



CR5200 Application Firmware Read Me

Version 1.7.6

June 2025

Associated firmware file versions	
CR5200	
Firmware	1.7.6
Decoder	24.1.28



******* PLEASE NOTE: *******

- This readme file contains information about the latest version of the firmware for the CR5200 hardware.
- Support for all Code products is available from Code website at: www.codecorp.com or by contacting Code Technical Support at <https://www.codecorp.com/code-support/>.

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1. NEW FEATURES IN THIS RELEASE

Version 1.7.6

- Integration of decoder 24.1.28
 - Fixed bug causing polarity issue in decoding QR Code.
 - Reduced stack memory usage for Low Res 1D algorithm.
 - Fixed Codabar partial decoding when part of Codabar is blocked.
 - Fixed potential divide by 0 for BC412 when using less than the required number of codewords to get a character.
 - Fixed a Data Matrix message decoding bug where FNC1 is at both first and second position.
 - No longer support Security Level 3 as related algorithm has improved.
 - Improved overall decoding speed for linear barcodes.
 - Removed duplicate decoding when decoding multiple PDF417 barcodes in one image.
 - Improved DataBar Stacked decoding speed.
 - Improved index validation for Code 128.
 - Fixed memory allocation in Low Res 1D decoding that causes error in Ubuntu Linux decoder.
 - Fixed PDF/MicroPDF uninitialized symbology modifier value.
 - Fixed a GS1 parsing bug.
 - Reduced QR Code decoding time when the finders were in certain orientations.
 - Fixed a bug in QR finder search when analyzed an area with no quiet zone.
- Added imager connectivity test pixel data to the error log.
- Added a global beep volume setting. See category FB, subcategory IN in the CCD for more details.

2. ENHANCEMENTS/IMPROVEMENTS/FIXES

Please reference the CCD for specifics on the new features added below, including default values and commands for enabling, disabling, and setting associated parameters

Version 1.7.6

- Fixed an issue where settings could get corrupted, preventing new settings from being saved and preventing previously saved settings from being loaded.
- Fixed an issue that could cause a reader to become unresponsive, also due to settings block corruption.
- Fixed an issue with downloading files larger than 2 MB.
- Licenses in the 5000 range are no longer required to access related features.
- Creating a new Date object in JavaScript with no arguments will now create a Date object with the current time (devices with clock support). `now_ms()` will now reflect the current date's time in ms.
- Improved memory management for prefix and suffix commands.
- Restored decimated image capture functionality.
- Fixed an issue with settings corruption after saving many settings
- Fixed an issue with rebooting after many scans.
- Fixed value returned by JavaScript `decode.aimModifier` property.
- Improved flash memory robustness.
- Fixed an issue with erroneous output when scanning invalid configuration codes.
- Removed Han Xin Polarity and Mirror settings.

Version 1.6.3

- Integration of decoder 23.2.2
 - Fixed GS1 DataBar Expanded message decoding error related to ISO/IEC 646.
 - Improved Data Matrix decoding using erasures.
 - Enhanced decoding of QR Code on curved surface.
 - Improved DPM algorithms enabled.
- Added a parameter to allow for skipping formatting on barcodes that only contain CodeXML data

- Added target trigger mode to the reader, which holds the targeting bar on for a specified length of time before flashing the illumination.
- Performance in low light conditions improved.
- Fixed an issue with Pick List not taking effect when off-table or out-of-stand.
- Improvements made for exit logging.
- Added command to suppress invalid command responses.
- Prevent re-saving parameters that have already been saved with the same value, in order to better conserve flash usage.
- Added new output method for Unicode to Shift-JIS.
- Fixed an issue with converting input encodings to Unicode.
- FW with wrong CRC will fail to program.
- Illumination channels can now be specified independently for each AGC mode.
- Power Mode times are now based off of the time since the reader was last active, not the previous power mode. Restrictions are now in place to prevent a mode from having a time lower than a previous mode, if it's enabled.
- Fixed Shift-JS exception when we send command CMHDSIE5.
- Created common scene management between different readers.
- Generalized bootloaders between Code products.
- Issue scanning QR Code fixed.
- Fixed an issue where JavaScript would constantly write to the error log when there was an error in a script.
- Reduced the maximum size of the error log to prevent issues with CortexTools crashing when retrieving the file.
- Improved decode mode handling and interactions with event based triggers.
- Fixed an issue with a CFR not restoring baud rate platform settings.
- Deprecated AGTM parameters. Please use CDDT_TL and CDDT_LT to control the time spent decoding.
- Normal AGC curve configuration commands have been deprecated (AGNO subcategory). These commands now affect the Config AGC mode (AGCD).
- Consolidated AGC curves, allowing for dynamic AGC curve initialization at runtime.
- Brought reader.onDecodes, rules_onDecodes, reader.onDecode, and rules_onDecode behavior in line with the JavaScript programming guide.
- Removed extra beep on UART connections.
- Fixed CFR issue on RS232 mode.
- Prevented download of incomplete or corrupted CRVFW files.
- PMES now puts the reader to sleep as intended.
- Sleep modes are no longer dependent on each other.
- Fixed an issue with USB communication after sleep.
- Fixed an issue with image capture after sleep.
- Removed unused battery parameters for products that do not have a battery.
- Fixed an issue with Quick Decode FOV check performance.
- JavaScript reader.locked property now returns true if the reader is locked. Use reader.lock(pin) and reader.unlock(pin) to lock or unlock the reader.
- Fixed an issue with AGC Mode not taking effect after a reboot.
- Fixed an issue with CDDT_TD not taking effect.
- Fixed an issue with flash corruption of qualification data.
- Improved field-of-view stability on the CR5200.
- Fixed an issue with RDQD parameters seemingly erased when downgrading firmware.
- DecodePlus modes now can be applied to the trigger mode.
- Changed RDFW_FT to be more accurate.
- Improved file system handling speed.
- Fixed an issue with CDC mode printing out invalid characters on connection.
- Removed default JavaScript echoing of raw data in default onRawData handler.
- Improved handling when the reader runs out of memory.

- Added a JavaScript debug setting.
- CDOP_AT now takes effect for motion detection as well as trigger modes.
- Saved settings can overwrite platform settings which are set with a P.
- Improved reader indication handling.
- Improved messaging during cleanliness test.
- Fixed a reboot occurring during usb CDC communication with packet mode enabled.
- Adjusted image capture orientation on the CR5200 and CR950 to match user expectation. This fixes decode behavior for the BC412 symbology on those products.
- Fixed an issue with quick red LED indication.
- Added a new message verbosity level (RDFBPVB2) that causes the reader to send a response message to the host when scanning a configuration barcode.
- New indication parameters added for more thorough modifications.
- Fixed an issue where certain platform settings could not be removed individually.
- Returning "true" from onConfigure will now stop configuration indication.
- Improved focusing verification during focus testing.
- reader.getKeyboardStatus now returns with an error value if the reader is not configured to be in a keyboard communication mode.
- Added new platform command to readers.
- Fixed an issue where the targeting LED would turn off when Sticky Trigger was enabled.
- Improved handling of devices with no imager attached.
- Error Beep for packet mode added.
- Trigger Pressed handled in continuous scan mode.
- The behavior of reader.onDecode(s) and rules_onDecode(s) has been better defined and updated. See the JavaScript programming guide for the updated behavior.
- Generalized input/output handling for extensibility.

Version 1.5.19

- Integration of decoder 22.2.6
- Enhanced PDF417 to decode poorly printed Start and Stop patterns.
- Added new aim identifiers (7011, 7230~9, 7240, 4309) for GS1 Validation.
- Added ability to transfer raw JPEG images in CDC mode.
- In the 1.4.5 version of the firmware, the "CDDT_TL" command served to set the decode locate time and decode time limit, using a formula where the decimal input value 9830720 equated to 0x00960140 (0x0096 = 150ms; 0x0140 = 320ms). However, a bug prevented the decode locate time value from taking effect. In the subsequent update, version 1.5.13, the command structure was enhanced by splitting it into two commands, "CDDT_TL" for decode time limit and "CDDT_LT" for decode locate time, and transitioned the input format from decimal to hexadecimal values. In order to further simplify and maintain backward compatibility with firmware version 1.4.5 and earlier, the input format reverted to decimal in version 1.5.19.
- Fixed an issue where platform settings couldn't be removed using a "^" or settings that were longer than 10 characters.
- Fixed an issue where sending RDCMXEV7 ~600 times caused the reader to become unresponsive.
- Fixed a manufacturing issue where the Quality bits could get corrupted.
- Fixed an issue where RDCMXEV1,P10 would not stop a continuous scan event with timeout (RDCMXEV1,P11,P20,P3500).
- Fixed an issue where RDCMXEV9 would trigger a continuous event if RDCMXEV7 has been issued since boot.
- Fixed an issue where the decode performance took ~20ms longer.
- Updated cleanliness test to allow preferred field selection on dual field lenses instead of running the test on the entire captured image.

Version 1.5.15

- Added support for CT8200 chip revision 2.2
- Allow upgrades to a future firmware version that supports a 3.x CT8200 chip revision

Version 1.5.13

- Added control of the LED color indicators to JavaScript
- Added support for transitional images (normal to cellphone mode)
- Added settings to control the blinking of the Good Read LED
- Added support for future chip revisions
- Updated decoder to 21.2.4
- Added the ability to adjust desired brightness target for decoding and picture capture
- Added the ability to toggle between USB and serial communication modes while in bootloader mode by pressing the trigger.
- Fixed an issue with the SwissGerman_Win keyboard mode, where some keypresses were incorrect
- Fixed an issue with the targeting LED after issuing RDCMXEV1 while in PickList mode
- Fixed an issue where the returned value from onDecodes() was not being handled correctly
- Fixed an issue where the reader object could not nest calls in JavaScript
- Improved illumination handling
- Recovery mode can now erase platform settings
- Fixed an issue with incorrect Decode Timeout in image header information
- Fixed an issue where the reader would get stuck and illumination would stay on, when in-stand motion detection mode and alternate cellphone mode was enabled
- Fixed an issue where the reader would freeze when alternate cellphone mode was enabled, and the reader is taken in and out of the stand multiple times
- Fixed an issue when handling invalid configurations in CDC mode
- Fixed an issue where AIM ID wouldn't load properly after reboot or power cycle
- Fixed an issue with raw commands in RS232 mode
- Fixed an issue with erroneous update log messages when loading non firmware files
- Improved image header information for JPEG and PGM images
- Improvements made for cellphone mode

Version 1.4.5

- Added new functionality where readers treat QCC codes as configuration codes instead of normal barcodes
- Added new functionality for event-based triggering
- Added ability to see product ID when in USB Keyboard, HID Vendor, HID POS, surePOS
- Updated CortexDecoder to 21.1.23
- Fixed an issue with raw commands
- Fixed an issue with receiving raw data in JavaScript when no default functionality was specified
- Fixed an issue when handling invalid configurations in CDC mode
- Fixed an issue where the reader rebooted when scanning continuously 8000+ scans when JavaScript was running
- Fixed an issue with erroneous update log messages when given a non-firmware file
- Fixed an issue with JavaScript configurations when JavaScript is disabled
- Added functionality for the reader to output encoded images as raw data
- Added functionality for tracking the version of the bootloader
- Added functionality to allow CR5200 units to DL parse without a license
- Improved updated age verification handling of PDF417 barcodes to output driver's license data
- Improved image header information for JPEG and PGM images

Version 1.3.3

- Updated CortexDecoder to 20.3.0
- Updated language files
- Added support for improved aperture
- Added support for cell phone modes

- Improved performance with calibrated AGC curve
- Improved decoding performance
- Quick Decode mode with dim red illumination
- Quick Decode Motion with dim red illumination
- Quick Decode with IR illumination
- Motion Detection with IR illumination
- Pick List mode
- Real Time Clock for CR5215
 - Ability to set and get real-time clock(RTC) date and time
 - Ability to set over and underage for age verification
 - Age verification with Audio and Visual feedback
 - Ability to ignore driver's license expiration date
 - Ability to allow PDF417 barcodes if age verification is enabled
- Support for RS232
- Support for IBM POS

Version 1.2.0

- Initial Release
- USB Vendor, USB Keyboard, and USB VCOM. RS232 not supported at this time.
- Supports Barcode detection with IR illumination
- Supports Motion detection with IR illumination

3. CHANGES TO DEFAULT SETTINGS

Version 1.7.6

Changes to existing setting defaults

- Changed symbology ID values for Grid Matrix (27->73), Dot Code (74->76), BC412 (27->59), and QR Model 1 (27->41).
- SYHAXN_PO Han Xin Polarity setting has been removed
- SYHAXN_MR Han Xin Mirror setting has been removed
- FBGR_VB Command to enable/disable vibration on a good read has been removed
- FBGR_NV Command to set vibration time on a good read setting has been removed
- FBGR_FV Command to set vibration time off on a good read setting has been removed
- FBGR_VN Command to set the number of pulses on a good read has been removed
- CDOP_SM match string validation setting default was "" is now "000000000000!,,,"
- CDOP_GP standard GS1 validation string default was "" is now "000000000000!,,,"
- CDOP_FP public sector and validation configuration string default was "" is now "000000000000!,,,"
- CDOP_UD UDI standard validation configuration string default was "" is now "000000000000!,,,"
- CDOP_IS ISO15434 standard validation configuration string default was "" is now "000000000000!,,,"
- CDOP_IO ISO15434/15418 standard validation configuration string default was "" is now "000000000000!,,,"

New setting defaults

- SYAZTC_US Aztec ultra small enable setting was added and defaults to 0
- SYC128_E2 C128 enhance method 2 setting was added and defaults to 0
- SYDATM_HD Data Matrix high density enable setting was added and defaults to 0
- SYQRCO_US QR ultra small enable setting was added and defaults to 0
- SYQRCO_HD QR high density enable setting was added and defaults to 0
- FBIN_VO Global Volume Percent setting was added and defaults to 100

Version 1.6.3

- CDOP_MD has been changed from normal trigger mode (CDOP_MD1) for off table operation to Pick list mode for off table operation (CDOP_MD7).

Version 1.5.15

- None

Version 1.5.13

- CDDT_TL Upper byte access problem fixed old default was 320 new default is 0x00000140
- SCSP_MO changed from NO (Normal AGC mode) to DF (Default AGC Behavior)
- FWHW_RD changed from 25 to 50, button release delay improvement
- FWHW_PD changed from 0 to 25, button release delay

Version 1.4.5

- Maximun gain (MDPM_XG) changed from 47 to 42

Version 1.3.3

- Scene Manager Mode SCSP_MONO has changed to SCSP_MODF

Version 1.2.0

- None

4. OUTSTANDING ISSUES

Note: Firmware ENHANCEMENTS and OUTSTANDING ISSUES are categorized as critical and noncritical. Critical updates require the user to upgrade firmware and all reader programming guides and manuals.

***** CRITICAL *****

- None

*****NON CRITICAL*****

- USB Full speed is not working as expected for USB CDC mode.
- ABGY_IS and other IS commands do not default to a value of -1
- Illumination may oscillate when RDIL_LO (Leave Illumination On between image captures) is enabled
- Illumination may not oscillate when MDPM_DI (Leave Illumination On while detecting motion) is enabled
- The targeting LED will turn on when the targeting bar CDOP_UT (Targeting LED) is disabled
- Deprecated commands AGNO, AGTM, FBVB, RDIL, and RDST all have settings that could be reset unintentionally if using the "C" action.

5. CONFIGURATION CODES

NEW CONFIGURATION CODES: NONE

Code	Ver	Description

EXISTING CONFIGURATION CODES THAT HAVE BEEN MODIFIED: NONE

Code	Ver	Description

EXISTING CONFIGURATION CODES THAT HAVE BEEN REMOVED: NONE

Code	Ver	Description

6. FIRMWARE FILE NAMING CONVENTION

The CR5200 firmware CRVFW file names describe the corresponding platform associated with the file. See the table below for a breakdown of the filename:

Cxxxxxx_<Version>_<Product>_<Components>_<Imager_type>.crvfw

File name part	Description	Notes	
Cxxxxxx	Unique Code internal tracking number	This number is unique for all Code firmware/hardware but has no other significance	
<Version>	The version number of this firmware in three integers as Major.Minor.Build	Major – A change to this number equates to significant changes such as breaking backwards compatibility	
		Minor – A change to this number equates to a change or addition to functionality	
		Build – A change in this number equates to an issue fix or some minor change. It is updated for every build of the firmware.	
<Product>	The product on which this firmware will run	Currently CR5200 only (other values reserved for future use)	
<Components>	Four alphanumeric characters describing product characteristics and sub-assemblies	1 st character	2 = CT8200 Chip Revision 2.xx
		2 nd character	A = CR8200 Optical Head M = CR8000 Optical
		3 rd character	K = CR5200 Development Board for Development D = CR5200 Decode Board in production units
		4 th character	0 = Normal firmware (other integers reserved for future use)
<Imager_type>	Designates the optics used	L00	Single-field optics
		L01	Single-field IR-Cut optics
		L02	Dual-field optics

7. SOFTWARE/READER TOOL COMPATIBILITY

Recently upgraded Code software is available for download from Code website at: www.codecorp.com or contact Code Technical Support.

Software	Version
CortexTools™3	2.1.20.1 or higher



8. TECHNICAL SUPPORT INFORMATION

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You can track new product releases, software updates and technical bulletins by visiting the Code web page at <http://codecorp.com>.

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