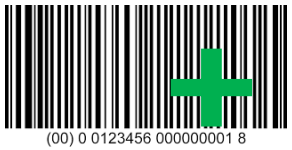
## Illumination and Scanning

The DE33 micro embedded scanner is equipped with a bright white LED illumination light and a Green Crosshair aimer. The aiming LED should be targeted over the code to be read. The aiming LED 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:


## Basic Specifications

**READING PERFORMANCE**

| | |
|---|---|
| IMAGER SENSOR | 1280 x 800 pixels |
| ILLUMINATION | White LEDs |
| AIMING | Green Crosshair LED |
| PRINT CONTRAST RATIO (MIN) | 20% min ratio |
| FIELD OF VIEW | 47° H x 30° V |
| READING ANGLE | Tilt: 360°, Pitch: +/- 60°,Skew :+/- 60° |
| READING INDICATORS | Beeper, HW output |

**READING RANGES**

| | |
|---|---|
| TYPICAL DEPTH OF FIELD | Minimum distance determined by symbol length scan angle, printing resolution, contrast, and ambient light dependent. |
| | 1D / 2D CODES |
| | 13 MIL UPC (100%): 4 to 49 cm / 1.6 to 19.3 in |
| | 5 mils Code 39: 6 to 27.5 cm / 2.4 to 10.8 in |
| | 5 mils Code 128: 6.5 to 24.5.0 cm / 2.6 to 9.6 in |
| | 20 mils Code 39: 6.1 to 79.0 cm / 2.4 to 31.1 in |
| | 10 mils DataMatrix: 5.2 to 27.0 cm / 2 to 10.6 in |





# Quick Reference Guide

Model: DE33-003, DE33-004

Manual Version 1.00

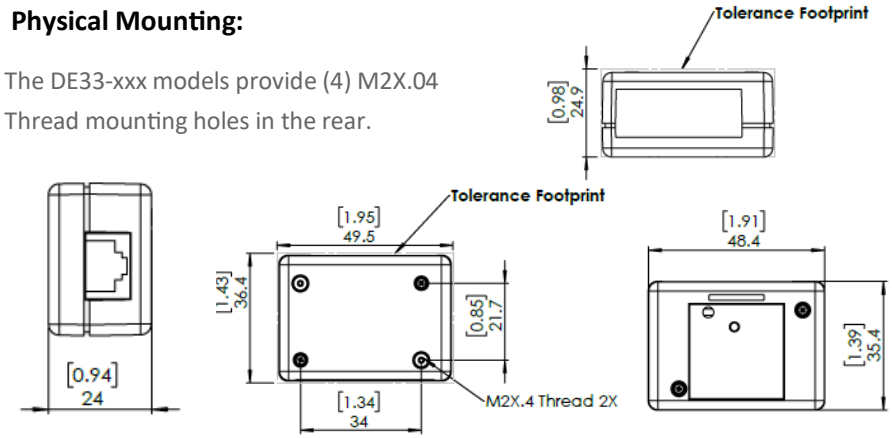
Diamond Technologies
Getting data where it needs to be.

The Diamond Technologies DE33 is a micro enclosed embedded 1D/2D image based barcode scanner designed for integration into OEM equipment such as 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 includes a bright white illumination LED and a bright red aiming pattern.

The reader includes patented, highly accurate, decode software libraries. The reader's decoded output is provided to the host system through either USB, or RS232 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:

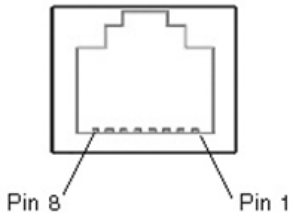
The DE33-xxx models provide (4) M2X.04 Thread mounting holes in the rear.



## Electrical and Communication Connections:

The DE33 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




**DE33-003 USB Model**

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

**DE33-004 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 DE33 it is important to install the USB device driver before plugging the DE33 into your system. The driver is available from Diamond Technologies.

The DE33 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 USBCOM 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.

TERMID124.
***USB Keyboard (PC)**

TERMID130.
**USB Serial**



The DE33 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 DE33 can also operate in several operating modes. These include a trigger mode in which the DE33 will start its' reading phase on receiving a trigger and presentation mode in which the sensing of motion in the DE33'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.

TRGMOD3.
**Presentation Mode**

PAPHHF.
**Manual Trigger – Normal**

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

On sending the above command to the scanner 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:

Command: {SYN}U{CR}
Where SYN is the Hex code 0x16 and CR is the Hex code 0x0d

## Default operating mode

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

DEFALT.
**Activate Custom Defaults**