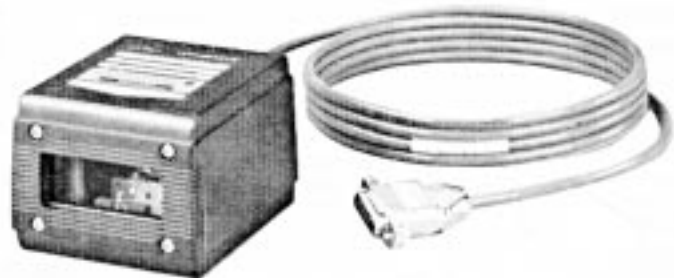




## High Performance Visible Laser Diode Scanners

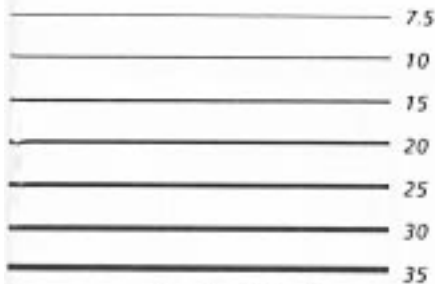
(Catalog No. 2755-LD4z1, -LD4z4  
2755-LD8z1, -LD8z4)

### Product Data



Use the lines below to determine the narrowest element of your bar code symbol.

Compare the smallest bar, or space, of your bar code symbol to the lines below.



When in doubt, always select the smallest bar width.

These high performance, fixed-mount scanners use a Visible Laser Diode (VLD) for non-contact scanning. The laser generates a small, concentrated light beam that exits the scan window. Light, reflected off the bar code symbols, passes back through the window and is detected by a light sensor. The signal is then sent to a decoder for further processing.

The scanners are compatible with these Allen-Bradley bar code decoders:

- Catalog No. 2755-DM6 or -DM9 Bar Code Decoder
- Catalog No. 2755-DS1A/DS4A Enhanced Single-Head Decoders
- Catalog No. 2755-DD1A/DD4A Enhanced Dual-Head Decoders

Equipped with either a NEMA Type 1 or Type 4 connector, the environmentally sealed enclosure is suitable for a wide range of applications. Each scanner has a permanently attached 10 foot (3 meter) cable for connecting to a decoder and an 11.5 inch (.29 meter) package detector cable. Extension cables increase the scanner-to-decoder distance to 25 or 50 feet (7.6 or 15.2 meters).

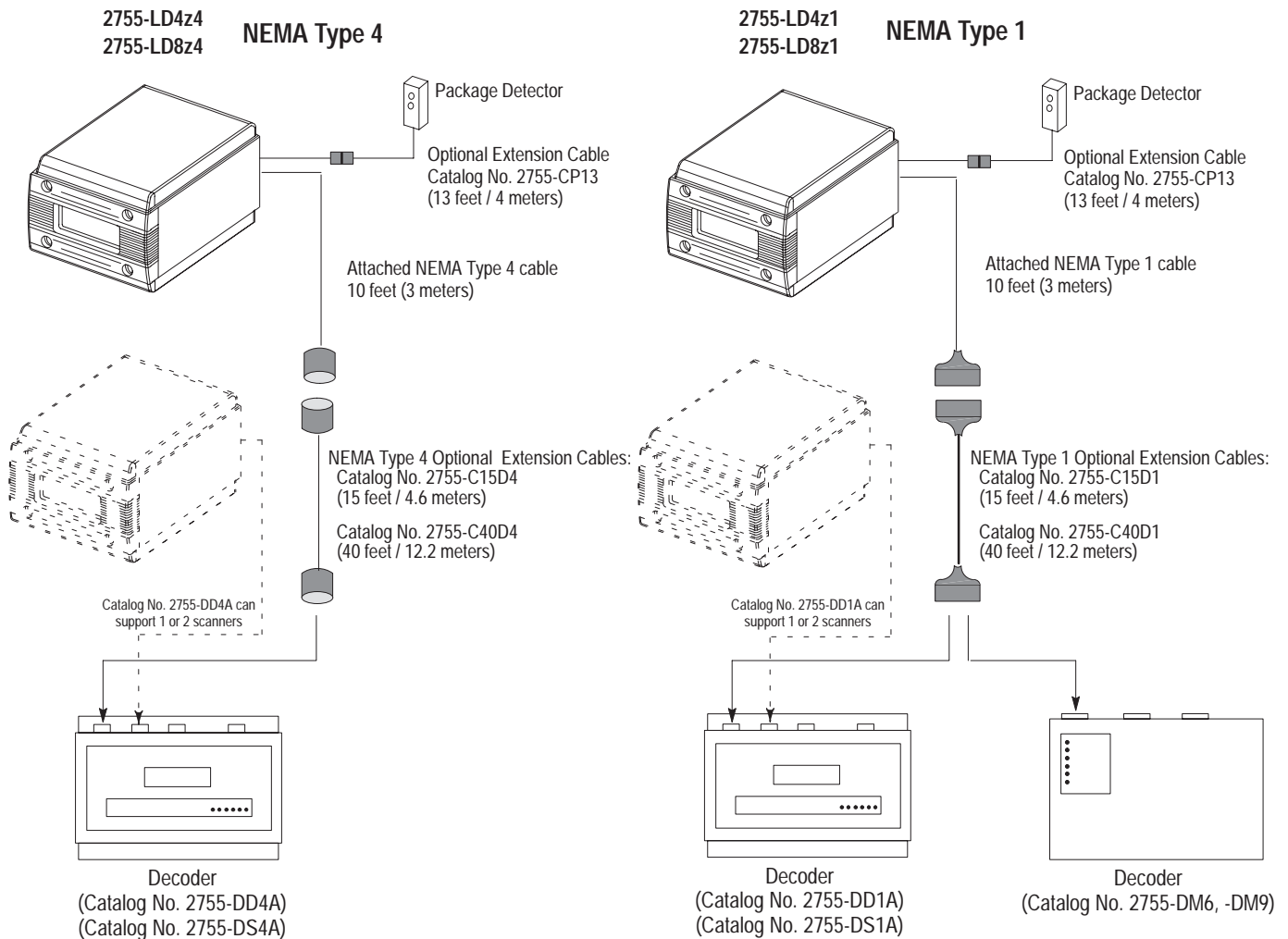
The scanners feature two scan rates, multiple read ranges and a NEMA Type 1 or NEMA Type 4 connector.

Catalog Number	Description
2755-LD4z1 <sup>①</sup>	200 scans per second, NEMA Type 1 Connector
2755-LD4z4 <sup>①</sup>	200 scans per second, NEMA Type 4 Connector
2755-LD8z1 <sup>②</sup>	500 scans per second, NEMA Type 1 Connector
2755-LD8z4 <sup>②</sup>	500 scans per second, NEMA Type 4 Connector

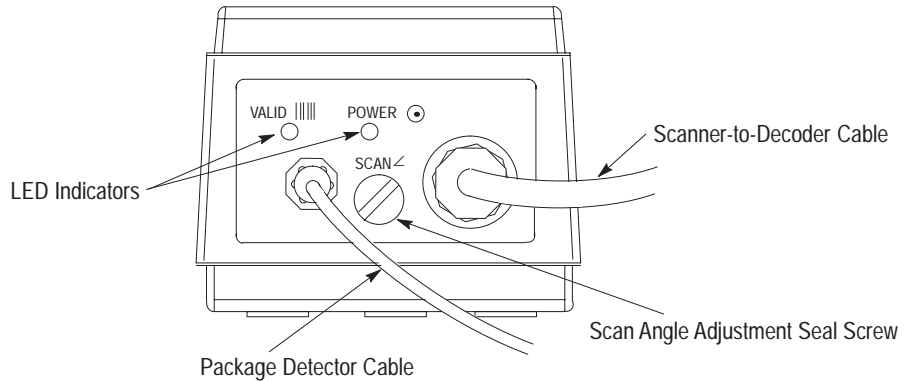
① z = A, B, C or E read range for LD4 scanners. See Figure 3.

② z = A, B or C read range for LD8 scanners. See Figure 6.

**Figure 1**  
**Cabling Options**



**Figure 2**  
**Back of Scanner**



## LED Indicators

The back of the scanner (Figure 2) has two LED Indicators: *VALID* and *POWER*. These LEDs provide a visual indication of scanner operation. Table A defines the color and function of each LED.

**Table A**  
**LED Indicators**

LED Label	Color	Function
POWER $\odot$	Amber	Lights when the scanner is receiving power from the decoder. The scanner must be connected to the decoder and the decoder turned on before this LED lights.
VALID $\text{    }$	Green	Flashes momentarily to indicate a successful decode.

## Scan Angle Adjustment

A multi-position rotary switch lets you adjust the scan angle to  $\frac{1}{2}$ ,  $\frac{3}{4}$ , or a maximum angle.

The scan angle adjustment switch is located behind a seal screw on the back of the scanner. See Figure 2.

## Accessories

Extension cables and replacement windows are available for each of the scanners.

### Scanner Extension Cables

Each scanner has a permanently attached 10 foot (3 meter) cable for connecting to the decoder. Extension cables are available to increase the distance between the scanner and decoder to 25 or 50 feet (7.6 or 15.2 meters). Table B lists the available extension cables.

**Table B**  
**Optional Scanner Extension Cables**

Catalog Numbers	Description
2755-C15D1	15 feet (4.6 meters), NEMA Type 1 extension cable
2755-C40D1	40 feet (12.2 meters), NEMA Type 1 extension cable
2755-C15D4	15 feet (4.6 meters), NEMA Type 4 extension cable
2755-C40D4	40 feet (12.2 meters), NEMA Type 4 extension cable

### Package Detectors

Allen-Bradley Photoswitch® package detectors are recommended for use with the scanner. Select a switch from the Photoswitch Series 6000 (-QD) or Series 9000 (-QD Micro Style) product line that best fits your application. You must order a **sinking** type sensor that can operate from a 12V DC supply with the -QD suffix (Quick Disconnect) added to the catalog number.

For example: Catalog Number 42SRU-6203-**QD** or  
 Catalog Number 42GRU-9200-**QD**

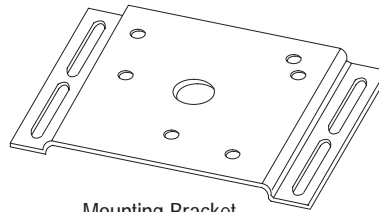
The connector on the -QD sensors and the LD4/LD8 scanners are compatible with Brad Harrison Micro-Change® connectors and Crouse-Hinds Micro-Mini® connectors. The table below lists the vendor part numbers.

Length	Brad Harrison Part Number	Crouse-Hinds Part Number	Allen-Bradley Catalog Number
2 Meter (6.56 feet)	81428-003	5000118-40	
3 Meter (9.84 feet)		5000118-41	
4 Meter (13.1 feet)	81428-005	5000118-42	2755-CP13
5 Meter (16.4 feet)	81428-004	5000118-43	

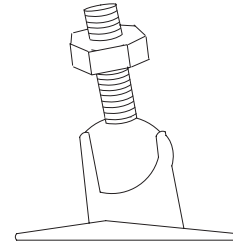
Various mounting brackets for the switches are also available from Allen-Bradley Photoswitch.

## Mounting Bracket

The Mounting Bracket (Catalog No. 2755-NM6) lets you mount the scanner on most flat surfaces. The bracket can be used with or without the optional Swivel Ball Mount (Catalog No. 2755-NM1).



Mounting Bracket  
 (Catalog No. 2755-NM6)



Swivel Ball Mount  
 (Catalog No. 2755-NM1)

## Replacement Windows

Customer installed plastic and glass replacement windows are available for the scanners. To order replacement windows, refer to Table C.

**Table C**  
**Replacement Scan Windows**

Replacement Numbers	Description
77125-898-01	Replacement Glass Window Kit Includes bezel/window assembly with anti-reflective, optical <b>glass</b> window.
77125-899-01	Replacement Plastic Window Kit Includes bezel/window assembly with hard coated, anti-reflective, optical quality <b>plastic</b> window.

## Safety Label Kit

Use this kit to replace damaged safety labels.  
 Kit part number is 77121-802-01.

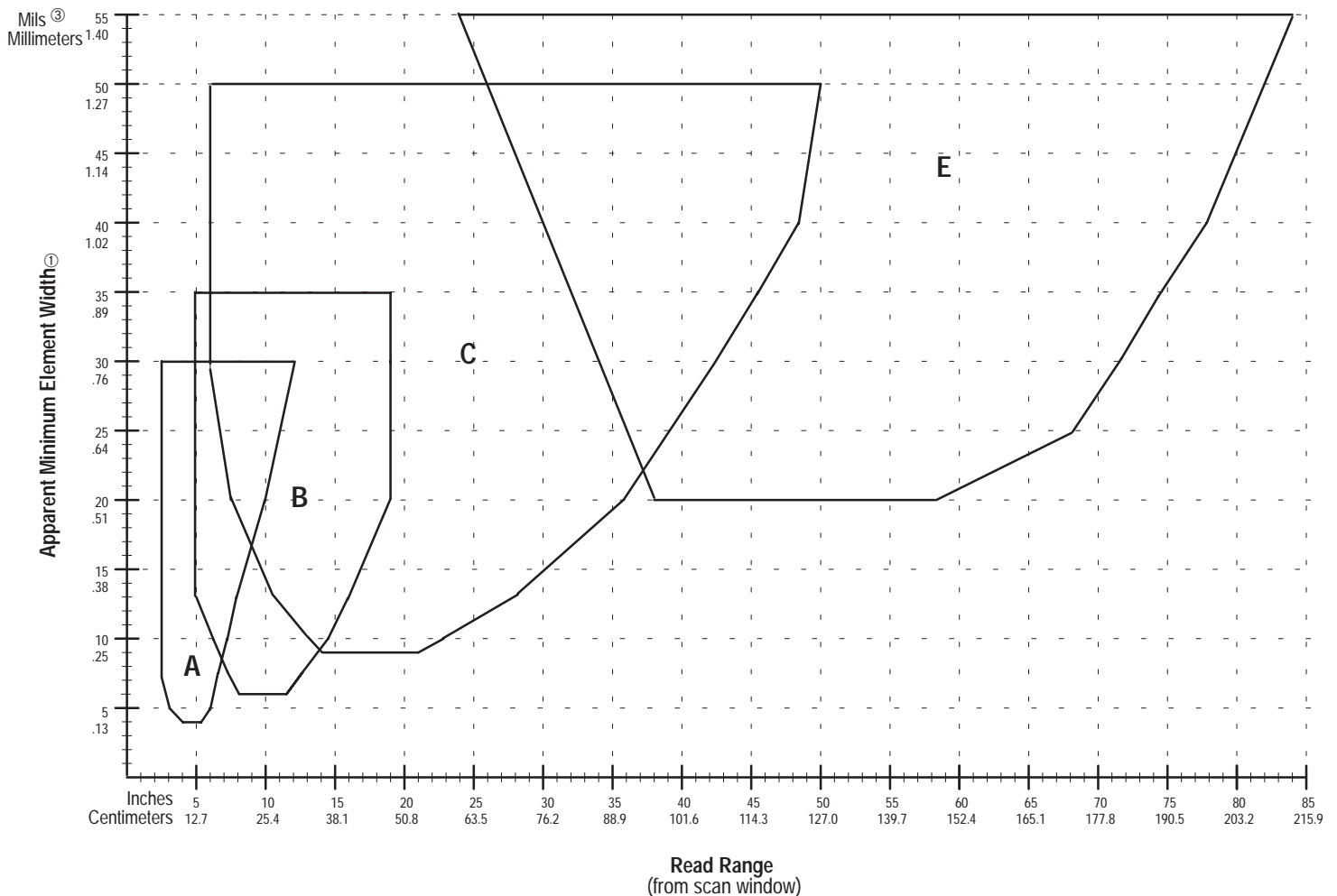
## 2755-LD4 Read Ranges

The LD4 scanners can read bar code labels at various distances depending on the apparent minimum element width<sup>①</sup> and scanner to label pitch. The scanner can read labels within one of four read ranges: A, B, C or E.

Figure 3 shows the *reading distances* for each range of the LD4 scanner. Table D lists the read ranges for the LD4 scanners.

See "Compensating for Pitched Symbols" if your labels are pitched.

**Figure 3**  
 Read Range vs Apparent Minimum Element Width (LD4 Scanners)<sup>②</sup>



- ① For minimum element width, refer to "Determining Apparent Minimum Element Width" on page 18.
- ② Read ranges based on four character, Code 39 labels with a wide to narrow bar ratio of 2.6 to 1 and a print contrast ratio of .75 or better. Read ranges vary with bar code symbol quality.
- ③ 1 mil = 0.001 inches

**Table D**  
**LD4 Read Ranges ①**

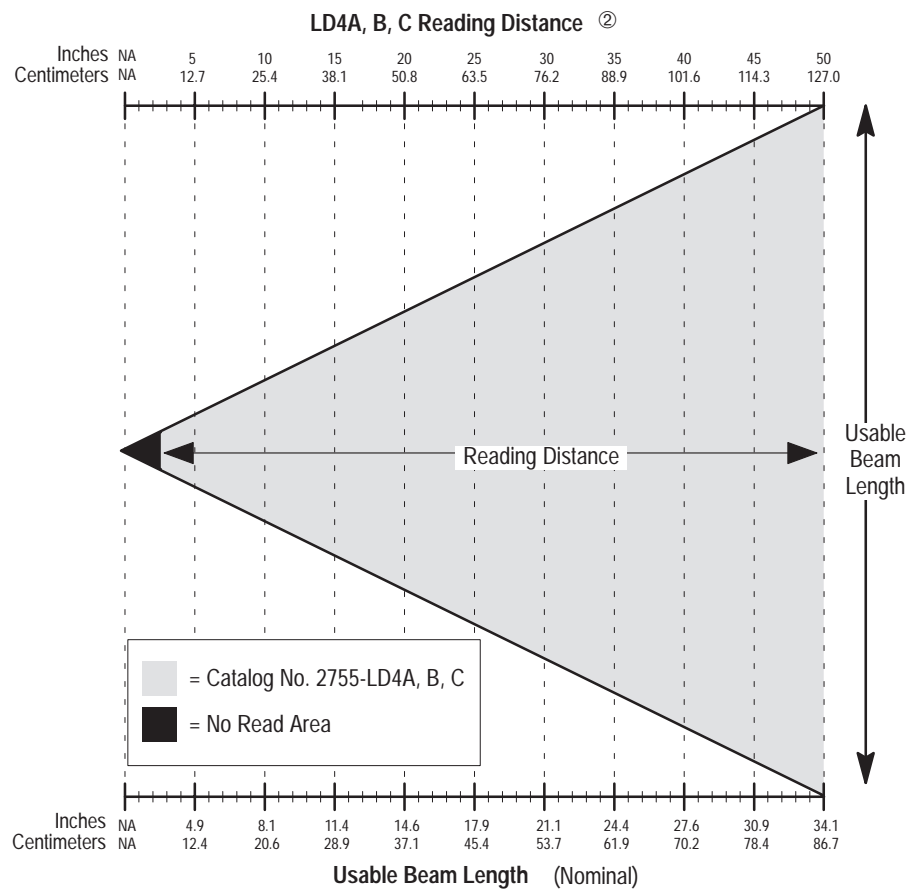
Minimum Element Width ②		Read Range		Catalog Number
Mils	Millimeters	Inches	Centimeters	
4	.10	4.0 - 5.25	10.2 - 13.3	2755-LD4A1 2755-LD4A4
5	.13	3.0 - 6.0	7.6 - 15.2	
7.5	.19	2.5 - 6.5	6.4 - 16.5	
10	.25	2.5 - 7.25	6.4 - 18.4	
13	.33	2.5 - 8.0	6.4 - 20.3	
20	.51	2.5 - 9.75	6.4 - 24.8	
30	.76	2.5 - 12.0	6.4 - 30.5	
6	.15	8.0 - 11.5	20.3 - 29.2	2755-LD4B1 2755-LD4B4
7.5	.19	7.25 - 12.75	18.4 - 32.4	
10	.25	6.25 - 14.5	15.9 - 36.8	
13	.38	5.0 - 16.0	12.7 - 40.6	
20	.51	5.0 - 19.0	12.7 - 48.3	
30	.76	5.0 - 19.0	12.7 - 48.3	
35	.89	5.0 - 19.0	12.7 - 48.3	
9	.23	14 - 21.0	35.6 - 53.3	2755-LD4C1 2755-LD4C4 ③
10	.25	13.25 - 22.75	33.6 - 57.8	
13	.38	10.75 - 28.25	27.3 - 71.7	
20	.51	7.5 - 36.0	19.0 - 91.4	
30	.76	6.0 - 42.25	15.2 - 107.3	
35	.89	6.0 - 45.5	15.2 - 115.6	
40	1.02	6.0 - 48.5	15.2 - 123.2	
50	1.27	6.0 - 50.0	15.2 - 127.0	
20	.51	38.0 - 58.0	96.5 - 147.3	2755-LD4E1 2755-LD4E4 ③
25	.64	36.0 - 68.0	91.4 - 170.0	
30	.76	34.0 - 71.5	86.4 - 181.6	
35	.89	32.0 - 74.5	81.3 - 189.2	
40	1.02	30.0 - 78.0	76.2 - 198.1	
45	1.14	28.0 - 80.0	71.1 - 203.2	
50	1.27	26.0 - 82.0	66.0 - 208.3	
55	1.40	24.0 - 84.0	61.0 - 213.4	

- ① Read ranges based on four character, Code 39 labels with a wide to narrow bar ratio of 2.6 to 1 and a print contrast ratio of .75 or better. Read ranges will vary with bar code symbol quality.
- ② For minimum element width, refer to "Determining Apparent Minimum Element Width" on page 18.
- ③ The glare that results from the laser striking reflective objects (conduit, metal conveyors) may affect performance of the LD4C and LD4E scanners when used at long ranges. To minimize this effect, mask the area behind the symbol with a non-glossy material (flat black paint) or reduce the scan line to avoid reflective objects. Reducing the scan line will affect reading distances of the scanner.

## 2755-LD4 Usable Beam Length (A, B, C Read Ranges)

Figures 4 and 5 show the *Usable Beam Length* versus *Distance* for the LD4 scanners. The black area is a no read area. The *Usable Beam Length* (bottom of chart) is compared to the *Reading Distance* (top of chart). The Usable Beam Length is approximately 20% less than the projected beam length (10% on each end of the scan line). The reading distance is measured from the scan window to the center of the symbol.

Figure 4  
 LD4A, B, C Usable Beam Length ①



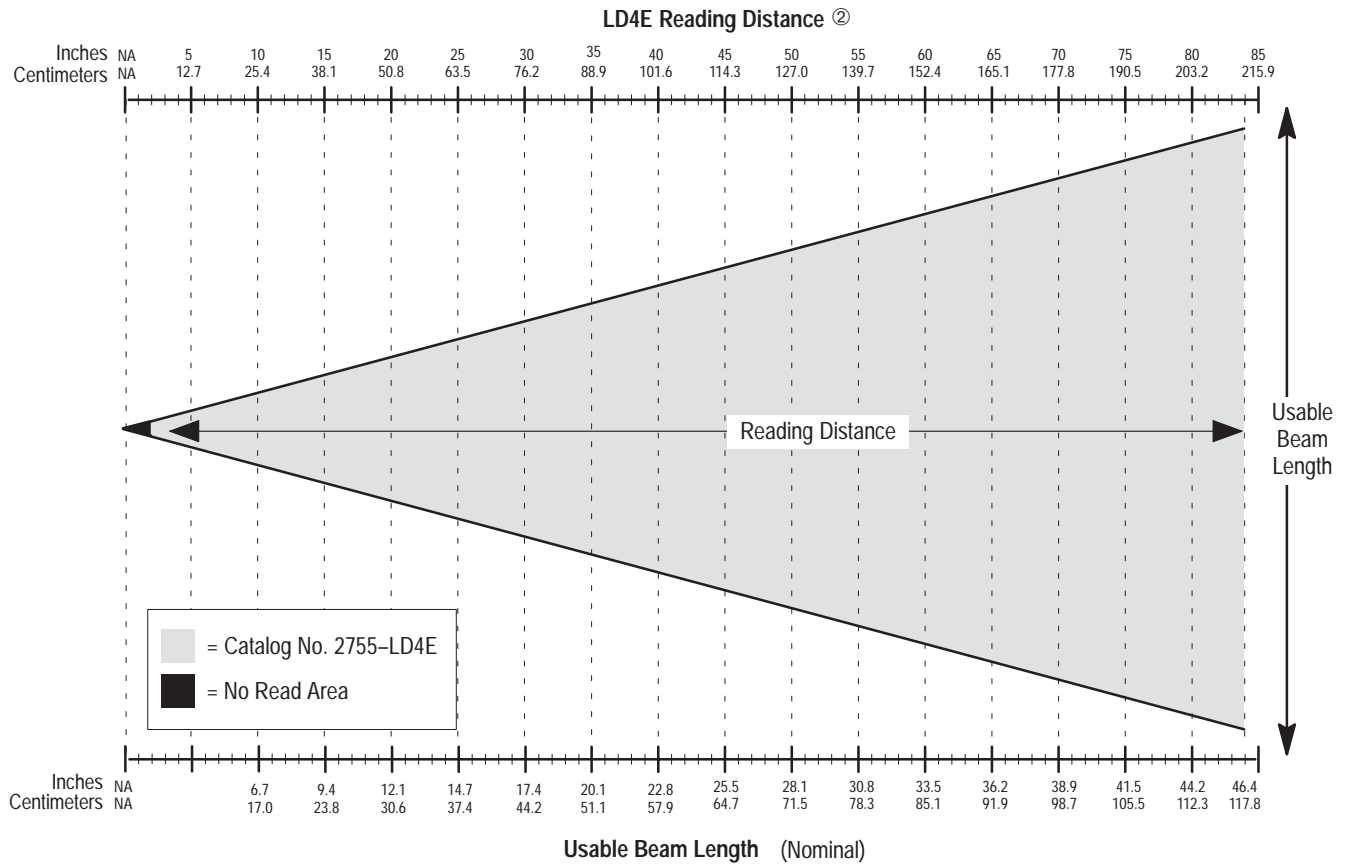
① Usable Beam Length for LD4A, B, C Scanners =  $0.65 \times (\text{Reading Distance} + 2.5 \text{ inches})$

② Measured from the scan window to the center of the bar code symbol.



**2755-LD4**  
**Usable Beam Length**  
**(E Read Range)**

**Figure 5**  
**LD4E Usable Beam Length ①**



①Usable Beam Length for LD4E Scanners = 0.536 x (Reading Distance + 2.5 inches)

②Measured from the scan window to the center of the bar code symbol.

To estimate the *Usable Beam Length*:

- Determine the distance from the scan window to the center of the bar code symbol. This is your *Reading Distance*.
- Locate your *Reading Distance* in Figure 4 or 5. The top of the charts display the reading distances. The bottom of the charts display the nominal *Usable Beam Lengths*.

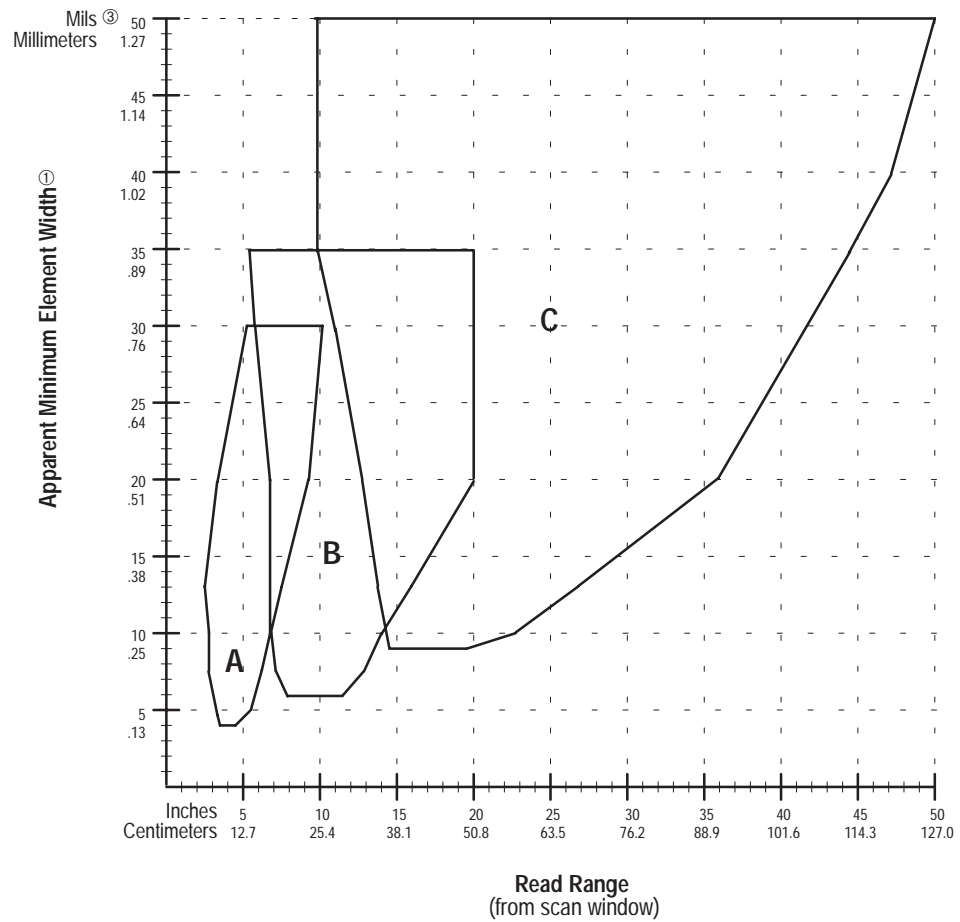
## 2755-LD8 Read Ranges

The LD8 scanners can read bar code labels at various distances depending on the apparent minimum element width<sup>①</sup> and scanner to label pitch. The scanner can read labels within one of three read ranges: A, B or C.

Figure 6 shows the *reading distances* for each range of the LD8 scanner. Table E lists the read ranges for the LDE scanners.

See "Compensating for Pitched Symbols" if your labels are pitched.

**Figure 6**  
 Read Range vs Apparent Minimum Element Width (LD8 Scanners)<sup>②</sup>



- ① For minimum element width, refer to "Determining Apparent Minimum Element Width" on page 18.
- ② Read ranges based on four character, Code 39 labels with a wide to narrow bar ratio of 2.6 to 1 and a print contrast ratio of .75 or better. Read ranges will vary with bar code symbol quality.
- ③ 1 mil = 0.001 inch

**Table E**  
**LD8 Read Ranges ①**

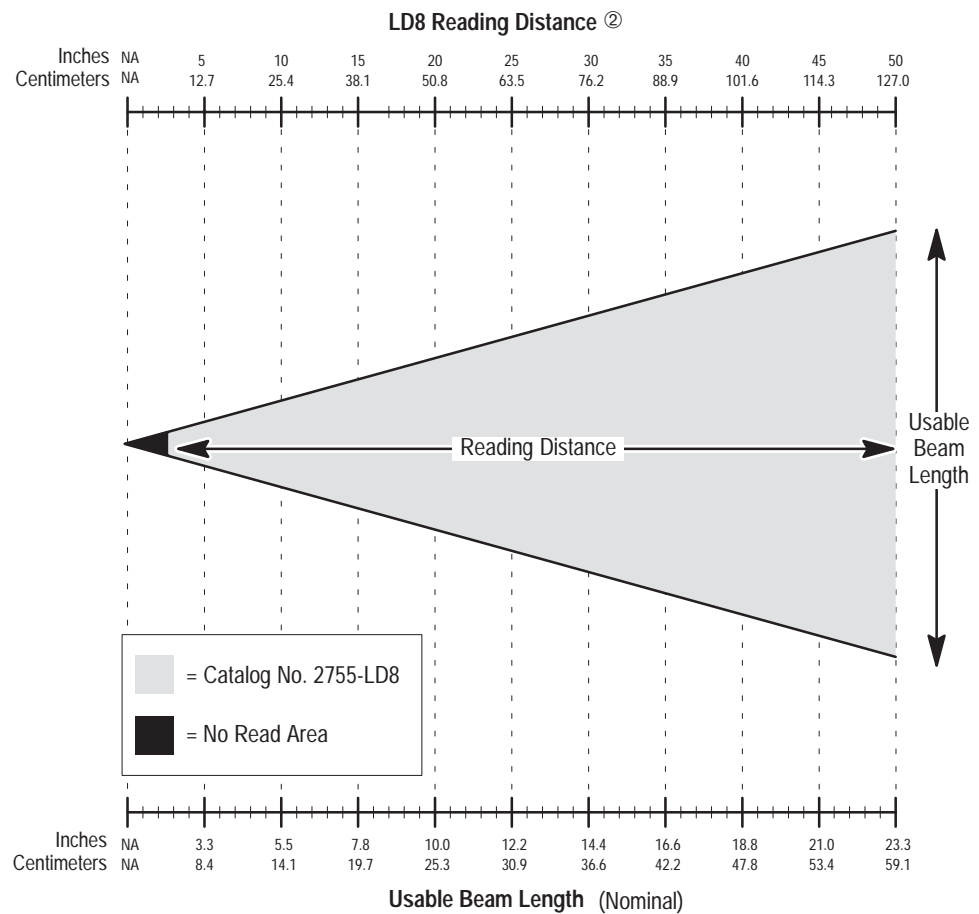
Minimum Element Width ②		Read Range		Catalog Number
Mils	Millimeters	Inches	Centimeters	
4	.10	3.5 - 4.5	8.9 - 11.4	2755-LD8A1 2755-LD8A4
5	.15	3.25 - 5.5	8.3 - 14.0	
7.5	.19	2.75 - 6.25	7.0 - 15.9	
10	.25	2.75 - 6.75	7.0 - 17.1	
13	.33	2.5 - 7.5	6.4 - 19.0	
20	.51	3.25 - 9.25	8.3 - 23.5	
30	.76	5.25 - 10.25	13.3 - 26.0	
6	.15	7.0 - 11.75	17.8 - 29.8	2755-LD8B1 2755-LD8B4
7.5	.19	7.0 - 12.5	17.8 - 31.8	
10	.25	6.75 - 14.0	17.1 - 35.6	
13	.33	6.75 - 16.0	17.1 - 40.6	
20	.51	6.75 - 20.0	17.1 - 50.8	
30	.76	6.0 - 20.0	15.2 - 50.8	
35	.89	5.5 - 20.0	14.0 - 50.8	
9	.23	14.5 - 19.5	36.8 - 49.5	2755-LD8C1 2755-LD8C4 ③
10	.25	14.25 - 22.75	36.2 - 57.8	
13	.38	13.75 - 26.75	34.9 - 67.9	
20	.51	12.75 - 36.0	32.4 - 91.4	
30	.76	11.0 - 41.75	27.9 - 106.0	
35	.89	10.0 - 44.5	25.4 - 113.0	
40	1.02	10.0 - 47.5	25.4 - 120.6	
50	1.27	10.0 - 50.0	25.4 - 127.0	

- ① Read ranges are based on 4 character, Code 39 labels with a wide to narrow bar ratio of 2.6 to 1. and a print contrast ratio of .75 or better. Read ranges will vary with bar code symbol quality.
- ② For minimum element width, refer to "Determining Apparent Minimum Element Width" on page 18.
- ③ The glare that results from the laser striking reflective objects (conduit, metal conveyors) may affect performance of the LD8C scanner when used at long ranges. To minimize this effect, mask the area behind the symbol with a non-glossy material (flat black paint) or reduce the scan line to avoid reflective objects. Reducing the scan line will affect reading distances of the scanner.

## 2755-LD8 Usable Beam Length

Figure 7 shows the *Usable Beam Length* versus *Distance* for the LD8 scanner. The black area is a no read area. The *Usable Beam Length* (bottom of chart) is compared to the *Reading Distance* (top of chart). The Usable Beam Length is approximately 20% less than the projected beam length (10% on each end of the scan line). The reading distance is measured from the scan window to the center of the symbol.

Figure 7  
 LD8 Usable Beam Length ①



① Usable Beam Length for LD8 Scanners =  $0.443 \times (\text{Reading Distance} + 2.5 \text{ inches})$

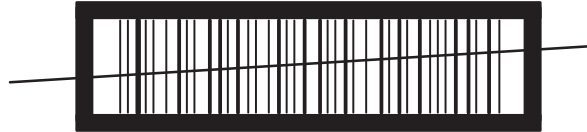
② Measured from the scan window to the center of the bar code symbol.

To estimate the *Usable Beam Length*:

- Determine the distance from the scan window to the center of the bar code symbol. This is your *Reading Distance*.
- Locate your *Reading Distance* on Figure 7. The top of the chart displays the reading distances. The bottom of the chart displays nominal Usable Beam Lengths.

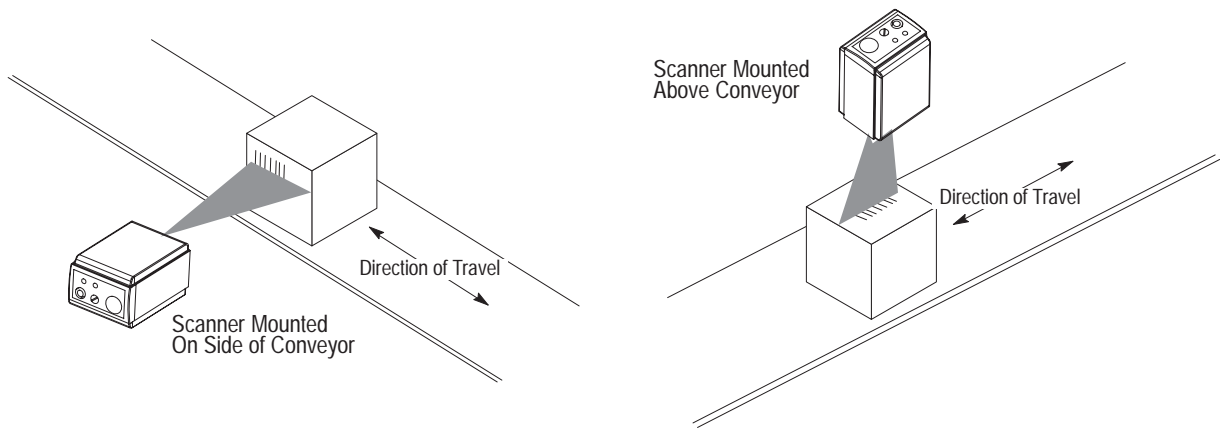
## Symbol Orientation

Bar code symbols must be in the correct orientation as they move by the scanner. The laser beam must cross every bar, space and quiet zone on the symbol in one sweep.

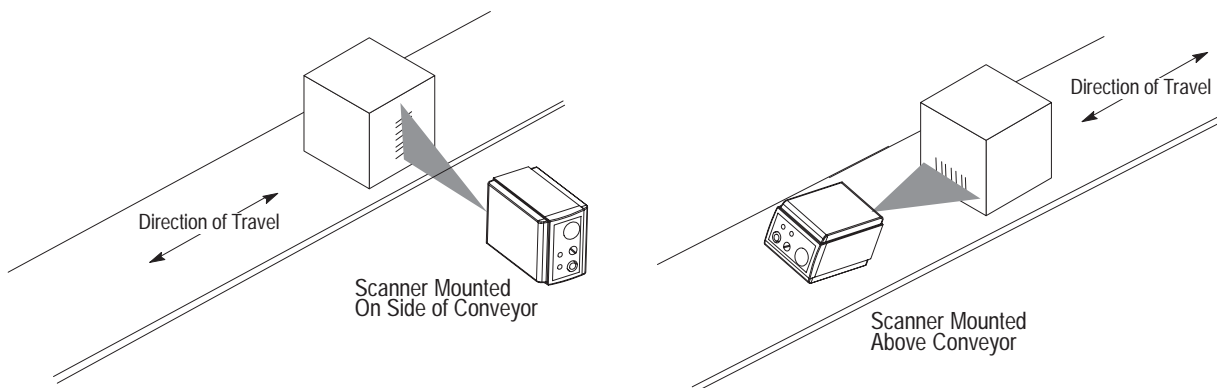


The orientation of the bar code symbol can be picket fence or step ladder. The orientation is determined by the symbol's direction of travel relative to the scan line, not the horizontal or vertical orientation of the symbol.

**Figure 8**  
Picket Fence Orientation



**Figure 9**  
Step Ladder Orientation



## Calculating Scans/Symbol

This section explains how to calculate minimum scans per symbol for picket fence and step ladder applications.

### Picket Fence Applications

To calculate **minimum** scans per symbol for picket fence applications, use this formula:

$$S = \frac{A(X-Y)}{Z}$$

- S = Scans per Symbol (**must be at least 5**)
- A = Derated Scan Rate (nominal scan rate -5%)
- X = Usable Beam Length at Minimum Read Distance
- Y = Symbol Length (including quiet zones)
- Z = Conveyor Speed

Usable Beam Length, Symbol Length, and Conveyor Speed must be expressed in similar units. Calculations assume the scanner and decoder are triggered for the entire time the symbol is present and the symbol has a 0° pitch. (See "Compensating for Pitched Symbols" on page 18.)

#### Example 1:

A 40 mil case code label that is 1 inch tall and 4.75 inches long (including quiet zones) is to be read in a picket fence orientation at 125 ft/min. Space is limited so the scanner must be positioned as close as possible to the labels.

Since the 2755-LD8C1 scanner cannot read a 40 mil label until the scanner is 10 inches away, let's assume that the 2755-LD4C1 scanner can read the label. At 6 inches, the LD4C1 scanner has a usable beam length of 5.525 inches.

The following calculation converts Conveyor Speed to similar units (inches).

$$125 \text{ feet/minute} \times 12 \text{ inch/feet} \times 1 \text{ minute/60second} = 25 \text{ inch/seconds}$$

To calculate minimum scans per symbol for this application, insert these values into the formula:

- A = 200 scans/second - 5% = 190 scans/second (minimum scan rate)
- X = 5.525 inches
- Y = 4.75 inches
- Z = 25 inches/second

$$S = 190 \text{ scans/second} \times (5.525 \text{ inches} - 4.75 \text{ inches}) / (25 \text{ inches / second})$$
$$S = 5.89 \text{ scans}$$

Since S (scans per symbol) is greater than 5 and the application uses good quality labels, the 2755-LD4C1 scanner is appropriate for this application.

### Example 2:

Increasing the conveyor speed in Example 1 to 300 ft/min. decreases the number of scans per symbol to less than 3. This means the 2755-LD4C1 scanner is no longer appropriate.

To increase the number of scans per symbol for picket fence applications, you can either:

- select a higher speed scanner
- increase the usable beam length by backing the scanner away from the bar code symbol

### Selecting Higher Speed Scanner

The LD8C1 scanner has a scan rate of 500 scans/second. It reads 40 mil labels at a minimum distance of 10 inches. At 10 inches, the LD8C1 has a usable beam length of 5.5 inches.

To calculate minimum scans per symbol, use these values:

- A = 500 scans/second – 5% = 475 scans/second (minimum scan rate)  
X = 5.5 inches  
Y = 4.75 inches  
Z = 60 inches/second (equivalent to 300 ft/min. )

$$S = 475 \text{ scans/second} \times (5.5 \text{ inches} - 4.75 \text{ inches}) / (60 \text{ inches} / \text{second})$$
$$S = 5.94 \text{ scans}$$

Since S (scans per symbol) is greater than 5 and the application uses good quality labels, the 2755-LD8C1 scanner is appropriate for this application.

### Increasing Usable Beam Length

The LD4C1 scanner at 10 inches produces a usable beam length of 8.1 inches. Minimum scans per symbol are now calculated using these values.

- A = 200 scans/second – 5% = 190 scans/second (minimum scan rate)  
X = 8.1 inches  
Y = 4.75 inches  
Z = 60 inches/second (equivalent to 300 ft/min. )

$$S = 190 \text{ scans/second} \times (8.1 \text{ inches} - 4.75 \text{ inches}) / (60 \text{ inches} / \text{second})$$
$$S = 10.6 \text{ scans}$$

Because of the increased scan angle of the LD4, some picket fence applications can be performed with a higher number of reads using the lower speed scanner.

## Calculating Scans/Symbol

### Step Ladder Applications

To calculate **minimum** scans per symbol for step ladder applications, use this formula:

$$S = \frac{A \times H}{Z}$$

S = Scans per Symbol (**must be at least 5**)

A = Derated Scan Rate (nominal scan rate -5%)

H = Symbol Height (length of bars of symbol)

Z = Conveyor Speed

Conveyor Speed and Symbol Height must be expressed in similar units. Calculations assume that the scanner and decoder are triggered for the entire time the symbol is present and the symbol has a 0° pitch. (See the section on Compensating for Pitched Symbols.)

#### Example 1:

A 40 mil case code label that is 1 inch tall and 4.75 inches long is to be read in step ladder orientation at 125 ft/min. Space is limited so the scanner must be positioned as close as possible to the labels.

Since the 2755-LD8C1 cannot read a 40 mil label unless the scanner is 10 inches away, let's assume the 2755-LD4C1 scanner can read the label. The usable beam must be long enough to cover the entire symbol including quiet zones. At 6 inches, the LD4C1 scanner has a usable beam length of 5.525 inches.

The calculation below converts Conveyor Speed to similar units (inches).

$$125 \text{ feet/minute} \times 12 \text{ inch/feet} \times 1 \text{ minute}/60\text{second} = 25 \text{ inch/second}$$

To calculate minimum scans per symbol for this step ladder application, use the following values:

A = 200 scans/second - 5% = 190 scans/second (minimum scan rate)

H = 1 inch

Z = 25 inches/second

$$S = 190 \text{ scans/second} \times 1 \text{ inch} / (25 \text{ inches} / \text{second})$$

$$S = 7.6 \text{ scans}$$

Since S (scans per symbol) is greater than 5 and the application uses good quality labels, the 2755-LD4C1 scanner is appropriate for this step ladder application.



### Example 2:

Increasing the conveyor speed in Example 1 to 300 ft/min. decreases the minimum number of scans per symbol to approximately 3. This value is below the recommended value of 5 scans per symbol making the 2755-LD4C1 inappropriate. The label would have to be at least 1.6 inches tall to be read by an LD4 scanner.

To increase the number of scans per symbol for step ladder applications, you can select a higher speed scanner or increase the height of the symbol.

### Selecting Higher Speed Scanner

The LD8C1 scanner has a scan rate of 500 scans/second. It reads 40 mil labels at a minimum distance of 10 inches.

To calculate the minimum number of scans per symbol use these values:

A = 500 scans/second -5% = 475 scans/second (minimum scan rate)

H = 1 inch

Z = 60 inches/second (equivalent to 300 ft/min.)

$$S = 475 \text{ scans/second} \times 1 \text{ inch} / (60 \text{ inches / second})$$

$$S = 7.9 \text{ scans}$$

Since S (scans per symbol) is greater than 5 and the application uses good quality labels, the 2755-LD8C1 scanner is appropriate for this step ladder application.

Because of the increased speed of the LD8 scanners, most high speed step ladder applications will use this scanner.

## Compensating for Pitched Symbols

You must consider the following when attempting to read symbols that are pitched:

- The apparent minimum element width
- The nearest and farthest code elements must be within the scanner's read range.

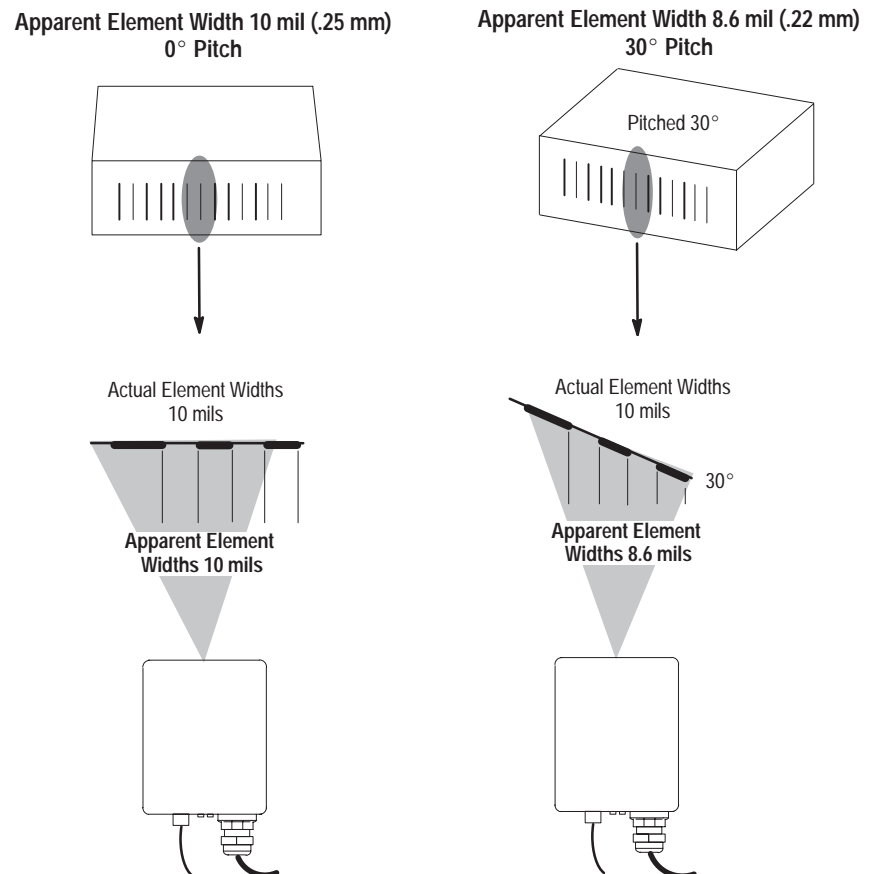
### Determining Apparent Minimum Element Width

When a symbol is pitched, the bars appear to be narrower and closer to one another. This *apparent element width* is a reduction of the actual element width. Before positioning the scanner using the read ranges in Figure 3 or 6, determine the symbol's *apparent minimum element width*.

**Note:** If the symbol has narrow spaces that are smaller than the narrow bars, base the read range on the narrow spaces.

Figure 10 shows two boxes, each containing the same bar code symbol. Below each box is an exaggerated view of 5 elements (3 black, 2 white) as seen from the top down.

Figure 10  
Actual vs Apparent Element Width



For example, a 10 mil (0.25 mm) symbol with 0° pitch can be scanned at 17 inches (43.2 cm) with a Catalog No. 2755-LD8C1 scanner. If you pitch the symbol 30° and determine the apparent minimum element width using the formula below, the apparent element width is 8.6 mils (0.22 mm).

$$\text{Apparent Minimum Element Width} = \text{Actual Element Width} \times \text{Cosine (Pitch Angle)}$$

In the above example, the following conditions apply:

Actual Element Width = 10 mil (0.25 mm)

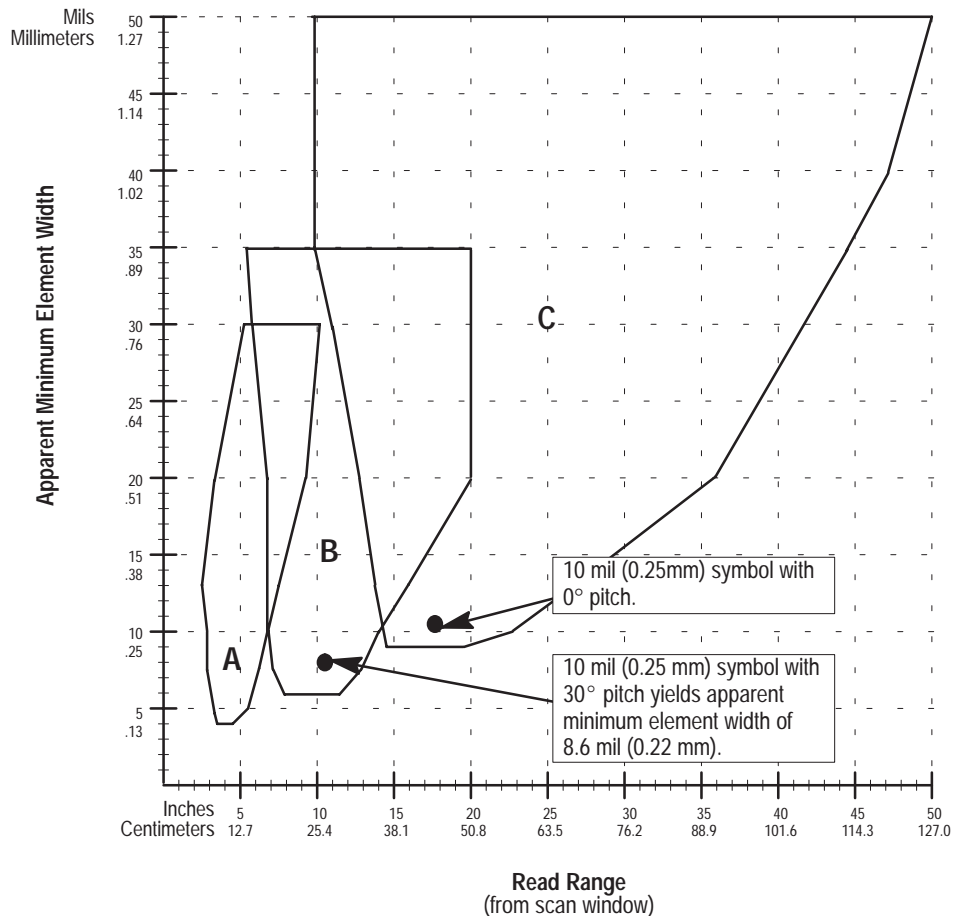
Pitch Angle = 30°

Therefore:  $10 \times (\cos 30^\circ) = 8.6 \text{ mil (0.22 mm)}$

The minimum recommended bar width that the Catalog No. 2755-LD8C1 scanner can read is 9 mil (0.23 mm). Because of the pitch of the symbol, you need to use the Catalog No. 2755-LD8B1 scanner. However, the distance between the scanner and the symbol is decreased. The maximum read range of the Catalog No. 2755-LD8B1 scanner for a 8.6 mil symbol is 13 inches (33 cm).

**In summary, increasing the pitch of the symbol decreases the apparent minimum element width.** Figure 11 illustrates the above example.

**Figure 11**  
**Effect of Pitch on Read Range**



## Compensating for Pitched Symbols

### Code Element Distance

The nearest and farthest elements of a pitched symbol must be within the minimum and maximum reading distance of the scanner.

Centering the symbol within the scanner's read range helps to prevent pitched symbols from exceeding the read range limits. You can still exceed the read range with a pitched symbol. See Figures 12 and 13.

**Figure 12**  
 Read Range and Symbol Resolution at 0° Pitch

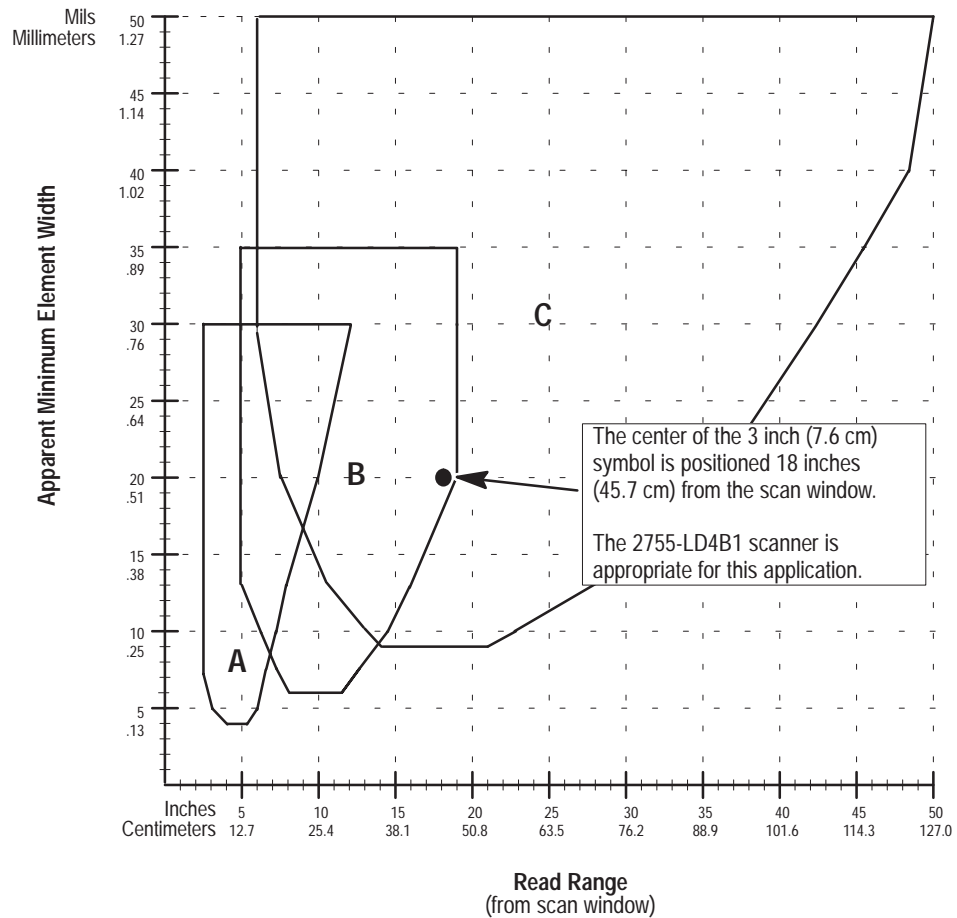
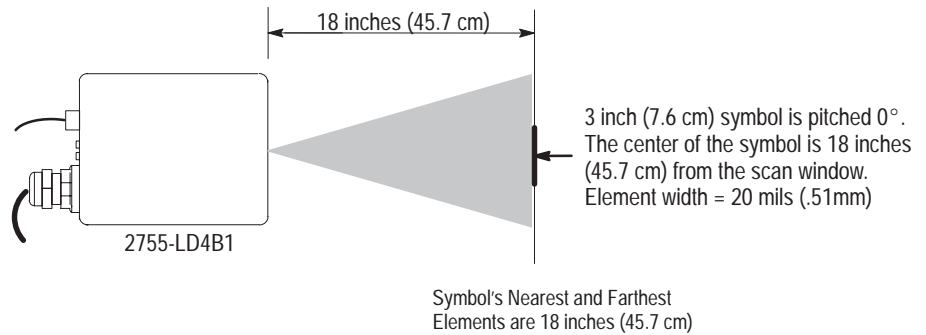
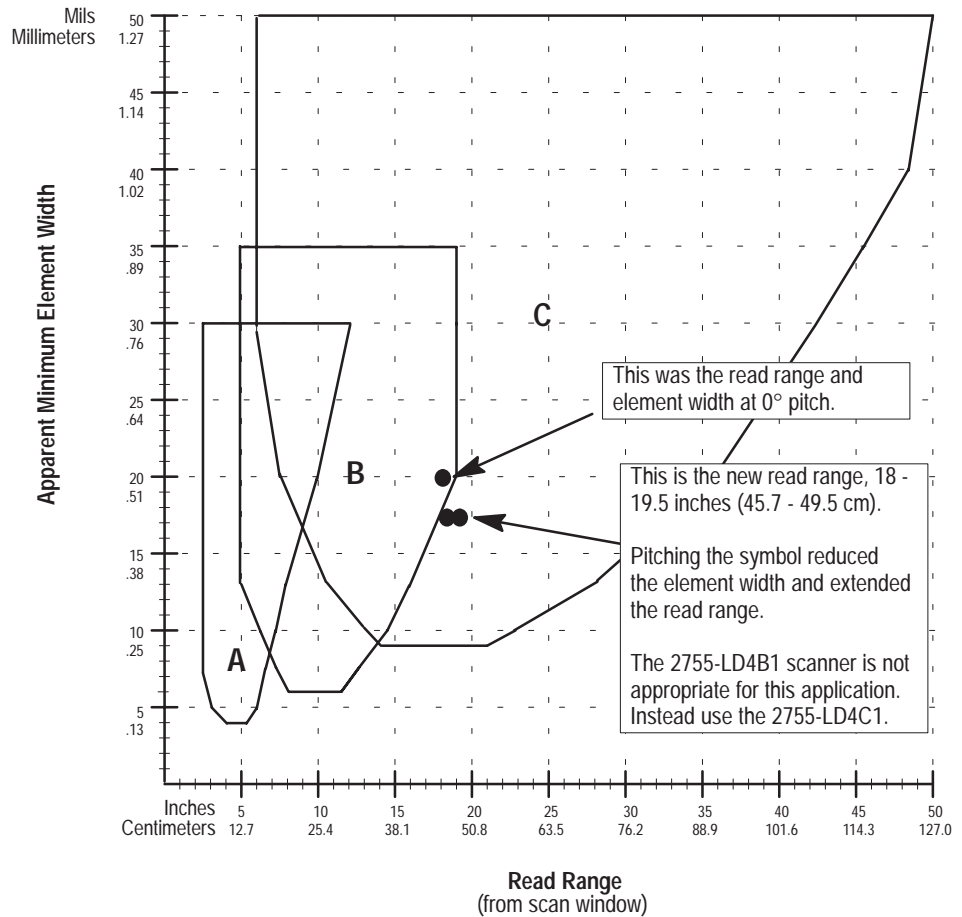
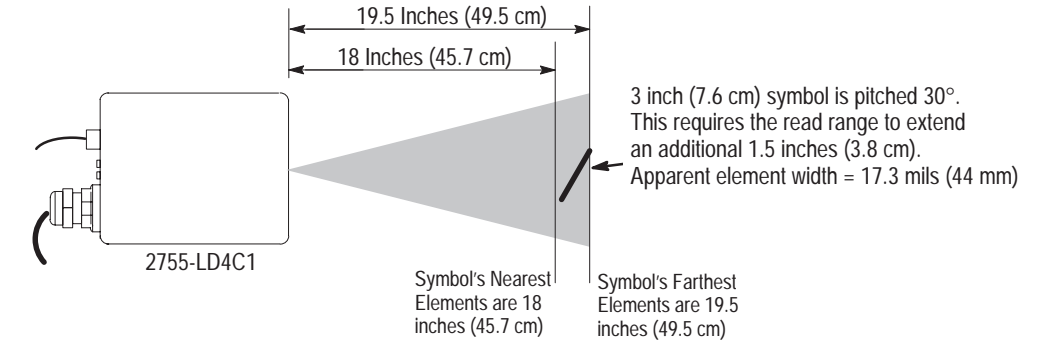


Figure 13 further illustrates how a pitched symbol can change the read range enough to require a different scanner.

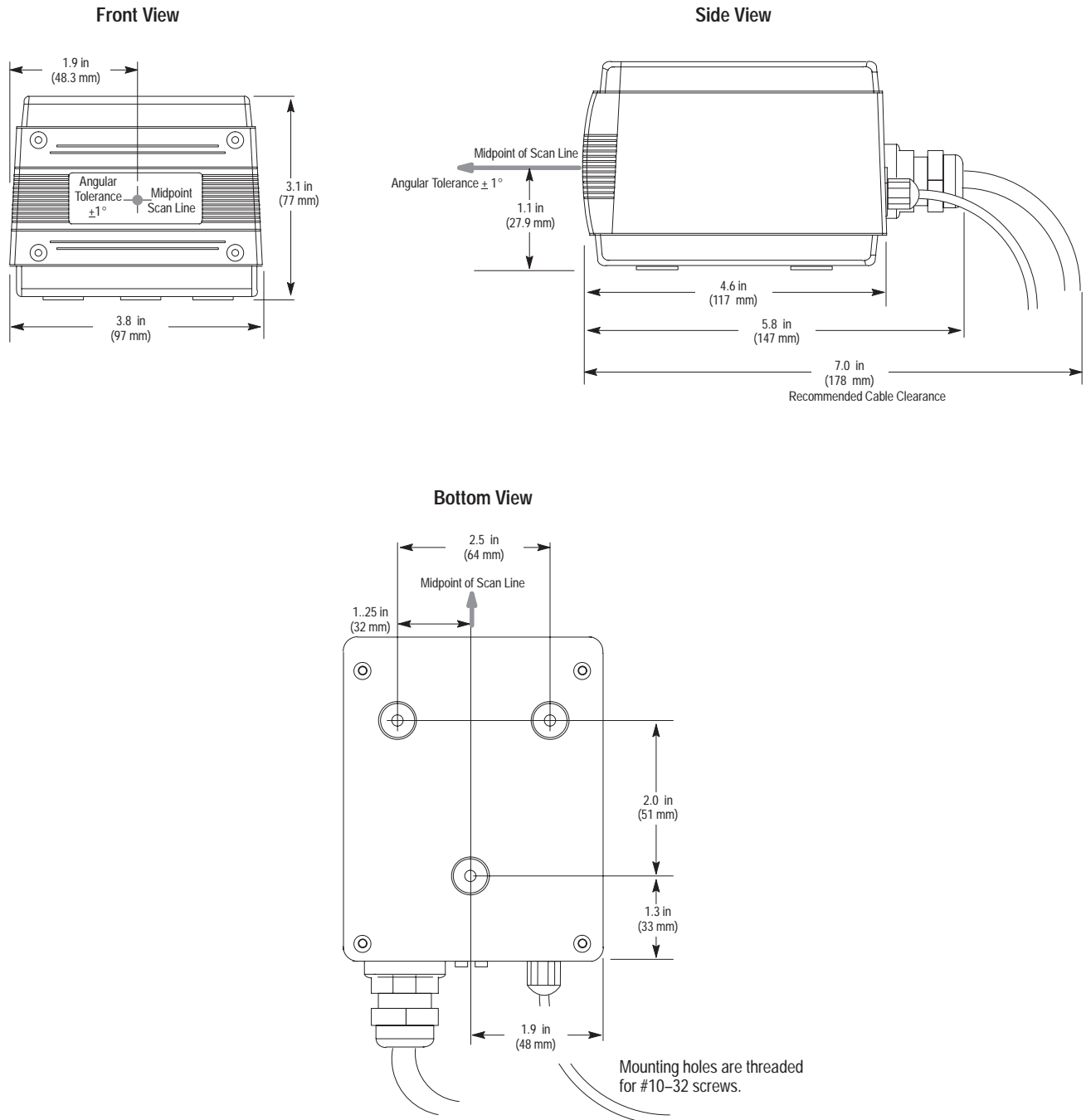
**Figure 13**  
**Read Range and Symbol Resolution Changed By Pitch**



## Scanner Dimensions

Figure 14 shows the scanner and optional mounting bracket dimensions.

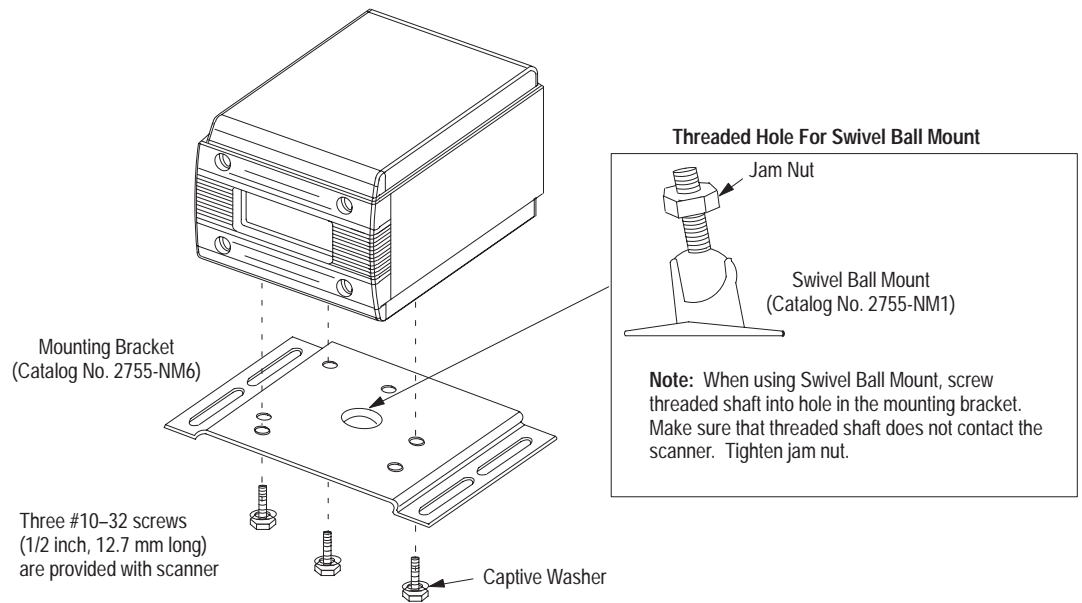
**Figure 14**  
**Dimensions**



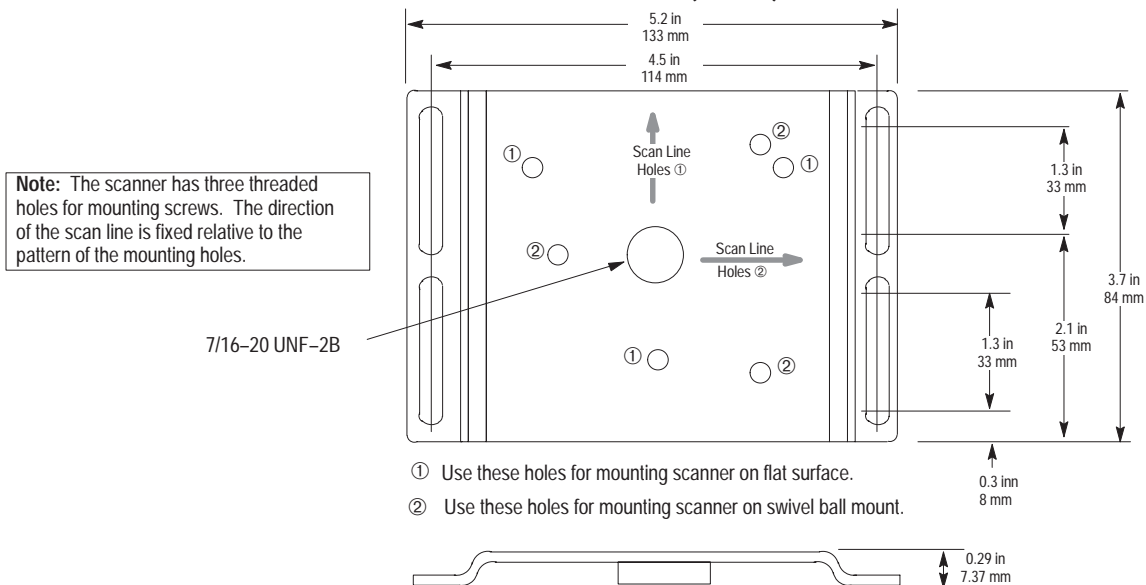
## Mounting Bracket

The Mounting Bracket (Catalog No. 2755-NM6) allows mounting on flat surfaces. The scanner is supplied with three #10-32 screws ( $\frac{1}{2}$  inch, 12.7 mm long) for mounting. Two sets of mounting holes let you mount the scanner to the bracket as shown below or turned 90°. The Swivel Ball Mount (Catalog No. 2755-NM1) provides additional flexibility.

**Figure 15**  
**Mounting Bracket**



### Mounting Bracket Dimensions (Nominal)

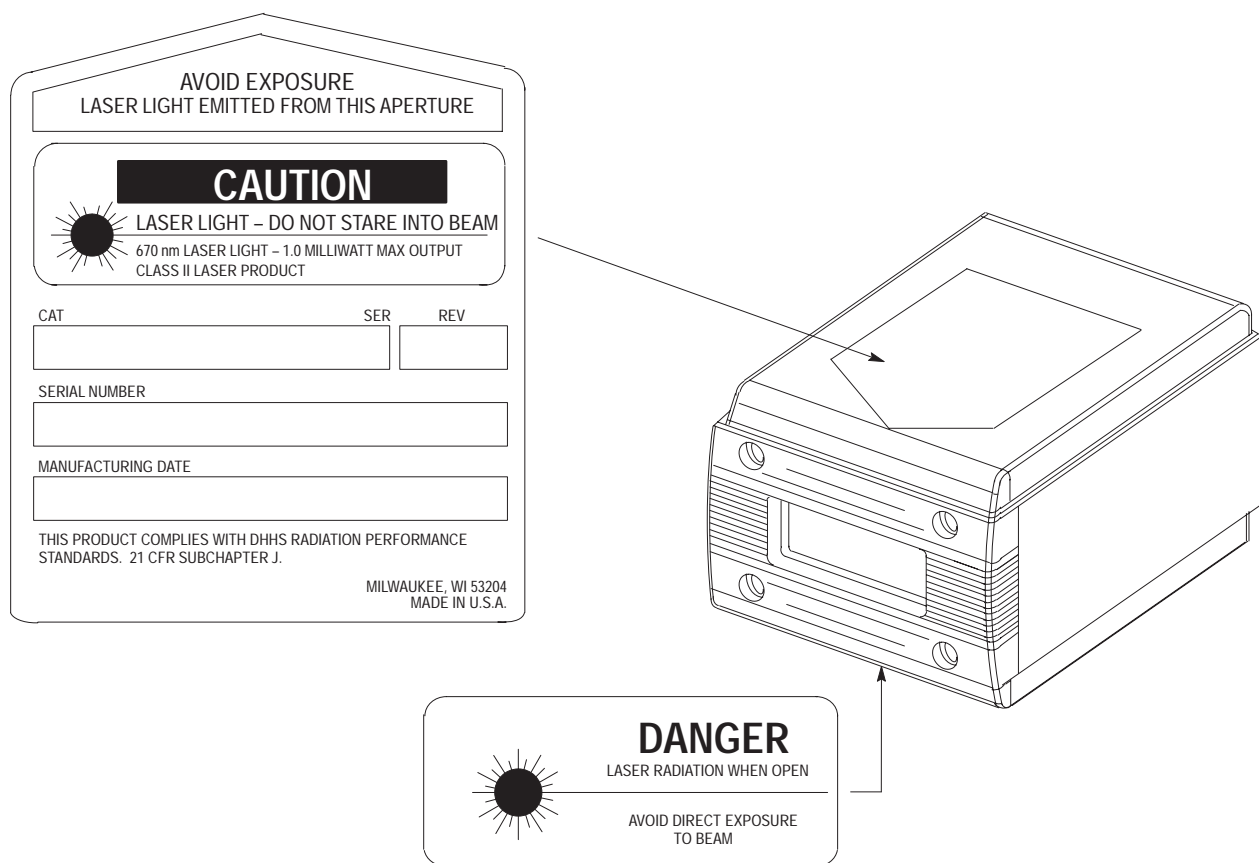


## Safety Labels

The scanners use a low power visible laser diode. As with any bright light source, such as the sun, you should avoid staring directly into the beam.

Figure 16 shows the location of all safety labels as they appear on the scanner.

Figure 16  
Safety Labels



**ATTENTION:** Use of controls, adjustments, or procedures other than those specified herein may result in hazardous laser light exposure.



## Specifications

<b>Electrical</b>	Receives power from decoder.
<b>Mechanical</b>	
Enclosure	NEMA Type 4
Connectors	NEMA Type 1 (Subminiature DB15) NEMA Type 4 (Cannon KPT Series)
Package Detect	NEMA Type 4 Micro-Mini Connector (Crouse-Hinds) NEMA Type 4 Micro-Change Connector (Brad Harrison)
LED Indicators	
POWER ON	Amber
VALID READ	Green
Approximate Weight	4.0 lbs (1.8 kg)
Dimensions	
Inches	3.1 (H) x 3.8 (W) x 4.5 (D)
Millimeters	78.7 (H) x 96.5 (W) x 116.8 (D)
Shock	30G operating, 50G nonoperating
Vibration	2.5G 5 to 2,000Hz (3 axis) operating, 5G 5 to 2,000 Hz (3 axis) non-operating
<b>Environment</b>	
Ambient Temperature	
Operating	0 to 40° C (32 to 104° F)
Storage	-30 to 70° C (-22 to 158° F)
Relative Humidity	5 to 95%, non-condensing
<b>Optical</b>	
Light Source	Visible Laser Diode
Wavelength	660-680 nm
Average Output Power	1.0 mW maximum
Scan Rate (Nominal)	
Catalog No. 2755-LD4	200 Scans/Second
Catalog No. 2755-LD8	500 Scans/Second
Scan Angle Adjustment	
Catalog No. 2755-LD4A, B, C	1/2 (25°), 3/4 (37.5°), Full (50°)
Catalog No. 2755-LD4E	1/2 (20°), 3/4 (30°), Full (40°)
Catalog No. 2755-LD8	1/2 (15°), 3/4 (22.5°), Full (30°)
Maximum Usable Scan Angle	
Catalog No. 2755-LD4A, B, C	36°
Catalog No. 2755-LD4E	30°
Catalog No. 2755-LD8	25°
Read Ranges for LD4/LD8	Refer to Tables D & E
<b>Package Detect</b>	External, +12 V DC, @ 100 mA max. 5 mA current sink (minimum)
<b>CDRH Standards</b>	Meets Class II Standards

**Product Data**

Bulletin 2755

High Performance, Visible Laser Diode Scanners

**Notes:**

**Notes:**

