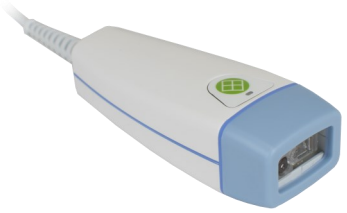




# Creo Compact Hand Held Combo Bar-code/RFID Scanner

# Quick Reference Guide



Model: FHR-004

Manual Version 1.03

DIAMOND TECHNOLOGIES
Getting data where it needs to be.

The Diamond Technologies Creo R is a compact companion barcode and RFID scanner which is designed for applications in hospitals, labs, and for use with medical devices and lab instrumentation. The reader's small size is designed for space saving applications such as on nursing carts and lab bench tops. The Creo R scanner is further designed for ergonomic use by clinicians, nursing staff, and lab personnel. The scanner is designed to withstand cleaning by common cleaning products found in hospital settings and incorporates special anti-microbial plastics which inhibit the growth of bacteria on the reader's surface.

The Creo R incorporates a high performance 1D/2D barcode module along with an Low Frequency and High Frequency RFID scan module. This provides omni directional reading of all standard 1D and 2D barcodes with high accuracy and speed regardless of code orientation, as well as low and high frequency RFID tag reading. The reader includes a highly visible LED aimer and integrated user feedback in the form of green light, audible beep, and vibrator.

The Creo R scanner includes patented, highly accurate, decode software libraries and provides decoded output through its USB interface. This guide provides the basic instructions for scanner setup and use.

## Basic Specifications

### READING PERFORMANCE

| | |
|---|---|
| IMAGER SENSOR | VGA: 640 x 480 pixels |
| ILLUMINATION | White LEDs |
| AIMING | Red dot LED |
| SYMBOL CONTRAST | 20% |
| FIELD OF VIEW | 40° H x 30° V |
| READING ANGLE | Tilt: 360° , Pitch: +/- 50°, Skew: +/-50° |
| READING INDICATORS | Beeper, Green light read confirmation, Vibrator |
| MOTION TOLERANCE | 6 m/s |

### DECODING CAPABILITY

| | |
|---|---|
| 1D / LINEAR CODES | Auto discriminates all standard 1D codes including GS1 DataBar™ linear codes. |
| 2D CODES | Aztec Code, China Han Xin Code, Data Matrix, MaxiCode, Micro QR Code, QR Code |
| POSTAL CODES | Australian Post, British Post, Canadian Post, China Post, IMB, Japanese Post, KIX Post, Korea Post, Netherlands Post, Planet Code, Postnet |
| STACKED CODES | Codablock A, Codablock F, PDF417, MicroPDF417 |

### READING RANGES

| | |
|---|---|
| TYPICAL DEPTH OF FIELD | Minimum distance determined by symbol length scan angle, printing resolution, contrast, and ambient light dependent. 1D / 2D CODES<br><br>100% UPC: 5.5 to 28 cm / 2.1 to 11 in<br>5 mils Code 39: 6.1 to 13.0 cm / 2.4 to 5.1 in<br>13 mils EAN-13: 5.5 to 39.0 cm / 2.2 to 15.4 in<br>20 mils Code 39: 6 to 38.0 cm / 2.4 to 15 in<br>10 mils DataMatrix: 6.0 to 13.0 cm / 2.4 to 5.1 in |

### RFID READING PERFORMANCE

| | |
|---|---|
| NOMINAL READ RANGE | Contact—3" / 0 - 76.2mm |
| SUPPORTED TAGS | Globally Relevant Standards EM 125kHz, ISO14443A, ISO14443B, ISO15693, ISO18092, EM4102/4100, EM4305, HITAG1,2,S, NXP ICODE, SLI, SLIX, SLIX2, MIFARE, Classic, Classic 1K/4K, DESFire EV1,EV2, EV3, PLUS, Ultralight C, Ultralight EV1, NTAG 203,213, PicoPass, SRX |
| READ/WRITE SPEED | NFC-A 106kbps, NFC-B 212kbps or 424kbps |
| FREQUENCY BAND | 125KHz LF, 13.56MHz HF |



## Regulatory Information:

Compliance Statement (Part 15.19)

*This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:*

*1. This device may not cause harmful interference, and*

*2. This device must accept any interference received, including interference that may cause undesired operation.*

Warning (Part 15.21)

*Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

FCC Interference Statement (Part 15.105 (b))

*This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:*

*- Reorient or relocate the receiving antenna.*

*- Increase the separation between the equipment and receiver.*

*- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*

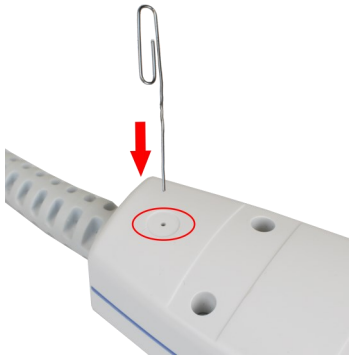
*- Consult the dealer or an experienced radio/TV technician for help.*

## Setup and Configuration:

The Creo R can be easily setup by the following steps:

1) Plug the scanner into your host USB port.
2) Set the preferred scanner interface.
3) Set the preferred scanner operating mode.
4) Program the scanner as needed.

The Creo R is powered and provides data via its USB interface cable. The cable comes preinstalled but can be removed by the user. The USB cable can be removed, by inserting a paper clip into the decoupling hole under the round sticker on the scanner's base. The paper clip pushes on the top of the RJ45 connector locking tab, allowing the cable to be pulled out. Reaffix the round sticker over decoupling hole for proper sealing. Unless it is required, it is not advised to remove the cable.



## Interface Mode:

The Creo R can operate in various interface modes. These include USB COM and USB keyboard. These modes determine how the scanner will send its data to the host. The scanner's default setting is USB Serial. In this mode the Creo R acts as a USB Serial port to the host. Scan the following barcode to set your desired operating mode.

USB COM Mode

USB Keyboard Mode



## Good Read Feedback:

The Creo R comes equipped with green led, vibrator, and audio feedback when scanning barcodes. The unit will display a green light, vibrate in the hand, and emit an audible beep when a good read is performed on a barcode. However this may not be desired in all cases.

The barcodes to enable and disable the green feedback light and in hand vibration are found below. For Audible beeper settings, please refer to page 7.

Vibrator On

Vibrator Off

Feedback LED On

Feedback LED Off

## Enable Disable Specific Codes:

The Creo R can be programmed to read or ignore barcodes based on barcode type. Use the following programming barcodes to enable or disable the scanner's ability to read specific barcode types.

Code 39 Enable

Code 39 Disable

Code 128 Enable

Code 128 Disable

Data Matrix Enable

Data Matrix Disable

## Beeper:

It may be advantageous to turn off the Creo R's audible good read beeper. This is helpful in hospital bedside applications. The beeper volume may also be raised or lowered. Use the following barcodes to increase, decrease, or turn off the reader's beeper settings.

Good Read Beeper Off

Good Read Beeper On

Good Read Beeper Medium

Good Read Beeper Low

Good Read Beeper High

## Illumination Control:

The Creo R's illumination lighting can be controlled with the below codes. This is also helpful in hospital or patient room settings. Note however, reducing the lights too much will reduce the scanners ability to read barcodes in dark environments.

Illumination On

Illumination Off

## Aimer and Scanning

The Creo R is equipped with a red dot LED aimer as shown on page 4. The aiming pattern shows the scanner's field of view. The aiming pattern should be targeted over the code to be read. The aimer can also be disabled with the codes below

Aimer On

Aimer Off



## Operating Mode:

The Creo R's default operating mode is single trigger. In this mode the scanner will turn on when the trigger button is pressed and it will look for barcodes. On reading a barcode or releasing the trigger button, the scanner will turn off. The scanner can also be put into other operating modes depending on the specific need. To enter a different operating mode simply scan the QR code above the description.

**Manual Trigger**

Scanner activates on trigger press and searches for a barcode until trigger is released or barcode is found.

**Presentation Mode**

The reader will come on when it detects motion and will sleep after a few seconds of not detecting a code

**Disable Barcode Reading**

Disables Barcode Reading Functionality

### CAUTION!

Scanning this code will disable the use of barcode reading functionality and thus will disable programming codes in this manual.

**This cannot be undone with codes in this manual**

To re-enable barcode reading, download the DSCU software from Diamondt.com

## Reset Default Configuration:

The default code is provided below. This will revert the scanner into its default configuration settings.

DEFAULT CODE

## Aimer and Scanning

Examples of Proper aiming that will result in good reads are shown below.

1D Codes



2D Codes



## Good Read and Scanner Indications:

The Creo R is equipped with several indicators. These include an audible beeper, good read green LED indicator, blue power LED indicator, and vibrator. These indicators are used to identify various scanner states including the following:

| State | Beeper Indication | LED Indication | Vibration |
|---|---|---|---|
| Power Up | 4 High Pitched Beep Tones | Blue LED above trigger button | Off |
| USB Not Enumerated not connected to host | No Beep | Blue LED above trigger button | Off |
| Error or Incorrect Barcode | 1 Low Tone Beep | Blue LED above trigger button | off |
| RFID Tag Detected | No Beep | Flashing blue and white LED above trigger | Off |
| Good Read (Barcode) | 1 Medium Tone Beep | Blue LED above trigger , Green LED feedback on nose | On |
| Good Read (RFID) | 1 Medium Tone Beep | Blue LED above trigger , Yellow LED feedback on nose | On |
| Programming Barcode Read | 2 Tone Beep | Blue LED above trigger , Green LED feedback on nose | On |



## RFID Reading:

The Creo R is equipped with a built in Low and High Frequency RFID Reader. This functionality can be enabled or disabled with the codes below.

RFID Reading On

RFID Reading Off

## Enabling Specific Tag Frequencies:

The Creo R reads both Low Frequency (125Khz) and High Frequency (13.5Mhz) tags. These can be selectively enabled or disabled with the codes below.

Low Frequency Tags Enable

Low Frequency Tags Disable

High Frequency Tags Enable

High Frequency Tags Disable

## RFID Reading:

Reading RFID with the Creo R is simple. Shown below are the proper actions for scanning a common RFID access card.

Simply bring the RFID tag or card within 3” or into contact with the back of the scanner opposite the trigger button. When a tag is detected the scanner trigger LED will begin flashing. When the trigger LED is flashing depress the trigger and observe the good read yellow LED on the nose cone and the vibration feedback.