



SHINING LIGHT ON 2D IMAGERS



AN INTRODUCTION TO BARCODE SCANNING

For decades, enterprises have relied on laser scanners to efficiently capture barcode data. In recent years, however, many organizations have begun to reassess their relationship with traditional laser technology, thanks to a host of new applications that are driving the move to imaging across several markets. Before we delve into the applications and benefits of 2D imaging, it is important to understand the basic capabilities of each technology.

Laser scanners are designed solely for 1D traditional paper barcodes, commonly found on coupons, hang tags and packaging. In comparison, 2D array imagers utilize camera technology to read both 1D and 2D barcodes in print and electronic media, such as digital coupons or loyalty apps. Linear imagers also utilize camera technology, but with a linear row of pixels. This allows them to read from both paper and mobile media but only for 1D barcodes.

The majority of barcode types do not have a universal application. Thus, the flexibility of a 2D imager is very beneficial to enterprises whose environments are likely to require a device that can read multiple symbology types from different forms of media. Such flexibility is demonstrated in the following capabilities:

- **Capture Every Barcode**

2D imagers can read 1D and 2D barcodes from both paper and electronic screens, enabling users to read virtually any barcode that may come their way.

- **Superior Performance on Poor Quality Barcodes**

2D imagers are designed to easily read barcodes that are damaged, torn, smudged or poorly printed.

- **Omni-directional Scanning**

A 2D imager reads barcodes omni-directionally, meaning users do not have to take the time to align the scanner with the barcode. This enhances productivity and keeps lines moving quickly.

- **Enhanced Range**

Some 2D imagers offer enhanced range, enabling users to scan barcodes from a greater distance than traditional lasers. This is particularly helpful when scanning large or bulky items on the bottom of a shopping cart.

- **Read Multiple Barcodes in a Single Trigger Pull (Multi-Code)**

With a 2D imager, you can read multiple barcodes in a single trigger pull. This allows workers in a warehouse environment to populate a database automatically as they scan incoming shipments, faster and with greater accuracy.

- **Go Beyond the Barcode**

Since at their core they are essentially cameras, many 2D imagers can capture images, signatures, and documents, as well as support Optical Character Recognition (OCR) for reading characters on checks, passports, invoices and more.

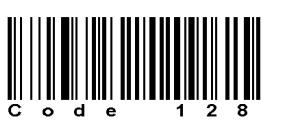
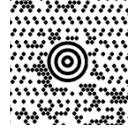


SYMOLOGIES

Barcodes are divided into two main types: one-dimensional (1D) and two-dimensional (2D). 1D barcodes, the oldest and most widely adopted of the two, are composed of vertical black bars and white spaces of varying lengths. 2D barcodes store information vertically and horizontally to support much higher amounts of data.

Barcodes can further be divided into symbologies, or barcode languages, which support different types and amounts of data.

For example:

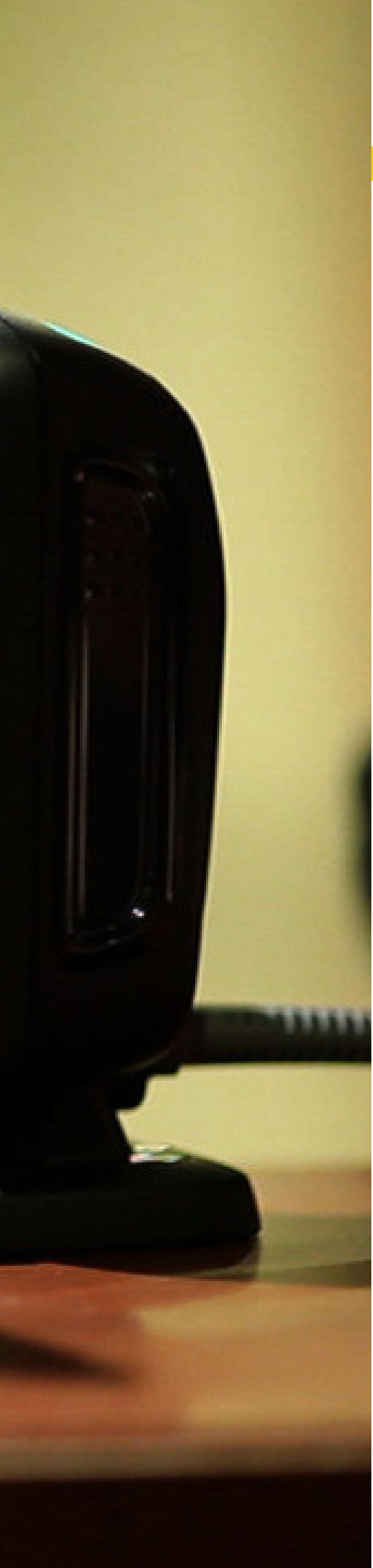
1D BARCODE SYMOLOGIES	2D BARCODE SYMOLOGIES
UPC	 0 1234567890 5 QR Code 
GS1 Databar	 (01) 0 9501101 53000 3 Data Matrix 
Code 128	 C o d e 1 2 8 Aztec 
I 2 of 5	 0 1 2 3 4 5 6 5 Maxicode 

Barcode Infographic

View this document for a quick reference guide on barcode basics.







AN INTRODUCTION TO BARCODE SCANNING

FEATURE	LASER	2D IMAGER
Reads 1D printed barcodes on paper	X	X
Reads 1D and 2D printed barcodes on paper		X
Reads 1D and 2D electronic barcodes from the screen of a mobile device		X
Enables true omni-directional scanning		X
Reads multiple barcodes in a single trigger pull		X
Supports Optical Character Recognition (OCR)		X
Captures and transfers images		X
Reads Direct Part Marks (DPM)		X
Excellent performance on poorly printed, damaged, or shrink-wrapped barcodes		X

IMAGERS - CONVERTING THE PHYSICAL TO DIGITAL

HOW IT WORKS

- Barcode illuminated by LED lights
- Scanner captures image of entire code
- Decoder software finds barcode in image to decode
- Symbology algorithm applied
- Verification via check digit, if supported
- Data stream sent to host

Learn more about Zebra's 2D imaging portfolio at:
www.Zebra.com/Imaging



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