### Illumination and Scanning

The DE27 scanner is equipped with either a bright red or white LED illumination light and several options for aiming LED or aiming laser. The aimer should be targeted over the code to be read. The aimer does not need to be centered on the code and the reader can read codes anywhere in its field of view. Examples of aiming which will result in good reads are shown below (bright green aimer bar LED shown):


### Basic Reading Ranges

The DE27 can be purchased with different optic characteristics. The basic reading ranges for these optics are listed in the below charts. Consult your model number to determine your particular reading range.

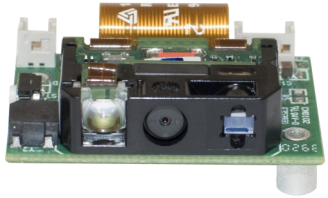
| STANDARD RANGE (DE27-Sx) | | | |
|---|---|---|---|
| Symbology | Near Distance (cm [in]) | Far Distance (cm [in]) | Delta (cm [in]) |
| 5 mil C39 | 70 [2.76] | 301 [11.85] | 231 [9.09] |
| 10 mil C39 | 40 [1.57] | 517 [20.3] | 477 [18.73] |
| 15 mil C128 | 42 [1.65] | 650 [25.6] | 608 [23.95] |
| 6.7 mil PDF417 | 84 [3.3] | 244 [9.6] | 160 [6.3] |
| 15 mil QR | 39 [1.54] | 414 [16.3] | 375 [14.76] |

| HIGH DENSITY (DE27-Hx) | | | |
|---|---|---|---|
| Symbology | Near Distance (cm [in]) | Far Distance (cm [in]) | Delta (cm [in]) |
| 3 mil C39 | 66 [2.6] | 183 [7.2] | 367 [14.4] |
| 6,7 mil DM | 72 [2.8] | 180 [7.1] | 108 [4.3] |
| 10 mil DM | 59 [2.3] | 248 [9.8] | 189 [7.5] |
| 5 mil PDF | 74 [2.9] | 186 [7.3] | 112 [4.4] |
| 15 mil QR | 27 [1.1] | 308 [12.1] | 281 [11] |





# Quick Reference Guide



Model: DE27--xx-003, DE27-xx-004, DE27-xx-005

Manual Version 1.01

The Diamond Technologies DE27 is an ultra slim, enclosed, embedded 1D/2D image based barcode scanner designed for integration into OEM equipment including Lab instrumentation, Medical Devices, Kiosks, Automated machines, and customer facing applications. This compact, reliable, barcode scanner provides image based reading of all standard 1D and 2D barcodes. The reader, depending on model, includes either bright red or white illumination LED, several options for aiming pattern, and varying optics.

The reader includes patented, highly accurate, decode software libraries. The reader's decoded output is provided to the host system through either USB, RS232, or UART interface depending on model. The reader's hardware and software has been designed for the user to easily integrate the scanner into a host system. This guide provides the basic instructions for that integration.

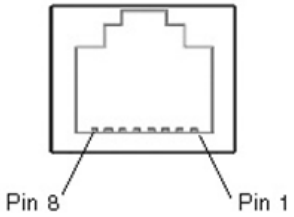
### Physical Mounting:

The DE27-xx-xxx models provide (2) M2X.04 Thread mounting holes in the rear.

## Electrical and Communication Connections:

The DE27 provides a side mounted RJ45 connector for power and communications. The connections on this along with power requirements are seen below for specific models. The default RS232 communication parameters are 115K Baud, No Parity, 8 Data Bit, 1 Stop bit.

Side mounted RJ45 Connector




**DE27 USB Model**

| PIN | Connection |
|---|---|
| 1 | USB D+ |
| 2 | USB D- |
| 3 | GND |
| 4 | NC |
| 5 | NC |
| 6 | +5VDC |
| 7 | POWER_ON |
| 8 | HW_TRIGGER |

**DE27 RS232 Model**

| PIN | Connection |
|---|---|
| 1 | RTS |
| 2 | HW_TRIGGER |
| 3 | GND |
| 4 | RXD |
| 5 | TXD |
| 6 | +5VDC - +24VDC |
| 7 | POWER_ON |
| 8 | CTS |

An accessory RS232 communications cable **PN# CAB-DSE-002** . Or an accessory USB communications cable **PN# CAB-DSE-001** can be purchased from Diamond Technologies. www.diamondt.com

## Programming

Note if you are using the USB version of the DE27 it is important to install the USB device driver before plugging the DE27 into your system. The driver is available from Diamond Technologies.

The DE27 supports several interface modes when operating as a USB device. The modes can be configured in the scanner via programming barcodes or through the scanners' programmatic interface. The most common interfaces are USB COM where the scanner operates as a USB serial interface and keyboard where the scanner operates as a keyboard input device. The following programming barcodes can be used to set these interfaces.

USB Keyboard

USB Serial



The DE27 can be configured either using barcode programming labels or through a programmatic interface. The programmatic interface allows the scanners configuration to be changed via simple commands from the host processor. See the programming manual for more information on programmatic interface. The DE27 can also operate in several operating modes. These include a trigger mode in which the DE27 will start its' reading phase on receiving a trigger and presentation mode in which the sensing of motion in the DE27's field of view will start the reading phase. The following barcode labels can be used to change the scanners operating mode as desired. Additional operation modes can be set by seeing the settings in the programming guide.

Presentation Mode

Manual Trigger Mode

The scanner can also be easily triggered by sending the below trigger command via USB or serial communications to the reader:

Command: {SYN}T{CR}
where SYN = Hex code 0x16 and CR is Hex code 0x0d

The scan module(s) also contains a two pin hardware trigger within the RJ45 connection that utilizes pin 3 and 8 on the DE27 USB models and pin 3 and 2 on the DE27 RS232 models. The scan module(s) also contain a hardware trigger input in the RJ45 connection (pin 8 on USB models, pin 2 on RS232 models). The HW_TRIGGER signal is internally pulled up to +3.3VDC. Switch to GND to initiate a scanner trigger. Leave unconnected if not used

On sending the above command to the scanner, or triggering the hardware trigger or push button, the scanners illumination and LED lights will come on and the scanner will begin to look for and read a barcode. On reading a barcode the LED illumination and aiming lights will go off. If the scanner does not read a barcode, barcode reading can be terminated by sending the scanner the following deactivation trigger:

## Default operating mode

The default code is provided below. This will revert the scanner into it's default configuration.

Activate Custom Defaults