Configuration Control Document

CR950 Firmware Version 2.5.3

Contents

1 Keyword Table

Keyword	Description
#2Of5	All 2 of 5 symbologies
#AGC	Automatic Gain Control
#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
#Code32	Code 32 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
#DataEncoding	Settings that affect incoming/outgoing data
#DataFormatting	Data Formatting settings
#DataMatrix	Data Matrix symbology
#DotCode	DotCode symbology
#DuplicateBlock	Settings related to blocking duplicate barcodes
#EAN/JAN	EAN/JAN symbology
#GoCode	GoCode® symbology
#GridMatrix	Grid Matrix symbology
#GS1DataBar	The GS1 DataBar family of symbologies
#HanXin	Han Xin symbology
#Image	Image cropping, ROI
#InterCharacterDelay	Settings controlling the USB keyboard inter-character delay
#Interleaved2Of5	Interleaved 2 of 5 symbology
#MaxiCode	MaxiCode symbology
#Message	Messages and logs
#MSIPlessey	MSI Plessey symbology
#PDF417	PDF417 symbology
#Pharmacode	Pharmacode symbology
#Postal	Postal symbologies
#QR	QR Code symbology
#Raw	Settings related to the reader accepting raw commands
#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
#TextCommands	Settings relating to the reader accepting text commands
#Trioptic	Trioptic symbology
#UKPlessey	UK Plessey symbology
#UPC	UPC symbology
#CleanlinessTest	Cleanliness Test for 8200 products

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
Text-Command	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)
data$_{opt}$	$_{opt}$ (opt subscript)	Optional terminals and non-terminals
crc16$_{nr}$	$_{nr}$ (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. If a command is not recognized or is not supported by a device, the reader will respond with a "NOTSUPP" error message. If an invalid parameter or parameter value is given, CDOPSQQ or CDOPSMD25 for example, the reader will respond with an "INVAL" error message.

4.2 Command Format

Primary Category	Sub-Category	Action Code	Parameter	Parameter Value (when action is S or P)
Example: SY, CM, etc.	Example: AZTC, SE, etc.	S - Change and save L - Save as a platform setting P - Change but do not save R - Reset to default value G - Get value in effect X - Execute C - Reset to saved or, if there is no saved value, resets to default	Example: AL, BA, [, etc.	String of decimal, number, or text.

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.

The Configuration Manager is a series of commands that apply to all primary category settings. For a full output of CR8200

settings, requested by issuing the Configuration Manager command CFG, 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 > Image Sensor

     < JS > ... </JS > JavaScript

     < FW > ... </FW > Firmware

     < RD > ... </RD > Reader

     < FB > ... </FB > Feedback

     < LA > ... </LA > Language

     < MD > ... </MD > Motion Detection

     < EN > ... </EN > Encoder Image Parameters

     < ST > ... </ST > Storage

     < BT > ... </BT > Bluetooth Radio Parameters

     < 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

5 AG - Automatic Gain Control (AGC) Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	AG	FX	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
AGC - Fixed Mode - Percent	AG	FX	S/L/P/G R/C	BP	When the AGC is in fixed mode, this value selects the point on the AGC curve from which to make calculations. **Keyword:** #AGC **Example:** AGFXSBP50 **Default Value:** 50
Get All Subcategory Parameters	AG	BY	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
AGC - Bypass Mode - Illumination Percent	AG	BY	S/L/P/G R/C	IL	Overrides the illumination setting with the user-provided illumination setting when the AGC is set to bypass mode. **Keyword:** #AGC **Example:** AGBYSIL50 **Default Value:** 50
AGC - Bypass Mode - Exposure (us)	AG	BY	S/L/P/G R/C	EX	Overrides the exposure setting with the user-provided exposure setting when the AGC is set to bypass mode in microseconds. **Keyword:** #AGC **Example:** AGBYSEX4000 **Default Value:** 4000
AGC - Bypass Mode - Gain Percent	AG	BY	S/L/P/G R/C	GN	Overrides the gain setting with the user-provided gain setting when the AGC is set to bypass mode. **Keyword:** #AGC **Example:** AGBYSGN0 **Default Value:** 0
AGC Config Mode Exposure Time Curve Adjustment (us)	AG	CD	S/L/P/G R/C	E1	Adjust Config AGC's exposure time curve's points in microseconds. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSE1100 **Default Value:** 100
AGC Config Mode Exposure Time Curve Adjustment (us)	AG	CD	S/L/P/G R/C	E2	Adjust Config AGC's exposure time curve's points in microseconds. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSE21400 **Default Value:** 1400

Description	Cat	Sub	Action	Param	Notes/Example
AGC Config Mode Exposure Time Curve Adjustment (us)	AG	CD	S/L/P/G R/C	E3	Adjust Config AGC's exposure time curve's points in microseconds. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSE33200 **Default Value:** 3200
AGC Config Mode Exposure Time Curve Adjustment (us)	AG	CD	S/L/P/G R/C	E4	Adjust Config AGC's exposure time curve's points in microseconds. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSE45600 **Default Value:** 5600
AGC Config Mode Exposure Time Curve Adjustment (us)	AG	CD	S/L/P/G R/C	E5	Adjust Config AGC's exposure time curve's points in microseconds. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSE57500 **Default Value:** 7500
AGC Config Mode Exposure Time Curve Adjustment (us)	AG	CD	S/L/P/G R/C	E6	Adjust Config AGC's exposure time curve's points in microseconds. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSE69200 **Default Value:** 9200
AGC Config Mode Gain Curve Adjustment (%)	AG	CD	S/L/P/G R/C	G1	Adjust Config AGC's gain curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSG115 **Default Value:** 15
AGC Config Mode Gain Curve Adjustment (%)	AG	CD	S/L/P/G R/C	G2	Adjust Config AGC's gain curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSG225 **Default Value:** 25
AGC Config Mode Gain Curve Adjustment (%)	AG	CD	S/L/P/G R/C	G3	Adjust Config AGC's gain curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSG325 **Default Value:** 25
AGC Config Mode Gain Curve Adjustment (%)	AG	CD	S/L/P/G R/C	G4	Adjust Config AGC's gain curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSG425 **Default Value:** 25

Description	Cat	Sub	Action	Param	Notes/Example
AGC Config Mode Gain Curve Adjustment (%)	AG	CD	S/L/P/G R/C	G5	Adjust Config AGC's gain curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSG525 **Default Value:** 25
AGC Config Mode Gain Curve Adjustment (%)	AG	CD	S/L/P/G R/C	G6	Adjust Config AGC's gain curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSG625 **Default Value:** 25
AGC Config Mode Illumination Curve Adjustment (%)	AG	CD	S/L/P/G R/C	I1	Adjust Config AGC's illumination curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSI11 **Default Value:** 1
AGC Config Mode Illumination Curve Adjustment (%)	AG	CD	S/L/P/G R/C	I2	Adjust Config AGC's illumination curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSI214 **Default Value:** 14
AGC Config Mode Illumination Curve Adjustment (%)	AG	CD	S/L/P/G R/C	I3	Adjust Config AGC's illumination curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSI328 **Default Value:** 28
AGC Config Mode Illumination Curve Adjustment (%)	AG	CD	S/L/P/G R/C	I4	Adjust Config AGC's illumination curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSI444 **Default Value:** 44
AGC Config Mode Illumination Curve Adjustment (%)	AG	CD	S/L/P/G R/C	I5	Adjust Config AGC's illumination curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSI562 **Default Value:** 62
AGC Config Mode Illumination Curve Adjustment (%)	AG	CD	S/L/P/G R/C	I6	Adjust Config AGC's illumination curve's points percentage. This configurable curve is used when taking pictures and decoding in this mode. **Keyword:** #AGC #Image **Example:** AGCDSI680 **Default Value:** 80

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	AG	DP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
AGC - Decode Plus - Window X	AG	DP	S/L/P/G R/C	WX	X component of the window for the Decode Plus AGC adjustments given to the decoder. **Keyword:** #AGC **Example:** AGDPSWX420 **Default Value:** 420
AGC - Decode Plus - Window Y	AG	DP	S/L/P/G R/C	WY	Y component of the window for the Decode Plus AGC adjustments given to the decoder. **Keyword:** #AGC **Example:** AGDPSWY320 **Default Value:** 320
AGC - Decode Plus - Corner X	AG	DP	S/L/P/G R/C	CX	X component of the corner for the Decode Plus AGC adjustments given to the decoder. **Keyword:** #AGC **Example:** AGDPSCX430 **Default Value:** 430
AGC - Decode Plus - Corner Y	AG	DP	S/L/P/G R/C	CY	X component of the corner for the Decode Plus AGC adjustments given to the decoder. **Keyword:** #AGC **Example:** AGDPSCY320 **Default Value:** 320
AGC - Decode Plus - Dim Red Illumination Percent	AG	DP	S/L/P/G R/C	DR	Illumination percent for dim red modes. **Example:** AGDPSDR10 **Default Value:** 10
Get All Subcategory Parameters	AG	CR	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
AGC Control - Window width	AG	CR	S/L/P/G R/C	CX	Set the contrast window width in pixels. **Keyword:** #AGC **Example:** AGCRSCX300 **Default Value:** 300
AGC Control - Window height	AG	CR	S/L/P/G R/C	CY	Set the contrast window height pixels. **Keyword:** #AGC **Example:** AGCRSCY300 **Default Value:** 300

Description	Cat	Sub	Action	Param	Notes/Example
AGC Control Window - X offset	AG	CR	S/L/P/G R/C	PX	Set the contrast window's horizontal offset from the center of the image (default is 0). Use positive values to move the window to the right and negative values to move it to the left. **Note:** This setting value is ignored if AGC Control Window - Enable re-positioning is disabled **Keyword:** #AGC #Image **Example:** AGCRSPX0 **Default Value:** 0
AGC Control Window - Y offset	AG	CR	S/L/P/G R/C	PY	Set the contrast window's vertical offset from the center of the image (default is 0). Use positive values to move the window upwards and negative values to move it downwards. **Note:** This setting value is ignored if AGC Control Window - Enable re-positioning is disabled **Keyword:** #AGC #Image **Example:** AGCRSPY0 **Default Value:** 0
AGC Control Window - Re-positioning	AG	CR	S/L/P/G R/C	ES	0 — Disable repositioning the contrast window 1 — Enable repositioning the contrast window **Keyword:** #AGC #Image **Example:** AGCRSES0 **Default Value:** 0
AGC Control Window - Drawing Boundaries	AG	CR	S/L/P/G R/C	ED	0 — Disable drawing visible boundaries to show the contrast window edges 1 — Enable drawing visible boundaries embedded in the image to show the contrast window edges **Keyword:** #AGC #Image **Example:** AGCRSED0 **Default Value:** 0
AGC Quality Low Threshold	AG	CR	S/L/P/G R/C	LT	Control quality calculations-Quality Low Threshold. **Keyword:** #AGC **Example:** AGCRSLT8 **Default Value:** 8
AGC Quality Low Factor	AG	CR	S/L/P/G R/C	LP	Control quality calculations-Quality Low Factor. **Keyword:** #AGC **Example:** AGCRSLP200 **Default Value:** 200
AGC Quality High Threshold	AG	CR	S/L/P/G R/C	HT	Control quality calculations-Quality High Threshold. **Keyword:** #AGC **Example:** AGCRSHT85 **Default Value:** 85
AGC Quality High Factor	AG	CR	S/L/P/G R/C	HP	Control quality calculations-Quality High Factor. **Keyword:** #AGC **Example:** AGCRSHP200 **Default Value:** 200

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	AG	TM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
AGC Medium Quality time limit (ms) **DEPRECATED**	AG	TM	S/L/P/G R/C	MQ	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSMQ0 **Default Value:** 0
AGC minimum time limit (ms) **DEPRECATED**	AG	TM	S/L/P/G R/C	MN	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSMN0 **Default Value:** 0
AGC Low Quality time limit (ms) **DEPRECATED**	AG	TM	S/L/P/G R/C	LQ	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSLQ0 **Default Value:** 0
AGC high quality time limit (ms) **DEPRECATED**	AG	TM	S/L/P/G R/C	HQ	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSHQ0 **Default Value:** 0
AGC Timeout multiplier (FP24_8) **DEPRECATED**	AG	TM	S/L/P/G R/C	MT	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSMT0x0 **Default Value:** 0x0
AGC high quality percentage **DEPRECATED**	AG	TM	S/L/P/G R/C	HP	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSHP0 **Default Value:** 0
AGC Medium Quality percentage **DEPRECATED**	AG	TM	S/L/P/G R/C	MP	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSMP0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
AGC Low Quality percentage **DEPRECATED**	AG	TM	S/L/P/G R/C	LP	**This command has been deprecated, please do not use this command** This parameter no longer has any effect. Please use CDDT_TL and CDDT_LT to control the timeout. **Example:** AGTMSLP0 **Default Value:** 0
AGC Normal Mode Exposure Time Curve Adjustment (us) **DEPRECATED**	AG	NO	S/L/P/G R/C	E1	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_E1, configuring the Config AGC mode's curve. **Example:** AGNOSE1100 **Default Value:** 100
AGC Normal Mode Exposure Time Curve Adjustment (us) **DEPRECATED**	AG	NO	S/L/P/G R/C	E2	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_E2, configuring the Config AGC mode's curve. **Example:** AGNOSE21400 **Default Value:** 1400
AGC Normal Mode Exposure Time Curve Adjustment (us) **DEPRECATED**	AG	NO	S/L/P/G R/C	E3	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_E3, configuring the Config AGC mode's curve. **Example:** AGNOSE33200 **Default Value:** 3200
AGC Normal Mode Exposure Time Curve Adjustment (us) **DEPRECATED**	AG	NO	S/L/P/G R/C	E4	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_E4, configuring the Config AGC mode's curve. **Example:** AGNOSE45600 **Default Value:** 5600
AGC Normal Mode Exposure Time Curve Adjustment (us) **DEPRECATED**	AG	NO	S/L/P/G R/C	E5	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_E5, configuring the Config AGC mode's curve. **Example:** AGNOSE57500 **Default Value:** 7500

Description	Cat	Sub	Action	Param	Notes/Example
AGC Normal Mode Exposure Time Curve Adjustment (us) **DEPRECATED**	AG	NO	S/L/P/G R/C	E6	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_E6, configuring the Config AGC mode's curve. **Example:** AGNOSE69200 **Default Value:** 9200
AGC Normal Mode Gain Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	G1	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_G1, configuring the Config AGC mode's curve. **Example:** AGNOSG115 **Default Value:** 15
AGC Normal Mode Gain Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	G2	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_G2, configuring the Config AGC mode's curve. **Example:** AGNOSG225 **Default Value:** 25
AGC Normal Mode Gain Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	G3	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_G3, configuring the Config AGC mode's curve. **Example:** AGNOSG325 **Default Value:** 25
AGC Normal Mode Gain Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	G4	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_G4, configuring the Config AGC mode's curve. **Example:** AGNOSG425 **Default Value:** 25
AGC Normal Mode Gain Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	G5	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_G5, configuring the Config AGC mode's curve. **Example:** AGNOSG525 **Default Value:** 25
AGC Normal Mode Gain Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	G6	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_G6, configuring the Config AGC mode's curve. **Example:** AGNOSG625 **Default Value:** 25

Description	Cat	Sub	Action	Param	Notes/Example
AGC Normal Mode Illumination Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	I1	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_I1, configuring the Config AGC mode's curve. **Example: AGNOSI11** **Default Value: 1**
AGC Normal Mode Illumination Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	I2	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_I2, configuring the Config AGC mode's curve. **Example: AGNOSI214** **Default Value: 14**
AGC Normal Mode Illumination Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	I3	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_I3, configuring the Config AGC mode's curve. **Example: AGNOSI328** **Default Value: 28**
AGC Normal Mode Illumination Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	I4	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_I4, configuring the Config AGC mode's curve. **Example: AGNOSI444** **Default Value: 44**
AGC Normal Mode Illumination Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	I5	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_I5, configuring the Config AGC mode's curve. **Example: AGNOSI562** **Default Value: 62**
AGC Normal Mode Illumination Curve Adjustment (%) **DEPRECATED**	AG	NO	S/L/P/G R/C	I6	**This command has been deprecated, please do not use this command** No longer effects the AGC Normal Mode curve. This setting now maps to AGCD_I6, configuring the Config AGC mode's curve. **Example: AGNOSI680** **Default Value: 80**

6 CD - Decoder Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	CD	DT	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Decode Time Limit (ms)	CD	DT	S/L/P/G R/C	TL	Amount of time in milliseconds that CortexDecoder uses for decode attempt before returning a decode failure. 0 - No time limit applied 1 - 60,000 time limit in ms The value should be entered as a hexadecimal number. **Example:** CDDTSTL320 **Default Value:** 320
Decode Locate Time Limit	CD	DT	S/L/P/G R/C	LT	This setting sets the timeout value to locate the barcode. 0 - No time limit applied 1 - 30,000 time limit in mS The value should be entered as a hexadecimal number. **Example:** CDDTSLT150 **Default Value:** 150
Continuous scan image capture delay (ms)	CD	DT	S/L/P/G R/C	CD	Limit the rate of image capturing in milliseconds during continuous scan. **Notes:** Shortest supported delay is 100ms **Example:** CDDTSCD100 **Default Value:** 100
Trigger mode image capture delay (ms)	CD	DT	S/L/P/G R/C	TD	Limit the rate of image capturing during trigger modes. Including event-based trigger modes. **Example:** CDDTSTD0 **Default Value:** 0
DecodePlus Decode Delay (ms)	CD	DT	S/L/P/G R/C	QD	The amount of time that the reader expects a barcode to remain outside of the field of view before allowing that same barcode to be decoded. If the barcode returns into the field of view before this time has expired, the barcode will not decode. If the barcode returns into the field of view before this time has expired, and leaves the field of view again, it must remain outside of the field of view for the full amount of time before the reader will decode that same barcode. This parameter only applies to DecodePlus quick decode and motion modes. Furthermore, this parameter is completely separated from the duplicate block time parameters and does not require CDVA_BD to be enabled. **Example:** CDDTSQD600 **Default Value:** 600

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	CD	OP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Maximum Decodes Per Read	CD	OP	S/L/P/G R/C	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 found will be decoded. **Example:** CDOPSPR1 **Default Value:** 1
Ensure Region of Interest	CD	OP	S/L/P/G R/C	RO	Only decoded barcodes that are completely inside the region of interest. When disabled, barcode may be decoded if it is partially inside the ROI. **Keyword:** #Image **Example:** CDOPSRO0 **Default Value:** 0
Region of Interest Leftmost pixel	CD	OP	S/L/P/G R/C	RL	ROI Left is the x or column coordinate of the ROI upper-left corner. Default value is 0. **Keyword:** #Image **Example:** CDOPSRL0 **Default Value:** 0
Region of Interest Topmost pixel	CD	OP	S/L/P/G R/C	RT	ROI Top is the y or row coordinate of the ROI top-left corner. Default value is 0. **Keyword:** #Image **Example:** CDOPSRT0 **Default Value:** 0
Region of Interest width (pixels)	CD	OP	S/L/P/G R/C	RW	ROI width - The width of the ROI rectangle. Default value is 0, indicating the full image width is used. **Keyword:** #Image **Example:** CDOPSRW0 **Default Value:** 0
Region of Interest height (pixels)	CD	OP	S/L/P/G R/C	RH	ROI height - The height of the ROI rectangle. Default value is 0, indicating the full image height is used. **Keyword:** #Image **Note:** Whenever these values are non-zero, the decoder only attempts decoding barcodes within or partially within this area. The only way to disable this feature is set RL, RT, RW, RH back to 0. **Example:** CDOPSRH0 **Default Value:** 0
Low Contrast Mode for 1D Barcodes	CD	OP	S/L/P/G R/C	LC	<table><tr><td>0</td><td>Disable Low Contrast Mode</td></tr><tr><td>1</td><td>Enable Low Contrast Mode</td></tr></table> Low contrast mode enable inverse images to be decoded more easily. **Example:** CDOPSLC1 **Default Value:** 1

Description	Cat	Sub	Action	Param	Notes/Example
Field of Interest (FOI) Zoom	CD	OP	S/L/P/G R/C	ZR	0 — Disable FOI Zoom 1 — Enable FOI Zoom Increase the FOI resolution to robustly decode small barcodes when FOI is set to sub-region of the entire FOI. For faster speed, set $FOI_{width} * FOI_{height} < 320 * 480$ **Example:** CDOPSZR0 **Default Value:** 0
Enhance Contrast Mode for 1D Barcodes	CD	OP	S/L/P/G R/C	EC	0 — Disable Enhance Contrast Mode 1 — Enable Enhance Contrast Mode Enhance contrast mode enables DPM images to be decoded more easily. **Example:** CDOPSEC0 **Default Value:** 0
Enable Cellphone Settings **DEPRECATED**	CD	OP	S/L/P/G R	CI	**This command has been deprecated, please do not use this command** Deprecated command that enabled cellphone settings in the decoder for very old iPhone screens so the decoder could process barcodes on the old screens. No longer needed as the very old iPhones are no longer in service and current iPhone screens are readable. **Note:** This command has been replaced by **CDOP_CE** **Example:** CDOPSCI0 **Default Value:** 0
1D Barcode Aggressiveness	CD	OP	S/L/P/G R/C	SE	0 — Most aggressive at achieving a decode with increase possibility of misreads 1 — Less aggressive for poorly printed 1D barcodes. Decreases probability of misreads. 2 — Least aggressive for poorly printed 1D barcodes. Further decreases probability of misreads. 11 — Less aggressive for 1D barcodes with low module size. Decreases probability of misreads. 12 — Least aggressive for 1D barcodes with low module size. Further decreases probability of misreads This tells the decoder that it can enforce the barcode standard more strictly on poorly printed codes. **Example:** CDOPSSE0 **Default Value:** 0
Decode Attempt Timeout (ms)	CD	OP	S/L/P/G R/C	AT	Decode attempt timeout in milliseconds (was sticky time). **Example:** CDOPSAT0 **Default Value:** 0
Target bar trigger mode target time (ms)	CD	OP	S/L/P/G R/C	TT	The amount of time the targeting bar will be active before the reader begins scanning while in target bar trigger mode (RDTCSMD9) **Example:** CDOPSTT1000 **Default Value:** 1000

Description	Cat	Sub	Action	Param	Notes/Example	
Stop Decoding on Duplicate	CD	OP	S/L/P/G R/C	SD	0	Continue decoding even if duplicate barcode is detected in the current image
					1	Stop decoding when duplicate barcode is detected in the current image
					Note: This works only if CDOP_PR is set to more than 1. Instruct the decoder to continue or stop looking for decodes in the current image when a duplicate barcode is found. **Example:** CDOPSSD0 **Default Value:** 0	
Cellphone Mode Enable	CD	OP	S/L/P/G R/C	CE	0	Disable Cellphone reading mode
					1	Enable Cellphone reading mode
					2	Enable alternate Cellphone reading mode
					Enables the reading of barcodes on cellphone screens in the decoder so it will properly decode barcodes from a light-emissive surface instead of a light-absorbent surface. Alternate cellphone mode captures two images, and compares the image quality, which it uses to decide which image to attempt to decode. **Keyword:** #Cellphone **Example:** CDOPSCE1 **Default Value:** 1	
Targeting LED	CD	OP	S/L/P/G R/C	UT	0	Disable targeting LED during capture
					1	Enable targeting LED during capture
					This command allows or prevents the reader from turning on the blue targeting LED when capturing an image. **Example:** CDOPSUT1 **Default Value:** 1	
Idle Decode Mode	CD	OP	S/L/P/G R/C	MD	0	No scanning mode while the trigger is not held.
					1+	These use the standard set of decode modes. See appendix D for a list of these modes.
					These values dictate which scanning mode the reader will run while the trigger is not pressed. See appendix D for a list of possible scan modes **Note:** linked to RDPM_FT **Example:** CDOPSMD0 **Default Value:** 0	
Transfer Images	CD	OP	S/L/P/G R/C	DI	0	Disable transferring images
					1	Enable transferring images
					When image transfer is enabled, each image captured by the reader will be sent as a stream of data to the host. The host is responsible for assembling the stream and saving it as a file. **Note:** This command enables transfer of all decoded, non-decoded and cellphone images. This command is a global enable and is linked to FWIM_DI, FWIM_NI, FWIM_CI. **Example:** CDOPSDI0 **Default Value:** 0	

Description	Cat	Sub	Action	Param	Notes/Example
Last Read Image Width	CD	OP	G	LW	Returns the width of the image that contained the most recently decoded barcode. **Example:** CDOPGLW
Last Read Image Height	CD	OP	G	LH	Returns the height of the image that contained the most recently decoded barcode. **Example:** CDOPGLH
Send Aim ID	CD	OP	S/L/P/G R/C	AS	0 — Disable Send Aim ID 1 — Enable Send Aim ID **Keyword:** #AIMId **Example:** CDOPSAS0 **Default Value:** 0
Select Aim ID Position	CD	OP	S/L/P/G R/C	PI	0 — Before prefix 1 — After prefix, before decode data 2 — Positioned according to Data formatting string **Keyword:** #AIMId **Example:** CDOPSPI1 **Default Value:** 1
Verifone Support	CD	OP	S/L/P/G R/C	VF	0 — Disable Verifone formatting 1 — Enable Verifone formatting
Gilbarco Support	CD	OP	S/L/P/G R/C	GB	0 — Disable Gilbarco formatting 1 — Enable Gilbarco formatting
NCR Register Support (Option 1)	CD	OP	S/L/P/G R/C	NC	0 — Disable NCR formatting 1 — Enable NCR formatting **Example:** CDOPSNC0 **Default Value:** 0
NCR Register Support (Option 2)	CD	OP	S/L/P/G R/C	N2	0 — Disable NCR2 formatting 1 — Enable NCR2 formatting **Example:** CDOPSN20 **Default Value:** 0
Wincor Nixdorf Support	CD	OP	S/L/P/G R/C	WN	0 — Disable Wincor Nixdorf formatting 1 — Enable Wincor Nixdorf formatting
Data Formatting Enable	CD	OP	S/L/P/G R/C	DF	0 — Disable Data Formatting 1 — Enable Data Formatting May be used in conjunction with a configuration string CDOPSFD, or prefix/suffix settings, or other special formatting like upper/lower case or output as hex. **Note:** May be used in conjunction with CDOP_DV to add data formatting to a validation type. **Keyword:** #DataFormatting **Example:** CDOPSDF0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example	
Data validation selection For use with cd 17.2.x **REPLACES CDOP_FO**	CD	OP	S/L/P/G R/C	DV	0	Disable data validation/parsing
					1	DL / ID public sector parsing **Note:** Requires configuration string see CDOP_FP
					2	DL / ID public sector parsing output in JSON format
					3	Simple age verification **Note:** Does not require configuration string
					4	Match string validation **Note:** Requires configuration string see CDOP_SM
					5	GS1 validation **Note:** Requires configuration string see CDOP_GP
					6	UDI validation **Note:** Requires configuration string see CDOP_UD
					7	ISO 15434 validation **Note:** Requires configuration string see CDOP_IS
					8	ISO 15434 before ISO 15418 validation **Note:** Requires configuration string see CDOP_IO
					9	Perform Success & Raw validation. Success & Raw means return both parsed data and raw data [4 chars parsed data length][parsed data][raw data]
						Selects data validation or data parsing option applied to decoded data. **Keyword:** #DataFormatting **Example:** CDOPSDV0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example	
Data format option selection **DECODER DEPRECATED** With cd 17.2.x (See CDOP_DV for more options)	CD	OP	S/L/P/G R	FO	0	Don't format data output.
					1	Format data with prefix/suffix or data configuration string
					2	Perform match string validation
					12	Perform match string validation and Data Formatting
					3	Perform GS1 validation
					13	Perform GS1 validation and Data Formatting
					4	Perform UDI validation
					14	Perform UDI validation and Data Formatting
					5	Perform ISO15434 validation
					15	Perform ISO15434 validation and Data Formatting
					6	Perform ISO15434 & ISO15418 validation
					16	Perform ISO15434 & ISO15418 validation and Data Formatting
					8	Perform Simple Age verification
					18	Perform Simple Age verification and Data Formatting
					8	Perform DL Parsing with configuration string
					18	Perform DL Parsing with configuration string and Data Formatting
					10	Perform DL Parsing without configuration
					20	Perform DL Parsing without configuration and Data Formatting
					11	Perform Success & Raw validation. Success & Raw means return both parsed data and raw data [4 chars parsed data length][parsed data][raw data]
					Keyword: #DataFormatting **Example:** CDOPSFO0 **Default Value:** 0	
Prefix	CD	OP	S/L/P/G R/C	PX	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 **Keyword:** #DataFormatting **Example:** CDOPSPX"," **Default Value:** ""	

Description	Cat	Sub	Action	Param	Notes/Example
Suffix	CD	OP	S/L/P/G R/C	SX	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:** Until revision 1.7.5, there was a default suffix of ⟨Windows Enter⟩ **Keyword:** #DataFormatting **Example:** CDOPSSX"," **Default Value:** ""
Convert output text	CD	OP	S/L/P/G R/C	FC	0 — No change to case formatting of decoded text 1 — Convert decoded text to upper case 2 — Convert decoded text to lower case 3 — Convert decoded text to bracketed hex bytes. Barcode contents of 03400704 would produce output of: ⟨30⟩⟨33⟩⟨34⟩⟨30⟩⟨30⟩⟨37⟩⟨30⟩⟨34⟩ Data formatting output case/hex **Note:** Data format option selection must be set to 1 for this setting to have an effect **Keyword:** #DataFormatting **Example:** CDOPSFC0 **Default Value:** 0
Full data format string	CD	OP	S/L/P/G R/C	FD	Data formatting raw format configuration string. **Note:** This is enabled by setting data formatting enable to true (CDOPSDF1). **Note:** When FD is set, Prefix and Suffix are ignored **Keyword:** #DataFormatting **Example:** CDOPSFD"00\x2B\x5F\x61\x49\x60\x2B\x5F\x61\x49\x60\x01!,,012\x01@" **Default Value:** ""
Match string validation configuration string	CD	OP	S/L/P/G R/C	SM	Match String validation configuration string. **Note:** Data Validation option must be set to 4 for this setting to have an effect (CDOPSDV4). **Keyword:** #DataFormatting **Example:** CDOPSSM"00\x2B\x5F\x61\x49\x60\x2B\x5F\x61\x49\x60\x01!,,00F\x01@" **Default Value:** ""
GS1 standard validation configuration string	CD	OP	S/L/P/G R/C	GP	GS1 standard validation configuration string. **Note:** Data format option must be set to 5 for this setting to have an effect (CDOPSDV5). **Keyword:** #DataFormatting **Default Value:** ""

Description	Cat	Sub	Action	Param	Notes/Example
Public sector & validation configuration string	CD	OP	S/L/P/G R/C	FP	Validation & Public sector configuration string. **Note:** Data Validation option must be set to 1 for this setting to have an effect (CDOPSDV1). **Keyword:** #DataFormatting **Default Value:** ""
UDI standard validation configuration string	CD	OP	S/L/P/G R/C	UD	This configuration string is used for validation of FDA UDI Standard Validation (HIBCC-UDI, GS1-UDI, ICCBBA-UDI) barcode data. **Note:** The Data Validation option must be set to 6 for UDI validation (CDOPSDV6). **Keyword:** #DataFormatting **Default Value:** ""
ISO15434 standard validation configuration string	CD	OP	S/L/P/G R/C	IS	This configuration string is used to validate ISO/IEC 15434 Standard barcodes. **Note:** Data Validation option be set to 7 (CDOPSDV7). **Keyword:** #DataFormatting **Default Value:** ""
ISO15434/15418 standard validation configuration string	CD	OP	S/L/P/G R/C	IO	This configuration string is used to validate ISO/IEC 15434 followed by ISO/IEC 15418 validation. **Note:** Data Validation option be set to 8 (CDOPSDV8). **Keyword:** #DataFormatting
Success and Raw validation	CD	OP	S/L/P/G R/C	SR	<table><tr><td>0</td><td>Disable Success and raw validation</td></tr><tr><td>1</td><td>Enable Success and raw validation</td></tr></table> Perform Success & Raw validation. Success & Raw means return both parsed data and raw data [4 chars parsed data length][parsed data][raw data] **Keyword:** #DataFormatting **Example:** CDOPSSR0 **Default Value:** 0
Select decode Preferred Field of interest	CD	OP	S/L/P/G R/C	PF	<table><tr><td>0</td><td>This setting passes the HD field to the decoder. AGC analysis is done on the HD field.</td></tr><tr><td>1</td><td>This setting passes the wide field to the decoder. AGC analysis is done on the wide field.</td></tr><tr><td>2</td><td>This setting passes the best field to the decoder. AGC analysis is done on the field calculated to have the best image.</td></tr><tr><td>3</td><td>This setting passes the full image to the decoder. AGC analysis is done in the decoder.</td></tr></table> **Note:** Not supported by single field optics **Example:** CDOPSPF0

Description	Cat	Sub	Action	Param	Notes/Example
AGC Logging Form	CD	OP	S/L/P/G R/C	LA	0 — Disable AGC logging 1 — Enable AGC logging in XML formatter form with time stamps 2 — Enable AGC logging in raw form 3 — Enable AGC extended logging in raw form **Note:** To avoid missing characters use RDCMXDL with CDOPSLA1 exclusively. **Note:** To avoid extraneous characters use RDCMXRL with CDOPSLA2 and CDOPSLA3 exclusively. **Keyword:** #Message #AGC **Example:** CDOPSLA0 **Default Value:** 0
Skip Formatting for Code XML Only Data	CD	OP	S/L/P/G R/C	SK	0 — Skipping disabled 1 — Skipping enabled Specifies if the reader should format a barcode that only contains CodeXML data. **Example:** CDOPSSK0 **Default Value:** 0
Get All Subcategory Parameters	CD	VA	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Target Tolerance (percent)	CD	VA	S/L/P/G R/C	TT	For a reader to accept a barcode, it must be within the specified 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. This tolerance applies to all decode modes. **Example:** CDVASTT1600 **Default Value:** 1600
PickList Target Tolerance (percent)	CD	VA	S/L/P/G R/C	PT	This sets the target tolerance of the PickList decode mode (See CDOP_MD for more details), this does not effect any other mode. **Example:** CDVASPT150 **Default Value:** 150
Duplicate Block Time (ms)	CD	VA	S/L/P/G R/C	BT	The additional time the reader will be prevented from decoding consecutive identical barcodes. This time is added on to the Default Block Time when the reader is not in-stand. See the related Stand Duplicate Delay setting (RDST_SD) **Note:** Duplicate Block time must be enabled (CDVASBD1). **Keyword:** #DuplicateBlock **Example:** CDVASBT0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
Default Block Time (ms)	CD	VA	S/L/P/G R/C	EB	The default time to prevent the reader from decoding consecutive identical barcodes, whether the reader is in-stand or not. This setting takes effect regardless of the value of Enable Duplicate Block Time (CDVA_BD) **Note:** This setting can interfere with Quick Decode mode **Keyword:** #DuplicateBlock **Example:** CDVASEB0 **Default Value:** 0
Enable Duplicate Block Time	CD	VA	S/L/P/G R/C	BD	<table><tr><td>0</td><td>Disable additional duplicate block time.</td></tr><tr><td>1</td><td>Enable additional duplicate block time.</td></tr></table>Setting enables or disables the additional Duplicate Block Time. If enabled, the amount of time that consecutive identical barcodes will be blocked is Default Block Time + Duplicate Block Time (out-of-stand) or Default Block Time + Stand Duplicate Delay (in-stand). If disabled, consecutive identical barcodes will be blocked for Default Block Time. This setting does not apply to CDDT_QD, but can interfere with Quick Decode mode. **Keyword:** #DuplicateBlock **Example:** CDVASBD0 **Default Value:** 0
Get All Subcategory Parameters	CD	TP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Command for taking pictures	CD	TP	X	EV	1 Take picture immediately Allows the reader to take a picture (Only captures, does not decode any data). **Example:** CDTPXEV1
Use trigger to take pictures	CD	TP	S/L/P/G R/C	TE	0 Disable image capture with a trigger press. 1 Enable image capture with a trigger press.
Rotate picture	CD	TP	S/L/P/G R/C	RO	Rotates picture by 90, 180, or 270 degrees. No rotation for any other values. **Example:** CDTPSRO0 **Default Value:** 0
Extra image capture for AGC analysis and stabilization	CD	TP	S/L/P/G R/C	AB	Sets number of images to capture before the requested image, used to tune the AGC. Since all the images are written into the same buffer, only the last image is preserved. **Example:** CDTPSAB4 **Default Value:** 4
Convert picture to black and white	CD	TP	S/L/P/G R/C	CB	<table><tr><td>0</td><td>Disable converting an image from grayscale to black & white</td></tr><tr><td>1</td><td>Enable converting an image from grayscale to black & white</td></tr></table>Converts an image from grayscale to black & white. **Example:** CDTPSCB0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
Window of interest - X coordinate	CD	TP	S/L/P/G R/C	XO	Set picture window of interest starting X coordinate. **Note:** This is only effective when picture FOI is set to full image (CDTPSPF2). **Example:** CDTPSXO0 **Default Value:** 0
Window of interest - Y coordinate	CD	TP	S/L/P/G R/C	YO	Set picture window of interest starting Y coordinate. **Note:** This is only effective when picture FOI is set to full image (CDTPSPF2). **Example:** CDTPSYO0 **Default Value:** 0
Window of interest - width	CD	TP	S/L/P/G R/C	WD	Set picture window of interest width. **Note:** This is only effective when picture FOI is set to full image (CDTPSPF2). **Example:** CDTPSWD-1 **Default Value:** -1
Window of interest - height	CD	TP	S/L/P/G R/C	HT	Set picture window of interest height. **Note:** This is only effective when picture FOI is set to full image (CDTPSPF2). **Example:** CDTPSHT-1 **Default Value:** -1
Preferred Field of interest (FOI) for taking pictures	CD	TP	S/L/P/G R/C	PF	0 — Select the HD "Field Of Interest" (FOI) for taking a picture 1 — Select the Wide "Field Of Interest" (FOI) for taking a picture 2 — Select both HD and Wide fields for taking a picture **Note:** When taking a picture, only the selected field will be sent from the reader **Note:** Not supported by single field optics.
Targeting Bar On Time for Taking Pictures	CD	TP	S/L/P/G R/C	TT	Number of milliseconds the targeting bar will be held on before taking a picture. **Example:** CDTPSTT100 **Default Value:** 100
Get All Subcategory Parameters	CD	ST	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Stand Detection enable **DEPRECATED**	CD	ST	S/L/P/G R	SE	**This command has been deprecated, please do not use this command** Setting allows the reader to detect whether it is in a stand and follow in stand or out of stand behaviors. **Note:** **This command has been replaced by RDST_SE.** **Example:** CDSTSSE1 **Default Value:** 1

Description	Cat	Sub	Action	Param	Notes/Example
Stand Duplicate Delay (ms) **DEPRECATED**	CD	ST	S/L/P/G R	SD	**This command has been deprecated, please do not use this command** 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.** **Example:** CDSTSSD500 **Default Value:** 500
Get All Subcategory Parameters	CD	DP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
DPM Basic Etch	CD	DP	S/L/P/G R/C	BE	0 — Disable DPM Basic Etch 1 — Enable DPM Basic Etch This basic etch mode can read basic laser/chemical etched image. **Example:** CDDPSBE0 **Default Value:** 0
DPM Basic Dots	CD	DP	S/L/P/G R/C	BD	0 — Disable DPM Basic Dots 1 — Enable DPM Basic Dots The basic dots mode can read easy inkjet and dot peen images. **Note:** CDDP_BD, CDDP_BI, and CDDP_PD are mutually exclusive **Example:** CDDPSBD0 **Default Value:** 0
DPM Basic Inkjet	CD	DP	S/L/P/G R/C	BI	0 — Disable DPM Basic Inkjet 1 — Enable DPM Basic Inkjet The mode can read poor quality inkjet image. **Note:** CDDP_BD, CDDP_BI, and CDDP_PD are mutually exclusive **Example:** CDDPSBI0 **Default Value:** 0
DPM Basic Handheld	CD	DP	S/L/P/G R/C	BH	0 — Disable DPM Basic Handheld 1 — Enable DPM Basic Handheld This mode can read good quality laser marks and normal barcode labels from images captured from a handheld reader that are more centered in the image but can have severe perspective distortion. **Example:** CDDPSBH0 **Default Value:** 0
DPM Small Mirrored	CD	DP	S/L/P/G R/C	SM	0 — Disable DPM Small Mirrored 1 — Enable DPM Small Mirrored The mode can read small, mirrored image. **Example:** CDDPSSM0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	CD	IM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Encode Type **DEPRECATED**	CD	IM	S/L/P/G R	ET	**This command has been deprecated, please do not use this command** This is a setting to select the format of the image being captured. **Note:** This command has been replaced by **ENIM_ET.** **Example:** CDIMSET1 **Default Value:** 1

7 CF - Configuration Parameters

Description	Cat	Sub	Action	Param	Notes/Example		
Get All Reader Parameters	CF		G		Returns all reader parameter values in an XML element. **Example:** CFG		
Get Reader Settings	CF		G		[^CF]	Returns all Saved Settings in an XML element.	
					[^PL]	Returns all Platform Settings in an XML element.	
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:** CFS0 **Default Value:** 0		
Reset all values to their saved value.	CF		C		Reset all reader parameters to their current saved value or to their defaults if no value is saved. **Note:** Deprecated commands do not support C. This prevents accidentally resetting a shared value to its default value instead of the saved value.		
Reset Reader Defaults - All	CF		R		Reset all Reader parameters, which support the 'R' action, to default values. **Note:** Removes all saved/non-platform changes but does not remove any platform customizations or licenses.		
Reset Reader Defaults - Specific	CF		R		[^AL]	Remove license files, saved parameters which support the 'R' action, as well as platform parameters. **Note:** This will not reset the parameters, it only removes parameters from the list of saved parameters. To reset the parameter, the user needs to reboot the reader, issue another CFR, or manually set the parameter to its default value.	
					[^LC]	Remove only license files.	
					[^CF]	Remove only saved parameters which support the 'R' action. **Note:** This will not reset the parameters, it only removes parameters from the list of saved parameters. To reset the parameter, the user needs to reboot the reader, issue another CFR, or manually set the parameter to its default value.	
					[^PL]	Remove only platform parameters. **Note:** This will not reset the parameters, it only removes parameters from the list of platform parameters. To reset the parameter, the user needs to reboot the reader, issue another CFR, or manually set the parameter to its default value.	
					[^PM]	Has the same functionality as the generic CFR, but it preserves the current mode of communication.	
					[^AM]	Has the same functionality as the CFCFR[^AL], but it preserves the current mode of communication.	

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	CF	CF	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Reset Reader (shortcuts)	CF	CF	R		Shortcut for performing both a CFR and CFR[^code] See CFR above.

8 CM - Communication Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	CM	UP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
USB HID POS - Use Serial Number for the USB identification string	CM	UP	S/L/P/G R/C	SN	<table><tr><td>0</td><td>Disable USB HID POS</td></tr><tr><td>1</td><td>Enable USB HID POS</td></tr></table> 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. **Keyword:** #Communications **Example:** CMUPSSN1 **Default Value:** 1
USB HID POS - Product ID	CM	UP	S/L/P/G R/C	PD	The product ID of the reader reported when in USB HID POS mode. **Example:** CMUPSPD0x8203 **Default Value:** 0x8203
Get All Subcategory Parameters	CM	UK	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
USB Keyboard - Use Serial Number for the USB identification string	CM	UK	S/L/P/G R/C	SN	<table><tr><td>0</td><td>Disable USB Keyboard</td></tr><tr><td>1</td><td>Enable USB Keyboard</td></tr></table> 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. **Keyword:** #Communications **Example:** CMUKSSN1 **Default Value:** 1
USB Keyboard - Number of Endpoints	CM	UK	S/L/P/G R/C	NE	<table><tr><td>0</td><td>One endpoint (IN)</td></tr><tr><td>1</td><td>Two endpoints (both IN and OUT)</td></tr></table> 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. Different hosts require different numbers of endpoints. **Keyword:** #Communications **Example:** CMUKSNE2 **Default Value:** 2

Description	Cat	Sub	Action	Param	Notes/Example	
USB Keyboard - Declaration Wait State	CM	UK	S/L/P/G R/C	EM	0	Declare enumeration when addressed
					1	Declare enumeration after receipt of output report
					2	Declare enumeration after receipt of get report descriptor
					3	Enumerate either after receiving output report or after Get report descriptor report is received
					Choose when to have the device declare enumeration as a keyboard, in the special case when the USB device does not require host keyboard response. **Keyword:** #Communications **Example:** CMUKSEM3 **Default Value:** 3	
USB Keyboard - IN Endpoint Polling Interval (us)	CM	UK	S/L/P/G R/C	IN	Controls the USB HID Keyboard IN Endpoint Polling Interval. **Keyword:** #Communications **Example:** CMUKSIN1000 **Default Value:** 1000	
USB Keyboard - Product ID	CM	UK	S/L/P/G R/C	PD	The product ID of the reader reported when in USB Keyboard mode. **Example:** CMUKSPD0x8201 **Default Value:** 0x8201	
Get All Subcategory Parameters	CM	UB	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
USB - Manufacturer	CM	UB	S/L/P/G	MF	A string representing the manufacturer name for the product. **Keyword:** #Communications	
USB - Part Number	CM	UB	S/L/P/G	PN	A string representing the part number or name for the product. **Keyword:** #Communications	
USB - High Speed or Full Speed	CM	UB	S/L/P/G R/C	FS	0	Disable Full Speed USB communications
					1	Enable Full Speed USB communications
					Note: Some hosts have USB ports that are not fast enough to support high speed communication, so they must use full speed **Keyword:** #Communications **Example:** CMUBSFS0 **Default Value:** 0	

Description	Cat	Sub	Action	Param	Notes/Example
USB - Presence Delay (ms)	CM	UB	S/L/P/G R/C	PD	This setting will cause the reader to delay before presenting as a device on the USB bus. This setting will cause the reader to delay before presenting as a device on the USB bus. **Keyword:** #Communications **Example:** CMUBSPD0 **Default Value:** 0
USB - Reboot After Suspend	CM	UB	S/L/P/G R/C	RS	<table><tr><td>0</td><td>Disable Reboot After Suspend</td></tr><tr><td>1</td><td>Enable Reboot After Suspend</td></tr></table>Causes the reader to reboot after resuming from a USB suspend state. **Keyword:** #Communications **Example:** CMUBSRS0 **Default Value:** 0
Get All Subcategory Parameters	CM	UC	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
USB CDC - Use Serial Number for the USB identification string	CM	UC	S/L/P/G R/C	SN	<table><tr><td>0</td><td>Disable USB CDC</td></tr><tr><td>1</td><td>Enable USB CDC</td></tr></table>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. **Example:** CMUCSSN0 **Default Value:** 0
USB CDC - Product ID	CM	UC	S/L/P/G R/C	PD	The product ID of the reader reported when in USB CDC mode. **Example:** CMUCSPD0x8211 **Default Value:** 0x8211
Get All Subcategory Parameters	CM	HD	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
HID Keyboard - Inter-Character Delay (ms)	CM	HD	S/L/P/G R/C	IC	The time, in milliseconds, between sending full key press-and-releases to the host. **Valid Range:** 0 - 10000 **Note:** See Appendix A **Keyword:** #Communications **Example:** CMHDSIC0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
HID Keyboard - Inter-Scan Delay (ms)	CM	HD	S/L/P/G R/C	IS	The time, in milliseconds, between sending key presses to the host. **Valid Range:** 0 - 10000 **Note:** See Appendix A **Keyword:** #Communications **Example:** CMHDSIS0 **Default Value:** 0
HID Keyboard - Release Delay (ms)	CM	HD	S/L/P/G R/C	RL	The time, in milliseconds, after completing a key press before starting the subsequent key release. **Valid Range:** 0 - 10000 **Note:** See Appendix A **Keyword:** #Communications **Example:** CMHDSRL0 **Default Value:** 0
HID Keyboard Control Characters	CM	HD	S/L/P/G R/C	CC	0 — Use default language special keyboard character encoding 1 — Use Ctrl+⟨char⟩ 2 — Use Alt+⟨Keypad⟩ 3 — Use Alt+0⟨Keypad⟩ **Keyword:** #DataEncoding **Example:** CMHDSCC0 **Default Value:** 0
HID Keyboard Decode Data Input Conversion	CM	HD	S/L/P/G R/C	IE	0 — ASCII - No Conversion 1 — ASCII to Unicode Code point 2 — UTF-8 to Unicode Code point 3 — Input encoding is Shift_JIS and convert the Shift_JIS input to Unicode codepoints. 4 — Input encoding is Unicode (2 byte) and convert the Unicode (2 byte) input to Unicode code points. This is a pass-through. 5 — Input encoding is Shift_JIS and convert (pass-through) the Shift_JIS input to Shift_JIS code points. This is a pass-through. This setting tells the reader how to report non-ASCII codes to the host. This only applies to keyboard communication modes. When this setting is non-zero, there must be an appropriate output conversion set (e.g., CMHDSOMn where 'n' is a non-zero value). **Keyword:** #DataEncoding **Example:** CMHDSIE0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
HID Keyboard Decode Data Output Conversion	CM	HD	S/L/P/G R/C	OM	**0** Unicode as Windows Alt-Sequence **Note:** This parameter is only relevant when HID Keyboard Decode Data Input Conversion is greater than 0. **1** Unicode as Windows Alt-Sequence **2** Output Unicode as Thai characters IEC8859.11 This requires that the control characters be output as Alt+⟨Keypad⟩ **3** Output Shift_JIS code points using Alt+⟨Keypad⟩sequences **4** Converts unicode encoding to Shift_JIS code points, and outputs using Alt+⟨Keypad⟩sequences This setting with a non-zero value requires the conversion of barcode data to Unicode (e.g., CMHDSIEn where 'n' is a non-zero value) in order to output Unicode code points to the host system **Keyword:** #DataEncoding **Example:** CMHDSOM0 **Default Value:** 0
HID Keyboard Windows code page for Extended ASCII Characters	CM	HD	S/L/P/G R/C	EA	**0** Append leading zero (Code page 1232) **1** Do not append leading zero (Code page 437) Extended ASCII characters [0x80, 0xFF] are output as alt-sequences with or without a leading zero which Windows uses to determine whether to display the character from CP1232 or CP437. This only applies when the HID Keyboard Decode Data Output Method is set to Unicode as Windows Alt-Sequence. **Keyword:** #DataEncoding **Example:** CMHDSEA0 **Default Value:** 0
Get All Subcategory Parameters	CM	UV	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
USB VCOM - Use Serial Number for the USB identification string	CM	UV	S/L/P/G R/C	SN	**0** Disable USB VCOM **1** Enable USB VCOM 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. **Keyword:** #Communications **Example:** CMUVSSN0 **Default Value:** 0
USB VCOM - Product ID	CM	UV	S/L/P/G R/C	PD	The product ID of the reader reported when in USB VCOM mode. **Example:** CMUVSPD0x8210 **Default Value:** 0x8210

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	CM	IP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
USB IBM POS (surePos) - Use Serial Number for the USB identification string	CM	IP	S/L/P/G R/C	SN	<table><tr><td>0</td><td>Use reader serial number as USB id string</td></tr><tr><td>1</td><td>Use "0000000000" as USB id string</td></tr></table> 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. **Example:** CMIPSSN1 **Default Value:** 1
USB IBM POS - Product ID	CM	IP	S/L/P/G R/C	PD	The product ID of the reader reported when in USB IBM POS mode. **Example:** CMIPSPD0x8253 **Default Value:** 0x8253
Get All Subcategory Parameters	CM	GE	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Connection Retry Timeout (ms)	CM	GE	S/L/P/G R/C	CR	If reader disconnects, it will try to reconnect after the timeout interval In milliseconds. **Keyword:** #Communications **Example:** CMGESCR5000 **Default Value:** 5000
Get All Subcategory Parameters	CM	MO	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Communications Mode	CM	MO	S/L/P/G R/C	CM	<table><tr><td>SE</td><td>RS-232 Serial</td></tr><tr><td>UK</td><td>USB Keyboard</td></tr><tr><td>UV</td><td>USB VCOM</td></tr><tr><td>UN</td><td>USB HID Vendor (Similar to USB Native)</td></tr><tr><td>UP</td><td>USB HID POS</td></tr><tr><td>IP</td><td>USB IBM POS (surePos)</td></tr><tr><td>UC</td><td>USB CDC VCOM</td></tr><tr><td>BT</td><td>Bluetooth Vendor **Note:** Connects to base.</td></tr><tr><td>BK</td><td>Bluetooth Keyboard **Note:** Connects to host via keyboard (iOS, Android, Windows).</td></tr></table> **Keyword:** #Communications **Example:** CMMOSCMUN

Description	Cat	Sub	Action	Param	Notes/Example
Communication Auto Detect	CM	MO	S/L/P/G R/C	AD	Auto detect communications connection USB or RS232. **Keyword:** #Communications **Example:** CMMOSAD1 **Default Value:** 1
Get All Subcategory Parameters	CM	CP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Communication Protocol	CM	CP	S/L/P/G R/C	PM	<table><tr><td>0</td><td>Raw Mode</td></tr><tr><td>1</td><td>Packet Mode</td></tr><tr><td>2</td><td>Legacy Mode</td></tr></table>This option selects whether the reader will send data and responses in a packet, send the raw data, or communicate via legacy protocol. **Keyword:** #Communications **Keyword:** #Raw **Example:** CMCPSPM0 **Default Value:** 0
Get All Subcategory Parameters	CM	UN	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
USB Vendor - Use Serial Number for the USB identification string	CM	UN	S/L/P/G R/C	SN	<table><tr><td>0</td><td>Disable USB Vendor</td></tr><tr><td>1</td><td>Enable USB Vendor</td></tr></table>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. **Keyword:** #Communications **Example:** CMUNSSN1 **Default Value:** 1
USB Vendor - IN Endpoint Polling Interval (us)	CM	UN	S/L/P/G R/C	IN	Controls the USB HID Vendor IN Endpoint Polling Interval. **Keyword:** #Communications **Example:** CMUNSIN1000 **Default Value:** 1000
USB Vendor - Product ID	CM	UN	S/L/P/G R/C	PD	The product ID of the reader reported when in USB Vendor mode. **Example:** CMUNSPD0x8202 **Default Value:** 0x8202

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	CM	SE	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
RS-232 Interface - Baud Rate	CM	SE	S/L/P/G R/C	BA	1200 — 1200 Bits per second 2400 — 2400 Bits per second 4800 — 4800 Bits per second 9600 — 9600 Bits per second 19200 — 19200 Bits per second 38400 — 38400 Bits per second 57600 — 57600 Bits per second 115200 — 115200 Bits per second Supported Baud Rate. **Keyword:** #Communications **Example:** CMSESBA115200 **Default Value:** 115200
RS-232 Interface - Data Bit	CM	SE	S/L/P/G R/C	DB	7 — Seven data bits 8 — Eight data bits The number of bits per character. **Keyword:** #Communications **Example:** CMSESDB8 **Default Value:** 8
RS-232 Interface - Parit	CM	SE	S/L/P/G R/C	PA	N — None - No parity bits E — Even parity bit O — Off parity bit 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. **Keyword:** #Communications **Example:** CMSESPA'N' **Default Value:** 'N'
RS-232 Interface - Stop Bit	CM	SE	S/L/P/G R/C	SB	1 — One stop bit 2 — Two stop bit The number of stop bits sent. **Keyword:** #Communications **Example:** CMSESSB1 **Default Value:** 1
RS-232 Interface - Flow Control	CM	SE	S/L/P/G R/C	FC	0 — Disable flow control 1 — Enable flow control 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. Transmit flow control. **Keyword:** #Communications

Description	Cat	Sub	Action	Param	Notes/Example	
RS-232 Interface - Flow Control	CM	SE	S/L/P/G R/C	FC	0	Disable flow control
					1	Enable flow control
					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.
					Transmit flow control. **Keyword:** #Communications **Example:** CMSESFC0 **Default Value:** 0	
RS-232 Interface - Signal Polarity	CM	SE	S/L/P/G R/C	PO	0	Standard or non-inverted UART0 signals
					1	Invert UART0 signals
					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. **Note:** UART1 does not have polarity control **Keyword:** #Communications	
RS-232 Interface - Force On Driver	CM	SE	S/L/P/G R/C	FO	0	Disable force on driver
					1	Enable force on driver
					The RS232 output driver is powered down if a valid RS232 input signal is not present unless force on driver is enabled. **Note:** Supported by CR950 and CR1500 with hardware revision 1 (or greater). **Keyword:** #Communications **Example:** CMSESFO0 **Default Value:** 0	

9 EN - Encoder Image Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	EN	IM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Encode Type	EN	IM	S/L/P/G R/C	ET	1 RAW Image Format 2 PGM Image Format 3 JPEG Image Format 4 BMP Image Format This is a setting to select the format of the image being captured. **Note:** This parameter is an alias of CDIM_ET **Example:** ENIMSET1 **Default Value:** 1
Encode JPEG Quality (percent)	EN	IM	S/L/P/G R/C	JQ	Quality percentage used when encoding JPEG images. 1% quality is poor and 100% is best for JPEG format. **Example:** ENIMSJQ100 **Default Value:** 100
Encode JPEG Smoothing (percent)	EN	IM	S/L/P/G R/C	JS	Smoothing percentage used when encoding JPEG images. 0 is no smoothing and 100 is a lot of smoothing. **Example:** ENIMSJS30 **Default Value:** 30
Get All Subcategory Parameters	EN	PG	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Compression Level	EN	PG	S/L/P/G R/C	CL	PNG compression level. **Example:** ENPGSCL6 **Default Value:** 6

10 FB - Feedback Parameters

Description	Cat	Sub	Action	Param	Notes/Example	
Get All Subcategory Parameters	FB	GR	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
Beep as IO	FB	GR	S/L/P/G R/C	BI	0	Beep output is an audible tone
					1	Beep output is a GPIO signal toggle
Good Read Beep Polarity	FB	GR	S/L/P/G R/C	BP	0	Good Read beep polarity indication asserted low
					1	Good Read beep polarity indication beep asserted high
Beep Enable	FB	GR	S/L/P/G R/C	EN	0	Disable good read indication on successful decode
					1	Enable good read indication on successful decode
					Note: A good read indication includes LED, Vibration and beep **Example:** FBGRSEN1 **Default Value:** 1	
Good Read Beep Indication - Beep	FB	GR	S/L/P/G R/C	BE	0	Suppress good read beep indication on successful decode
					1	Enable good read beep indication on successful decode
Good Read IO Hold Time	FB	GR	S/L/P/G R/C	HT	The amount of time the reader will hold the Good Read GPIO line low. **Example:** FBGRSHT100 **Default Value:** 100	
Good Read Indication - Frequency (Hz)	FB	GR	S/L/P/G R/C	FQ	Good read beep output frequency. **Suggested Values:** 2730 and 2800. **Example:** FBGRSFQ2730 **Default Value:** 2730	
Good Read Indication - Volume (%)	FB	GR	S/L/P/G R/C	VO	Good read beep output volume as a percentage of full volume. **Example:** FBGRSVO100 **Default Value:** 100	
Good Read Beep - On Time (ms)	FB	GR	S/L/P/G R/C	NT	This parameter is the time the beep is on. **Example:** FBGRSNT80 **Default Value:** 80	
Good Read Beep - Off Time (ms)	FB	GR	S/L/P/G R/C	FT	This parameter is the time the beep is off. **Example:** FBGRSFT20 **Default Value:** 20	

Description	Cat	Sub	Action	Param	Notes/Example
Good Read Beep - Number of Beeps	FB	GR	S/L/P/G R/C	NB	This the number of beep on/off cycles to execute on a good read. **Example:** FBGRSNB1 **Default Value:** 1
Indicate Good Read	FB	GR	X	GR	Causes the reader to indicate a good read beep. **Example:** FBGRXGR
Good Read Blink - Delay (ms)	FB	GR	S/L/P/G R/C	KD	Sets the delay before starting to blink for good read indications. **Example:** FBGRSKD1 **Default Value:** 1
Good Read Blink - On Time (ms)	FB	GR	S/L/P/G R/C	KN	Sets the blink on time for good read indications. **Example:** FBGRSKN100 **Default Value:** 100
Good Read Blink - Off Time (ms)	FB	GR	S/L/P/G R/C	KF	Sets the blink off time for good read indications. **Example:** FBGRSKF20 **Default Value:** 20
Good Read Blink - Number of Blinks	FB	GR	S/L/P/G R/C	KM	Sets the number blinks for good read indications. **Example:** FBGRSKM1 **Default Value:** 1
Get All Subcategory Parameters	FB	CB	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Configuration beep Frequency (Hz)	FB	CB	S/L/P/G R/C	FQ	The frequency used when performing a beep to indicate that a configuration has been applied. **Example:** FBCBSFQ2800 **Default Value:** 2800
Configuration beep volume (%)	FB	CB	S/L/P/G R/C	VO	The volume used when performing a beep to indicate that a configuration has been applied. This is a percentage of full volume. **Example:** FBCBSVO100 **Default Value:** 100
Configuration beep On time (ms)	FB	CB	S/L/P/G R/C	NT	The amount of time the beep sounds when performing a beep to indicate that a configuration has been applied in milliseconds. **Example:** FBCBSNT80 **Default Value:** 80

Description	Cat	Sub	Action	Param	Notes/Example
Configuration beep Off time (ms)	FB	CB	S/L/P/G R/C	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. **Example:** FBCBSFT20 **Default Value:** 20
Configuration beep number of beeps	FB	CB	S/L/P/G R/C	NB	The number of beep sounds to play when performing a beep to indicate that a configuration has been applied. **Example:** FBCBSNB1 **Default Value:** 1
Get All Subcategory Parameters	FB	IN	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Beep as IO	FB	IN	S/L/P/G R/C	BI	0 — All beep output is an audible tone 1 — All beep output is a GPIO signal toggle
Beep Enable	FB	IN	S/L/P/G R/C	BE	0 — Globally disable all beeps (does not affect vibrate) 1 — Globally enable all beeps (does not affect vibrate)
Beep Polarity	FB	IN	S/L/P/G R/C	BP	0 — All beep indication polarities asserted low 1 — All beep indication polarities asserted high
Generic Indication Configuration	FB	IN	S/L/P/G R/C	GC	This command allows for a user to configure any indication from a list of indication actions. The structure of the command takes the form {'name':'⟨INDICATION NAME⟩','⟨PROPERTY NAME⟩' :⟨VALUE⟩} **Valid Indication Names:** Vibrate, GoodReadBeep, GoodReadBlink, ErrorBeep, ConfigCodeBeep **Valid Property Names:** delay_ms, onTime_ms, offTime_ms, freq, dutyCycle **Note:** Multiple properties can be specified for a single indication. **Note:** Multiple indications can be specified in this one command. **Example:** FBINSGC"{'name':'GoodReadBeep', 'freq':3000,'onTime_ms':1000}, {'name':'ConfigCodeBeep','onTime_ms':2000}"
Quiet Scanning Mode	FB	IN	S/L/P/G R/C	QM	0 — Do not enter quiet scanning mode 1 — Enter quiet scanning mode Quiet scanning mode will cause the reader to not indicate (both blink and beep) a good read or error indication for a scanned barcode. All other indication sources are still valid and will cause the reader to indicate. **Example:** FBINSQM0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	FB	CM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Host connect beep frequency (Hz)	FB	CM	S/L/P/G R/C	FQ	The frequency used when performing a beep to indicate that the reader has connected to a host. **Example: FBCMSFQ2730** **Default Value: 2730**
Host connect beep volume (%)	FB	CM	S/L/P/G R/C	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. **Example: FBCMSVO35** **Default Value: 35**
Host connect beep On time (ms)	FB	CM	S/L/P/G R/C	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** **Default Value: 100**
Host connect beep Off time (ms)	FB	CM	S/L/P/G R/C	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. **Example: FBCMSFT100** **Default Value: 100**
Host connect beep number of beeps	FB	CM	S/L/P/G R/C	NB	The number of beep sounds to play when performing a beep to indicate that the reader has connected to a host. **Example: FBCMSNB1** **Default Value: 1**
Get All Subcategory Parameters	FB	ER	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Error Beep Frequency (Hz)	FB	ER	S/L/P/G R/C	FQ	The frequency used when performing a beep to indicate that an error has occurred. **Example: FBERSFQ2800** **Default Value: 2800**
Error Beep volume (%)	FB	ER	S/L/P/G R/C	VO	The volume used when performing a beep to indicate that an error has occurred. This is a percentage of full volume. **Example: FBERSVO100** **Default Value: 100**
Error Beep On time (ms)	FB	ER	S/L/P/G R/C	NT	The amount of time the beep sounds when performing a beep to indicate that an error has occurred in milliseconds. **Example: FBERSNT200** **Default Value: 200**

Description	Cat	Sub	Action	Param	Notes/Example
Error Beep Off time (ms)	FB	ER	S/L/P/G R/C	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 **Default Value:** 100
Error Beep number of beeps	FB	ER	S/L/P/G R/C	NB	The number of beep sounds to play when performing a beep to indicate that an error has occurred. **Example:** FBERSNB3 **Default Value:** 3

11 FW - Firmware Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	FW	CM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Raw Command Enable	FW	CM	S/L/P/G R/C	OR	0 — Disable Raw Commands 1 — Enable Raw commands This setting allows commands to be sent to the reader from the host without being in packet mode **Keyword:** #TextCommands **Keyword:** #Raw **Example:** FWCMSOR0 **Default Value:** 0
Command timeout (ms)	FW	CM	S/L/P/G R/C	CT	Tells the reader to allow commands this much time to execute before sending a command failed response to the host in milliseconds. **Example:** FWCMSCT5000 **Default Value:** 5000
Get All Subcategory Parameters	FW	IM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Transfer Decoded Images	FW	IM	G/P/R/C	DI	0 — Disable transferring decoded images 1 — Enable transferring decoded images
Transfer Non-Decoded Images	FW	IM	G/P/R/C	NI	0 — Disable transferring non-decoded images 1 — Enable transferring non-decoded images
Transfer Cellphone Images	FW	IM	G/P/R/C	CI	0 — Disable transferring cellphone images 1 — Enable transferring cellphone images
Transfer Cellphone Transition Images	FW	IM	G/P/R/C	TI	0 — Disable transferring normal cellphone mode transitional images 1 — Enable transferring normal cellphone mode transitional images
Transfer Subsampled Images	FW	IM	G/P/R/C	SI	0 — Disable transferring decimated images 1 — Enable transferring decimated images
Get All Subcategory Parameters	FW	HW	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Watchdog Timeout (s)	FW	HW	S/L/P/G R/C	WT	Minimum Watchdog timeout (in seconds) **Example:** FWHWSWT5 **Default Value:** 5

Description	Cat	Sub	Action	Param	Notes/Example
Targeting Frequency	FW	HW	S/L/P/G R/C	TF	Targeting LED Frequency **Example:** FWHWSTF250000 **Default Value:** 250000
Targeting Brightness	FW	HW	S/L/P/G R/C	TB	Targeting LED Brightness (in percent) **Example:** FWHWSTB100 **Default Value:** 100
Targeting Leave On	FW	HW	S/L/P/G R/C	TO	0 — Disable turning targeting LED to be always on 1 — Enable turning targeting LED to be always on. **Note:** This setting takes precedence over disables targeting LED during capture
Set Trigger Release De-bounce Time (ms)	FW	HW	S/L/P/G R/C	RD	Set the time (ms) that the trigger must remain released to register. **Example:** FWHWSRD50 **Default Value:** 50
Set Trigger Press De-bounce Time (ms)	FW	HW	S/L/P/G R/C	PD	Set the time (ms) that the trigger must remain pressed to register. **Example:** FWHWSPD25 **Default Value:** 25

12 IM - Image Sensor Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	IM	CP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Minimum Exposure (percent)	IM	CP	S/L/P/G R/C	ME	0 — Minimum Value Define the minimum exposure parameter of camera. **Note:** Do not set this to a value greater than the maximum exposure. **Example:** IMCPSME1 **Default Value:** 1
Maximum Exposure	IM	CP	S/L/P/G R/C	XE	65535 — Maximum Value Define the maximum exposure parameter of camera. **Note:** Do not set this to a value less than the minimum exposure. **Example:** IMCPSXE65535 **Default Value:** 65535
Enable cropped image downloads	IM	CP	S/L/P/G R/C	EN	0 — Disable cropped image downloading 1 — Enable cropped image downloading **Keyword:** #Image **Example:** IMCPSEN0 **Default Value:** 0
Set cropping X offset	IM	CP	S/L/P/G R/C	WS	Set cropping window starting X coordinate. **Keyword:** #Image **Example:** IMCPSWS0 **Default Value:** 0
Set cropping Y offset	IM	CP	S/L/P/G R/C	HS	Set cropping window starting Y coordinate. **Keyword:** #Image **Example:** IMCPSHS0 **Default Value:** 0
Set cropping width	IM	CP	S/L/P/G R/C	WL	-1 — Use entire width supported by the imager. 0+ — Use specified width. If larger than imager resolution, will use the entire imager width. Set cropping window width. **Keyword:** #Image **Example:** IMCPSWL-1 **Default Value:** -1
Set cropping height	IM	CP	S/L/P/G R/C	HL	-1 — Use entire height supported by the imager. 0+ — Use specified height. If larger than imager resolution, will use entire imager height. Set cropping window height. **Keyword:** #Image **Example:** IMCPSHL-1 **Default Value:** -1

13   LA - Language Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	LA	IN	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Active language	LA	IN	S/L/P/G R/C	AL	Active language setting. **Valid Range:** Languages listed by the LAINGIL command. **Example:** USEnglish_Win **Default Value:** "USEnglish_Win"
Get Installed languages list	LA	IN	G	IL	Returns list of installed language names. **Example:** LAINGIL

14   MD - Motion Detection Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	MD	PM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Minimum gain	MD	PM	S/L/P/G R/C	NG	0 — Minimum Gain Value Max — Maximum Gain Value **Note:** The largest valid value for this parameter is set by the maximum gain parameter.
Maximum gain	MD	PM	S/L/P/G R/C	XG	Min — Minimum Gain Value **Note:** The smallest valid value for this parameter is set by the minimum gain parameter. 64 — Maximum Gain 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:** MDPMSXG42 **Default Value:** 42
Initial gain	MD	PM	S/L/P/G R/C	IG	Min — Minimum Initial Gain Value **Note:** The smallest valid value for this parameter is set by the minimum gain parameter. Max — Maximum Initial Gain Value **Note:** The largest valid value for this parameter is set by the maximum gain parameter.
Minimum exposure time (us)	MD	PM	S/L/P/G R/C	NE	1 — Minimum Exposure Value Max — Maximum Exposure Value **Note:** The largest valid value for this parameter is set by the maximum exposure parameter. This is the minimum time the camera lets light into the element to take the picture in microseconds. **Example:** MDPMSNE299 **Default Value:** 299
Maximum exposure time (us)	MD	PM	S/L/P/G R/C	XE	Min — Minimum Expsosure Value **Note:** The smallest valid value for this parameter is set by the minimum exposure parameter. 20000 — Maximum Exposure Value
Initial exposure time (us)	MD	PM	S/L/P/G R/C	IE	Min — Minimum Initial Expsosure Value **Note:** The smallest valid value for this parameter is set by the minimum exposure parameter. Max — Maximum Initial Exposure Value **Note:** The largest valid value for this parameter is set by the maximum exposure parameter.

Description	Cat	Sub	Action	Param	Notes/Example
Minimum Illumination	MD	PM	S/L/P/G R/C	NI	0 — Minimum Illumination Value
					Max — Maximum Illumination Value **Note:** The largest valid value for this parameter is set by the maximum illumination parameter.
					Minimum illumination is the lowest value the AGC should use to set the illumination. **Example:** MDPMSNI1 **Default Value:** 1
Maximum illumination	MD	PM	S/L/P/G R/C	XI	Min — Minimum Illumination Value **Note:** The smallest valid value for this parameter is set by the minimum illumination parameter.
					100 — Maximum Illumination Value
					This is the highest value the AGC should use to set the illumination. **Note:** This command replaces AGCR_MB. **Example:** MDPMSXI6 **Default Value:** 6
Initial illumination value	MD	PM	S/L/P/G R/C	II	Min — Minimum Initial Illumination Value **Note:** The smallest valid value for this parameter is set by the minimum illumination parameter.
					Max — Maximum Initial Illumination Value **Note:** The largest valid value for this parameter is set by the maximum illumination parameter.
					The starting value the AGC will use to start adjusting illumination. **Example:** MDPMSII1 **Default Value:** 1
Minimum lightest pixel value	MD	PM	S/L/P/G R/C	NL	0 — Minimum Lightest Pixel Value
					Max — Maximum Lightest Pixel Value **Note:** The largest valid value for this parameter is set by the maximum lightest pixel parameter.
Maximum lightest pixel value	MD	PM	S/L/P/G R/C	XL	Min — Minimum Lightest Pixel Value **Note:** The smallest valid value for this parameter is set by the minimum lightest pixel parameter.
					255 — Maximum Lightest Pixel Value
Detection pixel threshold	MD	PM	S/L/P/G R/C	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 **Default Value:** 15
Detection total threshold	MD	PM	S/L/P/G R/C	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 **Default Value:** 5

Description	Cat	Sub	Action	Param	Notes/Example
Detection blob threshold	MD	PM	S/L/P/G R/C	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:** MDPMSBT8 **Default Value:** 8
Enable Targeting	MD	PM	S/L/P/G R/C	ET	0 Disable targeting while detecting motion
					1 Enable targeting while detecting motion
Leave Illumination On while detecting motion	MD	PM	S/L/P/G R/C	DI	0 Turn on illumination in-between motion detection captures. This produces a constant illumination when in motion detection.
					1 Turn off illumination in-between motion detection captures. With default settings, this produces an oscillating illumination when in motion detection, as the illumination turns on only to capture an image.
					The original behavior of CR82x products did not match the behavior of the CR8x products. This command was created with a new default value to allow CR82x products to match the behavior of previous products, while also allowing customers to revert to the original CR82x behavior if desired. **Example:** MDPMSDI0 **Default Value:** 0
Target On When Motion is Detected	MD	PM	S/L/P/G R/C	TM	0 Disable Targeting Bar after motion has been detected
					1 Enable Targeting Bar after motion has been detected
					This setting allows the user to select the targeting bar behvavior after motion has been detected. **Example:** MDPMSTM1 **Default Value:** 1

15   PK - Protocol Parameter

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	PK	OP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Receive Timeout (ms)	PK	OP	S/L/P/G R/C	RT	When retry count specified and reader doesn't receive the ACK, it will resend the response after the timeout in milliseconds. **Keyword:** #Communications **Example:** PKOPSRT750 **Default Value:** 750
Connection Protocol Timeout (s)	PK	OP	S/L/P/G R/C	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. **Keyword:** #Communications **Example:** PKOPSCT60 **Default Value:** 60
Reader Retry Count	PK	OP	S/L/P/G R/C	RC	Number of retries from the reader when no ACK is received from the host. **Keyword:** #Communications **Example:** PKOPSRC0 **Default Value:** 0
Image Protocol Destination	PK	OP	S/L/P/G R/C	ID	0 — Send images to the host 1 — Send images to the filesystem **Note:** Not supported on CR8200 and CR950 2 — Send images to the host and the filesystem **Note:** Not supported on CR8200 and CR950 3 — Discard images When an image is captured and transferred by the reader, it will be sent to the specified destination. **Keyword:** #Communications **Example:** PKOPSID0 **Default Value:** 0

16   PM - Power Management Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	PM	SD	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Power Off Reader	PM	SD	X	PD	Powers off the reader. **Example:** PMSDXPD
Power off Mode Timer	PM	SD	S/L/P/G R/C	EN	0 — Disable Power Off Mode Timer 1 — Enable Power Off Mode Timer The power off mode timer must be enabled for the reader to go into power off mode. **Example:** PMSDSEN0 **Default Value:** 0
Power off Mode Timer Delay (s)	PM	SD	S/L/P/G R/C	VA	If power off mode is enabled, the reader will power off after this timer expires in seconds. **Example:** PMSDSVA7200 **Default Value:** 7200
Get All Subcategory Parameters	PM	SM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Sleep Mode Timer	PM	SM	S/L/P/G R/C	EN	0 — Disable Sleep Mode Timer 1 — Enable Sleep Mode Timer The Standby Mode Timer must be enabled for the reader to go into sleep mode. **Example:** PMSMSEN0 **Default Value:** 0
Sleep Mode Timer Delay (ms)	PM	SM	S/L/P/G R/C	VA	If both Standby Timer and Sleep Timer are enabled, Reader will go into Sleep Mode after this timer has expired. **Example:** PMSMSVA8600 **Default Value:** 8600
Sleep Mode Timer - Maintain Connection	PM	SM	S/L/P/G R/C	MC	0 — Disconnect from host in Sleep Mode 1 — Retain connection in Sleep Mode **Example:** PMSMSMC1 **Default Value:** 1
Get All Subcategory Parameters	PM	SB	G		Outputs all parameters, that support the G command, which are contained within this subcategory.

Description	Cat	Sub	Action	Param	Notes/Example	
Standby Mode Timer	PM	SB	S/L/P/G R/C	EN	0	Disable Standby Mode Timer
					1	Enable Standby Mode Timer
					Enabling the Standby Mode Timer allows the reader to enter a lower power consumption mode. This setting does not affect the reader going into idle state. **Example:** PMSBSEN0 **Default Value:** 0	
Standby Mode Timer Delay (ms)	PM	SB	S/L/P/G R/C	VA	If Standby Mode Timer is enabled, reader will go into Standby Mode after this timer has expired. **Example:** PMSBSVA5000 **Default Value:** 5000	
Power Mode Enter Sleep	PM	ES			Force the reader to go into Sleep mode even if Standby Timer and Sleep Timer are disabled. This command should be sent as RAW. The reader will immediately go into sleep mode after receiving this command. **Keyword:** #Raw	

17 RD - Reader Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	RD	ST	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Stand Detection - Enable	RD	ST	S/L/P/G R/C	SE	0 — Disable 1 — Enable Detect when the reader has been placed in a stand that contains a trigger magnet. **Note:** This command replaces CDST_SE **Example:** RDSTSSE1 **Default Value:** 1
Stand Duplicate Delay (ms)	RD	ST	S/L/P/G R/C	SD	When the reader is in the stand, block reading of duplicate barcodes for this many milliseconds **Note:** This command replaces CDST_SD **Note:** Duplicate Block time has to be enabled (CD-VASBD1). **Note:** When enabled, this setting can interfere with Quick Decode mode. **Example:** RDSTSSD500 **Default Value:** 500
Stand behavior	RD	ST	S/L/P/G R/C	SB	0 — Stand mode disabled. 1+ — These use the standard set of decode modes. See appendix D for a list of these modes. Sets the Decode Mode when Stand Detection is enabled, and the reader is in the stand. **Note:** This command is linked to both BTRD_PM and RDPM_OT. Changing one will change both of them, since they implement the same behavior. **Example:** RDSTSSB1 **Default Value:** 1
Set reader on-table presentation mode **DEPRECATED**	RD	PM	S/L/P/G R	OT	**This command has been deprecated, please do not use this command** **Note:** This command has been replaced by **RDST_SB** **Example:** RDPMSOT1 **Default Value:** 1
Set reader off-table presentation mode **DEPRECATED**	RD	PM	S/L/P/G R	FT	**This command has been deprecated, please do not use this command** **Note:** This command has been replaced by **CDOP_MD** **Example:** RDPMSFT0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
Set reader on-table duplicate scan delay **DEPRECATED**	RD	PM	S/L/P/G R	OD	**This command has been deprecated, please do not use this command** **Note: This command has been replaced by CDDT_QD** **Example: RDPMSOD600** **Default Value: 600**
Set reader off-table duplicate scan delay **DEPRECATED**	RD	PM	S/L/P/G R	FD	**This command has been deprecated, please do not use this command** **Note: This command has been replaced by CDDT_TD** **Example: RDPMSFD0** **Default Value: 0**
Get All Subcategory Parameters	RD	TC	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Trigger Control	RD	TC	S/L/P/G R/C	MD	0 — Trigger mode disabled. 1+ — This setting uses values from the standard set of decode modes. See appendix D for a list of these modes.
Button/Trigger Enable	RD	TC	S/L/P/G R/C	T1	0 — Disable handle trigger 1 — Enable handle trigger
Button/Trigger Enable	RD	TC	S/L/P/G R/C	T2	0 — Disable top front trigger 1 — Enable top front trigger
Button/Trigger Enable	RD	TC	S/L/P/G R/C	T3	0 — Disable top rear trigger 1 — Enable top rear trigger
Get All Subcategory Parameters	RD	FS	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Format	RD	FS	X	FM	0 — Firmware 1 — License (Deprecated) **Note:** Supported by all readers **Note:** License files have their own simplified "license load" command; see RDLCXLD 2 — File by Extension (file system in user flash storage) Requires the File Name (FN) parameter The format of file being downloaded to the reader. **Note:** All format targets require the RDFSXSZ (file size) parameter. **Note:** This type determines where the file is stored on the reader. **Example: RDFSXFM0**
File Size	RD	FS	X	SZ	File size in bytes. This parameter is required to download a file. **Example: RDFSXSZ4098**

Description	Cat	Sub	Action	Param	Notes/Example
Base Address	RD	FS	X	BA	Base Address for the start of the file in storage. **Example: RDFSXBA0**
CRC Checksum	RD	FS	X	CR	CRC checksum of the file's data. **Example: RDFSXCR65535**
File Name	RD	FS	X	FN	File name of the file to write to the reader's file system This parameter is required when downloading a file to the file system (FM2). This command must be followed by the other RDFS commands. **Example: RDFSXFN"File"**
Reboot	RD	FS	X	RB	<table><tr><td>0</td><td>Do not reboot the reader</td></tr><tr><td>1</td><td>Reboot the reader</td></tr></table>Reboot reader after file download completes. **Example: RDFSXRB1**
Get All Subcategory Parameters	RD	FD	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Download File Data	RD	FD			This command must follow the RDFS command(s). The reader writes the file data immediately following the RDFD command to the file defined by the RDFS command. **Note:** The file's data must be exactly size bytes of data where size is the value of the RDFSSZ parameter.
Get All Subcategory Parameters	RD	RR	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Reader Serial Number	RD	RR	G	SN	This command returns the factory programmed reader serial number from the flash. **Default Value: ""** **Example: RDRRGSN**
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**

Description	Cat	Sub	Action	Param	Notes/Example	
Reader Model Version	RD	RR	S/L/P/G	MD	CR8200	CR8200
					CR8060	CR8200
					CR8070	CR8071 CR8072 CR8073
					CR950	CR950
					CR1500	CR1500
					CR1100	CR1100
					CR2100	CR2100
					CR2700	CR2700
					CR2800	CR2800
					CR5200	CR5200
					A string that indicates the Model name of the reader.	
CR Reader Imager Model Type	RD	RR	G	MT	CR8200	2AD0
					CR8060	2MD0
					CR950	2A90
					CR1500	2AD0
					CR1100	2AD0
					CR2100	2AD0
					CR2700	2AD0
					CR2800	2AD0
					CR5200	2AD0
					CR8071	2MD0
					CR8072	2MD0
					CR8073	2MD0
					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	

Description	Cat	Sub	Action	Param	Notes/Example
Reader Information String	RD	RR	S/L/P/G R/C	IS	Returns Reader Information String parameter. **Example: RDRRGIS**
Reader Device Deployment Date	RD	RR	S/L/P/G	DD	The Device Deployment Date. The user can enter date in any format desired.
Camera Orientation	RD	RR	G	CO	Orientation of the camera on the product. **Example: RDRRGCO**
Get All Subcategory Parameters	RD	IL	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Leave Illumination On between image captures	RD	IL	S/L/P/G R/C	LO	<table><tr><td>0</td><td>Disable illumination-on between captures</td></tr><tr><td>1</td><td>Enable illumination-on between captures</td></tr></table> Leave illumination on prevents the illumination LED from blinking while scanning in a continuous scan (or motion) mode. **Example: RDILSLO0** **Default Value:** 0
Illumination Max Brightness	RD	IL	S/L/P/G R/C	MB	Max Illumination Brightness (0-100 percent). **Example: RDILSMB100** **Default Value:** 100
Use IR Illumination for Motion Detection	RD	IL	S/L/P/G R/C	IO	This command no longer serves any purpose. Please use RDILSAC to select the illumination source for motion mode. Setting this parameter will have no effect. This parameter never had any effect on products other than the CR5200. **Example: RDILSIO0** **Default Value:** 0
Set active illumination channel **DEPRECATED**	RD	IL	S/L/P/G R/C	AC	**This command has been deprecated, please do not use this command** Deprecated. When used, this setting overrides the illumination source of all AGC modes, which can have unintended consequences. Please use the AGC illumination source commands. **Example: RDILSAC0**
Get All Subcategory Parameters	RD	LC	G		Outputs all parameters, that support the G command, which are contained within this subcategory.

Description	Cat	Sub	Action	Param	Notes/Example
CR8x License	RD	LC	X	LF	Interpreted legacy license for CR8x interface.
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.
Get All Reader Licenses	RD	LC	G	GL	Returns all Reader License values in an XML element. **Example: RDLCGGL**
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: RDLXCDL5014**
Get All Subcategory Parameters	RD	OF	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Reader Output Format - Line Ending	RD	OF	S/L/P/G R/C	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** **Default Value: ""**
Get All Subcategory Parameters	RD	CP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Chip Revision	RD	CP	G	RV	Returns CT8200 Chip Revision parameter value in an XML element. **Example: RDCPGRV**
CT8200 Chip Serial Number	RD	CP	G	SN	Returns CT8200 Chip Serial Number parameter value in an XML element. **Example: RDCPGSN**
Get All Subcategory Parameters	RD	FW	G		Outputs all parameters, that support the G command, which are contained within this subcategory.

Description	Cat	Sub	Action	Param	Notes/Example
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 Number	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
Firmware Build Version	RD	FW	G	VS	Returns Firmware Major, Minor, and Build parameter values in an XML element. **Example:** RDFWGVS
Firmware Type Number	RD	FW	G	TY	Returns Firmware Part Number parameter value in an XML element. **Example:** RDFWGTY
Decoder Version	RD	FW	G	DV	Returns the Decoder version. **Example:** RDFWGDV
Lens Type	RD	FW	G	FT	00 — Normal filter - Single-field 01 — IR cut filter - Single-field 02 — Normal filter - Dual-field 03 — IR cut filter - Dual-field The lens type that the reader firmware was built for. Firmware filename will have _LXX at the end (before the extension), where XX is the lens type. **Example:** RDFWGFT
Get All Subcategory Parameters	RD	FB	G		Outputs all parameters, that support the G command, which are contained within this subcategory.

Description	Cat	Sub	Action	Param	Notes/Example	
Set Message Verbosity	RD	FB	S/L/P/G R/C	VB	0	Set verbosity level zero. This disables XML responses to configuration codes. Non-XML responses are allowed. This level may be overridden depending on the method of processing the configuration.
					1	Set verbosity level one. This enables XML responses to configuration codes. Non-XML responses are allowed. This level may be overridden depending on the method of processing the configuration.
					2	Set verbosity level two. This enables XML responses to configuration codes. Non-XML responses are allowed.
					3	Set verbosity level three. This disables XML responses to configuration codes. Non-XML responses are disabled.
					Set error message verbosity Level. **Keyword:** #Message **Example:** RDFBSVB0 **Default Value:** 0	
Erase Error Log	RD	FB	X	EL	Erases the error log from the file system. **Keyword:** #Message **Example:** RDFBXEL	
Reader Command - Post Event	RD	CM	X	EV1	P1	Start/Stop 0 = Stop Decode 1 = Start Decode
					P2	Decode Mode. See appendix D for a list of these modes.
					P3	Attempt Timeout (Sticky Time) in milliseconds
					Posts a decode event. **Example:** RDCMXEV1,P11,P20	
Reader Command - Post Event	RD	CM	X	EV2	P1	0 = Disable Targeting 1 = Enable Targeting
					Posts a targeting event. **Example:** RDCMXEV2,P11	
Reader Command - Post Event	RD	CM	X	EV7	Posts an event to continuously scan until decode is successful. **Example:** RDCMXEV7	
Reader Command - Post Event	RD	CM	X	EV9	Post an event to attempt a single scan regardless of decode success. This command does not timeout, the decode process stops after a true single cycle, whether decoded or not. **Example:** RDCMXEV9	
Reader Command - Process Barcode Data	RD	CM	X	BD	Send data to the host as barcode data. **Example:** RDCMXBD"barcode data"	

Description	Cat	Sub	Action	Param	Notes/Example
Reader Dump log messages to console (Formatted)	RD	CM	X	DL	Print the contents of the message log to the console window in XML format and with time stamps. **Note:** To achieve proper format, enable logging in XML form with CDOPSLA1. **Keyword:** #Message **Example:** RDCMXDL
Reader Clear message logs	RD	CM	X	CL	Erase the contents of the message logs. **Keyword:** #Message **Example:** RDCMXCL
Reader Dump log messages to console (Raw)	RD	CM	X	RL	Print the contents of the message log to the console window in raw form. **Note:** To avoid extraneous characters enable logging in raw form with CDOPSLA2 or CDOPSLA3. **Keyword:** #Message **Example:** RDCMXRL
Reader Command - Reboot	RD	CM	X	RB	Reboots the reader. **Example:** RDCMXRB
Reader Command - Platform settings	RD	CM	X	PL	[⟨Cmd⟩] Save configuration command to Platform Settings. Enclose the configuration command in brackets, with the command appearing exactly as used when setting and saving a parameter. Note: Adding the same setting more than once will result in multiple entries for the same parameter. Adding different values for the same parameter will result in the reader using the last-added parameter value. [^⟨Cmd⟩] Delete configuration command from Platform Settings. Enclose the command in square brackets and add a caret between the opening square bracket and command to delete the command from the platform configuration. **Note:** If there are multiple entries for a parameter, issuing this command will remove only the first entry. See also CFR[^PL] & CFG[^PL] Each time the reader reboots it re-applies commands saved as Platform Settings. This happens before settings saved with the 'S' action are applied, so saving a command with a 'P' action to the platform settings will allow that platform setting to be overridden by setting a different value with an 'S.' For example, adding ENIMPET3 as a platform setting would allow ENIMSET4 to override the value to 4. Platform settings are not removed when resetting to factory defaults. See the CF category for more details. **Example:** RDCMXPL[RDILPMB50]

18 SC - Scene Manager Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	SC	SP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Scene Manager Mode	SC	SP	S/L/P/G R/C	MO	**DF** — Default. Let's the currently assigned decode mode select the appropriate mode. See appendix D for details. **NO** — Normal. Follows a standard curve for adjusting LED illumination, camera exposure, and camera gain. **BY** — Bypass. Allows the user to directly set LED illumination, camera exposure, and camera gain. Please use AGBY parameters to set these values. **FX** — Fixed. Allows the user to select a fixed position along the normal curve, that will be used to set the values. **CD** — Configurable. Allows the user to establish their own curve for adjustments. Please use AGCD parameters to set this curve.
Bypass Illumination **DEPRECATED**	SC	SP	S/L/P/G R	IL	**This command has been deprecated, please do not use this command** Bypasses the illumination setting when the AGC is set to bypass mode **Note: This command has been replaced by AGBY_IL** **Example:** SCSPSIL50 **Default Value:** 50
Bypass Exposure **DEPRECATED**	SC	SP	S/L/P/G R	EX	**This command has been deprecated, please do not use this command** Bypasses the exposure setting when the AGC is set to bypass mode **Note: This command has been replaced by AGBY_EX** **Example:** SCSPSEX4000 **Default Value:** 4000
Bypass Gain **DEPRECATED**	SC	SP	S/L/P/G R	GN	**This command has been deprecated, please do not use this command** Bypasses the gain setting when the AGC is set to bypass mode **Note: This command has been replaced by AGBY_GN** **Example:** SCSPSGN0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
Percent **DEPRECATED**	SC	SP	S/L/P/G R	FP	**This command has been deprecated, please do not use this command** 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. **Note: This command has been replaced by AGFX_BP** **Example:** SCSPSFP50 **Default Value:** 50

19   SY - Symbology Parameters

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	SY	B412	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
BC412	SY	B412	S/L/P/G R/C	EN	<table><tr><td>0</td><td>Disable BC412</td></tr><tr><td>1</td><td>Enable BC412</td></tr></table> **Keyword:** #BC412 **Example:** SYB412SEN0 **Default Value:** 0
BC412 - Reverse Decoding	SY	B412	S/L/P/G R/C	RD	<table><tr><td>0</td><td>Disable BC412 - Reverse Decoding</td></tr><tr><td>1</td><td>Enable BC412 - Reverse Decoding</td></tr></table> Reverse the decoding direction **Note:** This setting value is ignored if BC412 decoding is disabled. **Keyword:** #BC412 **Example:** SYB412SRD0 **Default Value:** 0
Get All Subcategory Parameters	SY	CODF	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Codablock F	SY	CODF	S/L/P/G R/C	EN	<table><tr><td>0</td><td>Disable Codablock F</td></tr><tr><td>1</td><td>Enable Codablock F</td></tr></table> **Keyword:** #Codablock **Example:** SYCODFSEN0 **Default Value:** 0
Get All Subcategory Parameters	SY	TELP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Telepen	SY	TELP	S/L/P/G R/C	EN	<table><tr><td>0</td><td>Disable Telepen</td></tr><tr><td>1</td><td>Enable Telepen</td></tr></table> **Keyword:** #Telepen **Example:** SYTELPSEN0 **Default Value:** 0
Telepen - Output ASCII	SY	TELP	S/L/P/G R/C	OA	<table><tr><td>0</td><td>Disable Telepen - Output ASCII</td></tr><tr><td>1</td><td>Enable Telepen - Output ASCII</td></tr></table> **Note:** This setting value is ignored if Telepen decoding is disabled. **Keyword:** #Telepen **Example:** SYTELPSOA0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	SY	DATM	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Data Matrix	SY	DATM	S/L/P/G R/C	EN	0 — Disable Data Matrix 1 — Enable Data Matrix **Keyword:** #DataMatrix **Example:** SYDATMSEN1 **Default Value:** 1
Data Matrix - Polarity	SY	DATM	S/L/P/G R/C	PO	0 — Normal mode enabled - Black on white background 1 — Inverse mode enabled - White on black background 2 — Both normal and inverse modes enabled **Note:** This setting value is ignored if Data Matrix decoding is disabled. **Keyword:** #DataMatrix **Example:** SYDATMSPO2 **Default Value:** 2
Data Matrix - Mirror	SY	DATM	S/L/P/G R/C	MR	0 — Disable decoding Data Matrix barcodes printed as a mirror image of a normal Data Matrix 1 — Enable decoding Data Matrix barcodes printed as a mirror image of a normal Data Matrix **Note:** This setting value is ignored if Data Matrix decoding is disabled. **Keyword:** #DataMatrix **Example:** SYDATMSMR0 **Default Value:** 0
Data Matrix Rectangular	SY	DATM	S/L/P/G R/C	RE	0 — Disable Data Matrix Rectangular 1 — Enable Data Matrix Rectangular **Note:** This setting value is ignored if Data Matrix decoding is disabled. **Keyword:** #DataMatrix **Example:** SYDATMSRE1 **Default Value:** 1
Data Matrix Rectangular Extended	SY	DATM	S/L/P/G R/C	RX	0 — Disable Data Matrix Rectangular Extended 1 — Enable Data Matrix Rectangular Extended **Note:** This setting value is ignored if Data Matrix decoding is disabled. **Keyword:** #DataMatrix **Example:** SYDATMSRX0 **Default Value:** 0
Get All Subcategory Parameters	SY	CO32	G		Outputs all parameters, that support the G command, which are contained within this subcategory.

Description	Cat	Sub	Action	Param	Notes/Example	
Code 32	SY	CO32	S/L/P/G R/C	EN	0	Disable Code 32
					1	Enable Code 32
					Keyword: #Code32 **Example:** SYCO32SEN0 **Default Value:** 0	
Get All Subcategory Parameters	SY	CBAR	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
Codabar	SY	CBAR	S/L/P/G R/C	EN	0	Disable Codabar
					1	Enable Codabar
					Keyword: #Codabar **Example:** SYCBARSEN1 **Default Value:** 1	
Codabar - Require Checksum	SY	CBAR	S/L/P/G R/C	CS	0	Disable checksum check and output checksum if one exists
					1	Enable Codabar mod16 checksum
					2	Enable Codabar mod16 checksum and strip check character
					3	Enable Codabar 7DR checksum
					4	Enable checksum 7DR checksum and strip check character
					5	Enable either mod16 or 7DR checksum
					6	Enable either mod16 or 7DR checksum and strip check character
					Note: This setting value is ignored if Codabar decoding is disabled. **Keyword:** #Codabar **Example:** SYCBARSCS0 **Default Value:** 0	
Codabar - Start/Stop Characters	SY	CBAR	S/L/P/G R/C	SS	0	Transmit Codabar Start/Stop Characters
					1	Do not transmit Codabar Start/Stop Characters
					Note: This setting value is ignored if Codabar decoding is disabled. **Keyword:** #Codabar **Example:** SYCBARSSS0 **Default Value:** 0	
Codabar - Set minimum decode length	SY	CBAR	S/L/P/G R/C	ML	This sets the minimum data length to be decoded. If shorter than specified length, the reader will not decode the data. **Note:** This setting value is ignored if Codabar decoding is disabled. **Keyword:** #Codabar **Example:** SYCBARSML2 **Default Value:** 2	
Get All Subcategory Parameters	SY	CO11	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	

Description	Cat	Sub	Action	Param	Notes/Example	
Code 11	SY	CO11	S/L/P/G R/C	EN	0	Disable Code 11
					1	Enable Code 11
					Keyword: #Code11	
					Example: SYCO11SEN0	
					Default Value: 0	
Code 11 - Require Checksum	SY	CO11	S/L/P/G R/C	CS	0	Decode with checksum check disabled
					1	Decode with one checksum digits checked
					2	Decode with two checksum digits checked
					Note: This setting value is ignored if Code 11 decoding is disabled.	
					Keyword: #Code11	
					Example: SYCO11SCS2	
					Default Value: 2	
Code 11 - Remove Checksum	SY	CO11	S/L/P/G R/C	SC	0	ransmit Code 11 Checksum
					1	Do not transmit Code 11 Checksum
					Note: This setting value is ignored if Code 11 decoding is disabled.	
					Keyword: #Code11	
					Example: SYCO11SSC0	
					Default Value: 0	
Get All Subcategory Parameters	SY	P417	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
PDF417	SY	P417	S/L/P/G R/C	EN	0	Disable PDF417
					1	Enable PDF417
					Keyword: #PDF417	
					Example: SYP417SEN1	
					Default Value: 1	
Micro PDF417	SY	P417	S/L/P/G R/C	MI	0	Disable Micro PDF417
					1	Enable Micro PDF417
					Keyword: #PDF417	
					Example: SYP417SMI0	
					Default Value: 0	
Get All Subcategory Parameters	SY	M2O5	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
Matrix 2 of 5	SY	M2O5	S/L/P/G R/C	EN	0	Disable Matrix 2 of 5
					1	Enable Matrix 2 of 5
					Keyword: #2Of5	
					Example: SYM2O5SEN0	
					Default Value: 0	

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	SY	GS1D	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
GS1 DataBar Omnidirectional/GS1 DataBar Truncated	SY	GS1D	S/L/P/G R/C	EN	0 — Disable GS1 DataBar Omnidirectional/GS1 DataBar Truncated 1 — Enable GS1 DataBar Omnidirectional/GS1 DataBar Truncated **Keyword:** #GS1DataBar **Example:** SYGS1DSEN1 **Default Value:** 1
GS1 DataBar Stacked/GS1 DataBar Stacked Omnidirectional	SY	GS1D	S/L/P/G R/C	ST	0 — Disable GS1 DataBar Stacked/ GS1 DataBar Stacked Omnidirectional 1 — Enable GS1 DataBar Stacked/ GS1 DataBar Stacked Omnidirectional **Keyword:** #GS1DataBar **Example:** SYGS1DSST1 **Default Value:** 1
GS1 DataBar Expanded	SY	GS1D	S/L/P/G R/C	EX	0 — Disable GS1 DataBar Expanded 1 — Enable GS1 DataBar Expanded **Keyword:** #GS1DataBar **Example:** SYGS1DSEX1 **Default Value:** 1
GS1 DataBar Expanded Stacked	SY	GS1D	S/L/P/G R/C	ES	0 — Disable GS1 DataBar Expanded Stacked 1 — Enable GS1 DataBar Expanded Stacked **Keyword:** #GS1DataBar **Example:** SYGS1DSES1 **Default Value:** 1
GS1 DataBar Limited	SY	GS1D	S/L/P/G R/C	LI	0 — Disable GS1 DataBar Limited 1 — Enable GS1 DataBar Limited **Keyword:** #GS1DataBar **Example:** SYGS1DSLI1 **Default Value:** 1
Get All Subcategory Parameters	SY	C128	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Code 128	SY	C128	S/L/P/G R/C	EN	0 — Disable Code 128 1 — Enable Code 128 **Keyword:** #Code128 **Example:** SYC128SEN1 **Default Value:** 1
Code 128 - Set minimum decode length	SY	C128	S/L/P/G R/C	ML	This sets the minimum data length to be decoded. If shorter than specified length, the reader will not decode the data. **Keyword:** #Code128 **Example:** SYC128SML1 **Default Value:** 1

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	SY	MAXC	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
MaxiCode	SY	MAXC	S/L/P/G R/C	EN	0 Disable MaxiCode 1 Enable MaxiCode **Keyword:** #MaxiCode **Example:** SYMAXCSEN0 **Default Value:** 0
Get All Subcategory Parameters	SY	S2O5	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Straight 2 of 5	SY	S2O5	S/L/P/G R/C	EN	0 Disable Straight 2 of 5 1 Enable Straight 2 of 5 **Note:** Use for Straight 2O5, Standard 2O5 and Industrial. Previously this was used for IATA 2 of 5 as well. **Keyword:** #2Of5 **Example:** SYS2O5SEN0 **Default Value:** 0
Straight 2 of 5 Checksum	SY	S2O5	S/L/P/G R/C	CO	0 Disable Straight 2 of 5 checksum 1 Enable Straight 2 of 5 checksum 2 Enable Straight 2 of 5 checksum and strip check character **Note:** Use for Straight 2O5, Standard 2O5 and Industrial. **Keyword:** #2Of5 **Example:** SYS2O5SCO0 **Default Value:** 0
Get All Subcategory Parameters	SY	I2O5	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Interleaved 2 of 5	SY	I2O5	S/L/P/G R/C	EN	0 Disable Hong Kong 2 of 5 1 Enable Hong Kong 2 of 5 **Keyword:** #2Of5, #Interleaved2Of5 **Example:** SYI2O5SEN1 **Default Value:** 1
Interleaved 2 of 5 - Length	SY	I2O5	S/L/P/G R/C	LN	2 Minimum Value (will scan any Interleaved 2 of 5) 100 Maximum Value **Note:** This setting value is ignored if Interleaved 2 of 5 decoding is disabled. **Keyword:** #2Of5, #Interleaved2Of5 **Example:** SYI2O5SLN2 **Default Value:** 2

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	SY	QRCO	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
QR Code	SY	QRCO	S/L/P/G R/C	EN	0 — Disable QR Code 1 — Enable QR Code **Keyword:** #QR **Example:** SYQRCOSEN1 **Default Value:** 1
Disable QR Code - Polarity	SY	QRCO	S/L/P/G R/C	PO	0 — Normal mode enabled - Black on white background 1 — Inverse mode enabled - White on black background 2 — Both normal and inverse modes enabled **Note:** This setting value is ignored if QR Code decoding is disabled. **Keyword:** #QR **Example:** SYQRCOSPO0 **Default Value:** 0
Micro QR Code	SY	QRCO	S/L/P/G R/C	MI	0 — Disable Micro QR Code 1 — Enable Micro QR Code **Keyword:** #QR **Example:** SYQRCOSMI0 **Default Value:** 0
QR Code - Mirror	SY	QRCO	S/L/P/G R/C	MR	0 — Disable Disable QR Code - Mirror 1 — Enable Disable QR Code - Mirror **Note:** This setting value is ignored if QR Code decoding is disabled. **Keyword:** #QR **Example:** SYQRCOSMR0 **Default Value:** 0
QR Code - Model 1	SY	QRCO	S/L/P/G R/C	M1	0 — Disable Disable QR Code - Model 1 1 — Enable Disable QR Code - Model 1 **Note:** This setting value is ignored if QR Code decoding is disabled. **Keyword:** #QR **Example:** SYQRCOSM10 **Default Value:** 0
QR Code - Custom	SY	QRCO	S/L/P/G R/C	CQ	0 — Disable Disable QR Code - Custom 1 — Enable Disable QR Code - Custom **Note:** This setting value is ignored if QR Code decoding is disabled. **Keyword:** #QR **Example:** SYQRCOSCQ0 **Default Value:** 0
Get All Subcategory Parameters	SY	H2O5	G		Outputs all parameters, that support the G command, which are contained within this subcategory.

Description	Cat	Sub	Action	Param	Notes/Example	
Hong Kong 2 of 5	SY	H2O5	S/L/P/G R/C	EN	0	Disable Hong Kong 2 of 5
					1	Enable Hong Kong 2 of 5
					Keyword: #2Of5 **Example:** SYH2O5SEN0 **Default Value:** 0	
Get All Subcategory Parameters	SY	CO93	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
Code 93	SY	CO93	S/L/P/G R/C	EN	0	Disable Code 93
					1	Enable Code 93
					Keyword: #Code93 **Example:** SYCO93SEN1 **Default Value:** 1	
Code 93 - Set minimum decode length	SY	CO93	S/L/P/G R/C	ML	This sets the minimum data length to be decoded. If shorter than specified length, the reader will not decode the data. **Keyword:** #Code93 **Example:** SYCO93SML1 **Default Value:** 1	
Get All Subcategory Parameters	SY	CO39	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
Code 39	SY	CO39	S/L/P/G R/C	EN	0	Disable Code 39
					1	Enable Code 39
					Keyword: #Code39 **Example:** SYCO39SEN1 **Default Value:** 1	
Code 39 - Extended ASCII	SY	CO39	S/L/P/G R/C	EA	0	Disable support of Extended ASCII
					1	Enable support of Extended ASCII
					Note: This setting value is ignored if Code 39 decoding is disabled. **Keyword:** #Code39 **Example:** SYCO39SEA0 **Default Value:** 0	
Code 39 - MOD 43 Checksum Character	SY	CO39	S/L/P/G R/C	CS	0	Disable MOD 43 checksum check and output checksum if one exists
					1	Enable MOD 43 checksum check and output checksum
					2	Enable MOD 43 checksum check and do not output checksum from decode data
					Note: This setting value is ignored if Code 39 decoding is disabled. **Keyword:** #Code39 **Example:** SYCO39SCS0 **Default Value:** 0	

Description	Cat	Sub	Action	Param	Notes/Example	
Code 39 - Start/Stop Characters	SY	CO39	S/L/P/G R/C	SS	0	Do not transmit Code 39 Start/Stop Characters
					1	Transmit Code 39 Start/Stop Characters
					Note: This setting value is ignored if Code 39 decoding is disabled. **Keyword:** #Code39 **Example:** SYCO39SSS0 **Default Value:** 0	
Code 39 - Set minimum decode length	SY	CO39	S/L/P/G R/C	ML	This sets the minimum data length to be decoded. If shorter than specified length, the reader will not decode the data. **Note:** This setting value is ignored if Code 39 decoding is disabled. **Keyword:** #Code39 **Example:** SYCO39SML1 **Default Value:** 1	
Get All Subcategory Parameters	SY	UPC0	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
UPC/EAN/JAN	SY	UPC0	S/L/P/G R/C	EN	0	Disable UPC/EAN/JAN
					1	Enable UPC/EAN/JAN
					Keyword: #UPC, #EAN/JAN **Example:** SYUPC0SEN1 **Default Value:** 1	
UPC/EAN/JAN - Expand UPC-E to UPC-A	SY	UPC0	S/L/P/G R/C	EA	0	Do not expand UPC-E to UPC-A
					1	Expand UPC-E to UPC-A
					Note: This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SEA0 **Default Value:** 0	
UPC/EAN/JAN - Supplemental	SY	UPC0	S/L/P/G R/C	SU	0	Disable UPC/EAN/JAN - Supplemental
					1	Enable UPC/EAN/JAN - Supplemental
					Note: This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SSU0 **Default Value:** 0	
UPC/EAN/JAN - Expand EAN-8 to EAN-13	SY	UPC0	S/L/P/G R/C	E8	0	Do not expand EAN-8 to EAN-13
					1	Expand EAN-8 to EAN-13
					Note: This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SE80 **Default Value:** 0	

Description	Cat	Sub	Action	Param	Notes/Example
UPC/EAN/JAN - Expand UPC-A to EAN-13	SY	UPC0	S/L/P/G R/C	AD	0 — Do not expand UPC-A to EAN-13 1 — Expand UPC-A to EAN-13 **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SAD0 **Default Value:** 0
UPC/EAN/JAN - Convert Bookland EAN-13 to ISBN	SY	UPC0	S/L/P/G R/C	DI	0 — Do not convert Bookland EAN-13 to ISBN 1 — Convert Bookland EAN-13 to ISBN **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SDI0 **Default Value:** 0
UPC/EAN/JAN - Convert Bookland EAN-13 to ISSN	SY	UPC0	S/L/P/G R/C	DN	0 — Do not convert Bookland EAN-13 to ISSN 1 — Convert Bookland EAN-13 to ISSN **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SDN0 **Default Value:** 0
UPC/EAN/JAN - Transmit UPC-A Check digit	SY	UPC0	S/L/P/G R/C	AC	0 — Transmit UPC-A Check digit 1 — Do not transmit UPC-A Check digit **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SAC0 **Default Value:** 0
UPC/EAN/JAN - Transmit UPC-A Number System	SY	UPC0	S/L/P/G R/C	AN	0 — Transmit UPC-A Number System 1 — Do not transmit UPC-A Number System **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SAN0 **Default Value:** 0
UPC/EAN/JAN - Transmit UPC-A Number System 0	SY	UPC0	S/L/P/G R/C	N0	0 — Transmit UPC-A Number System 0 1 — Do not transmit UPC-A Number System 0 **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SN00 **Default Value:** 0
UPC/EAN/JAN - Transmit UPC-E Check digit	SY	UPC0	S/L/P/G R/C	EC	0 — Transmit UPC-E Check digit 1 — Do not transmit UPC-E Check digit **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SEC0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
UPC/EAN/JAN - Transmit UPC-E Number System	SY	UPC0	S/L/P/G R/C	ES	0 — Transmit UPC-E Number System 1 — Do not transmit UPC-E Number System **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SES0 **Default Value:** 0
UPC/EAN/JAN - Transmit EAN-13 Check digit	SY	UPC0	S/L/P/G R/C	DC	0 — Transmit EAN-13 Check digit 1 — Do not transmit EAN-13 Check digit **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SDC0 **Default Value:** 0
UPC/EAN/JAN - Transmit EAN-8 Check digit	SY	UPC0	S/L/P/G R/C	C8	0 — Transmit EAN-8 Check digit 1 — Do not transmit EAN-8 Check digit **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SC80 **Default Value:** 0
UPC/EAN/JAN - Use Standard AIM Modifier	SY	UPC0	S/L/P/G R/C	AM	0 — Use Non-Standard AIM Modifie 1 — Use Standard AIM Modifier **Note:** This setting value is ignored if UPC/EAN decoding is disabled. **Keyword:** #UPC, #EAN/JAN **Example:** SYUPC0SAM1 **Default Value:** 1
Get All Subcategory Parameters	SY	COMP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Composite	SY	COMP	S/L/P/G R/C	EN	0 — Disable Composite 1 — Enable Composite **Keyword:** #CompositeBarcodes **Example:** SYCOMPSEN0 **Default Value:** 0
Get All Subcategory Parameters	SY	MSIP	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
MSI Plessey	SY	MSIP	S/L/P/G R/C	EN	0 — Disable MSI Plessey 1 — Enable MSI Plessey **Keyword:** #MSIPlessey **Example:** SYMSIPSEN0 **Default Value:** 0

Description	Cat	Sub	Action	Param	Notes/Example
MSI Plessey - Require Checksum	SY	MSIP	S/L/P/G R/C	CS	0 — Disable checksum checking 1 — Check for Mod 10 checksum type 2 — Check for Mod 10/10 checksum type 3 — Check for Mod 11/10 checksum type **Note:** This setting value is ignored if MSI Plessey decoding is disabled. **Keyword:** #MSIPlessey **Example:** SYMSIPSCS0 **Default Value:** 0
MSI Plessey - Remove Checksum	SY	MSIP	S/L/P/G R/C	SC	0 — Transmit MSI Plessey Checksum 1 — Do not transmit MSI Plessey Checksum **Note:** This setting value is ignored if MSI Plessey decoding is disabled. **Keyword:** #MSIPlessey **Example:** SYMSIPSSC0 **Default Value:** 0
UK Plessey - PLE	SY	MSIP	S/L/P/G R/C	PE	0 — Disable UK Plessey - PLE 1 — Enable UK Plessey - PLE **Keyword:** #MSIPlessey **Example:** SYMSIPSPE0 **Default Value:** 0
MSI Plessey - Set minimum decode length	SY	MSIP	S/L/P/G R/C	ML	This sets the minimum data length to be decoded. If shorter than specified length, the reader will not decode the data. **Note:** This setting value is ignored if MSI Plessey decoding is disabled. **Keyword:** #MSIPlessey **Example:** SYMSIPSML1 **Default Value:** 1
Get All Subcategory Parameters	SY	N2O5	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
NEC 2 of 5	SY	N2O5	S/L/P/G R/C	EN	0 — Disable NEC 2 of 5 1 — Enable NEC 2 of 5 **Keyword:** #2Of5 **Example:** SYN2O5SEN0 **Default Value:** 0
NEC 2 of 5 - Require Checksum	SY	N2O5	S/L/P/G R/C	CS	0 — Disable checksum checking 1 — Enable checksum checking **Note:** This setting value is ignored if NEC 2 of 5 decoding is disabled. **Keyword:** #2Of5 **Example:** SYN2O5SCS0 **Default Value:** 0
Get All Subcategory Parameters	SY	A2O5	G		Outputs all parameters, that support the G command, which are contained within this subcategory.

Description	Cat	Sub	Action	Param	Notes/Example	
IATA 2 of 5	SY	A2O5	S/L/P/G R/C	EN	0	Disable IATA 2 of 5
					1	Enable IATA 2 of 5
					Note: Use for IATA 2 of 5. **Keyword:** #2Of5 **Example:** SYA2O5SEN0 **Default Value:** 0	
IATA 2 of 5 Checksum	SY	A2O5	S/L/P/G R/C	CO	0	Disable IATA 2 of 5 checksum
					1	Enable IATA 2 of 5 checksum
					2	Enable IATA 2 of 5 checksum and strip check character
					Note: Use for IATA 2O5. **Keyword:** #2Of5 **Example:** SYA2O5SCO0 **Default Value:** 0	
IATA 2 of 5 - Set minimum decode length	SY	A2O5	S/L/P/G R/C	ML	This sets the minimum data length to be decoded. If shorter than specified length, the reader will not decode the data. **Note:** Use for IATA 2O5. **Keyword:** #2Of5 **Example:** SYA2O5SML1 **Default Value:** 1	
Get All Subcategory Parameters	SY	AZTC	G		Outputs all parameters, that support the G command, which are contained within this subcategory.	
Aztec	SY	AZTC	S/L/P/G R/C	EN	0	Disable Aztec
					1	Enable Aztec
					Keyword: #Aztec **Example:** SYAZTCSEN1 **Default Value:** 1	
Aztec - Polarity	SY	AZTC	S/L/P/G R/C	PO	0	Normal mode enabled - Black on white background
					1	Inverse mode enabled - White on black background
					2	Both normal and inverse modes enabled
					Note: This setting value is ignored if Aztec decoding is disabled **Keyword:** #Aztec **Example:** SYAZTCSPO0 **Default Value:** 0	
Aztec - Mirro	SY	AZTC	S/L/P/G R/C	MR	0	Disable Aztec - Mirror
					1	Enable Aztec - Mirror
					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. **Keyword:** #Aztec **Example:** SYAZTCSMR0 **Default Value:** 0	

Description	Cat	Sub	Action	Param	Notes/Example
Get All Subcategory Parameters	SY	TRIO	G		Outputs all parameters, that support the G command, which are contained within this subcategory.
Trioptic	SY	TRIO	S/L/P/G R/C	EN	0 — Disable Trioptic 1 — Enable Trioptic **Keyword:** #Trioptic **Example:** SYTRIOSEN0 **Default Value:** 0
Trioptic - Reverse	SY	TRIO	S/L/P/G R/C	RV	0 — Disable Trioptic - Reverse 1 — Enable Trioptic - Reverse 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. **Keyword:** #Trioptic **Example:** SYTRIOSRV0 **Default Value:** 0
Trioptic - Require Start/Stop Characters	SY	TRIO	S/L/P/G R/C	SS	0 — Do not require Start/Stop Characters 1 — Require Start/Stop Characters **Note:** This setting value is ignored if Trioptic decoding is disabled. **Keyword:** #Trioptic **Example:** SYTRIOSSS0 **Default Value:** 0

20 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.

21 DPM Decoding

When Decoding DPM (Direct Part Marking) barcodes, there are a few general guidelines to remember:

- Keep the image size small, 960x480 or 752x480. This smaller size prevents the DPM algorithm from taking a long time to decode.

- On markings that are difficult to decode, try more than one algorithm. For example, If CDDP_BD doesn't work, also try CDDP_BI or CDDP_PD.

- Make certain to disable the current DPM algorithm before trying a different one. Most settings are mutually exclusive.

- Set the DPM timeout, see CDDP_TF for details.

22 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.

22.1 Data Formatting Options

The decoder allows many types of data formatting, selected by setting the data format option, and setting the appropriate configuration string. See Decoder Parameters section on format options.

Data Format Options	
Valid for cd 17.1.28 and below	
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

Data Format Options	
Valid for cd 17.1.28 and below	
Value	**Description**
4	UDI/HIBC validation
5	ISO15434 validation
6	ISO15434 & ISO15418 validation
7	~~Simple age verification using a configuration string~~ REPLACED - Use value '8'
8	Simple age verification
9	DL Parsing using a configuration string
10	DL Parsing without using a configuration string
11	Success and Raw validation
12	Match String validation + Data Formatting
13	GS1 validation + Data Formatting
14	UDI validation + Data Formatting
15	ISO15434 validation + Data Formatting
16	ISO15434 & ISO15418 validation + Data Formatting
18	Perform Simple Age verification and Data Formatting
19	Perform DL Parsing with configuration string and Data Formatting
20	Perform DL Parsing without configuration and Data Formatting

Data Format Options	
Valid for cd 17.1.28 and above	
Value	**Description**
DF=0	Data formatting off
DF=1	Simple data formatting using either prefix and suffix, or by setting the format data string directly
DV=1	DL Parsing using a configuration string
DV=2	DL / ID public sector parsing output in JSON format
DV=3	Simple age verification
DV=4	Match String validation
DV=5	GS1 DataBar validation
DV=6	UDI/HIBC validation
DV=7	ISO15434 validation
DV=8	ISO15434 & ISO15418 validation
DV=1 DF=1	Perform DL Parsing with configuration string + Data Formatting
DV=2 DF=1	DL / ID public sector parsing output in JSON format + Data Formatting
DV=3 DF=1	Simple age verification + Data Formatting
DV=4 DF=1	Match String validation + Data Formatting
DV=5 DF=1	GS1 DataBar validation + Data Formatting
DV=6 DF=1	UDI/HIBC validation + Data Formatting
DV=7	ISO15434 validation + Data Formatting

Data Format Options	
Valid for cd 17.1.28 and above	
Value	Description
DV=8	ISO15434 & ISO15418 validation+ Data Formatting

22.2   Data Formatting 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 CDOPSFD"000000000000!,,/0d/0a" which appends a carriage return line feed to the decoded data. For specific details of the format data string options see D025388.

22.3   Prefixes and Suffixes

Prefix and suffix values define data that will be added to the decoded 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 data formatting.

- Command to define a prefix - CDOPSPX"string"

- Command to define a suffix - CDOPSSX"string"

- "string" must be enclosed 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 - CDOPSFO1 with cd 17.1.28 CDOPSDF1 with cd 17.2.x

22.4   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 CDOPSFC1 to set the data to output in uppercase.

22.5   Format Parse and Validation Configuration String

Validation and public sector parsing also require a configuration string. This string is set using CDOPSFP"string".

22.6   Sending Windows Keystrokes using CodeXML

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. CodeXML Sequence was created to allow users to configure a 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 are 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
/g	Toggle AltGr (right Alt)
/c	Toggle Ctrl
/m	Toggle Menu
/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
//	/
/k	USB scan codes (see section 4.5.7)

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"

CDOPSFO1

22.7   Sending USB Keyboard Scan Codes using CodeXML

In addition to sending keyboard keystrokes using the aforementioned keystroke representations, CodeXML also has the ability to send USB scan codes to identify an exact key on a keyboard.

One such use case involves some language keyboards (e.g., Italian) labeling the left Alt key as "Alt" and the right "Alt" key as "AltGr" and entering different language characters for a keystroke based on just a key, Shift+key, AltGr+key, and even AltGr+Shift+key. Using CodeXML to identify the scan code for AltGr (right Alt), a reader can send a language character available only when AltGr (Alt Grave) is pressed by sending the scan codes for AltGr and the key.

USB scan codes provide for "modifiers"; that is, an indication of whether or not the Ctrl, Shift, Alt, AltGr and/or Meta/GUI (e.g., "Windows") keys are pressed at the same time a normal key is pressed, thus "modifying" the key's keystroke. For example, to send just the "a" character using scan codes requires sending the scan code for the "a" key (0x04) with no modifier (0x00); however, to send the "A" character requires sending the "a" key's scan code with a "Shift" modifier (0x02 (left Shift) or 0x20 (right Shift)).

The table below identifies the 2-digit hexadecimal representation for the "modifier" keys.

Key	Modifier
Left Ctrl	0x01
Left Shift	0x02
Left Alt	0x04
Left Meta/GUI	0x08
Right Ctrl	0x10
Right Shift	0x20
Right Alt (AltGr)	0x40
Right Meta/GUI	0x80

Note modifier keys can be combined by or'ing their values together; e.g., Left Shift + Right Alt = 0x42.
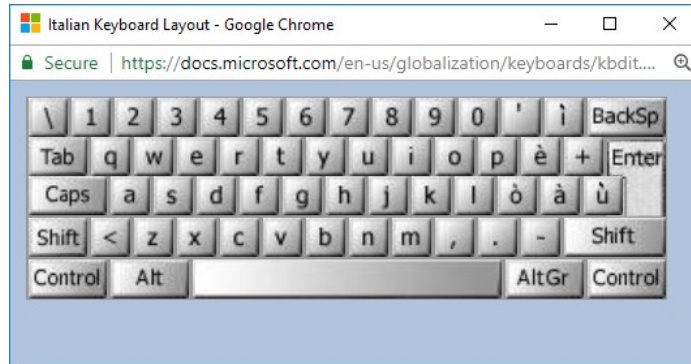
The CodeXML syntax for sending scan codes is the CodeXML header, followed by "/k", followed by two 2-digit hexadecimal values indicating the modifier(s) and key scan codes, respectively.

To illustrate, assume an Italian user wants to replace all "$" characters in a barcode with the Euro symbol "€", which is a non-ASCII character. The decoder's string-matching feature can easily accomplish this by replacing each dollar sign with CodeXML for the Euro sign on the Italian keyboard.

Below are the Italian keyboard character layouts based on the modifier keys pressed. Note the Euro sign is available as AltGr+5 or AltGr+e.
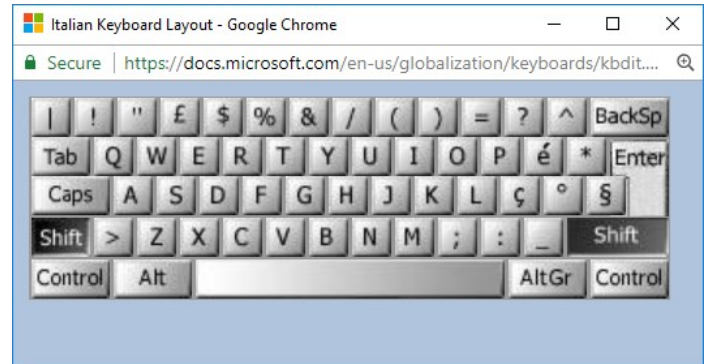
The USB scan codes for the "5" and "e" keys, which are in the same keyboard key position on both the English and Italian keyboards, are 0x22 and 0x08, respectively. The USB modifier scan code for the Italian AltGr key position, which is also the right Alt key position on the English keyboard, is 0x40.
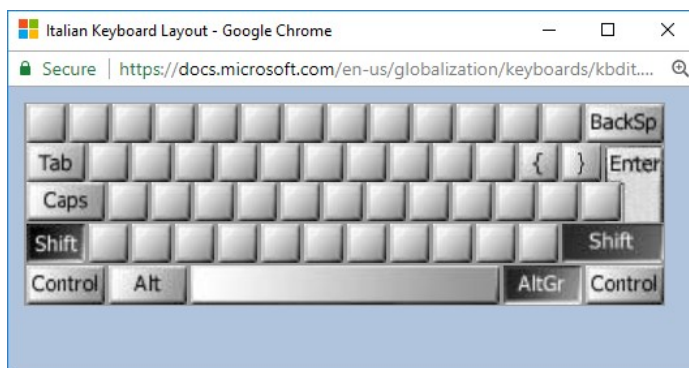
No Modifier Keys

Shift Modifier Key

AltGr Modifier Key

AltGr+Shift Modifier Key

Note after the "key press" scan code(s) there must be a "key release" specified using 0x00 (no modifier) and 0x00 (no key) to terminate the key press or the operating system may interpret the last scan code as "auto-repeating", which would be undesirable.

Below is the CodeXML for the AltGr+e scan codes to indicate a "€" key press on an Italian keyboard, followed by the "key release" scan codes ("0000") to end the "€" key press.

CodeXML:

/01Y/1Ean//k40080000/04

CodeXML in a decoder data-management configuration string for all symbologies:

000000000000!„|/24^1/01Y/1Ean/2F/2Fk40080000/04

For all barcode symbologies, replace all "$" (0x24) with "€" for Italian keyboard and enable String-matching.

CDOPSSM"000000000000!„|/24^1/01Y/1Ean/2F/2Fk40080000/04"
CDOPSDV4

22.8   Command Barcode Format

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

Header	Command	Trailer
\<SOH\>Y\<GS\>\<STX\> (/01Y/1D/02)	String as described in Section 4.2	\<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 **/01Y/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 contain comments, a 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:

/01Y/1d/02SYAZTCG/03SYAUPOG/03/04

Example.png

Example

23 Device Recovery for the CR950

A device may get into a state in which it is difficult to determine its configuration state on very rare occasions. When this occurs, two methods that allow the user to set devices back to their default settings for those occasions are provided. The first method is to issue a configuration reset (CFR) command. This method sets all settings modified by users back to the default values set at the factory. If the device does not respond to either scanned (readers), or manually entered configuration codes (readers and charging station), powering down the unit and then powering it up again should clear this condition to allow configuration reset codes to be sent to the reader. Users may recover the device to default settings in the unlikely event where it does not communicate even after the aforementioned procedure. Unlike a configuration reset, recovery removes all conventional saved settings. Whereas a configuration reset only removes saved settings if they support the 'R' action. The following are the recovery steps for the CR950:

1. Power down the reader.

2. Press and hold down the trigger button while restoring power to the reader.

3. The reader will beep three times, a high pitch beep, a low pitch beep, and the high pitch beep again.

4. Release the trigger button and press and hold down again within two seconds after the triple-beep sequence is heard.

 Note: If the trigger button is held down beyond the two-second limit, the settings will not reset.

5. The reader will beep once and then go through a quintuple-beep sequence.

Note: The sequence starts with three beeps (high, low, and high pitch beep), two beeps (high, low), two beeps (high, low), one beep (high) and one beep (high).

6. The reader's settings have now been reset to their default state. If you also wish to reset the platform settings, then keep the trigger held down and repeat steps 3 through 5. Otherwise, proceed to step 7.

7. Release the trigger and let the reader reboot.

A   HID scancode delay description

Keyword: #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 time between sending full key press-and-releases to the host. More specifically, this delay applies to key press scan codes, so long as they have a release scan code in between them (e.g. a full key press-and-release). It does not apply to key press scan codes that are not separated by releases (e.g. pressing two keys at the same time).

- **Inter-scancode delay** is the time between sending key presses to the host. More specifically, this delay applies only to key press scan codes that do not have a release in between them (e.g. pressing two keys at the same time). It does not apply to key presses separated by a release (e.g. a full key press-and-release).

- **Release delay** is the time after completing a key press before starting the subsequent key release. More specifically, the release delay is the reverse of the inter-character delay. While the inter-character delay applies after the key release, the release delay applies before the key release. This may have the effect of multiple characters outputted by the system, as this is equivalent to holding the key pressed for an extended amount of time.

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);
10	0A	LF	(line feed, new line);
11	0B	VT	(vertical tab)
12	0C	FF	(form feed, new page)
13	0D	CR	(carriage return);
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);
29	1D	GS	(group separator)
30	1E	RS	(record separator);
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	-	

Decimal Value	Hexadecimal Value	ASCII Character	Notes / Alternate Definition
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	@	
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	^	

Decimal Value	Hexadecimal Value	ASCII Character	Notes / Alternate Definition
95	5F	_	
96	60	'	
97	61	a	
98	62	b	
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

C   USB VID - PID Listing

The Vendor ID for Code's reader products, assigned by the USB Implementer's Forum, is 0x11FA		
PID	**Product**	**Description**
0x8200	CT8200	In-System-Programming
0x8201	Reader	USB Keyboard Mode
0x8202	Reader	HID Vendor
0x8210	Reader	VCOM Mode
0x8211	Reader	USB CDC
0x8241	CR950	USB Keyboard mode
0x8242	CR950	USB Vendor Mode (For base communication with CortexTools)
0x8243	CR950	USB Vendor Mode (For reader communication with CortexTools)
0x8244	CR950	USB HID POS Mode
0x8245	CR950	USB IBM POS Mode
0x8246	CR950	USB CDC ACM Mode
0x8247	CR950	USB VCOM Mode

D Decode Modes

There are multiple ways to get a reader to attempt decoding. See the following table for a list of user interactions that will trigger a decode mode:

User Interactions that Produce Decode Modes		
User Interaction	Description	Relevant Command
Default	This is what happens when no other interactions are happening.	CDOP_MD
Trigger	This is what happens when the user presses the trigger.	RDTC_MD
Stand	This is what happens when the user puts the reader into a stand that it is compatible with.	RDST_SB
Event	This is what happens when the user issues a trigger event.	RDCMXEV1,P11,P2

Each of these interactions will cause the reader to enter a mode for decoding. See the following table for a list of possible behaviors that these interactions will produce, as well as the values needed in order to set that behavior in the associated setting:

CDOP Value	RDCM Value	Value	Mode	Description	Decoding AGC Behavior
-	0	1	Normal	This mode will attempt decoding until a barcode is decoded, at which point it will stop.	Uses the normal AGC.
1	1	2	Motion Detection	Reader uses a dim illumination to detect when there is motion in front of the reader. Once it has detected motion, it will switch over to a normal scan until it has decoded a barcode. Once a barcode has been decoded, or a predetermined amount of time has passed without motion, it will switch back into it's detecting state.	Uses motion detection AGC until motion has been detected, then it uses the normal AGC.
2	2	3	Continuous Scan	Reader continuously attempts decoding. This works similarly to our normal mode, except it does not stop after a barcode is decoded.	Uses the normal AGC.
3	-	4	Quick Decode using IR Illumination	If the reader supports IR detection, the reader will use an IR LED to detect when a barcode is presented in front of the reader. Once a barcode has been detected, it will switch over to a normal scan until it has decoded a barcode. Once a barcode has been decoded, or a predetermined amount of time has passed without a barcode in front of the reader, it will switch back into it's detection state.	Uses the detection AGC until a barcode has been detected, then it uses the Decode Plus AGC (to keep the illumination on after the barcode has been removed from in front of the reader).
4	-	5	Motion Detection using IR illumination	Works similarly to regular motion detection, except it uses the decode plus AGC to keep the illumination on after the barcode has been removed from the reader. It also uses IR illumination instead of a dim light.	Uses the detection AGC until motion has been detected, then it uses the Decode Plus AGC (to keep the illumination on after the barcode has been removed from in front of the reader).

				Decode Modes	
CDOP Value	RDCM Value	Value	Mode	Description	Decoding AGC Behavior
5	-	6	Quick Decode using Red Illumination	If the reader supports IR detection, the reader will use an IR LED to detect when a barcode is presented in front of the reader. Once a barcode has been detected, it will switch over to a normal scan until it has decoded a barcode. Once a barcode has been decoded, or a predetermined amount of time has passed without a barcode in front of the reader, it will switch back into it's detection state.	Uses the detection AGC until a barcode has been detected, then it uses the Decode Plus AGC (to keep the illumination on after the barcode has been removed from in front of the reader).
6	-	7	Motion Detection using Red illumination	Works similarly to regular motion detection, except it uses the decode plus AGC to keep the illumination on after the barcode has been removed from the reader.	Uses the detection AGC until motion has been detected, then it uses the Decode Plus AGC (to keep the illumination on after the barcode has been removed from in front of the reader).
7	-	8	Pick List	Works similarly to our normal trigger mode, except it will keep the targeting bar on when the trigger is not currently pressed. If set as a trigger mode, this also enforces a narrow target tolerance, and only allows decodes close to the center of the reader's view.	Uses the normal AGC.
8	-	9	Target Bar Trigger	If set as a trigger mode (RDTC_MD9), this enables the targeting LED for the time specified by the target time setting (CDDT_TT) before attempting to scan.	Uses the normal AGC.
9	3	10	Single Cycle	This mode will make one attempt at decoding, at which point it will stop.	Uses the normal AGC.

The first column of the table references the values needed for CDOP_MD. The second column of the table references the values needed for RDCMXEV1. The third column of the table references the values for all other commands. These three distinct sets of values are maintained for backwards compatibility.

The "Decoding AGC Behavior" in the table above only takes place when the AGC mode is set to default (SCSP_MODF). In non-default cases, the AGC mode, when attempting a decode, will be the mode that the user specified.