, as in the example below. Hexadecimal values can be found in an appendix to this document. Note: Data format option selection must be set to 1 for this setting to have an effect Note: When Prefix or Suffix are set, FD is ignored Example: CDOPSPX"/09" Keyword: #DataFormatting</p>
Suffix	CD	OP	S/P/R/G	SX	<p>Suffix added to the end of the data decoded from a barcode. The suffix string must be enclosed in double quotes and it is recommended that any non-alphanumeric values be represented by hexadecimal values denoted by a forward slash, as in the example below. Hexadecimal values can be found in an appendix to this document. Note: Data format option selection must be set to 1 for this setting to have an effect Note: When Prefix or Suffix are set, FD is ignored Note: CR950 has a default suffix enter when in USB Keyboard mode. Example: CDOPSSX"/0D" Keyword: #DataFormatting</p>
Convert output text	CD	OP	S/P/R/G	FC	<p>0 No change to case formatting of decoded text Example: CDOPSF00</p>
					<p>1 Convert decoded text to upper case Example: CDOPSF01</p>
					<p>2 Convert decoded text to lower case Example: CDOPSF02</p>
					<p>3 Convert decoded text to bracketed hex bytes Barcode contents of 03400704 would produce output of: <30><33><34><30><30><37><30><34> Example: CDOPSF03</p>
					<p>Data formatting output case/hex Note: Data format option selection must be set to 1 for this setting to have an effect Keyword: #DataFormatting</p>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Full data format string	CD	OP	S/P/R/G	FD	Data formatting raw format configuration string Note: Data format option selection must be set to 1 for this setting to have an effect Note: When FD is set, Prefix and Suffix are ignored Note: See document D025388 Data Manipulation for Decoded Barcode Data Example: CDOPSFd<"string"> Keyword: #DataFormatting	
Public sector & validation configuration string	CD	OP	S/P/R/G	FP	Validation & Public sector configuration string Note: Data format option selection must be set to 7 or 9 for this setting to have an effect Example: CDOPSFp<"string"> Keyword: #DataFormatting	
Match string validation configuration string	CD	OP	S/P/R/G	SM	Match String validation configuration string Note: Data format option selection must be set to 2 for this setting to have an effect Example: CDOPSSM<"string"> Keyword: #DataFormatting	
GS1 standard validation configuration string	CD	OP	S/P/R/G	GP	GS1 standard validation configuration string Note: Data format option selection must be set to 3 for this setting to have an effect Example: CDOPSGP<"string"> Keyword: #DataFormatting	
Targeting LED	CD	OP	S/P/R/G	UT	0	Disables targeting LED during capture Example: CDOPSUT0
					1	Enables targeting LED during capture Example: CDOPSUT1
					This command allows or prevents the reader from turning on the blue targeting LED when capturing an image.	
Verifone Support	CD	OP	S/P/R/G	VF	0	Disable Verifone communication Example: CDOPSVF0
					1	Enable Verifone communication Example: CDOPSVF1
P_OUTPUT_GILBARCO (CortexDecoder)	CD	OP	S/P/R/G	GB	0	Disable Gilbarco Example: CDOPSGB0
					1	Enable Gilbarco Example: CDOPSGB1
					See CortexDecoder API Documentation	
P_OUTPUT_NCR (CortexDecoder)	CD	OP	S/P/R/G	NC	0	Disable NCR Example: CDOPSNCO
					1	Enable NCR Example: CDOPSNC1
					See CortexDecoder API Documentation	
P_OUTPUT_NCR2 (CortexDecoder)	CD	OP	S/P/R/G	N2	0	Disable NCR2 Example: CDOPSN20
					1	Enable NCR2 Example: CDOPSN21
					See CortexDecoder API Documentation	
P_OUTPUT_WINCNIX (CortexDecoder)	CD	OP	S/P/R/G	WN	0	Disable WINCNIX Example: CDOPSWN0
					1	Enable WINCNIX Example: CDOPSWN1
					See CortexDecoder API Documentation	

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Target Tolerance (percent)	CD	VA	S/P/R/G	TT	For reader to accept a barcode, it must be within certain distance from the center of the image. The distance is defined as a percentage of the barcode's smaller dimension. For example, with a 10 x 20 mm barcode and a setting of 150 (%), the barcode must be within 15 mm of the center of the image. Any value over 1000 is considered infinite tolerance, and no target checking is performed. Valid Range: 1 to 1000 Example: CDVASTT1600
Duplicate Block Time (ms)	CD	VA	S/P/R/G	BT	This is the additional time the reader will be prevented from decoding identical barcodes. This time is added on to the Default Block Time. Example: CDVASBT100 Keywords: #DuplicateBlock
Default Block Time (ms)	CD	VA	S/P/R/G	EB	This is the default time to prevent the reader from decoding identical barcodes Example: CDVASEB100 Keywords: #DuplicateBlock
Enable Duplicate Block Time	CD	VA	S/P/R/G	BD	0 Disable – do not block duplicates Example: CDVASBDO
					1 Enable – block duplicates Example: CDVASBD1
					This command enables or disables blocking duplicate barcodes. If enabled, the amount of time that duplicate barcodes will be blocked is Default Block Time + Duplicate Block Time Keywords: #DuplicateBlock
Stand Detection enable DEPRECATING	CD	ST	S/P/R/G	SE	0 Disable stand detect Example: CDSTSSE0
					1 Enable stand detect Example: CDSTSSE1
					This setting allows the reader to detect whether or not it is in a stand, and follow in stand or out of stand behaviors. NOTE: THIS COMMAND HAS BEEN REPLACED BY RDST_SE Note: Supported by CR950 only
Stand Duplicate Delay (ms) DEPRECATING	CD	ST	S/P/R/G	SD	When the reader is in the stand, block reading of duplicate barcodes for this long. In Milliseconds NOTE: THIS COMMAND HAS BEEN REPLACED BY RDST_SD Note: Supported by CR950 only
Take picture Command	CD	TP	X	EV	Allows the reader to take a picture (Only captures, does not decode any data). Example: CDTPXE1
Trigger Enable for capturing images	CD	TP	S/P/R/G	TE	0 Disables image capture with a trigger press. Example: CDTPSTE0
					1 Enables image capture with a trigger press. Example: CDTPSTE1
Rotate image	CD	TP	S/P/R/G	RO	Rotates picture by 90, 180, or 270 degrees. No rotation for any other values. Default value: 0 (in degrees) Valid Numbers: 0, 90, 180, 270, 360 (in degrees) Example: CDTPSRO270
Encode Type REPLACED	CD	IM	S/P/R/G	ET	This is a setting to select the format of the image being captured
					1 RAW Image Format
					2 PGM Image Format

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
<p>Note: This code has been replaced by ENIM_ET</p> <p>See <EN> category commands in section 4.3.1.10</p>					<p>3 JPEG Image Format</p>

4.3.5 <SC> – Scene Manager Parameters

Example output from CR8200. See Appendices for current default values.

```
<SC>
  <SP MO="NO" IL="50" EX="4000" GN="0" FP="50" />
</SC>
```

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All Scene Manager Parameters	SC	SC	G		Returns all Scene Manager parameters values in an XML element Example: SCSCG
Scene Manager Mode	SC	SP	S/P/R/G	MO	NO Example: SCSPSMONO
					BY Example: SCSPSMOBY
					FX Example: SCSPSMOFX
Bypass Illumination	SC	SP	S/P/R/G	IL	Bypasses the illumination setting when the AGC is set to bypass mode Example: SCSPSIL50
Bypass Exposure	SC	SP	S/P/R/G	EX	Bypasses the exposure setting when the AGC is set to bypass mode Example: SCSPSEX4000
Bypass Gain	SC	SP	S/P/R/G	GN	Bypasses the gain setting when the AGC is set to bypass mode Example: SCSPSGN50
Percent	SC	SP	S/P/R/G	FP	When the AGC is in fixed mode, this value selects the point on the AGC curve from which to make calculations. Valid values from 0 to 100. Example: SCSPSFP50

4.3.6 <SY> – Symbology Parameters

Example output from CR8200. See Appendices for current default values.

```
<SY>
  <AZTC EN="1" PO="0" MR="0" />
  <B412 EN="0" RD="0" />
  <C128 EN="1" />
  <CBAR EN="1" CS="0" SS="0" />
  <CO11 EN="0" CS="2" SC="0" />
  <CO32 EN="0" />
  <CO39 EN="1" EA="0" CS="0" SS="0" />
  <CO93 EN="1" />
  <COMP EN="0" />
  <DATM EN="1" PO="2" MR="0" RE="1" RX="0" FQ="0" />
  <GS1D EN="1" ST="1" EX="1" ES="1" LI="1" />
```

```

<H2O5 EN="0" />
<I2O5 EN="1" CO="0" LN="0" />
<M2O5 EN="0" />
<MSIP EN="0" CS="0" SC="0" PE="0" />
<N2O5 EN="0" CS="0" />
<P417 EN="1" MI="0" />
<PHCO EN="0" CB="0" CN="4" CX="16" MI="15" MX="131070" RV="0" />
<QRCO EN="1" PO="0" MI="0" MR="0" M1="0" CQ="0" />
<S2O5 EN="0" />
<TELP EN="0" OA="0" />
<TRIO EN="0" RV="0" SS="0" />
<UPCO EN="1" EA="0" SU="0" E8="0" AD="0" DI="0" DN="0" AC="0" AN="0" EC="0" NO="0" ES="0"
    DC="0" C8="0" AM="0" />
<CODA EN="0" />
<CODF EN="0" />
<AUPO EN="0" SC="0" />
<CAPO EN="0" />
<CO49 EN="0" />
<GDMX EN="0" PO="0" MR="0" />
<GOCO EN="&lt;val=-21 desc=NOTSUPP&gt;" MR="&lt;val=-21 desc=NOTSUPP&gt;" />
<HAXN EN="0" PO="0" MR="0" />
<JAPO EN="0" />
<KIX0 EN="0" />
<KOPO EN="0" />
<MAXC EN="0" />
<UKRO EN="0" CC="0" />
<UPUI EN="0" />
<USIM EN="0" />
<USPL EN="0" />
<USPO EN="0" />

```

</SY>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Get All Symbology Parameters	SY	ALLS	G		Returns all symbology values in a single XML element Example: SYALLSG	
Australian Post – Get All Parameter	SY	AUPO	G		Returns all Australian post parameters values in an XML element Note: This symbology is not supported by the CR950 Example: SYAUPOG Keywords: #Postal	
Australian Post	SY	AUPO	S/P/R/G	EN	0	Disable Example: SYAUPOSEN0
					1	Enable Example: SYAUPOSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	
	SY	AUPO	S/P/R/G	SC	0	Transmit Australian Post Checksum

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Australian Post – Remove Checksum					Example: SYAUPOSSC0	
					1	Do not transmit Australian Post Checksum Example: SYAUPOSSC1
					This setting value is ignored if Australian Post decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Postal	
Aztec – Get All Parameter	SY	AZTC	G		Returns all Aztec parameters values in an XML element Example: SYAZTCG Keywords: #Aztec	
Aztec	SY	AZTC	S/P/R/G	EN	0	Disable Example: SYAZTCSENO
					1	Enable Example: SYAZTCSEN1
					Keywords: #Aztec	
Aztec – Polarity	SY	AZTC	S/P/R/G	PO	0	Normal mode enabled - Black on white background Example: SYAZTCSP00
					1	Inverse mode enabled - White on black background Example: SYAZTCSP01
					2	Both normal and inverse modes enabled Example: SYAZTCSP02
					Note: This setting value is ignored if Aztec decoding is disabled Keywords: #Aztec	
Aztec – Mirror	SY	AZTC	S/P/R/G	MR	0	Disable Example: SYAZTCSMR0
					1	Enable Example: SYAZTCSMR1
					The ability to decode an Aztec code that has been printed as a mirror image of a standard Aztec. Note: This setting value is ignored if Aztec decoding is disabled Keywords: #Aztec	
BC412 – Get All Parameter	SY	B412	G		Returns all BC412 parameters values in an XML element Example: SYB412G Keywords: #BC412	
BC412	SY	B412	S/P/R/G	EN	0	Disable Example: SYB412SENO
					1	Enable Example: SYB412SEN1
					Note: Keywords: #BC412	
BC412 – Reverse Decoding	SY	B412	S/P/R/G	RD	0	Disable Example: SYB412SRD0
					1	Enable Example: SYB412SRD1
					Enable reading BC412 barcodes printed in light colors on a dark background (reverse printing) Note: This setting value is ignored if BC412 decoding is disabled Keywords: #BC412	
Canada Post	SY	CAPO	S/P/R/G	EN	0	Disable Example: SYCAPOSENO
					1	Enable Example: SYCAPOSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Codabar – Get All Parameter	SY	CBAR	G		Returns all Codabar parameters values in an XML element Example: SYCBARG Keywords: #Codabar
Codabar	SY	CBAR	S/P/R/G	EN	0 Disable Example: SYCBARSEN0
					1 Enable Example: SYCBARSEN1
					Keywords: #Codabar
Codabar – Require Checksum	SY	CBAR	S/P/R/G	CS	0 Disable checksum check and output checksum if one exists Example: SYCBARSCS0
					1 Enable checksum check and output checksum Example: SYCBARSCS1
					2 Enable checksum check and do not output checksum Example: SYCBARSCS2
					Note: This setting value is ignored if Codabar decoding is disabled Keywords: #Codabar
Codabar – Start/Stop Characters	SY	CBAR	S/P/R/G	SS	0 Transmit Codabar Start/Stop Characters Example: SYCBARSSS0
					1 Do not transmit Codabar Start/Stop Characters Example: SYCBARSSS1
					Note: This setting value is ignored if Codabar decoding is disabled Keywords: #Codabar
Codablock F	SY	CODF	S/P/R/G	EN	0 Disable Example: SYCODFSEN0
					1 Enable Example: SYCODFSEN1
					Keywords: #Codablock
Code 11 – Get All Parameter	SY	CO11	G		Returns all Code 11 parameters values in an XML element. Example: SYCO11G Keywords: #Code11
Code 11	SY	CO11	S/P/R/G	EN	0 Disable Example: SYCO11SEN0
					1 Enable Example: SYCO11SEN1
					Keywords: #Code11
Code 11 – Require Checksum	SY	CO11	S/P/R/G	CS	0 Decode with checksum check disabled Example: SYCO11SCS0
					1 Decode with one checksum digits checked Example: SYCO11SCS1
					2 Decode with two checksum digits checked Example: SYCO11SCS2
					Note: This setting value is ignored if Code 11 decoding is disabled Keywords: #Code11
Code 11 – Remove Checksum	SY	CO11	S/P/R/G	SC	0 Transmit Code 11 Checksum Example: SYCO11SSC0
					1 Do not transmit Code 11 Checksum Example: SYCO11SSC1
					Note: This setting value is ignored if Code 11 decoding is disabled Keywords: #Code11
Code 32	SY	CO32	S/P/R/G	EN	0 Disable Example: SYCO32SEN0
					1 Enable Example: SYCO32SEN1

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Code 39 – Get All Parameter	SY	CO39	G		Returns all Code39 parameters values in an XML element Example: SYCO39G Keywords: #Code39
Code 39	SY	CO39	S/P/R/G	EN	0 Disable Example: SYCO39SENO
					1 Enable Example: SYCO39SEN1
					Keywords: #Code39
Code 39 – MOD 43 Checksum Character	SY	CO39	S/P/R/G	CS	0 Disable MOD 43 checksum check and output checksum if one exists Example: SYCO39SCS0
					1 Enable MOD 43 checksum check and output checksum Example: SYCO39SCS1
					2 Enable MOD 43 checksum check and do not output checksum from decode data Example: SYCO39SCS2
					Note: This setting value is ignored if Code 39 decoding is disabled Keywords: #Code39
Code 39 – Extended ASCII	SY	CO39	S/P/R/G	EA	0 Disable support of Extended ASCII Example: SYCO39SEA0
					1 Enable support of Extended ASCII Example: SYCO39SEA1
					Note: This setting value is ignored if Code 39 decoding is disabled Keywords: #Code39
Code 39 – Start/Stop Characters	SY	CO39	S/P/R/G	SS	0 Do not transmit Code 39 Start/Stop Characters Example: SYCO39SSS0
					1 Transmit Code 39 Start/Stop Characters Example: SYCO39SSS1
					Note: This setting value is ignored if Code 39 decoding is disabled Keywords: #Code39
Code 49	SY	CO49	S/P/R/G	EN	0 Disable Example: SYCO49SENO
					1 Enable Example: SYCO49SEN1
					Note: This symbology is not supported by the CR950 Keywords: #Code49
Code 93	SY	CO93	S/P/R/G	EN	0 Disable Example: SYCO93SENO
					1 Enable Example: SYCO93SEN1
					Keywords: #Code93
Code 128	SY	C128	S/P/R/G	EN	0 Disable Example: SYC128SENO
					1 Enable Example: SYC128SEN1
					Keywords: #Code128
Composite	SY	COM P	S/P/R/G	EN	0 Disable Example: SYCOMPSENO
					1 Enable Example: SYCOMPSEN1
Data Matrix – Get All Parameter	SY	DAT M	G		Returns all Data matrix parameters values in an XML element Example: SYDATMG Keywords: #DataMatrix

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Data Matrix	SY	DAT M	S/P/R/G	EN	0	Disable Example: SYDATMSEN0
					1	Enable Example: SYDATMSEN1
					Keywords: #DataMatrix	
Data Matrix – Polarity	SY	DAT M	S/P/R/G	PO	0	Normal mode enabled - Black on white background Example: SYDATMSPO0
					1	Inverse mode enabled - White on black background Example: SYDATMSPO1
					2	Both normal and inverse modes enabled Example: SYDATMSPO2
					Note: This setting value is ignored if Data Matrix decoding is disabled Keywords: #DataMatrix	
Data Matrix – Mirror	SY	DAT M	S/P/R/G	MR	0	Disable decoding Data Matrix barcodes printed as a mirror image of normal Example: SYDATMSMR0
					1	Enable decoding Data Matrix barcodes printed as a mirror image of normal Example: SYDATMSMR1
					Note: This setting value is ignored if Data Matrix decoding is disabled Keywords: #DataMatrix	
Data Matrix Rectangular	SY	DAT M	S/P/R/G	RE	0	Disable Example: SYDATMSRE0
					1	Enable Example: SYDATMSRE1
					Note: This setting value is ignored if Data Matrix decoding is disabled Keywords: #DataMatrix	
Data Matrix Rectangular Extended	SY	DAT M	S/P/R/G	RX	0	Disable Example: SYDATMSRX0
					1	Enable Example: SYDATMSRX1
					Note: This setting value is ignored if Data Matrix decoding is disabled Keywords: #DataMatrix	
Grid Matrix – Get All Parameter	SY	GDM X	G		Returns all Grid Matrix parameters values in an XML element. Note: This symbology is not supported by the CR950 Example: SYGDMXG Keywords: #GridMatrix	
Grid Matrix	SY	GDM X	S/P/R/G	EN	0	Disable Example: SYGDMXSEN0
					1	Enable Example: SYGDMXSEN1
					Note: This symbology is not supported by the CR950 Keywords: #GridMatrix	
Grid Matrix – Polarity	SY	GDM X	S/P/R/G	PO	0	Normal mode enabled - Black on white background Example: SYGDMXSPO0
					1	Inverse mode enabled - White on black background Example: SYGDMXSPO1
					2	Both normal and inverse modes enabled Example: SYGDMXSPO2
					Note: This setting value is ignored if Grid Matrix decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #GridMatrix	
Grid Matrix – Mirror	SY	GDM X	S/P/R/G	MR	0	Disable Example: SYGDMXSMR0

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples						
					<table border="1"> <tr> <td>1</td> <td>Enable Example: SYGDMXSMR1</td> </tr> </table> <p>Note: This setting value is ignored if Grid Matrix decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #GridMatrix</p>	1	Enable Example: SYGDMXSMR1				
1	Enable Example: SYGDMXSMR1										
GS1 DataBar – Get All Parameter	SY	GS1D	G		<p>Returns all GS1 DataBar parameters values in an XML element Example: SYGS1DG Keywords: #GS1Databar</p>						
GS1 DataBar Omnidirectional/GS1 DataBar Truncated	SY	GS1D	S/P/R/G	EN	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYGS1DSENO</td> </tr> <tr> <td>1</td> <td>Enable Example: SYGS1DSEN1</td> </tr> </table> <p>Keywords: #GS1DataBar</p>	0	Disable Example: SYGS1DSENO	1	Enable Example: SYGS1DSEN1		
0	Disable Example: SYGS1DSENO										
1	Enable Example: SYGS1DSEN1										
GS1 DataBar Stacked/ GS1 DataBar Stacked Omnidirectional	SY	GS1D	S/P/R/G	ST	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYGS1DSST0</td> </tr> <tr> <td>1</td> <td>Enable Example: SYGS1DSST1</td> </tr> </table> <p>Keywords: #GS1DataBar</p>	0	Disable Example: SYGS1DSST0	1	Enable Example: SYGS1DSST1		
0	Disable Example: SYGS1DSST0										
1	Enable Example: SYGS1DSST1										
GS1 DataBar Expanded	SY	GS1D	S/P/R/G	EX	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYGS1DSEX0</td> </tr> <tr> <td>1</td> <td>Enable Example: SYGS1DSEX1</td> </tr> </table> <p>Keywords: #GS1DataBar</p>	0	Disable Example: SYGS1DSEX0	1	Enable Example: SYGS1DSEX1		
0	Disable Example: SYGS1DSEX0										
1	Enable Example: SYGS1DSEX1										
GS1 DataBar Expanded Stacked	SY	GS1D	S/P/R/G	ES	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYGS1DSESO</td> </tr> <tr> <td>1</td> <td>Enable Example: SYGS1DSES1</td> </tr> </table> <p>Keywords: #GS1DataBar</p>	0	Disable Example: SYGS1DSESO	1	Enable Example: SYGS1DSES1		
0	Disable Example: SYGS1DSESO										
1	Enable Example: SYGS1DSES1										
GS1 DataBar Limited	SY	GS1D	S/P/R/G	LI	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYGS1DSLIO</td> </tr> <tr> <td>1</td> <td>Enable Example: SYGS1DSL11</td> </tr> </table> <p>Keywords: #GS1DataBar</p>	0	Disable Example: SYGS1DSLIO	1	Enable Example: SYGS1DSL11		
0	Disable Example: SYGS1DSLIO										
1	Enable Example: SYGS1DSL11										
Han Xin – Get All Parameter	SY	HAXN	G		<p>Returns all Han Xin parameters values in an XML element Note: This symbology is not supported by the CR950 Example: SYHAXNG Keywords: #HanXin</p>						
Han Xin	SY	HAXN	S/P/R/G	EN	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYHAXNSENO</td> </tr> <tr> <td>1</td> <td>Enable Example: SYHAXNSEN1</td> </tr> </table> <p>Note: This symbology is not supported by the CR950 Keywords: #HanXin</p>	0	Disable Example: SYHAXNSENO	1	Enable Example: SYHAXNSEN1		
0	Disable Example: SYHAXNSENO										
1	Enable Example: SYHAXNSEN1										
Han Xin – Polarity	SY	HAXN	S/P/R/G	PO	<table border="1"> <tr> <td>0</td> <td>Normal mode enabled - Black on white background Example: SYHAXNSPO0</td> </tr> <tr> <td>1</td> <td>Inverse mode enabled - White on black background Example: SYHAXNSPO1</td> </tr> <tr> <td>2</td> <td>Both normal and inverse modes enabled Example: SYHAXNSPO2</td> </tr> </table> <p>Note: This setting value is ignored if Han Xin decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #HanXin</p>	0	Normal mode enabled - Black on white background Example: SYHAXNSPO0	1	Inverse mode enabled - White on black background Example: SYHAXNSPO1	2	Both normal and inverse modes enabled Example: SYHAXNSPO2
0	Normal mode enabled - Black on white background Example: SYHAXNSPO0										
1	Inverse mode enabled - White on black background Example: SYHAXNSPO1										
2	Both normal and inverse modes enabled Example: SYHAXNSPO2										

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Han Xin – Mirror	SY	HAXN	S/P/R/G	MR	0	Disable Example: SYHAXNSMR0
					1	Enable Example: SYHAXNSMR1
					Note: This setting value is ignored if Han Xin decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #HanXin	
Hong Kong 2 of 5	SY	H2O5	S/P/R/G	EN	0	Disable Example: SYH2O5SEN0
					1	Enable Example: SYH2O5SEN1
					Keywords: #2Of5	
Interleaved 2 of 5 – Get All Parameter	SY	I2O5	G		Returns all Interleaved 2 of 5 parameters values in an XML element Example: SYI2O5G Keywords: #2Of5, #Interleaved2Of5	
Interleaved 2 of 5	SY	I2O5	S/P/R/G	EN	0	Disable Example: SYI2O5SEN0
					1	Enable Example: SYI2O5SEN1
					Keywords: #2Of5, #Interleaved2Of5	
Interleaved 2 of 5 – Checksum Characters	SY	I2O5	S/P/R/G	CO	0	Disable checksum checking and output checksum if one exists Example: SYI2O5SCO0
					1	Enable checksum checking and output checksum with decode data Example: SYI2O5SCO1
					2	Enable checksum check and do not output checksum from decode data Example: SYI2O5SCO2
					Note: This setting value is ignored if Interleaved 2 of 5 decoding is disabled Keywords: #2Of5, #Interleaved2Of5	
Interleaved 2 of 5 – Length	SY	I2O5	S/P/R/G	LN	0	Minimum Value Example: SYI2O5SLN0
					100	Maximum Value Example: SYI2O5SLN100
					Note: This setting value is ignored if Interleaved 2 of 5 decoding is disabled Keywords: #2Of5, #Interleaved2Of5	
Japan Post	SY	JAPO	S/P/R/G	EN	0	Disable Example: SYJAPOSEN0
					1	Enable Example: SYJAPOSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	
KIX (Dutch Post)	SY	KIXO	S/P/R/G	EN	0	Disable Example: SYKIXOSEN0
					1	Enable Example: SYKIXOSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	
Korean Post	SY	KOPO	S/P/R/G	EN	0	Disable Example: SYKOPOSEN0
					1	Enable Example: SYKOPOSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	
Matrix 2 of 5	SY		S/P/R/G	EN	0	Disable

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
		M205			<p>Example: SYM205SEN0</p> <p>1 Enable Example: SYM205SEN1</p> <p>Keywords: #Postal</p>
Maxicode	SY	MAXC	S/P/R/G	EN	<p>0 Disable Example: SYMAXCSEN0</p> <p>1 Enable Example: SYMAXCSEN1</p> <p>Keywords: #Maxicode</p>
MSI Plessey – Get All Parameter	SY	MSIP	G		<p>Returns all MSI Plessey parameters values in an XML element Example: SYMSIPG Keywords: #MSIPlessey</p>
MSI Plessey	SY	MSIP	S/P/R/G	EN	<p>0 Disable Example: SYMSIPSEN0</p> <p>1 Enable Example: SYMSIPSEN1</p> <p>Keywords: #MSIPlessey</p>
MSI Plessey – Require Checksum	SY	MSIP	S/P/R/G	CS	<p>0 Disable checksum checking Example: SYMSIPSCS0</p> <p>1 Check for Mod 10 checksum type Example: SYMSIPSCS1</p> <p>2 Check for Mod 10/10 checksum type Example: SYMSIPSCS2</p> <p>3 Check for Mod 11/10 checksum type Example: SYMSIPSCS3</p> <p>Note: This setting value is ignored if MSI Plessey decoding is disabled Keywords: #MSIPlessey</p>
MSI Plessey – Remove Checksum	SY	MSIP	S/P/R/G	SC	<p>0 Transmit MSI Plessey Checksum Example: SYMSIPSSC0</p> <p>1 Do not transmit MSI Plessey Checksum Example: SYMSIPSSC1</p> <p>Note: This setting value is ignored if MSI Plessey decoding is disabled Keywords: #MSIPlessey</p>
UK Plessey – PLE	SY	MSIP	S/P/R/G	PE	<p>0 Disable Example: SYMSIPSPE0</p> <p>1 Enable Example: SYMSIPSPE1</p>
NEC 2 of 5 – Get All Parameter	SY	N205	G		<p>Returns all NEC 2 of 5 parameters values in an XML element Example: SYN205G Keywords: #2Of5</p>
NEC 2 of 5	SY	N205	S/P/R/G	EN	<p>0 Disable Example: SYN205SEN0</p> <p>1 Enable Example: SYN205SEN1</p> <p>Keywords: #2Of5</p>
NEC 2 of 5 – Require Checksum	SY	N205	S/P/R/G	CS	<p>0 Disable checksum checking Example: SYN205SCS0</p> <p>1 Enable checksum checking Example: SYN205SCS1</p> <p>Note: This setting value is ignored if NEC 2 of 5 decoding is disabled</p>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
					Keywords: #2Of5
PDF417	SY	P417	S/P/R/G	EN	0 Disable Example: SYP417SENO
					1 Enable Example: SYP417SEN1
					Keywords: #PDF417
Micro PDF417	SY	P417	S/P/R/G	MI	0 Disable Example: SYP417SMIO
					1 Enable Example: SYP417SMI1
					Keywords: #PDF417
Pharma Code – Get All Parameter	SY	PHCO	G		Returns all Pharma code parameters values in an XML element Note: This symbology is not supported by the CR950 Example: SYPHCOG Keywords: #Pharmacode
Pharmacode	SY	PHCO	S/P/R/G	EN	0 Disable Example: SYPHCOSENO
					1 Enable Example: SYPHCOSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Pharmacode
Pharmacode – Reverse	SY	PHCO	S/P/R/G	RV	0 Disable Example: SYPHCO SRV0
					1 Enable Example: SYPHCO SRV1
					Enable reading Pharmacode barcodes printed in light colors on a dark background (reverse printing). Note: This setting value is ignored if Pharmacode decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Pharmacode
Pharmacode – Support Color bars	SY	PHCO	S/P/R/G	CB	0 Disable Example: SYPHCO SCB0
					1 Enable Example: SYPHCO SCB1
					Note: This setting value is ignored if Pharmacode decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Pharmacode
Pharmacode – Bar Count Min	SY	PHCO	S/P/R/G	CN	4 Minimum Value Example: SYPHCO SCN4
					Note: This setting value is ignored if Pharmacode decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Pharmacode
Pharmacode – Bar Count Max	SY	PHCO	S/P/R/G	CX	16 Maximum Value Example: SYPHCO SCX16
					Note: This setting value is ignored if Pharmacode decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Pharmacode
Pharmacode – Min Value	SY	PHCO	S/P/R/G	MI	15 Minimum Value Example: SYPHCO SMI15
					Note: This setting value is ignored if Pharmacode decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Pharmacode
Pharmacode – Max Value	SY	PHCO	S/P/R/G	MX	1310 70 Maximum Value Example: SYPHCO SMX131070

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
					Note: This setting value is ignored if Pharmacode decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Pharmacode
QR Code – Get All Parameter	SY	QRCO	G		Returns all QR code parameters values in an XML element. Example: SYQRCOG Keywords: #QR
QR Code	SY	QRCO	S/P/R/G	EN	0 Disable Example: SYQRCOSEN0
					1 Enable Example: SYQRCOSEN1
					Keywords: #QR
QR Code – Polarity	SY	QRCO	S/P/R/G	PO	0 Normal mode enabled - Black on white background Example: SYQRCOSPO0
					1 Inverse mode enabled - White on black background Example: SYQRCOSPO1
					2 Both normal and inverse modes enabled Example: SYQRCOSPO2
					Note: This setting value is ignored if QR code decoding is disabled Keywords: #QR
Micro QR Code	SY	QRCO	S/P/R/G	MI	0 Disable Example: SYQRCOSMI0
					1 Enable Example: SYQRCOSMI1
					Keywords: #QR
QR Code – Mirror	SY	QRCO	S/P/R/G	MR	0 Disable Example: SYQRCOSMR0
					1 Enable Example: SYQRCOSMR1
					Note: This setting value is ignored if QR Code decoding is disabled Keywords: #QR
QR Code – Mode 1	SY	QRCO	S/P/R/G	M1	0 Disable Example: SYQRCOSM10
					1 Enable Example: SYQRCOSM11
					Note: This setting value is ignored if QR Code decoding is disabled Keywords: #QR
QR Code – Custom	SY	QRCO	S/P/R/G	CQ	0 Disable Example: SYQRCOSCQ0
					1 Enable Example: SYQRCOSCQ1
					Note: This setting value is ignored if QR Code decoding is disabled Keywords: #QR
Straight 2 of 5	SY	S2O5	S/P/R/G	EN	0 Disable Example: SYS2O5SEN0
					1 Enable Example: SYS2O5SEN1
					Keywords: #2Of5
Telepen – Get All Parameter	SY	TELP	G		Returns all Telepen parameters values in an XML element Example: SYTELPG Keywords: #Telepen
Telepen	SY	TELP	S/P/R/G	EN	0 Disable Example: SYTELPSEN0
					1 Enable

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples				
					<p>Example: SYTELPSEN1</p> <p>Keywords: #Telepen</p>				
Telepen – Output ASCII	SY	TELP	S/P/R/G	OA	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYTELPSOA0</td> </tr> <tr> <td>1</td> <td>Enable Example: SYTELPSOA1</td> </tr> </table> <p>Note: This setting value is ignored if Telepen decoding is disabled Keywords: #Telepen</p>	0	Disable Example: SYTELPSOA0	1	Enable Example: SYTELPSOA1
0	Disable Example: SYTELPSOA0								
1	Enable Example: SYTELPSOA1								
Trioptic – Get All Parameter	SY	TRIO	G		<p>Returns all Trioptic parameters values in an XML element Example: SYTRIOG Keywords: #Trioptic</p>				
Trioptic	SY	TRIO	S/P/R/G	EN	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYTRIOSEN0</td> </tr> <tr> <td>1</td> <td>Enable Example: SYTRIOSEN1</td> </tr> </table> <p>Keywords: #Trioptic</p>	0	Disable Example: SYTRIOSEN0	1	Enable Example: SYTRIOSEN1
0	Disable Example: SYTRIOSEN0								
1	Enable Example: SYTRIOSEN1								
Trioptic – Reverse	SY	TRIO	S/P/R/G	RV	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYTRIOSRV0</td> </tr> <tr> <td>1</td> <td>Enable Example: SYTRIOSRV1</td> </tr> </table> <p>Enable reading Trioptic barcodes printed in light colors on a dark background (reverse printing) Note: This setting value is ignored if Trioptic decoding is disabled Keywords: #Trioptic</p>	0	Disable Example: SYTRIOSRV0	1	Enable Example: SYTRIOSRV1
0	Disable Example: SYTRIOSRV0								
1	Enable Example: SYTRIOSRV1								
Trioptic – Require Start/Stop Characters	SY	TRIO	S/P/R/G	SS	<table border="1"> <tr> <td>0</td> <td>Do not require Start/Stop Characters Example: SYTRIOSS0</td> </tr> <tr> <td>1</td> <td>Require Start/Stop Characters Example: SYTRIOSS1</td> </tr> </table> <p>Note: This setting value is ignored if Trioptic decoding is disabled Keywords: #Trioptic</p>	0	Do not require Start/Stop Characters Example: SYTRIOSS0	1	Require Start/Stop Characters Example: SYTRIOSS1
0	Do not require Start/Stop Characters Example: SYTRIOSS0								
1	Require Start/Stop Characters Example: SYTRIOSS1								
UK Royal Mail	SY	UKRO	S/P/R/G	EN	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYUKROSEN0</td> </tr> <tr> <td>1</td> <td>Enable Example: SYUKROSEN1</td> </tr> </table> <p>Note: This symbology is not supported by the CR950 Keywords: #Postal</p>	0	Disable Example: SYUKROSEN0	1	Enable Example: SYUKROSEN1
0	Disable Example: SYUKROSEN0								
1	Enable Example: SYUKROSEN1								
UK Royal Mail – Require Check Character	SY	UKRO	S/P/R/G	CC	<table border="1"> <tr> <td>0</td> <td>Do not require a valid Check Character to output barcode data Example: SYUKROSCC0</td> </tr> <tr> <td>1</td> <td>Require a valid Check Character in order to output barcode data Example: SYUKROSCC1</td> </tr> </table> <p>Note: This setting value is ignored if UK Royal Mail decoding is disabled Note: This symbology is not supported by the CR950 Keywords: #Postal</p>	0	Do not require a valid Check Character to output barcode data Example: SYUKROSCC0	1	Require a valid Check Character in order to output barcode data Example: SYUKROSCC1
0	Do not require a valid Check Character to output barcode data Example: SYUKROSCC0								
1	Require a valid Check Character in order to output barcode data Example: SYUKROSCC1								
UPC/EAN/JAN – Get All Parameter	SY	UPC0	G		<p>Returns all UPC/EAN parameters values in an XML element Example: SYUPC0G Keywords: #UPC, #EAN/JAN</p>				
UPC/EAN/JAN	SY	UPC0	S/P/R/G	EN	<table border="1"> <tr> <td>0</td> <td>Disable Example: SYUPC0SEN0</td> </tr> <tr> <td>1</td> <td>Enable Example: SYUPC0SEN1</td> </tr> </table> <p>Keywords: #UPC, #EAN/JAN</p>	0	Disable Example: SYUPC0SEN0	1	Enable Example: SYUPC0SEN1
0	Disable Example: SYUPC0SEN0								
1	Enable Example: SYUPC0SEN1								
UPC/EAN/JAN – Expand UPC-E to UPC-A	SY	UPC0	S/P/R/G	EA	<table border="1"> <tr> <td>0</td> <td>Do not expand UPC-E to UPC-A Example: SYUPC0SEA0</td> </tr> </table>	0	Do not expand UPC-E to UPC-A Example: SYUPC0SEA0		
0	Do not expand UPC-E to UPC-A Example: SYUPC0SEA0								

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
					1	Expand UPC-E to UPC-A Example: SYUPC0SEA1 Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN
UPC/EAN/JAN – Supplemental	SY	UPCO	S/P/R/G	SU	0	Disable Example: SYUPC0SSU0
					1	Enable Example: SYUPC0SSU1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Expand EAN-8 to EAN-13	SY	UPCO	S/P/R/G	E8	0	Do not expand EAN-8 to EAN-13 Example: SYUPC0SE80
					1	Expand EAN-8 to EAN-13 Example: SYUPC0SE81
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Expand UPC-A to EAN-13	SY	UPCO	S/P/R/G	AD	0	Do not expand UPC-A to EAN-13 Example: SYUPC0SAD0
					1	Expand UPC-A to EAN-13 Example: SYUPC0SAD1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Convert Bookland EAN-13 to ISBN	SY	UPCO	S/P/R/G	DI	0	Do not convert Bookland EAN-13 to ISBN Example: SYUPC0SDI0
					1	Convert Bookland EAN-13 to ISBN Example: SYUPC0SDI1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Convert Bookland EAN-13 to ISSN	SY	UPCO	S/P/R/G	DN	0	Do not convert Bookland EAN-13 to ISSN Example: SYUPC0SDN0
					1	Convert Bookland EAN-13 to ISSN Example: SYUPC0SDN1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Transmit UPC-A Check digit	SY	UPCO	S/P/R/G	AC	0	Transmit UPC-A Check digit Example: SYUPC0SAC0
					1	Do not transmit UPC-A Check digit Example: SYUPC0SAC1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Transmit UPC-A Number System	SY	UPCO	S/P/R/G	AN	0	Transmit UPC-A Number System Example: SYUPC0SAN0
					1	Do not transmit UPC-A Number System Example: SYUPC0SAN1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Transmit UPC-A Number System 0	SY	UPCO	S/P/R/G	NO	0	Transmit UPC-A Number System 0 Example: SYUPC0SN00
					1	Do not transmit UPC-A Number System 0 Example: SYUPC0SAN01
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
	SY	UPCO	S/P/R/G	EC	0	Transmit UPC-E Check digit

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
UPC/EAN/JAN – Transmit UPC-E Check digit					Example: SYUPC0SECO	
					1	Do not transmit UPC-E Check digit Example: SYUPC0SEC1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Transmit UPC-E Number System	SY	UPCO	S/P/R/G	ES	0	Transmit UPC-E Number System Example: SYUPC0SES0
					1	Do not transmit UPC-E Number System Example: SYUPC0SES1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Transmit EAN-13 Check digit	SY	UPCO	S/P/R/G	DC	0	Transmit EAN-13 Check digit Example: SYUPC0SDCO
					1	Do not transmit EAN-13 Check digit Example: SYUPC0SDC1
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Transmit EAN-8 Check digit	SY	UPCO	S/P/R/G	C8	0	Transmit EAN-8 Check digit Example: SYUPC0SC80
					1	Do not transmit EAN-8 Check digit Example: SYUPC0SC81
					Note: This setting value is ignored if UPC/EAN decoding is disabled Keywords: #UPC, #EAN/JAN	
UPC/EAN/JAN – Send AIM Modifier	SY	UPCO	S/P/R/G	AM	0	Do not send AIM Modifier Example: SYUPC0SAM0
					1	Send AIM Modifier Example: SYUPC0SAM1
					Keywords: #AIMId	
USPS Planet	SY	USPL	S/P/R/G	EN	0	Disable Example: SYUSPLSEN0
					1	Enable Example: SYUSPLSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	
USPS Postnet	SY	USPO	S/P/R/G	EN	0	Disable Example: SYUSPOSEN0
					1	Enable Example: SYUSPOSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	
UPU ID Tags	SY	UPUI	S/P/R/G	EN	0	Disable Example: SYUPUISEN0
					1	Enable Example: SYUPUISEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	
USPS Intelligent Mail	SY	USIM	S/P/R/G	EN	0	Disable Example: SYUSIMSEN0
					1	Enable Example: SYUSIMSEN1
					Note: This symbology is not supported by the CR950 Keywords: #Postal	

4.3.7 <PK> – Protocol Parameters

Example output from CR8200. See Appendices for current default values.

```
<PK>
  <OP RT="250" CT="60" RC="0" />
</PK>
```

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Packet – Get All parameters	PK	OP	G		Returns all packet parameters values in an XML element Example: PKOPG Keywords: #Communications
Receive Timeout (ms)	PK	OP	S/P/R/G	RT	When retry count specified and reader doesn't receive the ACK, it will resend the response after the timeout In milliseconds Example: PKOPSRT250 Keywords: #Communications
Connection Protocol Timeout (s)	PK	OP	S/P/R/G	CT	When sending fragmented data in packet mode, this timeout specifies the maximum time between two fragments. Reader cancels the transaction when the timeout expires and it didn't receive new fragmented data. In Seconds Example: PKOPSCT120 Keywords: #Communications
Reader Retry Count	PK	OP	S/P/R/G	RC	Number of retries from the reader when no ACK is received from the host Valid Range: 0 - 10 Example: PKOPSRC1 Keywords: #Communications

4.3.8 <IM> – Image Sensor Parameters

Example output from CR8200. See Appendices for current default values.

```
<IM>
<SN FI="5436BCEFC97F7083" GR="" CV="0x00002400" CR="0x00004100" />
<CP TM="0" ME="0" XE="0" />
</IM>
```

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Minimum Exposure (percent)	IM	CP	S/P/R/G	ME	0 Minimum Value
					Define the minimum exposure parameter of camera Valid Range: 0 to less than or equal to Maximum Exposure percent Example: IMCPSME20
Maximum Exposure (percent)	IM	CP	S/P/R/G	XE	100 Maximum Value
					Valid Range: Greater than or equal to Minimum Exposure to 100 percent Example: IMCPSXE100
Image Sensor Commands	IM	SN	G	FI	Get Fuse ID from image sensor Example: IMSNGFI

4.3.9 <EN> – Encoder Image Parameters

Example output from CR8200. See Appendices for current default values.

```
<EN>
<IM ET="1" />
</EN>
```

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Get All Encoder Image Parameters	EN	EN	G		Returns all image encoding parameter values in an XML element Example: ENENG	
Encode Type	EN	IM	S/P/R/G	ET	This is a setting to select the format of the image being captured Note: This parameter is an alias of CDIM_ET	
					1	RAW Image Format Example: ENIMSET1
					2	PGM Image Format Example: ENIMSET2
				3	JPEG Image Format Example: ENIMSET3	
Encode JPEG Quality	EN	IM	S/P/R/G	JQ	Valid values are in the range 1 to 100 1% quality is poor and 100% is best for JPEG format Example: ENIMSJQ85	
Encode JPEG Smoothing	EN	IM	S/P/R/G	JS	Valid values are in the range 0 to 100 0 is no smoothing and 100 is lots of smoothing Example: ENIMSJS50	

4.3.10 <FW> – Firmware Parameters

Example output from CR8200. See Appendices for current default values.

<FW>

```
<CM OE="0" OR="0" CT="5000"/>
```

```
<HW WT="5" TF="250000" TB="100" />
```

```
<IM DI="0" NI="0" CI="0" SI="0" X1="0" X2="0" X3="0" X4="0" />
```

</FW>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Get All Firmware Parameters	FW	FW	G		Returns all Firmware parameter values in an XML element Example: FWFWG	
Echo option	FW	CM	S/P/R/G	OE	0	Disable Raw Command Echoing Example: FWCMSOE0
					1	Enable Raw Command Echoing Example: FWCMSOE1
					Commands sent over the debug serial port are not displayed in the host's terminal window by default. Enabling this parameter instructs the reader to print any characters received by the debug port in the host's terminal window.	
Raw Command Enable	FW	CM	S/P/R/G	OR	0	Disable Raw Commands Example: FWCMSOR0
					1	Enable Raw commands Example: FWCMSOR1
					This setting allows commands to be sent to the reader from the host without being in packet mode.	
Command timeout (ms)	FW	CM	S/P/R/G	CT	Tells the reader to allow commands this much time to execute before sending a command failed response to the host. In Milliseconds Example: FWCMPCT1000	
Watchdog Timeout	FW	HW	S/P/G/R	WT	5	Minimum Watchdog timeout (in seconds) Example: FWHWSWT5
Targeting Frequency	FW	HW	S/P/G/R	TF	250000	Targeting LED Frequency Example: FWHWSTF250000
Targeting Brightness	FW	HW	S/P/G/R	TB	100	Targeting LED Brightness (in percent) Example: FWHWSTB100

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples	
Transfer Decoded Images	FW	IM	P/G/R	DI	0	Disable transferring decoded images Example: FWIMPDIO
					1	Enable transferring decoded images Example: FWIMPDI1
Transfer Non-Decoded Images	FW	IM	P/G/R	NI	0	Disable transferring non-decoded images Example: FWIMPNI0
					1	Enable transferring non-decoded images Example: FWIMPNI1
Transfer Cellphone Images	FW	IM	P/G/R	CI	0	Disable transferring cellphone images Example: FWIMPCIO
					1	Enable transferring cellphone images Example: FWIMPCI1

4.3.11 <RD> – Reader Parameters

Example output from CR8200. See Appendices for current default values.

<RD>

```
<FW MJ="0" MN="0" BU="16211" OP="" VS="0.0.16211" TY="Cxxxxxx" DV="cd(17.1.0)"
  DX="cd(17.1.22.4468 - 20171129:1255)" />
<CP RV="2.00" SN="0E1D2680504C9A" />
<RR SN="1020000119" ID="55779404" HR="0x04" MD="CR8200" MT="2AD0" IS="20170706:1357" />
<QD N1="0" L1="0" RS="0" US="0" TG="0" LD="0" IL="0" SP="0" TR="0" F0="0x00" F1="0x00"
  PO="0x00" P1="0x00" />
<LC GL="" />
<FB VB="0" SM="0" />
<ST SE="1" SD="500" SB="1" />
<IL LO="0" MB="100" />
<OF LE="" />
<TC MD="1" />
```

</RD>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All Reader Information Parameters	RD	RD	G		Returns all Reader Information parameters values in an XML element Example: RDRDG
Get all Firmware information	RD	FW	G		Returns all Firmware parameters values in an XML element Example: RDFWVG
Firmware Version Major	RD	FW	G	MJ	Returns Firmware Major Version parameter value in an XML element Example: RDFWGMJ
Firmware Version Minor	RD	FW	G	MN	Returns Firmware Minor Version parameter value in an XML element Example: RDFWGMN
Firmware Version Build Version	RD	FW	G	BU	Returns Firmware Build Version parameter value in an XML element Example: RDFWGBU
Firmware Version Build Option	RD	FW	G	OP	Returns Firmware Build Option parameter value in an XML element Example: RDFWGOP Note: This value may be an empty string for most readers.
Firmware Build Major.Minor.Version	RD	FW	G	VS	Returns Firmware Build Major.Minor.Version parameter value in an XML element Example: RDFWGVVS
Firm Type Parameter	RD	FW	G	TY	Returns Firm Type parameter value in an XML element Example: RDFWGTY

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Decoder Version	RD	FW	G	DV	Returns Decoder version. Example: RDFWGDV => <RD><FW DV="cd(17.1.22)" /></RD>
Chip Revision	RD	CP	G	RV	Returns Chip Revision parameter value in an XML element Example: RDCPGRV
Reader Serial Number	RD	CP	G	SN	Returns Reader Serial Number parameter value in an XML element Example: RDCPGSN
Reader Information	RD	RR	G		Returns Reader Information parameter value in an XML element Example: RDRRG
Reader ID	RD	RR	G	ID	Returns Reader ID parameter value in an XML element Note: This is a GUID that is internally generated used for packet communications. Example: RDRRGID
Hardware Revision	RD	RR	G	HR	Returns Reader Hardware Revision parameter value in an XML element Example: RDRRGHR
Reader Model Type	RD	RR	G	MT	CR8200 2AD0
					CR950 2A90
					A string that indicates the Version of the CT8200 chip, the Imager model that is used, the Package type of the reader, and the Type of decoder. Note: See the Firmware File Naming Convention section of a firmware's included Read Me file for more information Example: RDRRGMT
Reader Model Version	RD	RR	G	MD	CR8200 "CR8200"
					CR950 "CR950"
					CR1500 "CR1500"
					A string that indicates the model name of the reader Example: RDRRGMD
Reader Serial Number	RD	RR	G	SN	This command gets the factory programmed serial number from the flash Example: RDRRGSN
Reader Information String	RD	RR	G	IS	Returns Reader Information String parameter Example: RDRRGIS
Reader Output Format – Line Ending	RD	OF	S/P/R/G	LE	Defines the output format line ending. Non-printable ASCII characters must be set using URL encoded hex value <CR><LF> (%0D%0A) Example: RDOFSLE%0D%0A
Reader Command – Process Barcode Data	RD	CM	X	BD	Send <data> to the host as barcode data Example: RDCMXBD12345
Reader Command – List files on reader filesystem REPLACED – See the command STFSXLS in section 4.3.15	RD	CM	X	FL	List all files on reader
Reader Dump log messages to console	RD	CM	X	DL	Print the contents of the message log to the console window. Example: RDCMXDL Note: Supported in CR1500 only
Reader Clear message logs	RD	CM	X	CL	Erase the contents of the message logs Example: RDCMXCL Note: Supported in CR1500 only
Reader Command – Reboot	RD	CM	X	RB	Reboots the reader Example: RDCMXRB1
Reader Command – Post Event 1	RD	CM	X	EV1	P10 Stop decoding as an event Example: RDCMXEV1,P10
					P11 P20 Post an event to request a single decode Example: RDCMXEV1,P11,P20
					P11 P21 Start continuous decoding as an event Example: RDCMXEV1,P11,P21

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
					Post an event of type 1. The event has one or two parameters. Any other issued event will override this event, such as pushing the trigger to decode. There are 'Enable Targeting' and "Disable Targeting" events in a decode sequence.
Reader Command – Post Event 2	RD	CM	X	EV2	P10 Disable Targeting immediately as an event Example: RDCMXEV2,P10
					P11 Enable Targeting immediately as an event Example: RDCMXEV2,P11
					Post an event of type 2. The event has one parameter. Any other issued event will override this event, such as pushing the trigger to decode. There are 'Enable Targeting' and "Disable Targeting" events in a decode sequence.
Out-of-stand behavior DEPRECATING	RD	ST	S/P/R/G	OB	0 Manually Triggered Example: RDSTSOB0
					1 Motion Detection Example: RDSTSOB1
					2 Continuous Scan Example: RDSTSOB2
					Note: This command is supported by the CR950 only Sets the Decode Mode when Stand Detection is enabled, but the reader is out of the stand.
Out-of-stand duplicate block time DEPRECATING	RD	ST	S/P/R/G	OB	When the reader is out of the stand and Stand Detection is enabled, the reader will not scan the same barcode being presented for the duration of the default duplicate scan delay time plus this additional time. In Milliseconds Note: This command is supported by the CR950 only Example: RDSTSOD500
Stand Detection – Enable	RD	ST	S/P/R/G	SE	0 Disable Example: RDSTSSE0
					1 Enable Example: RDSTSSE1
					Detect when the reader has been placed in a stand that contains a trigger magnet Note: This command is supported by the CR950 only Note: This command replaces CDST_SE
Stand behavior	RD	ST	S/P/R/G	SB	0 Manually Triggered Example: RDSTSSB0
					1 Motion Detection Example: RDSTSSB1
					Note: This command is supported by the CR950 only Sets the Decode Mode when Stand Detection is enabled and the reader is in the stand.
Stand Duplicate Delay (ms)	RD	ST	S/P/R/G	SD	When the reader is in the stand, block reading of duplicate barcodes for this many milliseconds Note: This command is supported by the CR950 only Note: This command replaces CDST_SD Example: RDSTSSD100
Get All Reader Licenses	RD	LC	G	GL	Returns all Reader License values in an XML element Example: RDLCGGL
Load License	RD	LC	X	LD	Loads license on the reader in the form of a "URL encoded license string" Copy the contents of the License CRB file starting after the '?' character to use as the URL encoded license string. This string must be in quotes in the command. Example: RDLXLD"%23%45...."
Delete License	RD	LC	X	DL	Delete a License number License number is an integer that represents just the license number, not the serial number of the license you want to delete. Example: RDLXDL5000

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Illumination During Read	RD	IL	S	LO	0 Minimal/No Illumination – Illumination stops when it's not needed during a read cycle. Example: RDILSLO0
					1 Leave Illumination On until end of the read cycle. Example: RDILSLO1
Illumination Max Brightness	RD	IL	S/P/R/G	MB	Max Illumination Brightness (0-100 percent) Example: RDILSMB100 Note: Supported in CR1500 only
Set Message verbosity	RD	FB	S/P/R/G	VB	0 Set verbosity level zero. Example: RDFBSVB0
					1 Set verbosity level one. Example: RDFBSVB1
					Set error message verbosity Level
Send error messages	RD	FB	S/P/R/G	SM	0 Disable sending error messages to the error log Example: RDFBSSM0
					1 Enable sending error messages to the error log Example: RDFBSSM1
					Send error messages to the error log
File Commands REPLACED – See the commands STFSXRM and STFSXRD in section 4.3.15	RD	FS	*	FE	File Erase – Erase the file specified (returns NODATA if the file is not stored on the reader)
			*	FG	File Get – Uploads the file to host (returns NODATA if the file is not stored on the reader)

4.3.12 <FB> – Feedback Parameters

Example output from CR8200. See Appendices for current default values.

<FB>

```
<IN BI="0" BE="1" />
<GR BI="0" FQ="2730" VO="100" NT="80" FT="20" NB="1" />
<CB FQ="2800" VO="100" NT="80" FT="20" NB="1" />
<CM FQ="2730" VO="35" NT="100" FT="100" NB="1" />
<ER FQ="2800" VO="100" NT="200" FT="100" NB="3" />
<VB EN="1" NT="80" FT="20" NB="1" />
```

</FB>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All Reader Feedback Parameters	FB	FB	G		Returns all Reader Feedback parameter values in an XML element Example: FBFBG
Beep Enable	FB	IN	S/P/R/G	BE	0 Globally disable all beeps (doesn't affect vibrate) Example: FBINSBE0
					1 Globally enable all beeps (doesn't affect vibrate) Example: FBINSBE1
Beep as IO	FB	IN	S/P/R/G	BI	0 Beep output is an audible tone Example: FBINSI0
					1 Beep output is a GPIO signal toggle Example: FBINSB1
Good Read Indication – Frequency (Hz)	FB	GR	S/P/R/G	FQ	Good read beep output frequency. Suggested Values: 2730 and 2800 Example: FBGRSFQ2730

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Good Read Indication – Beep Volume (percent)	FB	GR	S/P/R/G	VO	Good read beep output volume as a percentage of full volume Valid Range: 0 to 100 percent Example: FBGRSVO100
Beep As IO (Aliased from FBIN_BI global indication settings)	FB	GR	S/P/R/G	BI	0 Good Read Indication is a tone output whose frequency is defined by FBGRGFQ Example: FBGRSBI0
					1 Good Read Indication is an IO signal Example: FBGRSBI1
Good Read Beep On Time(mS)	FB	GR	S/P/R/G	NT	This parameter is the time the beep is on Example: FBGRSNT80
Good Read Beep Off Time(mS)	FB	GR	S/P/R/G	FT	This parameter is the time the beep is off Example: FBGRSFT80
Good Read Number of Beeps	FB	GR	S/P/R/G	NB	This the the number of beep on/off cycles to execute on a good read Example: FBGRSNB1
Configuration beep Frequency (Hz)	FB	CB	S/P/R/G	FQ	The frequency used when performing a beep to indicate that a configuration has been applied Example: FBCBSFQ2800
Configuration beep volume (%)	FB	CB	S/P/R/G	VO	The volume used when performing a beep to indicate that a configuration has been applied. This is a percentage of full volume. Valid Range: 0 to 100 percent Example: FBCBSVO100
Configuration beep On time (ms)	FB	CB	S/P/R/G	NT	The amount of time the beep sounds when performing a beep to indicate that a configuration has been applied In Milliseconds Example: FBCBSNT80
Configuration beep Off time (ms)	FB	CB	S/P/R/G	FT	If multiple beeps are configured for Configuration beep number of beeps, this is the amount of time of silence the beep sounds when performing a beep to indicate that a configuration has been applied. In Milliseconds Example: FBCBSFT20
Configuration beep number of beeps	FB	CB	S/P/R/G	NB	The number of beep sounds to play when performing a beep to indicate that a configuration has been applied Example: FBCBSNB1
Error Beep Frequency (Hz)	FB	ER	S/P/R/G	FQ	The frequency used when performing a beep to indicate that an error has occurred Example: FBERSFQ2800
Error Beep volume (%)	FB	ER	S/P/R/G	VO	The volume used when performing a beep to indicate that an error has occurred. This is a percentage of full volume. Valid Range: 0 to 100 percent Example: FBERSVO100
Error Beep On time (ms)	FB	ER	S/P/R/G	NT	The amount of time the beep sounds when performing a beep to indicate that an error has occurred In Milliseconds Example: FBERSNT200
Error Beep Off time (ms)	FB	ER	S/P/R/G	FT	If multiple beeps are configured for Error beep number of beeps, this is the amount of time of silence the beep sounds when performing a beep to indicate that an error has occurred In Milliseconds Example: FBERSFT100
Error Beep number of beeps	FB	ER	S/P/R/G	NB	The number of beep sounds to play when performing a beep to indicate that an error has occurred Example: FBERSNB3
Comm connect beep frequency (Hz)	FB	CM	S/P/R/G	FQ	The frequency used when performing a beep to indicate that the reader has connected to a host Example: FBCMSFQ2730

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Comm connect beep volume (%)	FB	CM	S/P/R/G	VO	The volume used when performing a beep to indicate that the reader has connected to a host. This is a percentage of full volume. Valid Range: 0 to 100 percent Example: FBCMSVO35
Comm connect beep On time (ms)	FB	CM	S/P/R/G	NT	The amount of time the beep sounds when performing a beep to indicate that the reader has connected to a host In Milliseconds Example: FBCMSNT100
Comm connect beep Off time (ms)	FB	CM	S/P/R/G	FT	If multiple beeps are configured for Comm connect beep number of beeps, this is the amount of time of silence the beep sounds when performing a beep to indicate that the reader has connected to a host. In Milliseconds Example: FBCMSFT100
Comm connect beep number of beeps	FB	CM	S/P/R/G	NB	The number of beep sounds to play when performing a beep to indicate that the reader has connected to a host Example: FBCMSNB1
Vibration on good read	FB	VB	S/P/R/G	EN	0 Disable vibrate on good read Example: FBVBSENO
					1 Enable vibrate on good read Example: FBVBSEN1
NOTE: Only supported on readers with a vibrate motor (Ex. CR1500)					
Vibration On time (ms)	FB	VB	S/P/R/G	NT	Set the number of milliseconds the reader should vibrate per pulse Example: FBVBSNT750 NOTE: Only supported on readers with a vibrate motor (Ex. CR1500)
Vibration Off time (ms)	FB	VB	S/P/R/G	FT	Set the number of milliseconds the reader should rest between pulses Example: FBVBSFT250 NOTE: Only supported on readers with a vibrate motor (Ex. CR1500)
Vibration number of pulses	FB	VB	S/P/R/G	NB	Set the number of vibrate pulses per good read Example: FBVBSNB2 NOTE: Only supported on readers with a vibrate motor (Ex. CR1500)

4.3.13 <LA> – Language Parameters

Example output from CR8200. See Appendices for current default values.

<LA>

```
<IN AL="USEnglish_Win" IL="USInternational_Win, UnitedKingdom_Win, Spanish_Apple, Spanish_Win,
Russian_Win, LatinAmerican_Win, Japanese_Win, Italian_Apple, SwissGerman_Win,
GermanSwiss_Apple, German_Apple, German_Win, French_Apple, French_Win, English_Apple,
BelgianFrench_Win, USEnglish_Win" />
```

</LA>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get all language parameters	LA	LA	G		Get all language settings Example: LAING
Active language	LA	IN	S/P/R/G	AL	Active language setting Valid Range: Languages listed by the LAINGIL command Example: LAINALSspanish_Win
Get Installed languages list	LA	IN	G	IL	List installed language names Example: LAINGIL

4.3.14 <MD> – Motion Detection Parameters

Example output from CR8200. See Appendices for current default values.

<MD>

```
<PM NG="1" XG="47" IG="40" NE="1" XE="46" IE="21" NI="1" XI="6" II="1" NL="60" XL="90" PL="15"
  TL="5" BT="4" IC="3" DT="0" ET="0" SD="0" DR="200" DI="0" AT="500" />
```

</MD>

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get All motion detect settings	MD	PM	G		Returns all motion detection parameters values in an XML element Example: MDPMG
Minimum Illumination	MD	PM	S/P/R/G	NI	0 Minimum Value
					Minimum illumination is the lowest value the AGC should use to set the illumination Valid Range: 0 to Maximum illumination Example: MDPMSNI1
Maximum illumination	MD	PM	S/P/R/G	XI	100 Maximum Value
					This is the highest value the AGC should use to set the illumination Valid Range: Minimum illumination to 100 Example: MDPMSXI6
Initial illumination value	MD	PM	S/P/R/G	II	The starting value the AGC will use to start adjusting illumination Valid Range: Minimum illumination to Maximum illumination Example: MDPMSII1
Minimum exposure time (μs)	MD	PM	S/P/R/G	NE	1 Minimum Value
					Valid Range: 1 to Maximum exposure time microseconds Example: MDPMSNE100 This is the minimum time the camera lets light into the element to take the picture in microseconds.
Maximum exposure time (μs)	MD	PM	S/P/R/G	XE	20000 Maximum Value
					Valid Range: Minimum exposure time to 20000 microseconds Example: MDPMSXE10040
Initial exposure time (μs)	MD	PM	S/P/R/G	IE	Valid Range: Minimum exposure time to Maximum exposure time microseconds Example: MDPMSIE100
Minimum gain	MD	PM	S/P/R/G	NG	0 Minimum Value
					Valid Range: 0 to Maximum Gain Example: MDPMSNG15
Maximum gain	MD	PM	S/P/R/G	XG	64 Maximum Value
					Gain is the amount of signal amplification the AGC can apply to make the picture easier to read Valid Range: Minimum Gain to 64 Example: MDPMSXG35
Initial gain	MD	PM	S/P/R/G	IG	Valid Range: Greater than or equal to Minimum Gain and less than or equal to Maximum Gain. Example: MDPMSIG15
Minimum lightest pixel value	MD	PM	S/P/R/G	NL	0 Minimum Value
					Valid Range: 0 to Maximum lightest pixel value Example: MDPMSNL60
Maximum lightest pixel value	MD	PM	S/P/R/G	XL	255 Maximum Value
					The lightest values give the motion calculations a base range for maximum brightness before the image begins to saturate. If you set these too high the algorithm will not be able to detect individual pixels because the image is washed out. Valid Range: Minimum lightest pixel value to 255 Example: MDPMSXL90

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Detection pixel threshold	MD	PM	S/P/R/G	PL	This pixel threshold is the minimum difference value between the background brightness and the pixel brightness for the current pixel to be considered a pixel. Different environments may require different thresholds which can be developed empirically. Example: MDPMSPL15
Detection total threshold	MD	PM	S/P/R/G	TL	Total threshold is the minimum number of pixels detected per detection region (left, center, right) to be considered detected motion. Different environments may require different thresholds which can be developed empirically. Example: MDPMSTL5
Detection blob threshold	MD	PM	S/P/R/G	BT	The minimum number of sequential pixels to be considered a group or blob (like a bar width). Different environments may require different thresholds which can be developed empirically. Example: MDPMSBT4
Enable Targeting	MD	PM	S/P/R/G	ET	0 Enable targeting while detecting motion Example: MDPMSET0
					1 Disable targeting while detecting motion Example: MDPMSET1
Disable Leave Illumination On while detecting motion	MD	PM	S/P/R/G	DI	0 Disables leaving illumination on while scanning for motion. Example: MDPMSDI0
					1 Enables leaving illumination on while scanning for motion. Example: MDPMSDI1

4.3.15 <ST> - Storage Parameters

Example output from CR1500. See Appendices for current default values.

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
File System Commands (Supported on readers with a file system)	ST	FS	X	LS	List all the files saved in the file system Example: STFSXLS1 Note: Supported by CR1500 only
	ST	FS	X	RD	File read – Uploads the file to host(returns NODATA if the file is not stored in the file system) Example: STFSXRD<"filename"> Note: Supported by CR1500 only
	ST	FS	X	RM	File remove – Remove the file specified(returns NODATA if the file is not stored in the file system) Example: STFSXRM<"filename"012345678905 > Note: Supported by CR1500 only

4.3.16 <Saved> – Saved Settings

Settings that are saved

Code Description	Pri-Cat	Sub-Cat	Action	Param	Notes/Examples
Get Saved settings	CF		G	[^code]	[^CF] Returns all the Saved Settings in an XML element Example: CFG[^CF]
Remove Saved Settings	CF		R	[^code]	[^CF] Removes saved parameters Example: CFR[^CF]

4.3.17 <Platform> – Platform Settings

Settings applied at the factory or by the customer that are semi-permanent. These settings get applied every time the reader starts up.

Code Description	Pri-Cat	Sub-Cat	Action	Param		Notes/Examples
Get Platform Settings	CF		G	[^code]	[^PL]	Returns all Platform Settings in an XML element Example: CFG[^PL]
Remove Platform Settings	CF		R	[^code]	[^PL]	Removes platform parameters Example: CFR[^PL]

4.4 Motion Detection

The CR8200 supports motion detection, which means the reader will trigger automatically when an object is brought into the field of view. Motion detect mode is typically used when the reader is mounted in a stationary position, and barcodes are presented to it. The reader is set to use minimal illumination while detecting motion, and works best with bright ambient light shining from behind the reader.

The motion detection algorithm uses several parameters. The exposure time, gain, and illumination are camera settings that are used to get the best picture to determine whether or not objects have moved into the field of view. All three have minimum and maximum values which the AGC (automatic gain control) uses to get the best picture.

The exposure is the length of time that the camera “shutter” lets light into the detector array. If it isn’t open long enough, the image will be too dark to detect motion. If it is open too long, the image will be over-exposed. By setting the minimum and maximum time the AGC is allowed to open the shutter, we can try to force the AGC to not over-expose or under-expose the picture.

The gain is the amount of amplification the AGC can use to attempt to increase the contrast of the picture between light and dark pixels. Setting the minimum too low doesn’t produce enough contrast, and setting the maximum too high saturates the image. Thus, the gain range helps the AGC to optimize the contrast of the image.

The illumination is light the reader shines on the object to increase the sensitivity of the motion detection algorithm. This is in addition to any ambient light that may be present. More illumination makes it easier to detect motion, but brighter illumination can be undesirable in some environments.

4.5 Data Formatting

The CR8200 supports data formatting at the decoder level. This produces fast, consistent results in a minimal amount of reader space. The reader supports simple prefixes and suffixes around the decoded data, the simplest form of data formatting, allows the user full control by using the data format string, and performs data validations and public sector parsing using the format parse setting in conjunction with the selected format option. All of the formatting options are explained in [D025388 Data Manipulation for Decoded Barcode Data](#).

4.5.1 Data Formatting Options

The decoder allows many types of data formatting, selected by setting the data format option, and setting the appropriate configuration string.

Data Format Options	
Value	Description
0	Data formatting off
1	Simple data formatting using either prefix and suffix, or by setting the format data string directly
2	Match String validation
3	GS1 DataBar validation (requires a license)
4	UDI/HIBC validation (requires a license)
5	ISO15434 validation
6	ISO15434 & ISO15418 validation
7	Simple age verification using a configuration string (requires a license) REPLACED – Use value '8'
8	Simple age verification (requires a license)
9	DL Parsing using a configuration string (requires a license)
10	DL Parsing without using a configuration string (requires a license)
11	Success and Raw validation
12	Match String validation + Data Formatting
13	GS1 validation + Data Formatting (requires a license)
14	UDI validation + Data Formatting (requires a license)
15	ISO15434 validation + Data Formatting
16	ISO15434 & ISO15418 validation + Data Formatting

Note: several options require a license

4.5.2 Data Format String

The data format string allows the user full control of the data formatting. This string consists of a 12-digit configuration string, typically zeros, a prefix, decode data, and a suffix. There may also be user data injected into the string. A format string example would be CDOPSPFD"00000000000!,,/0d/0a" which adds a carriage return line feed to the decoded data. For specific details of the format data string options see **D025388**.

4.5.3 Prefixes and Suffixes

Prefix and suffix values define data that will be added to the read barcode data. The firmware adds the prefix and suffix to the beginning and end of the decoded data respectively. Adding prefix or suffix data takes two steps – defining the prefix and/or suffix strings and enabling the application of

- Command to define a prefix – CDOPSPX"string"

- Command to define a suffix – CDOPSSX"string"
 - "string" must be in quotes in the command.
 - Non-printable characters are represented by a forward slash and the corresponding hexadecimal value, such as /0D for a carriage return

Examples:

- Command to define a prefix comma - CDOPSPX","
- Command to define a prefix non-keyboard tab - CDOPSPX"/09"

After defining strings for a prefix and/or suffix, the application of prefixes and suffixes must be enabled. This allows you to define prefixes and/or suffixes and enable/disable them as needed.

- Command to enable - CDOPSF01

4.5.4 Format Case

The decoder will decode the barcode data and if this option, which changes the default configuration string, is set, the data will be output as decoded (0), uppercase (1), lowercase (2), or bracketed hex (3).

An example is CDOPSF01 to set the data to output in upper case.

4.5.5 Format Parse and Validation Configuration String

Validation and public sector parsing also require a configuration string. This string is set using CDOPSF"string". See **D025388** for detailed explanations of the configuration strings and special character sequences used to enable validation or public sector parsing.

4.5.6 Sending Windows Keystrokes

The Code Reader products are often connected to a PC using keyboard input. The data contained in the read barcode is simply "typed" into the PC application. It is often required that the reader send a certain key as a prefix or suffix to the application such as an "enter" key, mimicking an actual keystroke. In order to do this, Code has defined what is called a CodeXML Sequence to indicate to the reader to send a Windows keystroke instead of literal data. Please note that an "enter" key is not the same as an ASCII carriage return (0x0D).

A CodeXML sequence consists of a header, a payload, and a footer

CodeXML header	<SOH>Y<RS>an/
Payload	(A keystroke representation. See the table below)
CodeXML footer	<EOT>

The non-printable characters will often be represented by their hexadecimal equivalents. This representation will be different based on the context, but will often be seen as \x01, /01, 0x01, etc. for the <SOH> (or Start of Header) non-printable character. For CortexDecoder formatting, the correct format is /01.

A CodeXML header, formatted for CortexDecoder formatting, would look like this:

```
/01Y/1Ean/2F
```

A CodeXML payload consists of one or more keystroke representations. These keystrokes are represented by a forward slash (which must be escaped by the hexadecimal /2F in the format string) and a letter. A full list of available keys is below:

Characters	Key
/a	Toggle Alt
/c	Toggle Ctrl
/s	Toggle Shift
/w	Toggle Windows Logo
/u	Up arrow
/l	Left arrow
/r	Right arrow
/d	Down arrow
/t	Tab
/z	Delete
/e	Esc
/n	Enter
/v	End
/b	Backspace
/i	Insert
/p	Page up
/x	Page down
/h	Home
/,	500 ms delay
/0 - /9	Number pad
/f1 - /f12	Function keys
//	/

The CodeXML footer would look like this:

`/04`

Therefore, a CodeXML string representing a Windows enter key, formatted for CortexDecoder formatting, would look like this:

`/01Y/1Ean/2F/2Fn/04`

And the entire command to add the above example as a suffix to decoded data (remembering to enable data formatting) would look like this:

CDOPSSX"/01Y/1Ean/2F/2Fn/04"
CDOPSF01

4.6 Command Barcode Format

The CR8200 can receive commands directly through user input via serial or text and via configuration barcodes. This section describes the format of command configuration barcodes.

Header	Command	Trailer
<SOH>Y<GS><STX> (%01%59%1D%02)	String as described in Section 4	<ETX><EOT> (%03%04)

Multiple commands can be included in one barcode by separating each command with ASCII <ETX> (0x03). Example: Scanning barcode generated from %01%59%1d%02SYAZTCG%03SYAUPOG%03%04 will output all settings of symbology AZTC and AUPO.

Configuration Command Barcodes:

- CR8200 configuration barcodes use QR code barcode symbology.
- Source files to generate configuration barcodes have a file extension of .CRCCS and an intermediate file extension of .CRMKR
- If source files contains comments, the comment should start with two forward slash (//) characters.
- Source files can have only one Primary Category command per line as defined in Section 4.2 above.

Examples:

Example.crccs

Contains:

```
// Hypothetical
// Output all settings of symbologies Aztec and Australian Post
// Rev 1 - 6/22/16 - Jackson - Initial Release

SYAZTCG // Get All Aztec settings
SYAUPOG // Get All Australian Post settings
```

example.crmkr

Contains:

%01%59%1d%02SYAZTCG%03SYAUPOG%03%04

example.tif

Looks like →



4.7 Reader Recovery

On very rare occasions, a reader may get into a state in which it is difficult to determine the reader's configuration state. For this reason, Code has provided two methods which allow the user to set the reader back to its factory default settings. The first method is to issue a **CFR** configuration command. This sets all the user modified settings back to the original values set at the factory. If the reader doesn't respond to either scanned or manually entered configuration codes, powering off the unit and then repowering it should clear this condition, and configuration reset codes may be sent to the reader. In the unlikely event that the reader

still remain uncommunicative after the above mentioned efforts, the user may reset the reader to factory default settings by:

1. *Power down the reader*
2. *Hold the trigger button while restoring power to the reader*
3. *The reader will beep three times, a high frequency beep, a lower frequency beep, and the higher frequency beep again*
4. *When the user hears the beep sequence, the user must release the trigger button and hold the trigger back within two seconds*
5. *The reader will go through five beep sequences and then release the trigger to reset to factory defaults*

Note: Five beep sequences starts with three beeps (high, low, and high frequency beep), two beeps (high, low), two beeps (high, low), one beep (high) and one beep (high)

If the trigger button is held beyond the two second limit, the settings will not be reset.

4.8 Host – Reader Communication

See document - D026166 CR8200 Interface Control Document ICD.docx

Appendix A – HID scancode delay description

Keywords: #Communications

All HID keyboard devices communicate via HID reports. These reports contain the keyboard scancodes for all possible keypresses including press, release, and modifier scancodes. In this way, each HID report represents a keyboard 'key' action.

- **Inter-character delay** is the minimum time the reader must wait between sending each HID report to the host. These delays are necessary sometimes because the communication channel may only be able to handle data at a lower rate.
- **Inter-scancode delay** is the minimum time the reader must wait between sending each scancode in the HID report.
- **Release delay** is the time the reader must wait (in milliseconds) after sending the last non-zero scancode in the HID report before sending the release scancode to finish the HID report, then delay **inter-character delay** milliseconds before sending the next character to the host.

Appendix B – ASCII-Hexadecimal table

This table is for finding hexadecimal values for use in Prefixes, Suffixes and the Format String.

Decimal Value	Hexadecimal Value	ASCII Character	Notes / Alternate Definition
0	00	NUL	(null)
1	01	SOH	(start of header)
2	02	STX	(start of text)
3	03	ETX	(end of text)
4	04	EOT	(end of transmission)
5	05	ENQ	(enquiry)
6	06	ACK	(acknowledge)
7	07	BEL	(bell)
8	08	BS	(backspace)
9	09	TAB; HT	(horizontal tab); ○ (Notepad)
10	0A	LF	(line feed, new line); ▣ (notepad)
11	0B	VT	(vertical tab)
12	0C	FF	(form feed, new page)
13	0D	CR	(carriage return); ♪ (notepad)
14	0E	SO	(shift out)
15	0F	SI	(shift in)
16	10	DLE	(data link escape)
17	11	DC1	(device control 1)
18	12	DC2	(device control 2)
19	13	DC3	(device control 3)
20	14	DC4	(device control 4)
21	15	NAK	(negative acknowledgement)
22	16	SYN	(synchronous Idle)
23	17	ETB	(end of transmission block)
24	18	CAN	(cancel)
25	19	EM	(end of medium)
26	1A	SUB	(substitute)
27	1B	ESC	(escape)
28	1C	FS	(file separator); ␣ (notepad)
29	1D	GS	(group separator)
30	1E	RS	(record separator); ▲ (notepad)

Decimal Value	Hexadecimal Value	ASCII Character	Notes / Alternate Definition
31	1F	US	(unit separator)
32	20	Space	
33	21	!	
34	22	"	
35	23	#	
36	24	\$	
37	25	%	
38	26	&	
39	27	'	
40	28	(
41	29)	
42	2A	*	
43	2B	+	
44	2C	,	
45	2D	-	
46	2E	.	
47	2F	/	
48	30	0	
49	31	1	
50	32	2	
51	33	3	
52	34	4	
53	35	5	
54	36	6	
55	37	7	
56	38	8	
57	39	9	
58	3A	:	
59	3B	;	
60	3C	<	
61	3D	=	
62	3E	>	
63	3F	?	
64	40	@	

Decimal Value	Hexadecimal Value	ASCII Character	Notes / Alternate Definition
65	41	A	
66	42	B	
67	43	C	
68	44	D	
69	45	E	
70	46	F	
71	47	G	
72	48	H	
73	49	I	
74	4A	J	
75	4B	K	
76	4C	L	
77	4D	M	
78	4E	N	
79	4F	O	
80	50	P	
81	51	Q	
82	52	R	
83	53	S	
84	54	T	
85	55	U	
86	56	V	
87	57	W	
88	58	X	
89	59	W	
90	5A	Z	
91	5B	[
92	5C	\	
93	5D]	
94	5E	^	
95	5F	_	
96	60	`	
97	61	a	
98	62	b	

Decimal Value	Hexadecimal Value	ASCII Character	Notes / Alternate Definition
99	63	c	
100	64	d	
101	65	e	
102	66	f	
103	67	g	
104	68	h	
105	69	i	
106	6A	j	
107	6B	k	
108	6C	l	
109	6D	m	
110	6E	n	
111	6F	o	
112	70	p	
113	71	q	
114	72	r	
115	73	s	
116	74	t	
117	75	u	
118	76	v	
119	77	w	
120	78	x	
121	79	y	
122	7A	z	
123	7B	{	
124	7C		
125	7D	}	
126	7E	~	
127	7F	DEL	DEL

Appendix C – Reference CFG XML output from CR8200, detailing current defaults

This section contains the CFG output from a CR8200 configured with default settings. You can use this reference to check default values for any parameter in the CR8200 firmware.

```
<CFG>
  <CM>
    <GE CR="5000" />
    <MO CM="UN" />
    <SE BA="115200" DB="8" PA="N" SB="1" FC="0" PO="1" />
    <UB MF="Code" PN="CR8200" FS="0" />
    <HD IC="0" IS="0" RL="0" CC="0" IE="0" OM="0" EA="0" />
    <CP PM="1" />
    <UK SN="1" NE="2" EM="3" IN="1000" />
    <UN SN="1" IN="1000" />
    <UP SN="1" />
    <UV SN="0" />
    <UC SN="0" />
  </CM>
  <PM>
    <SB EN="0" VA="5000" />
    <SM EN="0" VA="3600" MC="1" />
  </PM>
  <FC>
    <TS EN="0" TM="" MN="0" XN="0" MF="0" XF="0" />
  </FC>
  <AG>
    <CR CX="300" CY="300" CT="227" LT="8" LP="200" HT="85" HP="200" DL="11" ME="7" />
    <TM MN="5" MT="0x00000100" HQ="360" MQ="320" LQ="120" HP="80" MP="20" LP="10" />
    <BY IL="50" EX="4000" GN="0" />
    <FX BP="50" />
  </AG>
  <CD>
    <DP EN="0" BE="0" BD="0" PD="0" PL="0" LC="0" DP="0" BI="0" BH="0" SM="0" />
    <DT TL="9830720" TF="30" CD="100" TD="0" />
    <OP PR="1" RO="0" RL="0" RT="0" RW="0" RH="0" LC="1" ZR="0" EC="0" DL="0" SP="0" QD="0"
AS="0" CI="0" SE="0" AP="115" AT="0" SD="0" FQ="0" CE="0" UT="1" MD="0" DI="0" FO="1" FD="" PX=""
SX="/0d/0a" FC="0" FP="" RD="0" VF="0" />
    <VA TT="1600" BD="0" BT="0" EB="0" />
    <IM ET="3" />
    <TP TE="0" RO="0" AB="0" CB="0" XO="0" YO="0" WD="1280" HT="960" />
  </CD>
  <SC>
    <SP MO="NO" IL="50" EX="4000" GN="0" FP="50" />
  </SC>
  <SY>
    <AZTC EN="1" PO="0" MR="0" />
    <B412 EN="0" RD="0" />
    <C128 EN="1" />
    <CBAR EN="1" CS="0" SS="0" />
    <C011 EN="0" CS="2" SC="0" />
    <C032 EN="0" />
```

```
<C039 EN="1" EA="0" CS="0" SS="0" />
<C093 EN="1" />
<COMP EN="0" />
<DATM EN="1" PO="2" MR="0" RE="1" RX="0" FQ="0" />
<GS1D EN="1" ST="1" EX="1" ES="1" LI="1" />
<H205 EN="0" />
<I205 EN="1" CO="0" LN="0" />
<M205 EN="0" />
<MSIP EN="0" CS="0" SC="0" PE="0" />
<N205 EN="0" CS="0" />
<P417 EN="1" MI="0" />
<PHCO EN="0" CB="0" CN="4" CX="16" MI="15" MX="131070" RV="0" />
<QRCO EN="1" PO="0" MI="0" MR="0" M1="0" CQ="0" />
<S205 EN="0" />
<TELP EN="0" OA="0" />
<TRIO EN="0" RV="0" SS="0" />
<UPC0 EN="1" EA="0" SU="0" E8="0" AD="0" DI="0" DN="0" AC="0" AN="0" EC="0" ES="0" DC="0"
C8="0" AM="0" />
<CODA EN="0" />
<CODF EN="0" />
<AUPO EN="0" SC="0" />
<CAPO EN="0" />
<CO49 EN="0" />
<GDMX EN="0" PO="0" MR="0" />
<GOCO EN="0" MR="0" />
<HAXN EN="0" PO="0" MR="0" />
<JAPO EN="0" />
<KIX0 EN="0" />
<KOPO EN="0" />
<MAXC EN="0" />
<UKRO EN="0" CC="0" />
<UPUI EN="0" />
<USIM EN="0" />
<USPL EN="0" />
<USPO EN="0" />
</SY>
<PK>
  <OP RT="250" CT="60" RC="0" />
</PK>
<IM>
  <SN FI="C8DA1F879845803B" GR="" />
  <CP TM="0" ME="0" XE="0" />
</IM>
<FW>
  <CM OE="0" OR="0" CT="5000" />
  <HW WT="5" TF="250000" TB="100" />
  <IM DI="0" NI="0" CI="0" SI="0" X1="0" X2="0" X3="0" X4="0" />
</FW>
<RD>
  <FW MJ="1" MN="7" BU="3" OP="" VS="1.7.3" TY="C010603" DV="cd(17.1.0)" />
  <CP RV="2.00" SN="0E1D2680504C9A" />
  <RR SN="1020000119" ID="55779404" HR="0x04" MD="CR8200" MT="2AD0" IS="20170920:1731" />
  <QD N1="0" L1="0" RS="0" US="0" TG="0" LD="0" IL="0" SP="0" TR="0" F0="0x00" F1="0x00"
P0="0x00" P1="0x00" />
  <LC GL="" />
```



```
<FB VB="0" SM="0" />
<IL LO="0" MB="100" />
<OF LE="" />
<TC MD="0" />
</RD>
<FB>
  <IN BI="0" BE="1" />
  <GR BI="0" FQ="2730" VO="100" NT="80" FT="20" NB="1" />
  <CB FQ="2800" VO="100" NT="80" FT="20" NB="1" />
  <CM FQ="2730" VO="35" NT="100" FT="100" NB="1" />
  <ER FQ="2800" VO="100" NT="200" FT="100" NB="3" />
</FB>
<LA>
  <IN AL="USEnglish_Win"
IL="USInternational_Win,UnitedKingdom_Win,Spanish_Apple,Spanish_Win,Russian_Win,LatinAmerican_Win,
Japanese_Win,Italian_Apple,SwissGerman_Win,GermanSwiss_Apple,German_Apple,German_Win,French_Apple,
French_Win,English_Apple,BelgianFrench_Win,USEnglish_Win" />
</LA>
<MD>
  <PM NG="1" XG="47" IG="40" NE="1" XE="46" IE="21" NI="1" XI="6" II="1" NL="60" XL="90"
PL="15" TL="5" BT="4" IC="3" DT="0" ET="0" SD="0" DR="100" DI="0" AT="500" />
</MD>
<EN>
  <IM ET="3" />
</EN>
<Saved/>
<Platform/>
</CFG>
```

Appendix D – Reference CFG XML output from CR950, detailing current defaults

This section contains the CFG output from a CR950 configured with default settings. You can use this reference to check default values for any parameter in the CR950 firmware.

```
<CFG>
  <CM>
    <GE CR="5000" />
    <MO CM="UN" />
    <SE BA="115200" DB="8" PA="N" SB="1" FC="0" />
    <UB MF="Code" PN="CR950" FS="0" />
    <HD IC="0" IS="0" RL="0" CC="0" IE="0" OM="0" EA="0" />
    <CP PM="1" />
    <UK SN="1" NE="2" EM="3" IN="1000" />
    <UN SN="1" IN="1000" />
    <UP SN="1" />
    <UV SN="0" />
    <UC SN="0" />
  </CM>
  <PM>
    <SB EN="0" VA="5000" />
    <SM EN="0" VA="3600" MC="1" />
  </PM>
  <FC>
    <TS EN="0" TM="" MN="0" XN="0" MF="0" XF="0" />
  </FC>
  <AG>
    <CR CX="300" CY="300" CT="227" LT="8" LP="200" HT="85" HP="200" DL="11" ME="7" />
    <TM MN="5" MT="0x00000100" HQ="360" MQ="320" LQ="120" HP="80" MP="20" LP="10" />
    <BY IL="50" EX="4000" GN="0" />
    <FX BP="50" />
  </AG>
  <CD>
    <DP EN="0" BE="0" BD="0" BI="0" BH="0" SM="0" />
    <DT TL="9830720" TF="30" CD="100" TD="0" />
    <OP PR="1" RO="0" RL="0" RT="0" RW="0" RH="0" LC="1" ZR="0" EC="0" DL="0" SP="0" QD="0"
AS="0" CI="0" SE="0" AP="115" AT="10000" SD="0" FQ="0" CE="0" UT="1" MD="0" DI="0" FO="1" FD=""
PX="" SX="" FC="0" FP="" RD="0" VF="0" />
    <VA TT="1600" BD="0" BT="0" EB="0" />
    <IM ET="1" />
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