



**CR8500 Decoded Scan Engine
Integration Guide
C005383
Rev 06**



Qcode Reader 8500 Integration Guide

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The Qcode Reader software is based in part on the work of the Independent JPEG Group.

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CR8000 Introduction

Product Overview

With the CR8000, Qcode has taken its high performance, patented optical platform and miniaturized it into an optical scan engine. The CR8000 continues Qcode's legacy of dual optical fields— while most devices have a single field enhanced for a specific application, Qcode's CR8000 has both a high density field for reading the smallest of bar codes, and a wide angle field for reading oversized bar codes – giving you two readers in one.

The CR8000 includes Qcode's Glare Reduction Technology. Bar codes printed on shiny or reflective surfaces have typically been problematic for imaging-based bar code readers. Qcode has overcome this challenge with a patented process that significantly reduces the reflections, thus making the bar codes easily identifiable. In addition, Qcode has designed in functionality to allow the integration and control of additional illumination blocks or elements. Applications include document scanning, direct parts marking, and other applications that require expanded lighting.

For integration, a variety of mounting options are available including tabs, blind through holes, and mounting brackets for both the scan engine and the decode board. The CR8000 communicates via RS232 or USB protocols and can run Qcode's JavaScript for customized data parsing. A Software Developer's Kit and Integration Manual can be downloaded, free of charge, from Qcode's website.

Applications for the CR8000 include medical devices, ATMs, price lookup, lottery, age verification, direct parts marking, point of sale, self-service kiosks and more.

SKU Descriptions

The following table describes the options available for the CR8000 engine. Any SKU (Part Number) can be built using the following table. An example is included below, for reference.

CR8### - L## - MT## - D## - C### - F#

Base Number: CR8xyz

- x: Image Sensor
 - o 0 = Rolling Shutter; 1= Global Shutter
- y: Revision
 - o Current Revision is 1
- z: Interface
 - o 0 = Undecoded; 1 = USB; 2 = RS232

L: Wide Field Focus & High Density Field Focus

- 00 Standard Focus: WF = 115 mm; HD = 100 mm.
- 01 Custom: WF = 47 mm; HD = 47 mm.

MT: Mounting Options

- X = No Tabs, No Bracket
- 1 = Tabs
- 2 = Tabs, Standard Bracket

D: Flex Cable (Decode to Scan Engine Flex)

- X = No Flex
- 0 = Standard
- 1 = Mount Flex

C: Ribbon Cable

- 800 = 2" Ribbon Cable
- 801 = 6" Ribbon Cable
- 802 = 12" Ribbon Cable

F: Decode Algorithms

- X = none
- 1 = Omniplanar SwiftDecoder

EXAMPLE: CR8000 USB with Standard Focus, Rolling Shutter, Tabs, Standard Flex, 2" Ribbon Cable

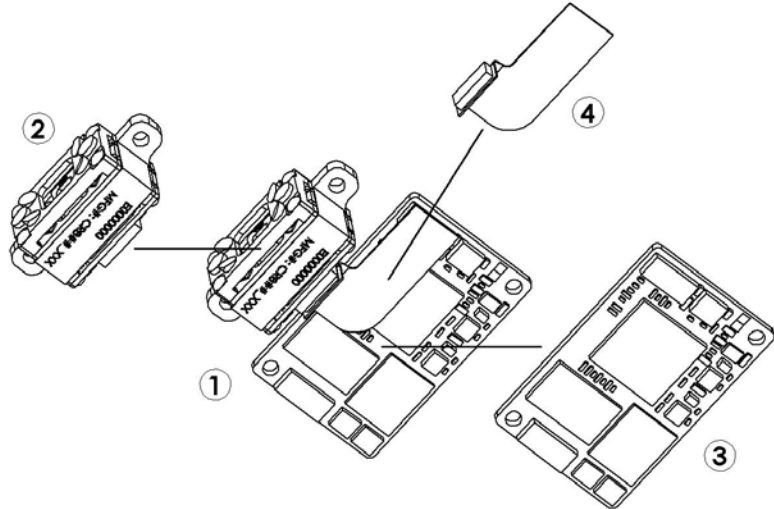
SKU = CR8011-L00-MT1-D0-C800-F1

Note: Additional Ribbon Cables, Flex Cables, Focus options may be available.

Mechanical Specifications

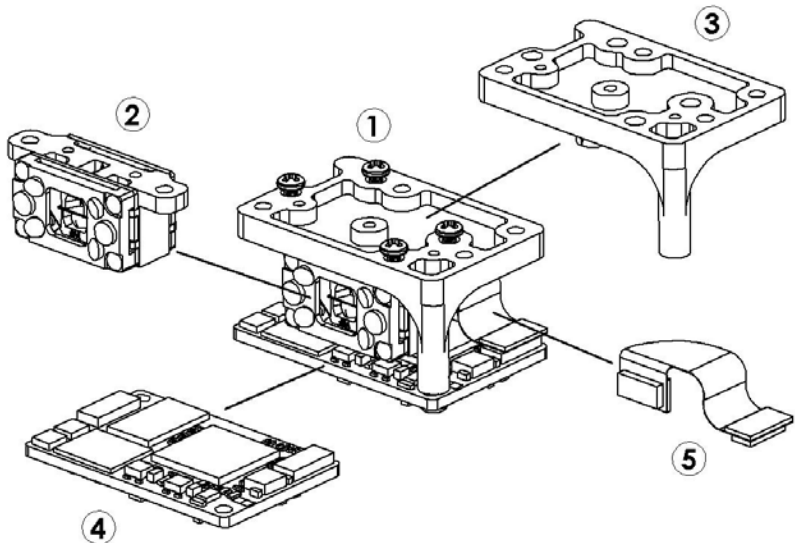
CR8000 Decoded Scan Engine Components

- 1) Fully Assembled CR8000 Scan Engine
- 2) Undecoded Scan Engine
- 3) Decode Board
- 4) Decode to Scan Engine Flex Cable



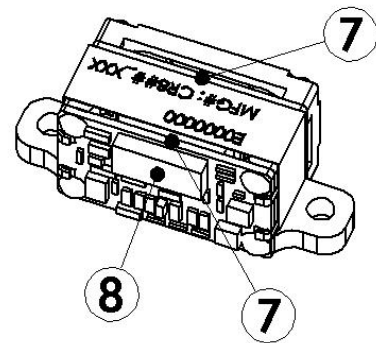
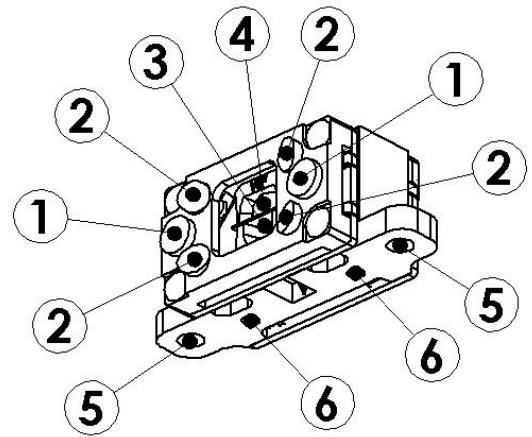
CR8000 Decoded Scan Engine with Mounting Bracket Components

- 1) Fully Assembled CR8000 Scan Engine with Mounting Bracket.
- 2) Undecoded Scan Engine
- 3) Mounting Bracket
- 4) Decode Board
- 5) Decode to Scan Engine Flex Cable



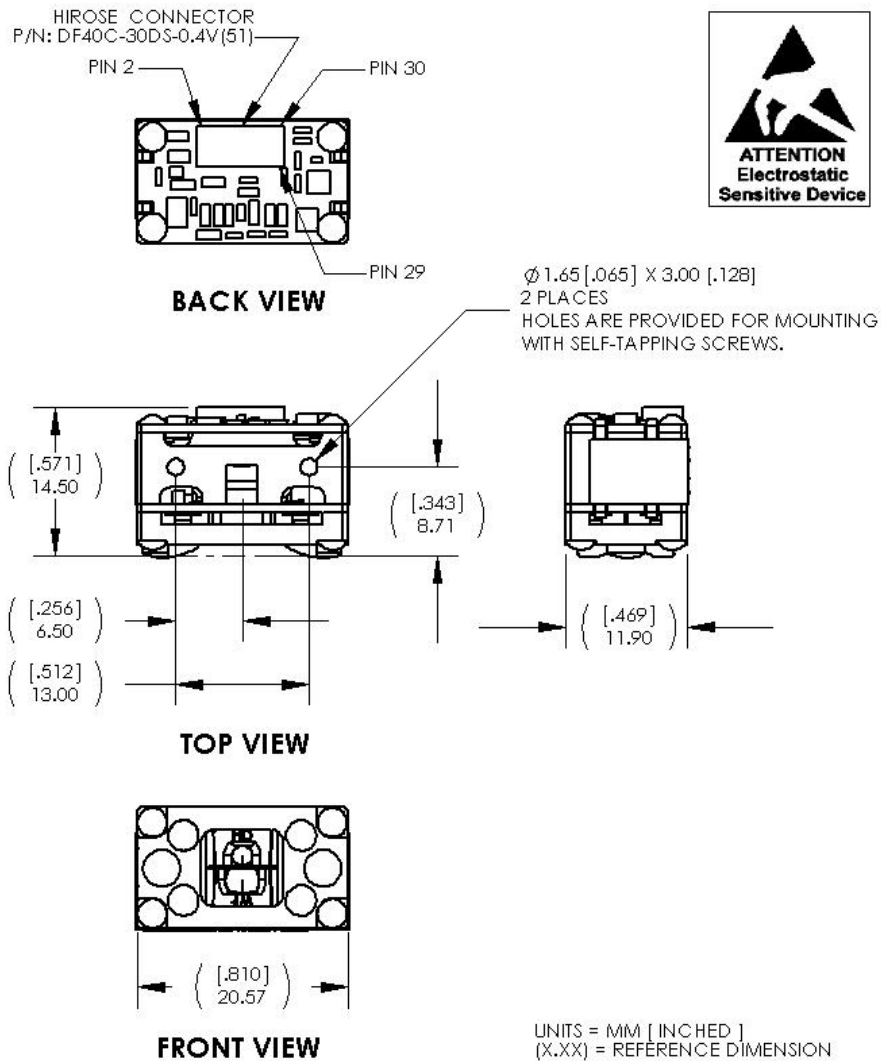
CR8000 Decoded Scan Engine with Mounting Bracket Components

- 1) Blue LED Targeting Lens
- 2) Red LED Illumination Lens
- 3) High Density Field Lens
- 4) Wide Field Lens
- 5) Mounting Tabs
- 6) Self Tapping Screw Tabs
- 7) Printed Circuit Board
- 8) Connector, Receptacle, 30 pin, 0.4 mm pitch



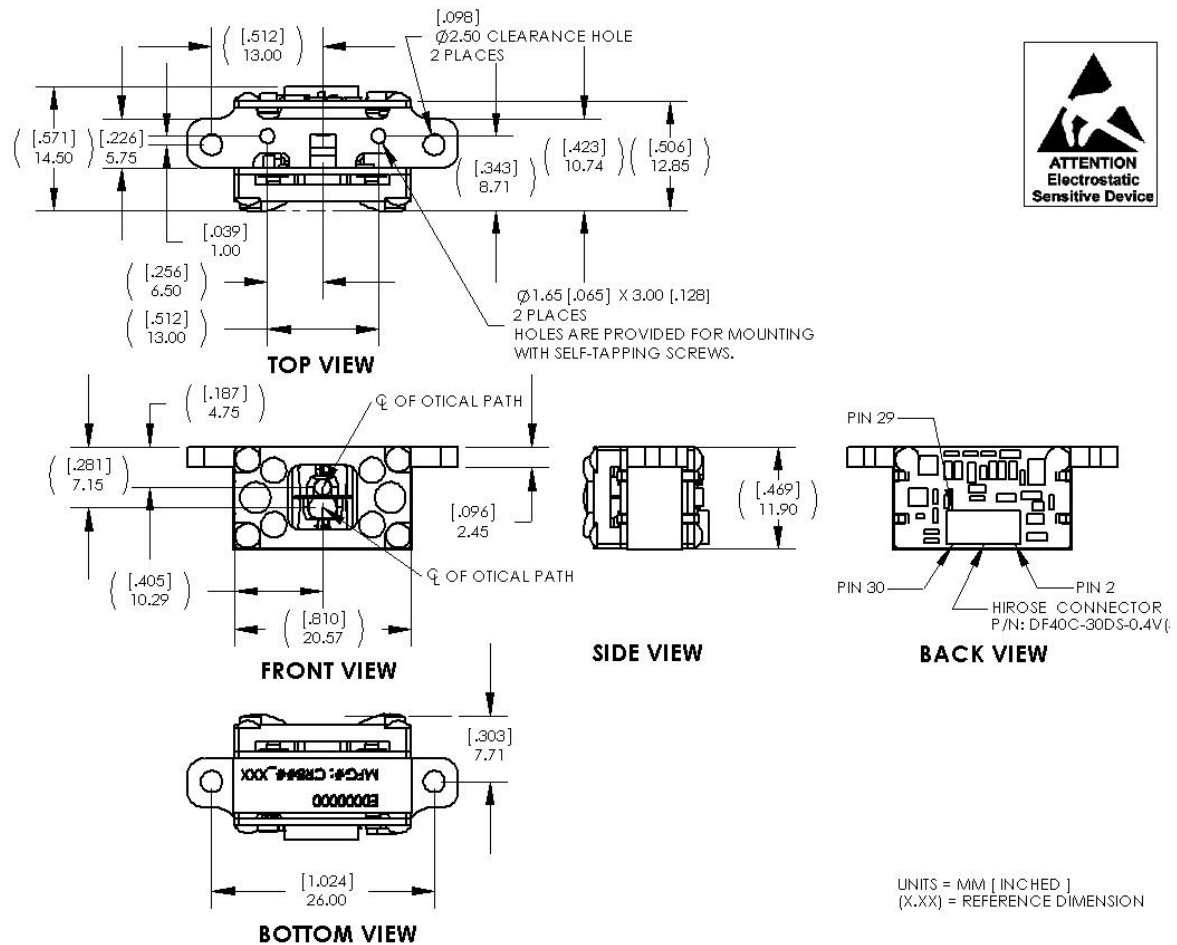
CR8000 Scan Engine Mechanical Specifications

- 1) The CR8000 has two holes available for mounting with 2 self-tapping screws.
- 2) Please use M2.2 x 4.5 Philips pan head, type AB, steel, zinc clear, Trivalent self-tapping screws.



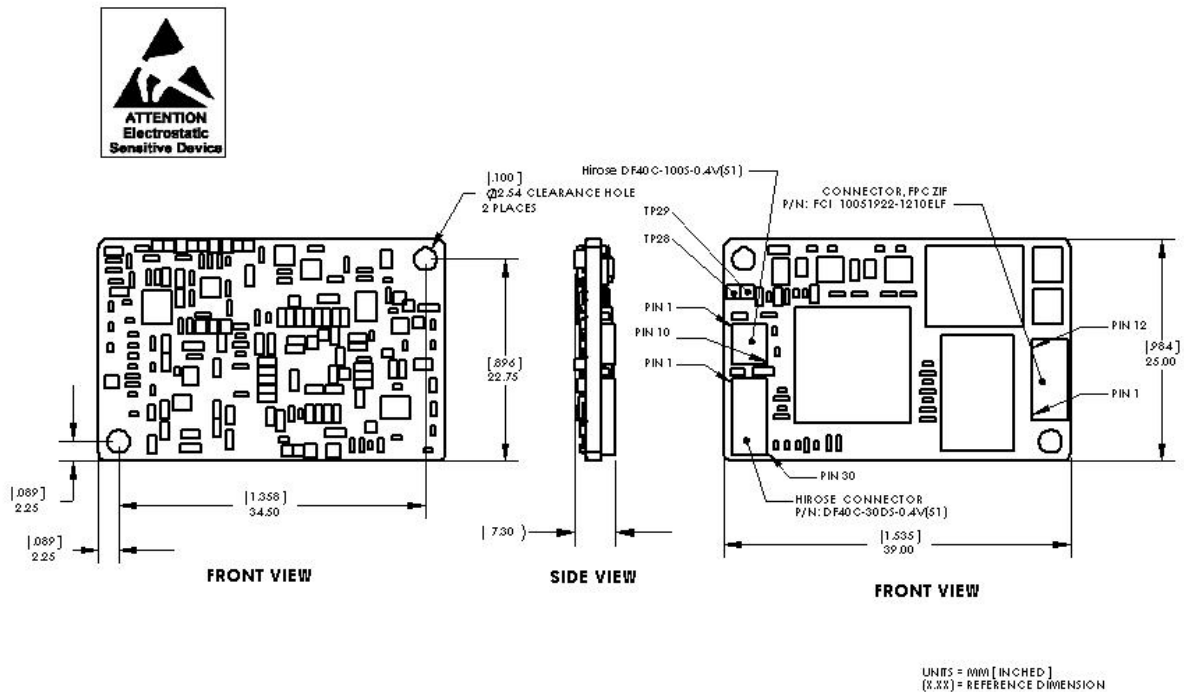
CR8000 Scan Engine with Mounting Tabs Mechanical Specifications

- 1) The CR8000 with Mounting Tabs has two tabs with mounting holes as well as two holes available for mounting with 2 self-tapping screws.
- 2) For the Mounting Tabs, Please use M2.2 x 6 Philips pan head screws. The design does not require a washer, however, if one is desired, Code recommends a flat washer, No. 2 Screw Size, .19" OD, .01"-.03" thick.
- 3) For the Blind Holes, please use M2.2 x 4.5 Philips pan head, type AB, steel, zinc clear, Trivalent self-tapping screws.



CR8000 Decode PCB Mechanical Specifications

- 1) The CR8000 Decode PCB has two holes available for mounting.
- 2) Please use M2.2 mounting hardware.



CR8000 Enclosure Specifications

- 1) Minimize infiltration by airborne contaminants and foreign materials while allowing sufficient air flow to maintain safe temperatures.
- 2) The CR8000 must not come in contact with water.
- 3) The CR8000 is sensitive to Electrostatic Discharge (ESD) and must be handled appropriately. Any individual that handles the CR8000 should be grounded using a wrist strap and ESD protected work area and work surface.
- 4) The warranty of the CR8000 is void if the recommendations above are not followed when handling or integrating the device.

Optical Considerations

CR8000 Scan Engine Window Requirements

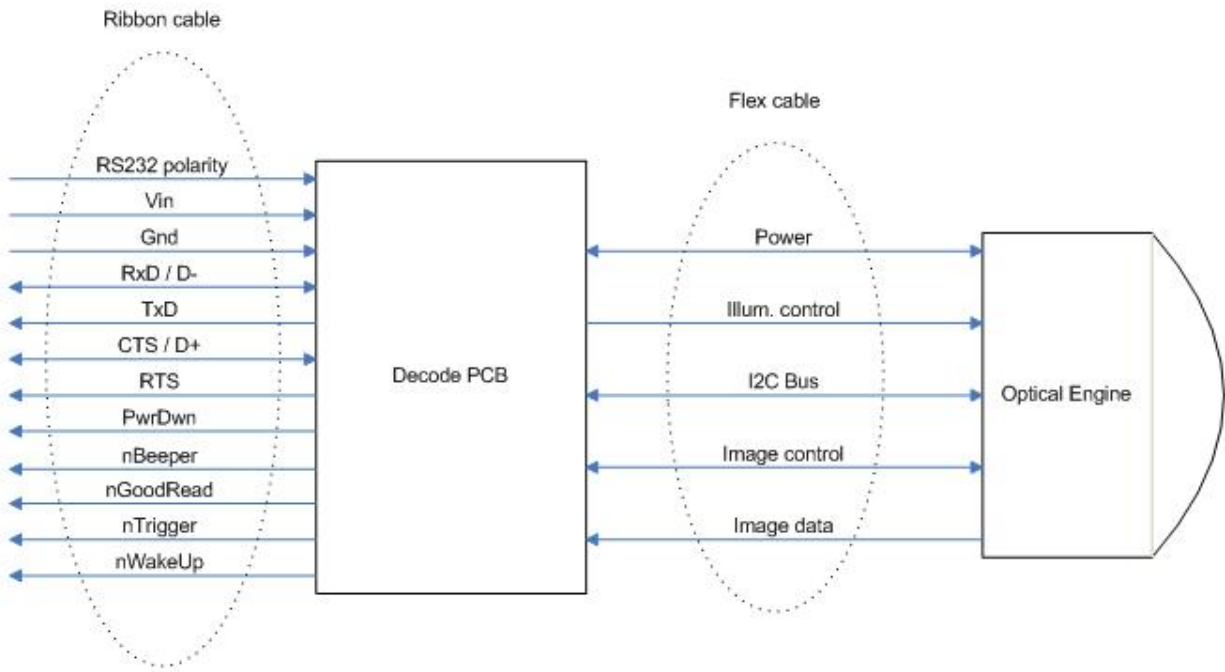
When integrating the CR8000 into your device or application, it may be necessary to install a window in front of the optics of the scan engine. Although many different types of materials can be considered, Code makes the following recommendations.

Placement: Contact to 12.5 mm away from the face of the scan engine.
Material: Optically clear acrylic
Thickness: 1 mm

Electrical Specifications

Electrical System Block Diagram

The CR8000 scan engine is a complete bar code scanning system that can be easily integrated into any device. The block diagram below shows the main components of the system. The CR8000 includes an optical engine with dual field optics (both Wide Angle Field and High Density Fields are included in the standard device). These fields are preset at the factory and can be customized to a non-standard focus prior to shipment. The CR8000 also includes a printed circuit board that includes a microprocessor with embedded decoding algorithms, along with communication interface. Configuration of the CR8000 can be accomplished by scanning bar codes or by sending serial commands (please refer to the Serial Configuration section of this guide for details).



System Requirements

Power Supply: The CR8000 is powered from the host via the Vin and Gnd pins. Vin must be within the range specified when measured at the decoding board. Vin must be maintained with varying loads, such as when the illumination is turned ON and OFF.

Host Flex Cable: The impedance of the cable for the USB data lines should be 90 ohm differential.

Power Sequencing: There is no special power sequence needed for the CR8000 as long as the max and min voltage and current specifications are met. However, if the voltage on a pin is greater than Vin, such as when powering on, then current will flow from the pin to Vin through the pull up resistors.

Thermal Requirements: The operating temperature range for the CR8000 is 0°C – 70 °C (32°F – 158°F) as measured at the coldest/hottest point on either of the printed circuit boards.

CR8000 Boot Modes

The CR8000 will enter the following boot modes based on the configurations of the *External Wakeup* line and *TP28: Illumination IO 4* line during boot time. TP28 has an internal pull up and can be pulled down by shorting it to TP29, which is a ground point located next to TP28. For location of TP28 and TP29, please reference the diagram in *CR8000 Decode PCB Mechanical Specification* section in this manual.

Pin	Name	Type	Description	Notes
TP28	Illumination IO 4	Bidirectional	Illumination Communications Line, Boot Select Signal	1
TP29	Ground	Power	Power supply and signal ground	

Notes: (1) Pin has a weak pull up to internal 3.3V

Boot Mode	Illumination IO 4	External Wakeup	Description	Notes
1	Pulled-up	Pulled-up	Normal Mode – Reader Application	
2	Pulled-up	Pulled-down	Upgrade Mode - Linux Application to upgrade Reader Application	
3	Pulled-down	Pulled-up	Factory Restoration Mode	1
4	Pulled-down	Pulled-down	Uboot Upgrade Mode - Upgrading Linux OS and FS	

Notes: 1. Boot Mode 3 will clear all settings and any customer specific configuration. Use with caution!

Host Interface Pinouts (RS232)

Pin	Name	Type	Description	Notes
1	RS232 Polarity	Input	RS232 polarity control. When high, all RS232 signals have their normal polarity. When low, all RS232 signals have inverted polarity.	1
2	Vin	Power	Power supply voltage input	
3	Gnd	Power	Power supply and signal ground	
4	RxD	Input	RS232 receive data, TTL level	1
5	TxD	Output	RS232 transmit data, TTL level	1
6	CTS	Input	RS232 Clear to Send, TTL level	1
7	RTS	Output	RS232 Request to Send, TTL level	1
8	PwrDwn	Output	Power down indicator	1
9	nBeeper	Output	Active low signal; can be used to indicate errors or success.	1
10	nGoodRead	Output	Indicates a successful decode; active low	1
11	nTrigger	Input	Activate image acquisition, decode; active low	1
12	nWakeUp	Input	Bring the unit out of sleep state; active low	1

Notes: (1) Pin has a weak pull up to Vin.

Host Interface Pinouts (USB)

Pin	Name	Type	Description	Notes
1	<unused>	Input		1
2	Vin	Power	Power supply voltage input	
3	Gnd	Power	Power supply and signal ground	
4	D-	Bidirectional	USB D- signal	
5	<unused>	Output		1
6	D+	Bidirectional	USB D+ signal	
7	<unused>	Output		1
8	PwrDwn	Output	Power down indicator	1
9	nBeeper	Output	Active low signal; can be used to indicate errors or success.	1
10	nGoodRead	Output	Indicates a successful decode; active low	1
11	nTrigger	Input	Activate image acquisition, decode; active low	1
12	nWakeUp	Input	Bring the unit out of sleep state; active low	1

Notes: 1. Pin has a weak pull up to Vin.

CR8000 Electrical Control Signals

The CR8000 is equipped with various control signals (aka lines or pins) that control or provide output on a variety of functions with the device. Please see the CR8000 Timing Diagrams and Timing Table in this guide for additional details.

Pin 8 - Power Down. The *PwrDwn* line will be asserted HIGH when *Vin* is present and the CR8000 has switched to the sleep state. *PwrDwn* will transition to the LOW state when *Vin* is not present or when *Vin* is present and the CR8000 is not in sleep state.

Pin 9 - Beeper. The *nBeeper* line can be pulled LOW for a specified length of time or for a series of pulses of a specified duration on a successful decode or on certain error conditions. The length or type of signal is settable via a configurable setting.

Pin 10 - Good Read. Upon a successful scan and decode, the *nGoodRead* line will be asserted LOW. The length of *nGoodRead* assertion is settable via a configurable setting.

Pin 11 - Trigger. To activate the CR8000, pull the *nTrigger* line LOW.

Pin 12 - Wakeup. Once the CR8000 has entered the sleep state, it may be awakened by asserting *nWakeUp* LOW. Note that *nWakeUp* must be HIGH when the CR8000 enters the sleep state in order for *nWakeUp* to awaken the CR8000 on assertion. The CR8000 awakens to the idle state.

Note: All output signals except *USB D-* and *USB D+* are connected to open drain buffers with a pull-up of 100 Kilo-ohm to *Vin* and a maximum current capability of 50 mA. All input signals except *USB D-* and *USB D+* are connected to a pull-up to *Vin* and to a buffer with a 50 mA maximum current capability.

Note: When *Vin* is initially supplied, *PwrDwn* and the other outputs will be LOW for a few milliseconds until the voltages on the board come up. They will then transition to default HIGH due to pull-ups until the unit is up and running. These signals should be ignored until the unit is fully functioning. See startup timing diagram for details.

CR8000 Power Modes

Boot State. The CR8000 enters boot state upon application of *Vin*. The *PwrDwn* pin will be HIGH (after power on delay) until the main app starts.

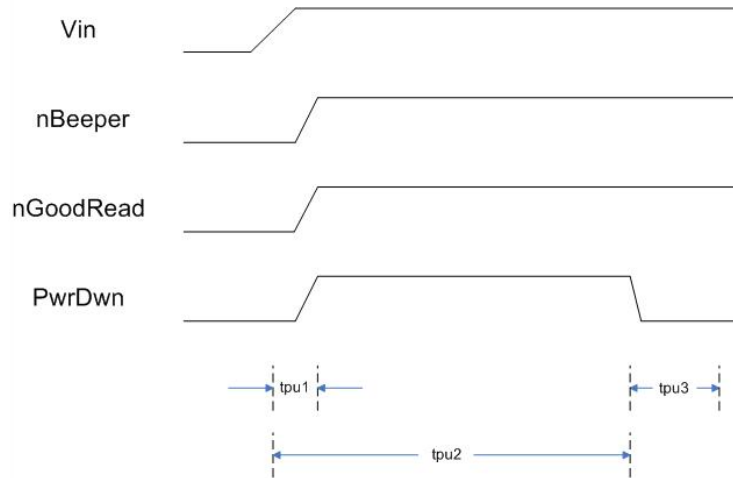
Active State. In the Active state the unit is capturing images and initiating the decode process and/or storing images. The unit transitions to Active state from Idle state when a trigger event is received.

Idle State. In the Idle state the unit is not actively capturing images. The processor is fully functioning and communication can take place, upgrades can be performed, and scripts can be run. The Idle state is entered from the Boot state after power on, from the Active state after a settings defined timeout in which there are no trigger events, and from the Sleep state on receipt of a wake up.

Sleep State. The imager, illumination, and most of the processor is powered down. The CPU wake up circuitry, the memory, and the input/output buffers are powered. The unit enters the sleep state after a settings defined timeout of inactivity. On receipt of a wake up on the *nWakeUp* pin, the processor restores the run environment and enters the Idle State.

CR8000 Power On/Boot Timing Diagram

The *PwrDwn* signal will transition to HIGH shortly after *Vin* is applied and will remain HIGH until the main application starts.

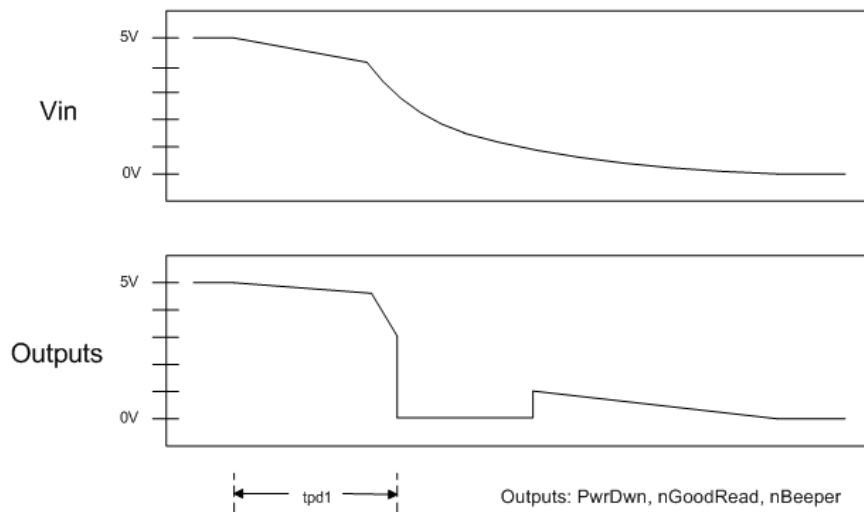


Parameter	Symbol	Min	Typ	Max	Unit	Note
Power on to outputs at default	tpu1		10		msec	
Power on to <i>PwrDwn</i> deasserted	tpu2		9		sec	
<i>PwrDwn</i> deasserted to ready (Idle state), after power on	tpu3		1		sec	1

Note: 1. USB enumeration might take longer on USB model.

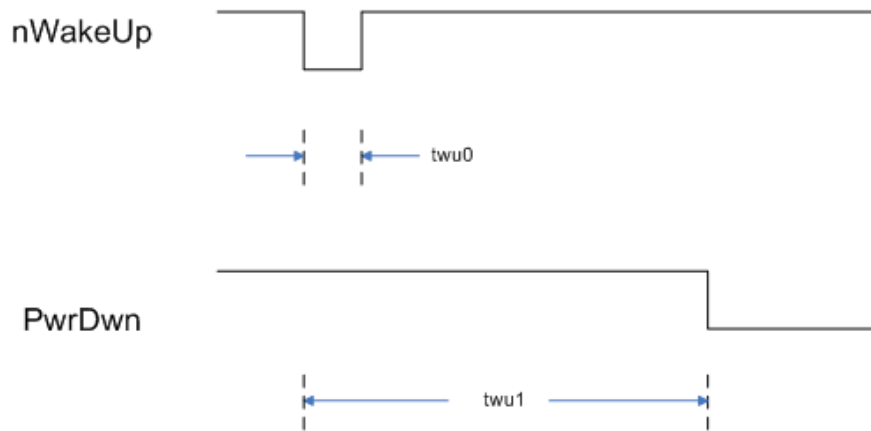
CR8000 Power Down Timing Diagram

Power (*Vin*) can be removed at any time except when the unit is performing an upgrade. Removing power during an upgrade may cause the unit to become unusable.



Parameter	Symbol	Min	Typ	Max	Unit	Note
Power off to outputs low	tpd1		56		msec	

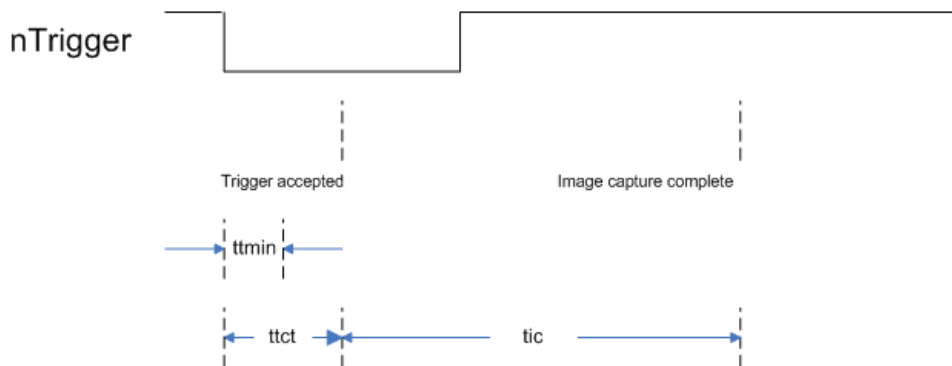
CR8000 Sleep & Wakeup Timing Diagram



Parameter	Symbol	Min	Typ	Max	Unit	Note
nWakeUp Assertion Time	twu0	60			usec	
Wakeup Time	twu1		1.6	10	msec	

CR8000 Image Capture & Decode Timing Diagram

Image Capture and Decode. Image acquisition and decoding can be started from either the *nTrigger* line or via communications channel command. The time required to capture an image can vary depending on the size of image selected, the confirmation time setting, and where in the capture cycle the imager is. The time to decode an image can depend on the image quality, complexity of the code, etc. The maximum time spent trying to decode an image is a setting.



Parameter	Symbol	Min	Typ	Max	Unit	Note
Trigger accepted to image capture complete	tic	25		50	msec	1,2
Minimum trigger duration	ttmin					1,4
Trigger confirmation time	ttct	0		2 ³¹		5

- Notes:
1. Confirmation time = 0.
 2. Maximum image size
 3. Trigger must also be asserted for confirmation time
 4. Trigger must be asserted for minimum trigger duration even if trigger confirmation Time is less than minimum trigger duration.
 5. Trigger confirmation time is adjustable through user selectable settings

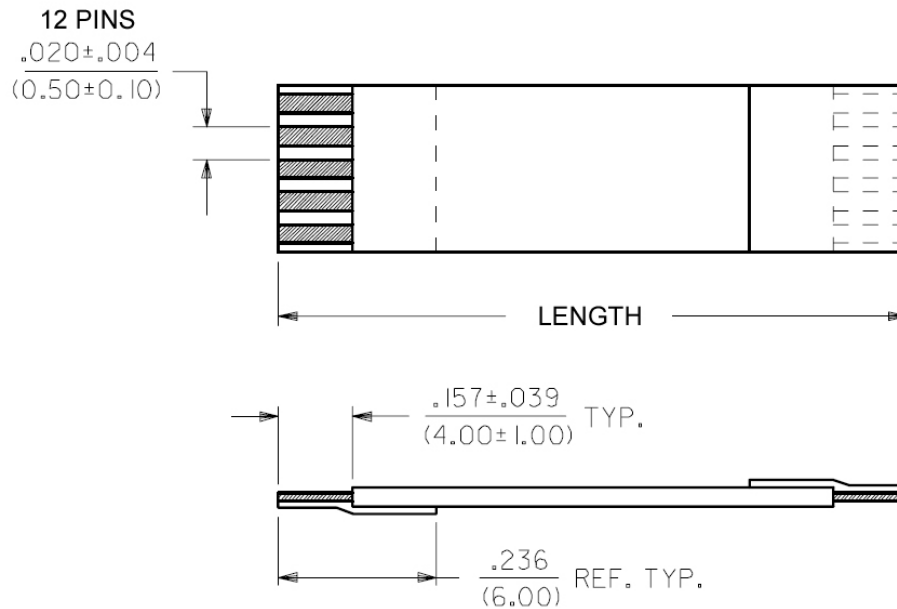
CR8000 Scan Engine Ribbon Cable Diagram

The Ribbon cable has the following characteristics:

- 1) Bottom contact.
- 2) 12 pin
- 3) 0.5 mm pitch
- 4) 0.3 mm thickness with stiffener.

At the time of the release of this document, three ribbon cables are available with the following SKUs and Lengths.

SKU	LENGTH
1) C800	2" ribbon cable.
2) C801	6" ribbon cable.
3) C802	12" ribbon cable.



CR8000 Electrical Characteristics (DC) - Absolute Maximum Rating

Parameter	Symbol	Min	Max	Unit	Note
DC Supply Voltage	V _{in}	-0.5	5.5	V	
DC Input Voltage	V _i	-0.5	5.5	V	
DC Output Voltage	V _o	-0.5	5.5	V	
Output source or sink current	I _o		50	mA	

CR8000 Electrical Characteristics (DC) - Operating Conditions

Parameter	Symbol	Min	Typ.	Max	Unit	Note
DC Supply Voltage	V _{in}	3.0		5.5	V	
High level input voltage	V _{ih}	0.7 x V _{in}			V	4
Low level input voltage	V _{il}			0.8	V	4
High level output voltage	V _{oh}			V _{in}		1
Low level output voltage	V _{ol}			0.55	V	4
Output leakage current	I _{oz}			10	uA	
Active operating current	I _a		345		mA	2,5
Idle operating current	I _i		75		mA	
Sleep current	I _s			1	mA	3
USB high level input voltage	V _{usbih}	2.0			V	
USB low level input voltage	V _{usbil}			0.8	V	
USB static output high	V _{usboh}	2.8		3.6	V	
USB static output low	V _{usbol}			0.3	V	
USB valid vbus voltage	V _{bus}	4.65		5.25	V	

- Notes:
1. 100 Kilo-ohm pull-up to V_{in} on open drain output, actual voltage will depend on external impedance connected to pin
 2. Depends on how long illumination LEDs are on
 3. Assumes inputs and outputs are tri-stated or high; if pulled low, current through pull up resistors will need to be added
 4. Except USB D- and D+
 5. Continuous scan

CR8000 Decode PCB to Scan Engine PCB Connector

Pin	Name	Type	Description	Notes
1	Vin	Power	Vin power to Optical Engine	
2	Vin	Power	Vin power to Optical Engine	
3	1.8V	Power	1.8V power to Optical Engine	
4	1.8V	Power	1.8V power to Optical Engine	
5	Gnd	Power	Power and signal ground	
6	ExtClk	Output	External clock to imager.	
7	Gnd	Power	Power and signal ground	
8	PixClk	Input	Pixel clock	
9	Gnd	Power	Power and signal ground	
10	FrameValid	Input	Vsync from imager	
11	LineValid	Input	Hsync from imager	
12	Gnd	Power	Power and signal ground	
13	Dout4	Input	Imager pixel data 4	
14	Dout5	Input	Imager pixel data 5	
15	Dout6	Input	Imager pixel data 6	
16	Dout7	Input	Imager pixel data 7	
17	Dout8	Input	Imager pixel data 8	
18	Dout9	Input	Imager pixel data 9	
19	Dout10	Input	Imager pixel data 10	
20	Dout11	Input	Imager pixel data 11	
21	nImagerReset	Output	Imager reset, active low	
22	ImagerStandby	Output	Imager standby	
23	Sdata	Input/ Output	I2C bus data line	
24	Sclk	Output	I2C bus clock line	
25	Gnd	Power	Power and signal ground	
26	IllumPwm0	Output	PWM illumination signal	
27	TargetLed	Output	Targeting LED control signal	
28	1.8VImagerEnable	Output	Imager 1.8V enable	
29	5VEnable	Output	Optical Engine 5V enable	
30	2.8VEnable	Output	Optical Engine 2.8V enable	

CR8000 Decode PCB Expanded Illumination Connector

Pin	Name	Type	Description	Notes
1	Vin	Power	Power supply voltage input	
2	Vin	Power	Power supply voltage input	
3	Illumination IO 0	Bidirectional	Illumination Communications Line, UART Port4 TX TTL Level, I2C SDA	1
4	Illumination IO 1	Bidirectional	Illumination Communications Line, UART Port4 RX TTL Level, I2C SCL	1
5	Illumination PWM 1	Output	Illumination PWM output	
6	Illumination IO 2	Bidirectional	Illumination Communications Line, GPIO	
7	Illumination IO 3	Bidirectional	Illumination Communications Line, GPIO	
8	Illumination IO 4	Bidirectional	Illumination Communications Line, Boot Select Signal	1
9	Gnd	Power	Power supply and signal ground	
10	Gnd	Power	Power supply and signal ground	

Notes: 1. 10 Kilo-ohm pull-up to Vin 3.3V

CR8000 Scan Engine PCB Illumination Connector

Table 8 – Optical Engine Board Illumination Connector

Pin	Name	Type	Description	Notes
1	NC			
2	5V	Power	5V power to Illumination	
3	IllumLed0	Output	Illumination LED0 control	
4	Gnd	Power	Power and signal ground	
5	NC			

CR8000 Configuration

CR8000 Serial Commands

The CR8000 engine can be configured by scanning bar codes or by sending serial commands. The following is an overview to the functionality. The details are documented in C005066_CR8000_Reader_Host_Interface Document.

Serial commands can be sent in two formats. The default format is referred to as a packetized command. A packetized command contains the following structure.

Code can provide sample source code or a library to assist with the software integration.

Packetized-command packet: *prefix command-type data-size data_{opt} reserved crc14*

<i>prefix:</i>	0xEE 0xEE 0xEE 0xEE
<i>command-type:</i>	Single ASCII character representing command
<i>data:</i>	<i>datum</i> <i>data datum</i>
<i>datum:</i>	any byte value in the range [0,255]
<i>data-size:</i>	byte value in range [0,240], which indicates size of <i>data</i> (in bytes)
<i>reserved:</i>	0x00
<i>crc14:</i>	two consecutive bytes, each in range [0,127], representing crc16 & 0x7f7f, most significant byte first. The packet crc16 is calculated over the entire packet, excluding the <i>prefix</i> and the <i>crc14</i> itself. (See source files <i>crc16.[hc]</i> (Appendix) for details on the crc16 algorithm and polynomials to be used.)

The complete list of commands and valid data options are listed in the C005066_CR8000_Reader_Host_Interface Document. The below is the sequence of hex values that would cause the reader to beep.

0xEE 0xEE 0xEE 0xEE 0x23 0x01 0x03 0x00 0x4E 0x71

This executes the beep command, '#' character or 23h, with a data of 3, so the reader would beep 3 times.

A simpler method is referred to as text commands. In order to eliminate inadvertent commanding of the reader, text commands are disabled by default. Text commands can be enabled by sending the following sequence

;>PA1 0x0d

This sets register 0x41 to 1 which enables text commands to be sent. The following sequence could also be sent. This will enable text commands but suppresses echo and responses. See register 41 for additional settings.

;>PA7 0x0d

Once text commands are enabled you can execute commands by sending only the command. No packet is required. For example, the same beep command described above in a packetized format would be

#%03
or
0x03

The reader will convert %xx characters to the ASCII values represented by the xx. In the example above %03 is also 0x03 or the ETX ASCII character. The reader will respond with an appropriate response after a command is received, if responses are enabled.

The complete documentation of the available commands the reader responses are documented in C005066 CR8000 Reader Host Interface Document.

CR8000 Shipping Specification

The CR8000 can be shipped in either bulk or as a single unit. If shipped in bulk, the units will be placed in a recyclable, ESD safe tray that can hold up to nine units per tray and three trays per box, for a total of twenty-seven per master box. The dimensions of the master box are 8 3/8"W X 7 1/4"D X 2 1/2"H. The master box will be sealed with an ESD caution label. The flex cables will be packaged in an ESD safe bag and placed on top of the trays. Ribbon cables will be shipped separately. If shipped as a single unit, a recyclable, ESD safe mini-tray is used.

Note: The ESD safe tray will maintain its properties for a period of 1 year.

CR8000 General Specifications

Physical Characteristics	Specification
CR8000 Dimensions	0.81" W x 0.57" D x 0.47" H (20.6 mm W 14.5 mm D x 11.9 mm H)
CR8000 with Tabs Dimensions	1.25" W x 0.57" D x 0.47" H (31.7 mm W x 14.5 mm D x 11.9 mm H)
Decode PCB	1.54" W x 0.98" D x 0.30" H (39.0 mm W x 25.0 mm D x 7.5 mm H)
CR8000 with Tabs Weight	0.10 oz. (3.0 g)
CR8000 and Decode PCB Weight	0.17 oz. (5.0 g)
CR8000 Reader without Tabs Weight	0.09 oz (3.0 g)

Performance Characteristics:	Specification
Field of View	High Density Field: 30° horizontal by 20° vertical Wide Field: 50° horizontal by 33.5° vertical
Focal Point	High Density Field: 100mm (SKU L00); 47 mm (SKU L01) Wide Field: 115mm (SKU L00); 47 mm (SKU L01)
Sensor	CMOS 1.2 Megapixel (1280 x 960) gray scale
Optical Resolution	High Density Field: 960 x 640 Wide Field: 960 x 640
Pitch	± 60° (from front to back)
Skew	± 60° from plane parallel to symbol (side-to-side)
Rotational Tolerance	± 180°
Print Contrast Resolution	25% (1D symbologies) or 35% (2D symbologies) absolute dark/light reflectance differential, measured at 650 nm
Target Beam	Single, blue targeting bar
Ambient Light Immunity	Sunlight: Up to 9,000ft-candles/96,890 lux
Shock	Withstands multiple drops of 6' (1.8 Meters) to concrete in an enclosed housing
Power Requirements	Reader @ 5vdc: Typical = less than 345 mA; Idle = less than 75 mA; Sleep = less than 1 mA
Memory Capacity	128MB Flash ROM, 32MB RAM
Communication Interfaces	TTL-RS232, USB (full speed)

User Environment	Specification
Operating Temperature	0° to 50° C / 32° to 122° F
Storage Temperature	-20° to 65° C / - 4° to 150° F
Humidity	5% to 95% non-condensing
1D Bar Codes	UPC/EAN/JAN, Code 39, Code 128, Interleaved 2 of 5, Codabar, GS1 DataBar (RSS), MSI Plessey, Code 11, Code 93, NEC 2 of 5, Matrix 2 of 5, Trioptic Code, Telepen, Hong Kong 2 of 5, Pharmacode, Composite Codes
Stacked 1D Bar Codes	PDF417, Micro PDF417, Codablock A & F
2D Bar Codes	Data Matrix, QR Code, Micro QR Code, Aztec Code, Maxicode
Proprietary 2D Bar Code	GoCode® (Additional License Required)
Postal Bar Codes	Postal: USPS OneCode (4CB), POSTNET, PLANET, Japanese Post, Australian Post, Royal Mail, KIX Code
OCR Recognition	OCR-A and OCR-B Fonts, Passports
Image Output Options	Formats: JPEG, PGM, Raw (Uncompressed)
Field Selection	High-Density or Wide Field
Data Editing	JavaScript (Additional License Required)

CR8000 Reading Range Specifications

The following table summarizes the reading distances for the specified bar codes with both the Wide Area Field and the High Density Field enabled and active for decoding.

Test code	Min Inches (mm)	Max Inches (mm)
3 Mil Code 39	3.7" (95)	5.9" (150)
7.5 Mil Code 39	2.2" (55)	8.0" (205)
13 Mil UPC	2.0" (50)	10.8" (275)
4.2 Mil Data Matrix	3.7" (95)	4.5" (115)
5 Mil Data Matrix	3.7" (95)	5.1" (130)
6.3 Mil Data Matrix	3.1" (80)	6.3" (160)
10 Mil Data Matrix	1.6" (40)	7.7" (195)
20.8 Mil Data Matrix	1.6" (40)	9.4" (240)

CR8000 Compliance Information

Declaration of Conformity

Date: 2010-05-18
Manufacturer's Name: Code Corporation
Manufacturer's Address: 14940 South Pony Express Rd., Suite 500
Bluffdale, UT 84065

Declares that the following product:

Product Name: CR8000

Model Number: CR8000

Conforms to the following Product Specification:

EMC Emissions : EN 55022:2006 class B limits
LED Safety Compliance : EN60825-1:1994+A1+A2 Class 1

The product herewith complies with the requirements of the following Directive and carries the CE Marking accordingly:

The EMC Directive 2004/108/EC

This certification applies to the CR8000 as a stand alone OEM engine and does not apply to the CR8000 as an integrated module. When integrating the CR8000 into another product, that product will still need to obtain any applicable CE certifications for the full product.

The CR8000 is RoHS compliant.

CR8000 Warranty

Qcode Corporation's CR8000 carries a one year limited warranty as described herein.

Limited Warranty

Qcode manufactures its hardware products in accordance with industry standard practices. Qcode warrants its products will be free from defects in materials and workmanship, provided that the products are used under normal operating condition intended by the Manufacturer. This warranty is provided to the original owner only and is not transferable to any third party. This warranty is subject to any and all accompanying disclaimers, limitations and other terms of this section.

Exclusions

No warranty herein contained or set out shall apply to any product (i) which has been repaired, altered or tampered with unless done or approved by Qcode, (ii) which has not been maintained in accordance with any operating or handling instructions supplied by Qcode, (iii) which has been subjected to unusual physical or electrical stress, immersion in fluids, puncture, crushing, misuse, abuse, power shortage, improper power supply such as incorrect voltage or wrong polarity, negligence or accident, or (iv) which has been used other than in accordance with the product operating and handling instructions. Preventive maintenance is the responsibility of the customer and is not covered under this warranty.

Warranty Coverage and Procedure

During the warranty period, Qcode will repair or replace defective products returned to Qcode's service center in the US. For worldwide warranty service call Qcode Warranty Support at 1-801- -2200 or email support@qcode.com . If warranty service is required, Qcode will issue a Return Material Authorization Number. Products must be shipped in the original or comparable packaging, with shipping and insurance charges prepaid. Qcode will ship the repaired or replacement product freight and insurance prepaid in North America. Shipments from the US or other locations will be made F.O.B. Qcode's manufacturing plant. Qcode will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for any pre-shipped replacement product in case it does not return the replaced product to Qcode within 7 days of receipt of the replacement product. The process for return and customer's charges will be in accordance with Qcode's Exchange Policy in effect at the time of the exchange. Customer accepts full responsibility for its software and data including the appropriate backup thereof. Repair or replacement of a product during warranty will not extend the original warranty term. Qcode's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

General

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