



## Bulletin 2755 AdaptaScan™ Bar Code Reader (Catalog No. 2755-SN3, -SN5, -SN8)

### Product Data



The AdaptaScan Bar Code Reader combines a scanner and decoder in a compact NEMA Type 4 enclosure. The Reader supports linear and raster scanning. Point-to-point and network communications options allow the Reader to communicate with a variety of devices and networks.

The AdaptaScan Configuration Software, a Windows™ based package, performs configuration and monitoring functions quickly and easily. Plus, the autofocus feature automatically adjusts the focus for an application, reducing setup time.

### Features

**Bar Code Scanner and Decoder** are in the same enclosure eliminating the need to mount two devices. Less area is required for an installation.

**Linear and Raster Scanning** are both supported and can be adjusted online. Both the scan pattern and position are software selectable.

**Automatic or Manual Focus** reduces setup time, simplifies installation and quickly adapts the Reader to line changeovers. Reader quickly adapts to changes in bar code read ranges, scanning position, and bar code labels.

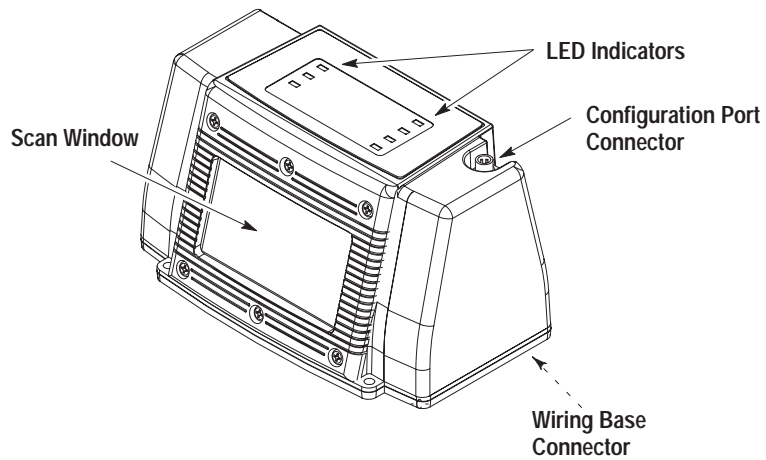
**DeviceNet, RS-232, RS-422, and RS-485 Communication Ports** provide compatibility with other Allen-Bradley devices such as PLC® and SLC™ controllers, PanelView™ terminals, and Dataliner™ message displays.

**Communication Protocol Options** (ASCII, DF1, DH485) provide additional flexibility. There is no need to purchase costly interface drivers.

**Windows Based Software** allows both online and offline configuration. System monitoring functions provide instant performance feedback.

**Separate Wiring Base** simplifies installation and reduces the possibility of damage to the Reader. A Reader can be installed or replaced in just minutes.

**Seven LED Indicators** provide system status at a glance.



## Reader

The Reader scans and decodes bar code symbols. The integral decoder decodes the most common bar code symbologies.

- UPC-A
- UPC-E
- Code 39
- Codabar
- Interleaved 2 of 5
- Pharma Code
- EAN-8
- EAN-13
- Code 128

Three scan speeds are available.

Catalog Number	Scan Rate	Maximum Scan Angle <sup>①</sup>
2755-SN3	300	72°
2755-SN5	500	50°
2755-SN8	800	30°

<sup>①</sup> Usable scan angle is 80% of the mechanical/optical scan angle.

### Scan Window

The replaceable glass scan window allows laser light to exit the Reader. Light reflects off the bar code symbol, passes back through the scan window and is decoded by the Reader. Optical glass and plastic windows are available as replacement parts.

### Configuration Port Connector

The RS-232 configuration port allows a personal computer running AdaptaScan Configuration Software (Catalog No. 2755-ASN) to:

- download configuration to the Reader.
- monitor system parameters on one or more Readers (that are networked)
- adjust Reader operating parameters online.

## LED Indicators

Seven LEDs provide the following indications.

Indicator	Condition	Indicates:
Module	Green	Normal operating state.
	Flashing Green	Initialization and/or incorrect configuration.
	Red	Processor fault (nonrecoverable).
	Flashing Red	Minor fault (recoverable). Occurs when downloading firmware.
	Off	No power applied to Reader.
Network	Green	Normal DeviceNet operating state.
	Flashing Green	Communication link established, but not data transfer.
	Red	Communication fault.
	Flashing Red	One or more DeviceNet devices are not responding. Reader may not be able to perform all configured functions.
	Off	DeviceNet communications not established.
Laser On	Yellow	Scan beam on.
	Off	Scan beam off.
On Symbol	Yellow	Scanning bar code symbol.
	Flashing	Bar code symbol read at less than 100% rate.
	Off	Not scanning bar code symbol.
Trigger / Read	Yellow	Package detected.
	Green	Valid read.
	Off	No trigger or no valid bar code symbol read.
I/O 1	Yellow	Input/Output module 1 active.
	Off	Input/Output module 1 not active.
I/O 2	Yellow	Input/Output module 2 active.
	Off	Input/Output module 2 not active.

## Wiring Base Connector

The 24-pin connector on the bottom of the Reader plugs into the socket on the wiring base. No other connections to the Reader are required.

## Operating Environment

The Reader operates under a variety of conditions.

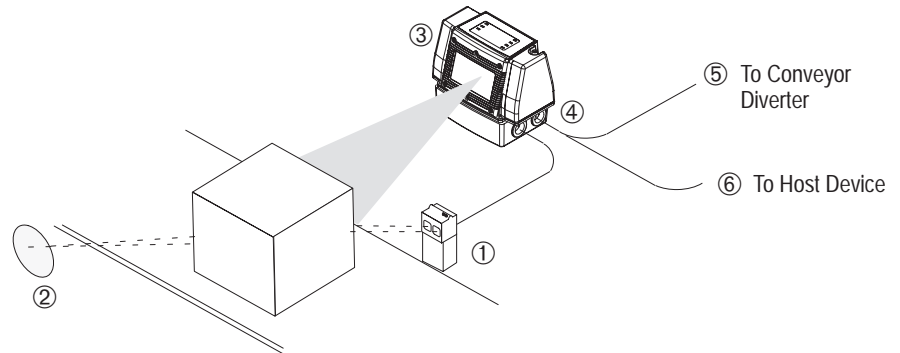
- Cast aluminum enclosure meets NEMA Type 4 requirements (when installed on the wiring base and the conduit openings in the base are properly sealed).
- Operates in environments from 32 to 122°F (0 to 50°C).
- Mount at any angle.

## Typical Applications

The flexibility of the Reader allows it to be configured for a variety of applications. The following are examples of the basic system types.

### Standalone

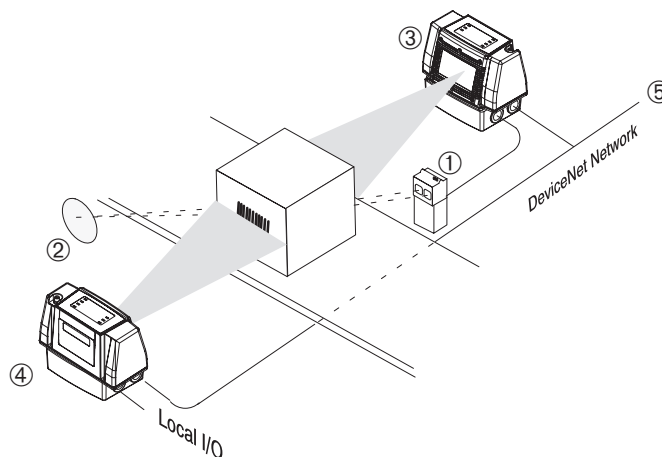
In a typical standalone setup, a single Reader scans bar codes on the side of a package moving down a conveyor.



The package crosses the beam between the package detector ① and reflector ②. The Reader ③ scans and decodes any bar code symbols on the package. Optionally, the match tables may be configured for the decoder. When decoded data matches a previously defined value, the Reader turns on an output module (in wiring base ④) to control the operation of a diverter ⑤ that directs the package to the proper location. The Reader can also transmit bar code data to a host device ⑥ via DeviceNet or one of the two serial ports.

### Coordinated (DeviceNet Master/Slave)

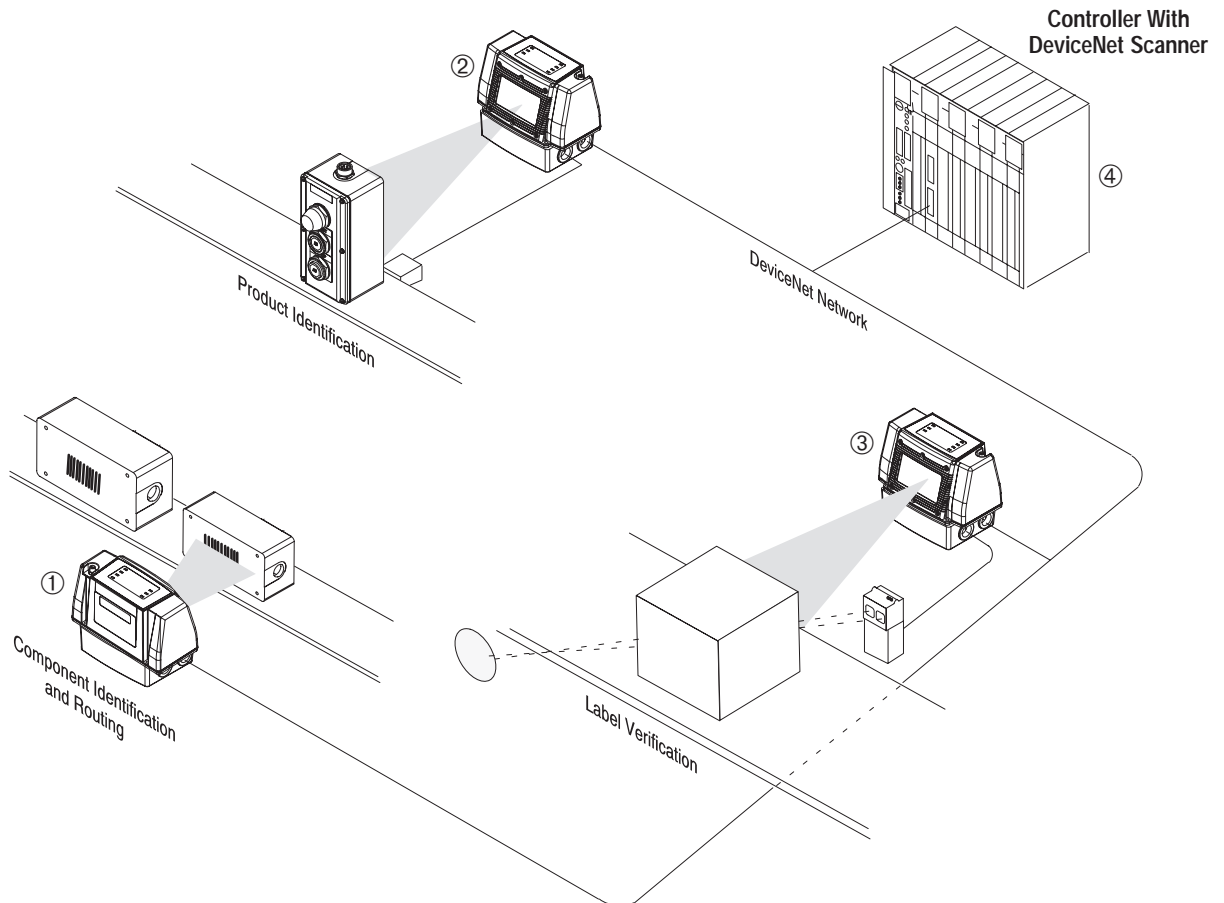
In a typical coordinated setup, two Readers scan bar codes on the side of a package. Data from both Readers is combined and sent to a controller.



The package crosses the beam between the package detector ① and reflector ②. Both Readers ③④ scan and decode bar code symbols on the package. Decoded data from both Readers is combined and sent to the controller ⑤ for processing.

## Distributed (DeviceNet Master/Slave)

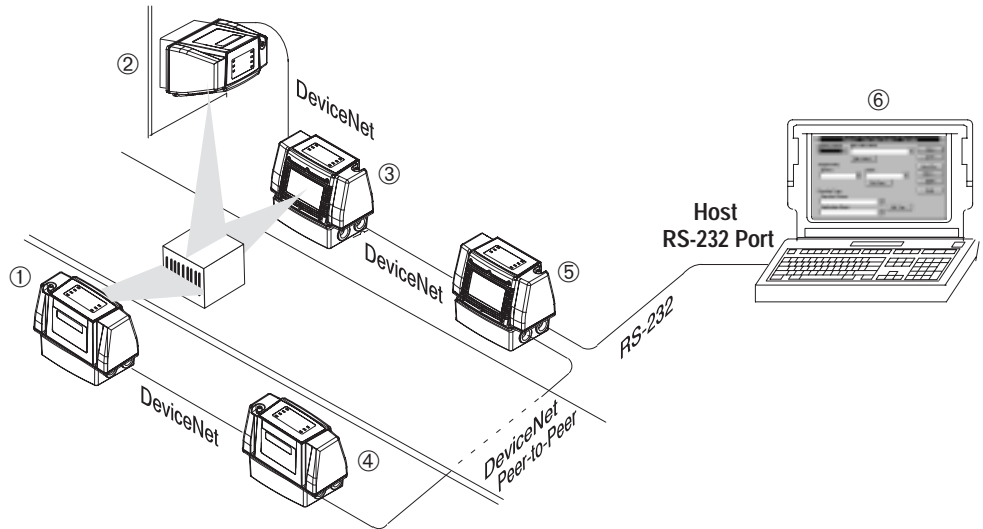
The distributed application below shows three Readers scanning bar codes at different points in an assembly process. Data from any Reader is sent to a controller. The discrete I/O on each Reader provide distributed control independent of the PLC monitoring the process.



Reader ① identifies major sub-assemblies for routing to the proper final assembly area. Reader ② verifies the product code on the assembled product being shipped. Reader ③ verifies that the shipping label matches the product code. PLC ④ monitors the process through the DeviceNet scanner module.

### Distributed (DeviceNet Peer-to-Peer)

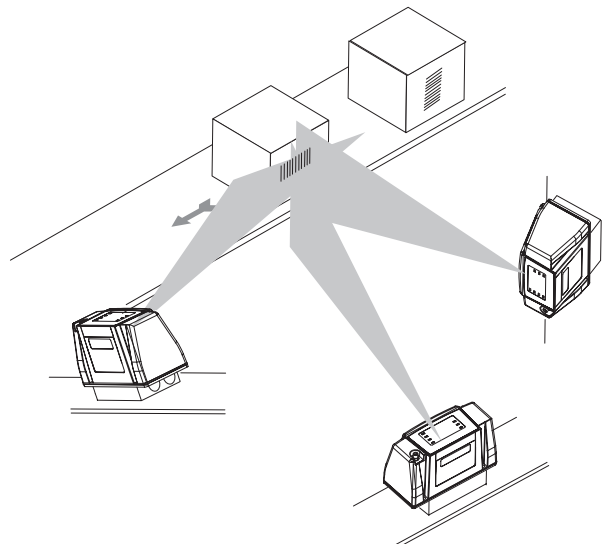
Peer-to-Peer communications allows a single Reader to gather data from other Readers on a DeviceNet network. The Reader transfers the collected data to a host, such as a controller over an RS-232 or RS-422/485 link.



Data collected from Readers ① through ⑤ transfer data over a DeviceNet network to Reader ⑤ which then transfers the data to a host ⑥ over an RS-232 or RS-422/485 link. In this configuration, the DeviceNet port and one of the Reader's serial ports can be active at the same time.

### Coordinated (DeviceNet Peer-to-Peer) Scanner Array

As shown in the previous examples, multiple Readers can operate in a coordinated mode to scan a single package. By positioning Readers at various angles, you can create the effect of an omnidirectional scanner which decodes labels regardless of their orientation. The electrical connections between Readers is DeviceNet peer-to-peer.



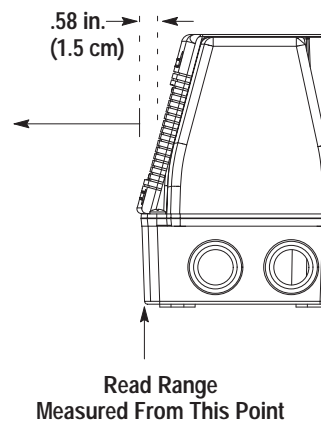
## Read Range Data References

Read range data (pages 8 through 10) is based upon the following conditions:

- 95% reads minimum with Reader set at maximum scan angle.①
- Test symbol is Code 39, size reference is narrow bar.
- Label orientation on axis with 5° pitch, 25° skew.

① Reducing the Reader's scan angle will increase the read range. The increased read range is dependent on many application parameters; most importantly the bar code symbol quality.

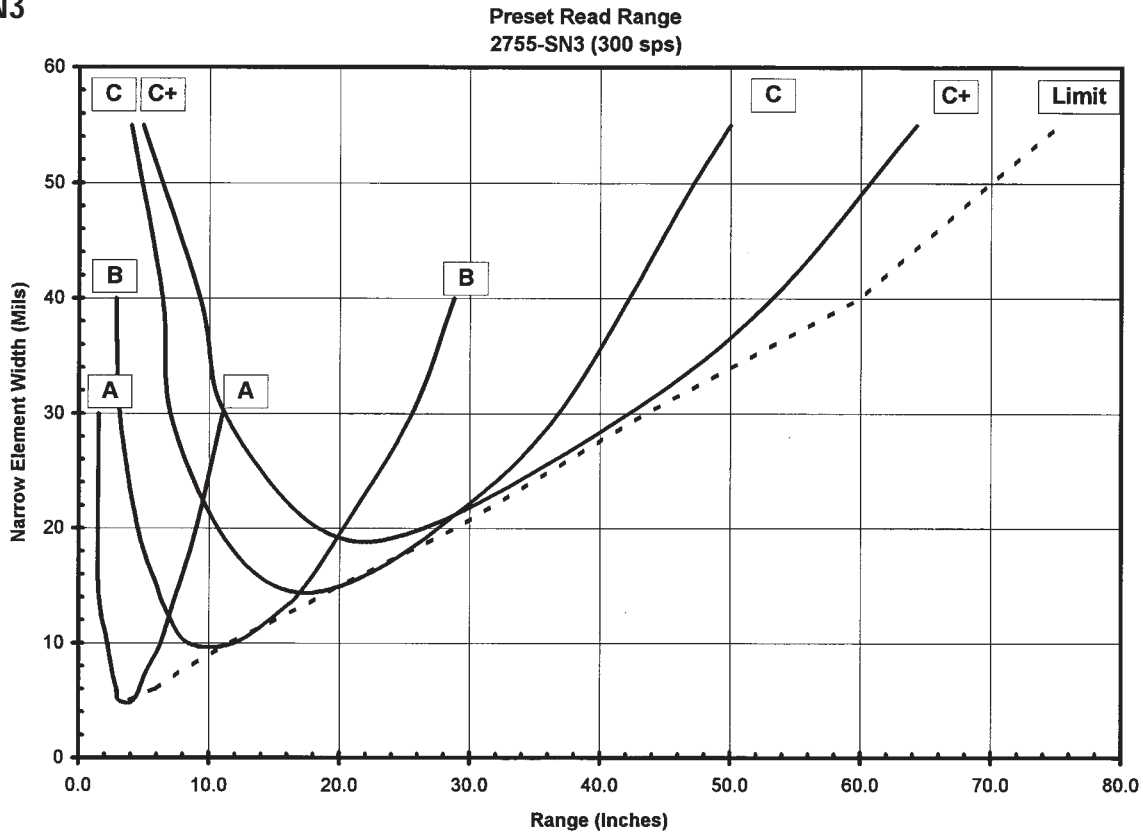
Read ranges are measured from front edge of wiring base. Add .58 inches (1.5 cm) for the distance to the scan window.



Read ranges on the following charts are factory tested for preset focus ranges A, B, C, and C+ at ambient temperature. Factory calibration and functional testing uses Code 39 symbols at 25° skew, 5° pitch. Typical preset read ranges will exceed those shown. The center of the read range will shift up to 15% over the full operating temperature (0 to 50°C) of the Reader.

Different symbologies, skew, and pitch will also result in slightly different range. Greater read range may be achieved by manually adjusting the focus. Greater read ranges may also be obtained by reducing the scan angle to less than 100%. Try different settings to determine the optimum symbol positioning, focus range units, and scan angle for your application.

## Read Ranges 2755-SN3

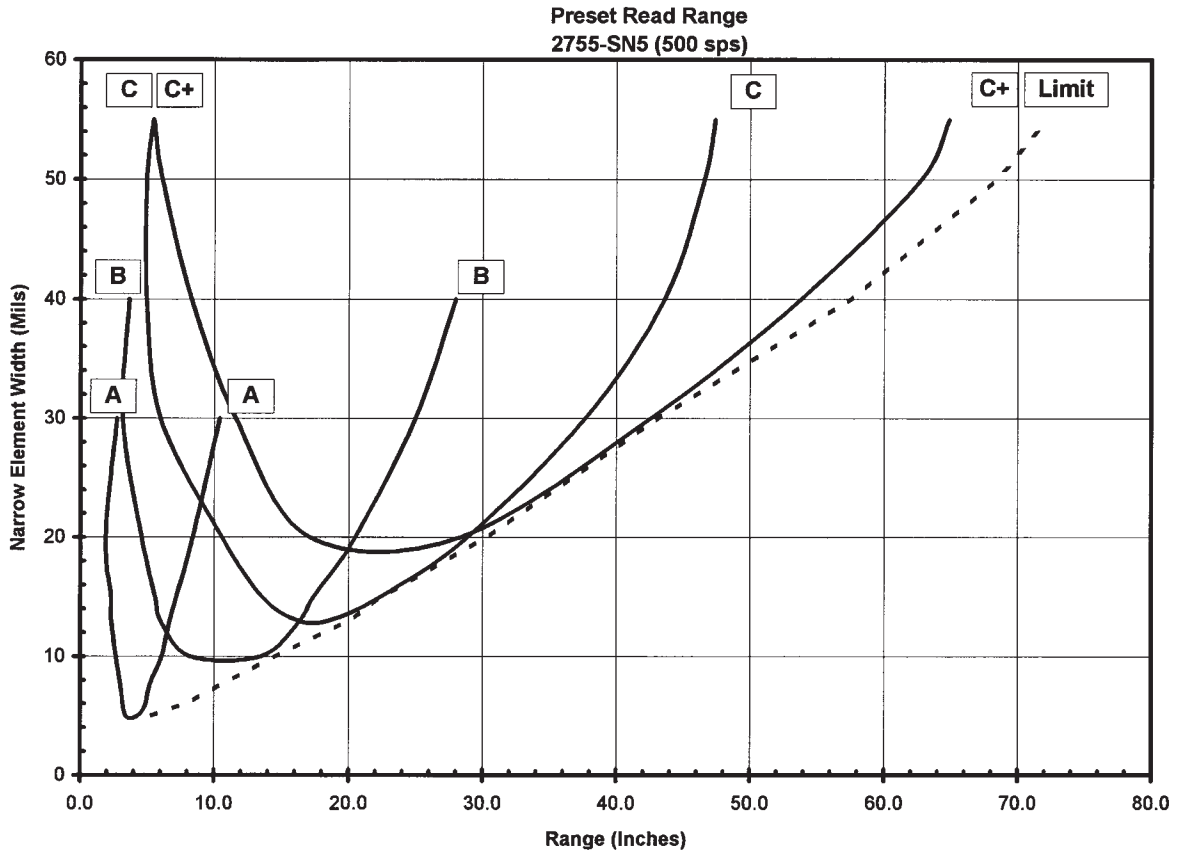


**300 Scans Per Second at Maximum Scan Angle (Usable 60 Degrees)**

Narrow Element (Mils)	A Range Inches (cm)		B Range Inches (cm)		C Range Inches (cm)		C+ Range Inches (cm)		Maximum Range Inches (cm)
	Inches	cm	Inches	cm	Inches	cm	Inches	cm	
5	2.5 (6.4)	3.6 (9.2)							3.6 (9.2)
6	2.3 (5.9)	4.4 (11.2)							5.3 (13.5)
7.5	2.0 (5.1)	4.6 (11.7)							7.2 (18.3)
10	1.6 (4.1)	5.7 (14.5)	7.8 (19.8)	11.3 (28.7)					10.9 (27.7)
13	1.5 (3.8)	6.5 (16.5)	6.1 (15.5)	15.1 (38.4)					16.2 (41.2)
15	0.9 (2.3)	6.9 (17.5)	5.4 (13.7)	16.8 (42.7)	14.4 (36.5)	19.6 (49.8)			19.5 (49.5)
20	0.9 (2.3)	8.4 (21.4)	3.9 (9.9)	19.7 (50.1)	10.1 (25.7)	27.0 (68.6)	17.8 (45.2)	25.9 (65.8)	28.4 (72.2)
30	0.9 (2.3)	10.4 (35.5)	2.5 (6.4)	25.0 (63.5)	6.4 (16.3)	36.2 (92.0)	10.6 (27.0)	41.6 (105.7)	42.9 (99.0)
40			2.2 (5.6)	28.2 (71.6)	5.8 (14.8)	43.2 (109.8)	8.7 (22.1)	52.6 (133.6)	59.3 (151.5)
50					3.3 (8.4)	46.6 (118.4)	7.6 (19.3)	61.6 (156.6)	69.4 (176.3)
55					3.4 (8.7)	49.4 (125.5)	4.3 (11.0)	63.7 (161.8)	74.6 (189.5)



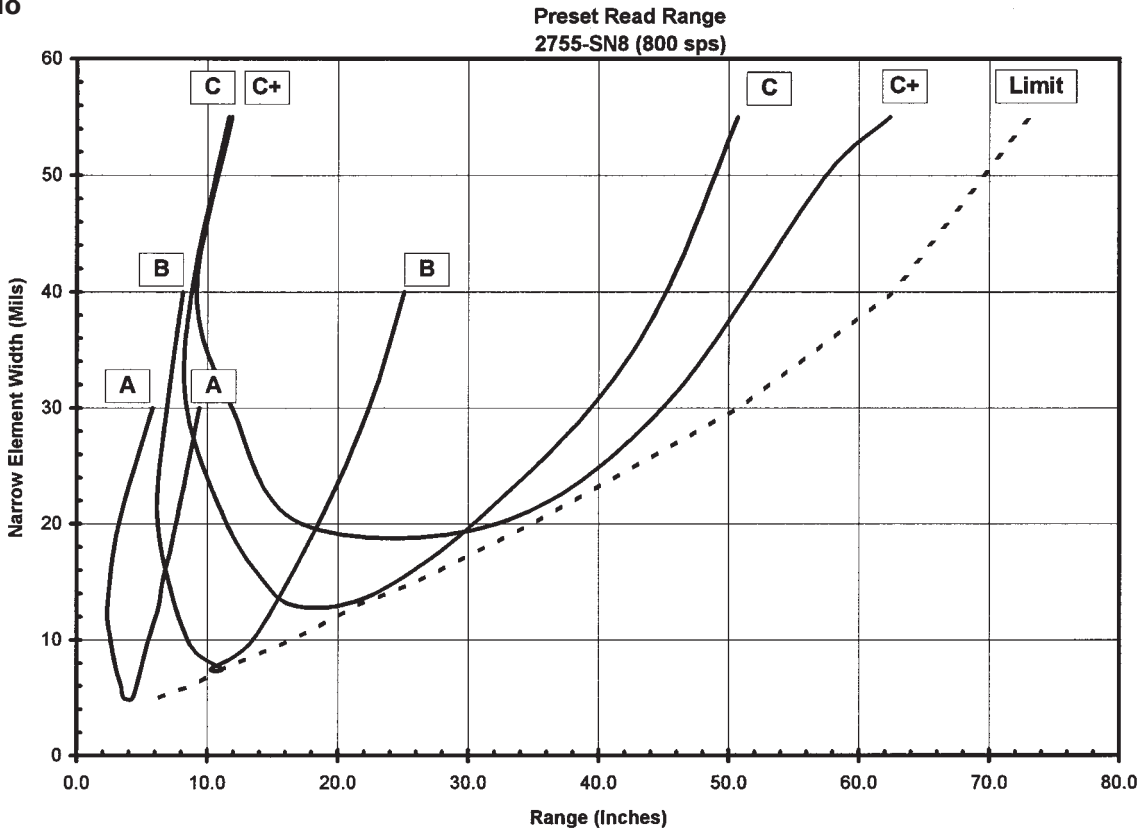
Read Ranges  
 2755-SN5



500 Scans Per Second at Maximum Scan Angle (Usable 40 Degrees)

Narrow Element (Mils)	A Range Inches (cm)		B Range Inches (cm)		C Range Inches (cm)		C+ Range Inches (cm)		Maximum Range Inches (cm)
5	2.8 (7.1)	3.7 (9.4)							4.7 (12.0)
6	2.4 (6.1)	4.3 (11.0)							7.3 (18.6)
7.5	2.4 (6.1)	4.6 (11.7)							8.9 (22.6)
10	2.7 (6.9)	5.5 (14.0)	7.6 (19.3)	12.9 (32.8)					14.0 (35.6)
13	1.7 (4.3)	6.1 (15.5)	5.4 (13.7)	15.8 (40.2)	15.6 (39.6)	18.0 (45.7)			19.5 (49.6)
15	1.7 (4.3)	6.6 (16.8)	5.0 (12.7)	16.8 (42.7)	13.0 (33.0)	21.8 (55.4)			21.8 (55.4)
20	1.3 (3.3)	7.8 (19.8)	4.0 (10.2)	19.9 (50.6)	10.0 (25.4)	28.3 (71.9)	16.5 (41.9)	27.8 (70.6)	29.7 (75.5)
30	2.2 (5.6)	9.8 (24.9)	2.6 (6.6)	24.4 (62.0)	6.2 (15.8)	37.1 (94.3)	11.0 (28.0)	42.0 (106.7)	42.5 (108.0)
40			3.0 (7.6)	27.4 (69.6)	5.4 (13.7)	43.0 (109.2)	7.7 (19.6)	53.2 (135.2)	56.9 (144.6)
50					4.3 (11.0)	46.0 (116.9)	5.6 (14.0)	62.2 (158.0)	67.9 (172.5)
55					4.9 (12.5)	46.8 (118.9)	4.9 (12.5)	64.3 (163.3)	71.6 (181.9)

## Read Ranges 2755-SN8



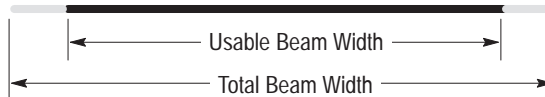
**800 Scans Per Second at Maximum Scan Angle (Usable 24 Degrees)**

Narrow Element (Mils)	A Range		B Range		C Range		C+ Range		Maximum Range (cm)
	Inches (cm)	Inches (cm)	Inches (cm)	Inches (cm)	Inches (cm)	Inches (cm)	Inches (cm)		
5	3.0 (9.1)	3.7 (9.4)							5.7 (14.5)
6	2.8 (7.1)	3.9 (9.9)							8.2 (20.9)
7.5	2.4 (6.1)	4.0 (10.2)	10.5 (26.7)	9.7 (24.7)					10.7 (27.2)
10	2.0 (5.1)	4.9 (12.5)	7.9 (20.1)	12.9 (32.8)					16.0 (40.7)
13	1.8 (4.6)	5.7 (14.5)	6.9 (17.5)	14.7 (37.4)	15.9 (40.4)	19.8 (50.3)			21.0 (53.4)
15	2.1 (5.4)	6.0 (15.3)	6.0 (15.3)	15.3 (38.9)	13.8 (35.1)	23.8 (60.5)			25.4 (64.5)
20	2.6 (6.6)	7.0 (17.8)	5.6 (14.3)	17.9 (45.5)	10.9 (27.7)	29.8 (75.7)	16.6 (42.2)	31.6 (80.3)	34.3 (87.2)
30	5.2 (13.2)	8.8 (22.4)	6.3 (16.0)	21.3 (55.4)	7.8 (19.8)	38.8 (98.6)	11.3 (28.7)	44.3 (112.6)	50.2 (127.5)
40			7.5 (19.1)	24.5 (62.3)	8.2 (20.9)	44.6 (113.3)	8.6 (21.9)	55.6 (141.3)	62.1 (157.8)
50					10.6 (27.0)	48.0 (121.9)	10.1 (25.7)	56.9 (144.6)	69.0 (175.3)
55					11.0 (28.0)	50.1 (127.3)	11.3 (28.7)	61.8 (157.0)	72.5 (184.2)

## Usable Beam Width

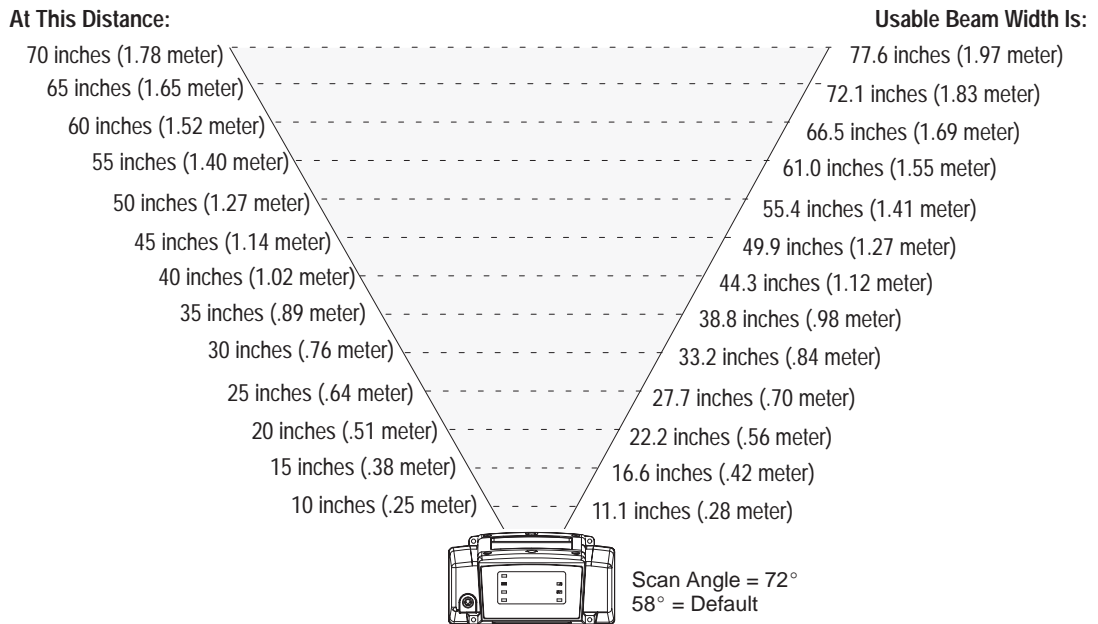
The usable beam width depends on the Reader type, the scan angle and the distance from the bar code symbol. Make sure that the scan beam is wide enough for the area you are scanning. Increasing the scan angle setting (using configuration software) or moving the Reader away from the symbol increases the beam width.

The usable beam width is approximately 80% of the total beam width. The end 10% on either side of the scan beam cannot decode bar code symbols.

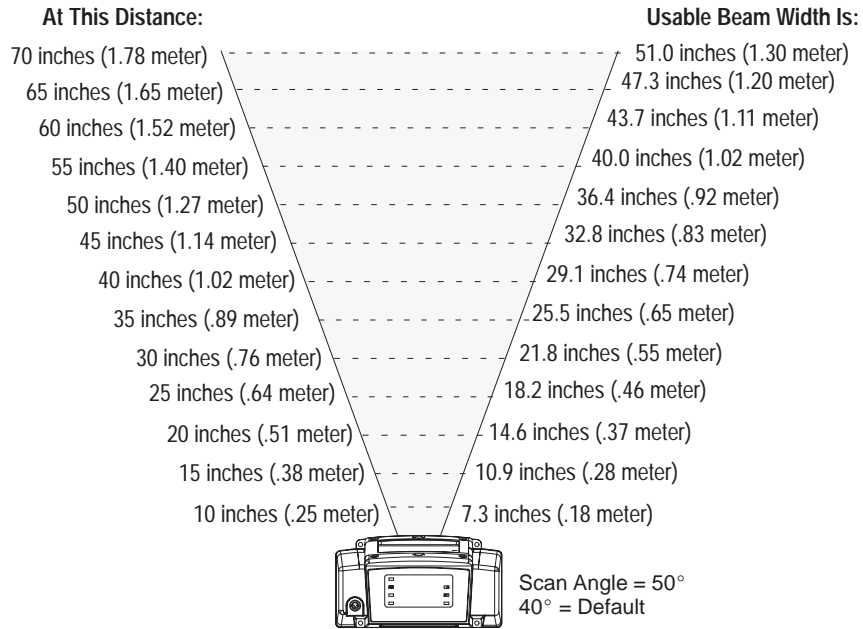


The following charts show the usable beam width for the default scan angle settings. We recommend that you use the default setting to determine the position of the Reader. This allows you to increase or decrease the scan angle after installation.

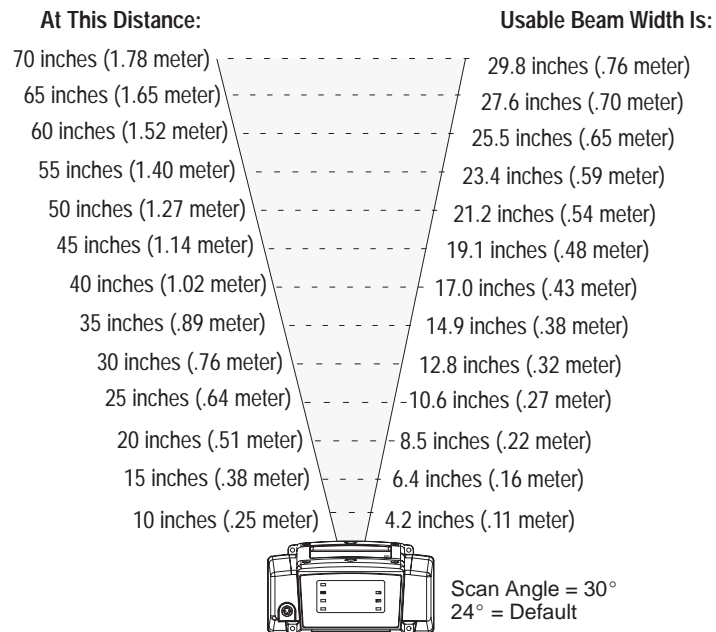
### Maximum Usable Beam Width (Catalog No. 2755-SN3)



### Maximum Usable Beam Width (Catalog No. 2755-SN5)

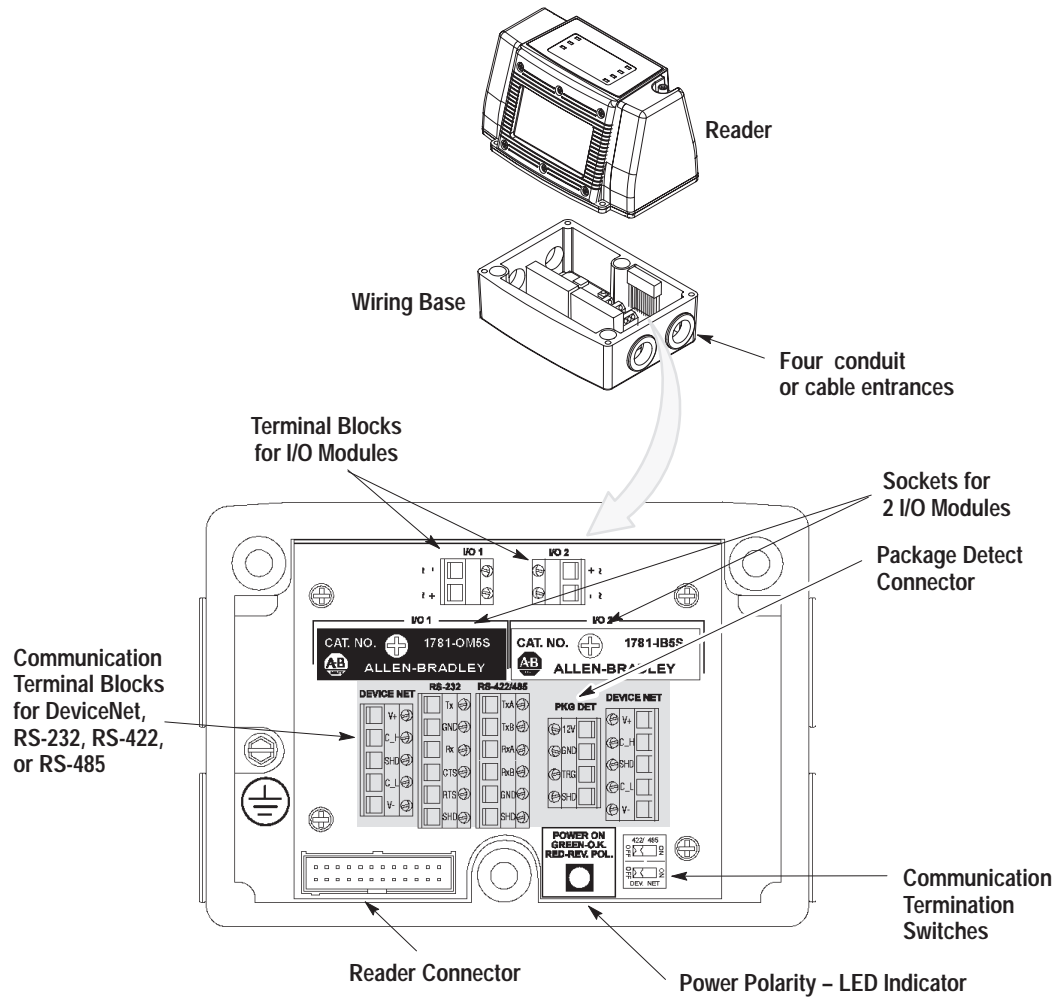


### Maximum Usable Beam Width (Catalog No. 2755-SN8)



## Wiring Base

The Reader plugs into the wiring base. All connections to the wiring base are made using common electrician tools. To reduce the possibility of damage, install the Reader or the wiring base dust cover after making the connections.



### DeviceNet Terminal Block

There are two identical terminal block connectors. One for incoming power and communications, the other for outgoing power and communications.

### RS-232 Terminal Block

Connections for point-to-point communications with a personal computer or the controller's RS-232 port.

## RS-422 / RS-485 Terminal Block

Connections for network or point-to-point communications with an RS-485 device or DH-485 network.

## Reader Connector

The Reader plugs into this connector. All power and communications with the Reader occurs through this connector.

## I/O Module Sockets

Two sockets support any combination of these I/O modules.

Description	Catalog No.
DC Output Module – rated at 3 to 60 VDC	2755-OB5S
AC Output Module – rated at 12 to 140 VAC	2755-OA5S
AC Output Module – rated at 24 to 280 VDC	2755-OM5S
DC Input Module – accepts 3.3 to 32 VDC	2755-IB5S
AC/DC Input Module – accepts 90 to 140 VRMS or VDC	2755-IA5S
AC/DC Input Module – accepts 180 to 280 VRMS or VDC	2755-IM5S

## I/O Module Terminal Blocks

Wiring connections for the optional input or output modules.

## Package Detect Terminal Block

Screw terminal block provides +12V DC power and ground for a package sensor. The remaining connection provides a sense line for the Reader. The package detect can be either an electronic (current sinking) or a hard contact type device. Most applications use a photo-reflective type sensor. The package detect starts and stops the Reader's decoding and determines when messages are sent and outputs energized.

## Power Polarity – LED Indicator

Indicates normal operating and fault conditions.

Condition	Indicates:
Green	Normal operating state.
Red	Polarity of the power connections is reversed. Wiring must be corrected.
Off	No power.

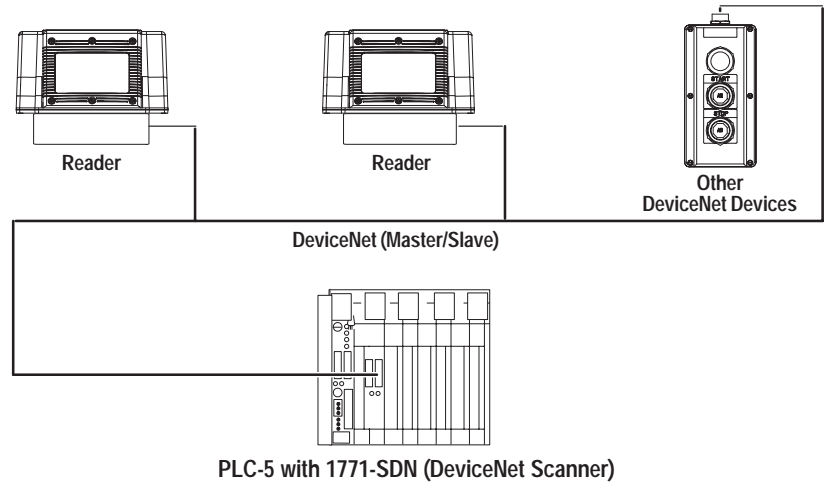
## Termination Switches

Provide termination for the last device on a DeviceNet, RS-422 or RS-485 network. The Reader is terminated by moving the switch to the ON position.

## Communication Options

### DeviceNet Network

A DeviceNet network supports multiple Readers and allows them to communicate with other devices (up to 63 devices) on the network. The DeviceNet cable consists of four wires (2 power and 2 communications) and a shield connected to the Reader wiring base. The controller with a DeviceNet scanner reads the data like a standard remote I/O rack.



The AdaptaScan Reader connects to other DeviceNet devices through either a PLC (Catalog No. 1771-SDN) or SLC (Catalog No. 1747-SDN) DeviceNet Scanner. The AdaptaScan operates as a slave device to the DeviceNet scanner.

AdaptaScan on a DeviceNet network supports the following baud rates and cable lengths:

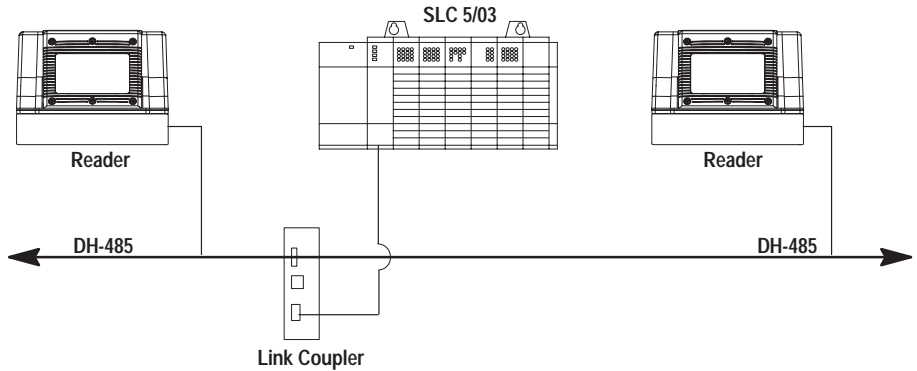
Baud Rate	Cable Length (Max)
125 Kbps	1600 feet (500 meters)
250 Kbps	600 feet (200 meters)
500 Kbps	300 feet (100 meters)

On a DeviceNet network, Readers can:

- operate in a coordinated mode to read multiple bar code symbols on different sides of the same package.
- communicate with other peer-to-peer or master DeviceNet compatible devices.
- combine data from several Readers to a single Reader that communicates the data to a host.
- combine data from several Readers to a single Reader that uses that data to control its discrete outputs.
- pass input and output status information between Readers.

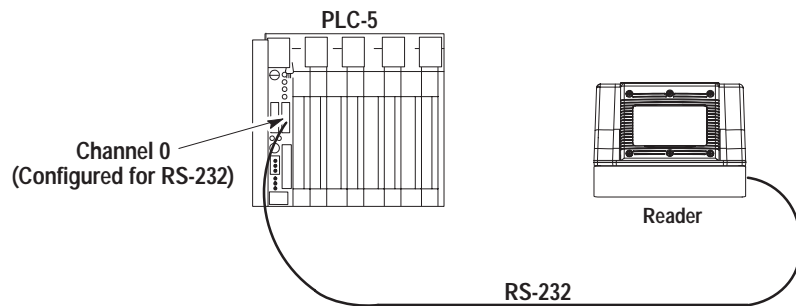
## RS-422 and RS-485 Communications

The RS-422 / RS-485 port allows communications with a single device (point-to-point) or network, such as an SLC DH-485 network.



## RS-232

The RS-232 port provides point-to-point communications with a device having an RS-232 port such as a PLC-5 Channel 0 port or personal computer.



The RS-422 / RS-485 port or the RS-232 port can be used at the same time as the DeviceNet port. The RS-422 / RS-485 port and the RS-232 port cannot be used at the same time.

## Protocols

The RS-485/RS-422 and RS-232 serial ports support these protocols.

Protocol	Description
Allen-Bradley DF1	A peer-to-peer link layer protocol that combines features of ANSI X3.28-1976 specification subcategories D1 (data transparency) and F1 (two-way simultaneous transmission with embedded responses). DF1 is supported by a variety of Allen-Bradley products including PLC-5 controllers.
Allen-Bradley DH485	Token passing protocol for a local area network. Use this protocol to connect the Reader to a DH-485 network, such as an SLC controller network.
Terminal	Provides a simple interface to most serial devices. However, this is the least secure protocol.



## Configuration Software (Catalog No. 2755-ASN)

The AdaptaScan Configuration Software, a Windows™ based package (Catalog No. 2755-ASN), lets you configure a Reader through a series of menus, tools and dialog boxes. Context sensitive help is available to assist with use of the software.

All Reader functions are configured from the Project dialog shown below, providing a single point of access for all operations.



The Project dialog has buttons for accessing the following operations.

Select:	To:
	Define label setup and symbologies for Reader operation.
	Define a unique name, node address, and description for the Reader.
	Define scanning parameters and autofocus functions.
	Define when the Reader decodes data and what data is decoded. Also defines the inter-symbol timer and performance indicator parameters.
	Define the operation for package detector, discrete inputs, discrete outputs, timer and ASCII trigger commands.
	Define communication parameters (RS-232, RS-422, RS-485) and protocols (ASCII, DH-485, DF1) for the Reader's communication ports.
	Define match table, package and counter functions for decoded bar code data.
	Define the format and content of bar code messages sent to the host by the Reader.
	Transfer a configuration to all Readers on the same network.
	Transfer a configuration to selected Reader(s).
	Download new Reader firmware when receiving a new AdaptaScan Reader or when the AdaptaScan Software is updated.
	View the operation of a Reader.

## Scanning Options

You can configure the Reader for linear or raster scanning. Setup dialogs determine how the laser scans a bar code symbol.



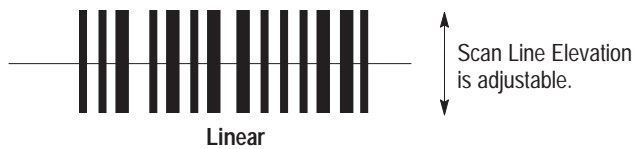
Raster Setup



Linear Setup

The orientation of the bar code label with the scanner usually determines which scan option is appropriate.

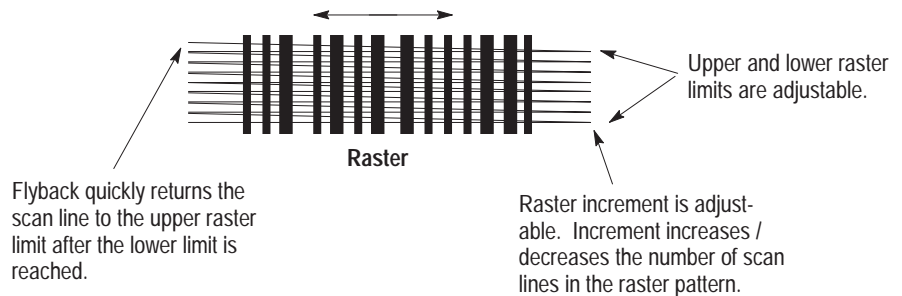
### Linear Mode



Linear

For linear scanning, you can adjust the scan line elevation and width.

### Raster Mode



Raster

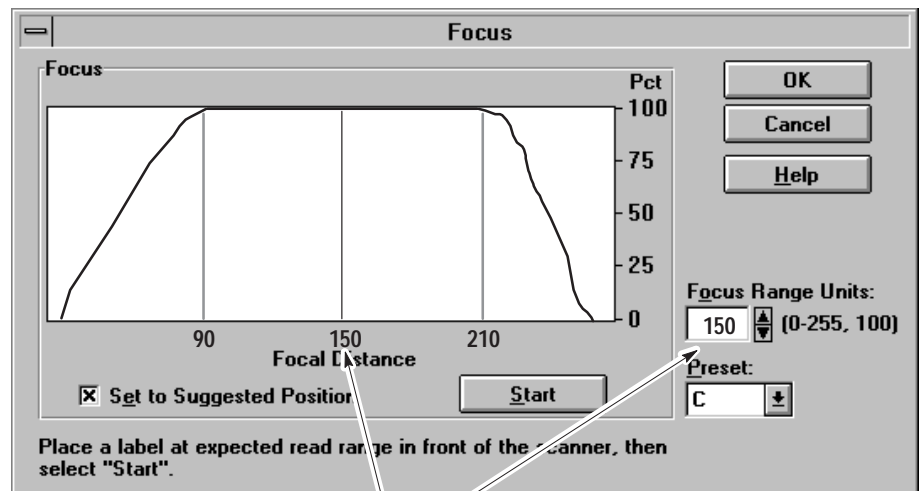
For raster scanning, you can adjust or select:

- Upper and lower raster limits
- Raster increment
- Flyback enable

## Focus

The Reader has a variable focus distance. The software supports manual, preset, and autofocus options.

The software provides a graphical representation of the focus operation.



Autofocus Setting

## AutoFocus

When autofocus is selected, the Reader scans for a label from the nearest to the farthest focal distance. The number of reads at each focal distance is determined and the focal distance is set halfway between the nearest and farthest focal distance where 100% valid reads occur.

## Manual

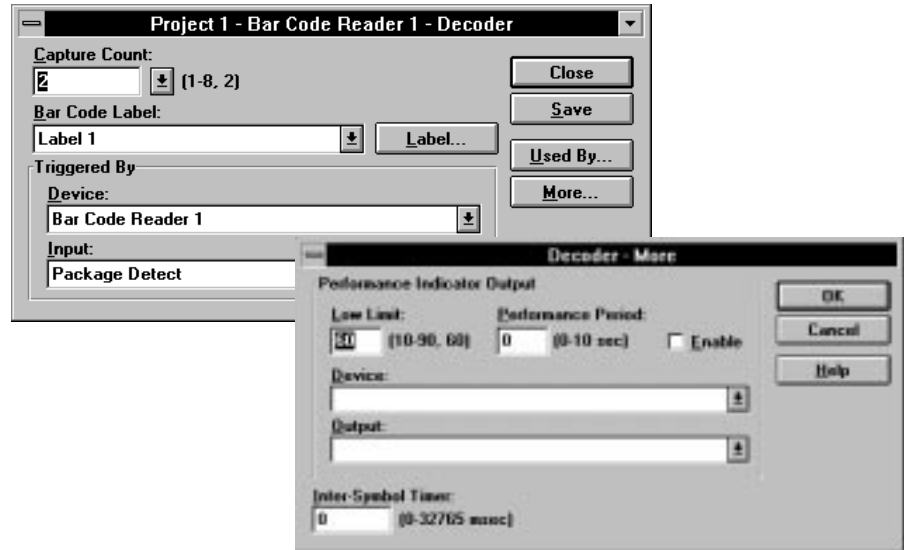
Manual adjustment of the read range allows you to fine-tune the autofocus setting for a maximum read percentage.

## Preset

Four preset read ranges (A, B, C, and C+) allow for easy replacement of an existing scanner.

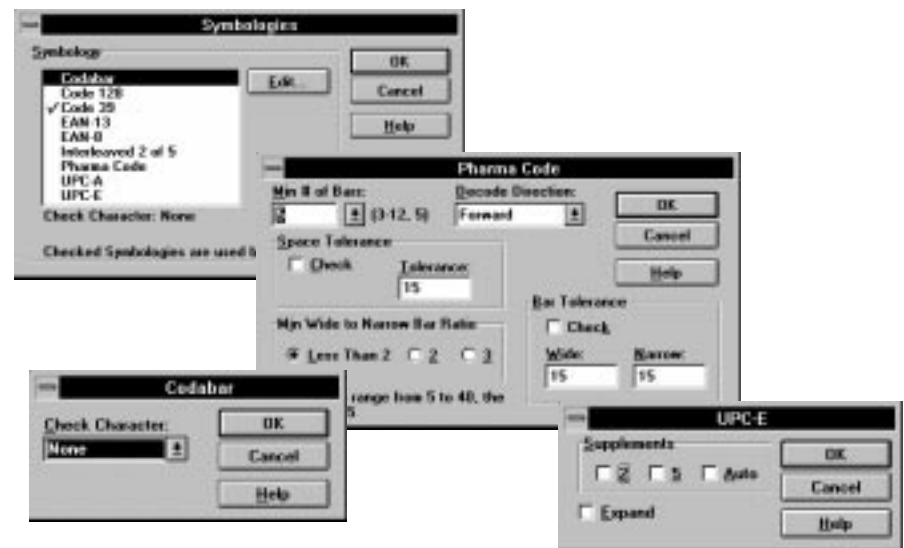
## Decoding Operations

Menus and dialog boxes define parameters that determine when and how decoding occurs and the destination of the data.



## Symbology Configurations

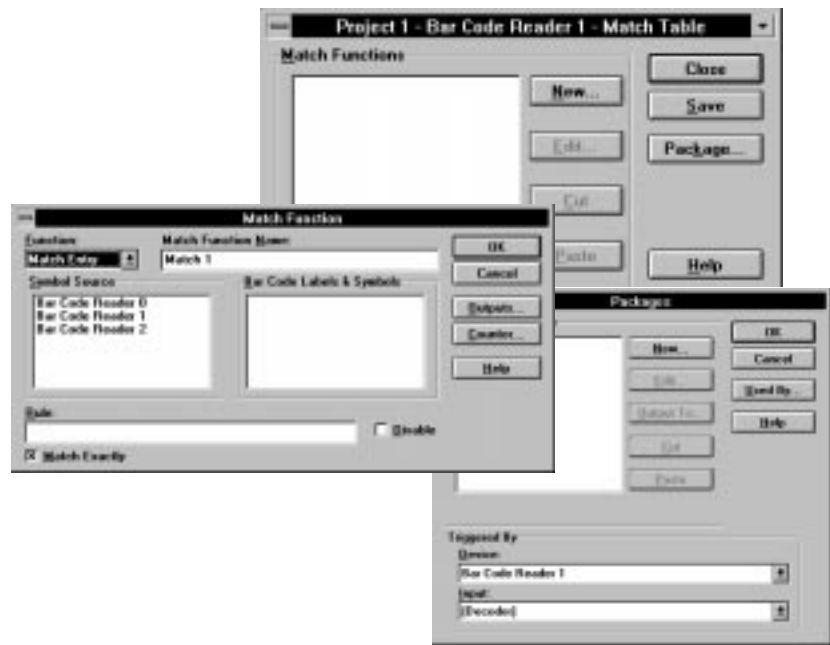
Each symbology has a separate dialog allowing you to specify optional parameters such as supplements, check characters and guard bars.



## Match Table Functions

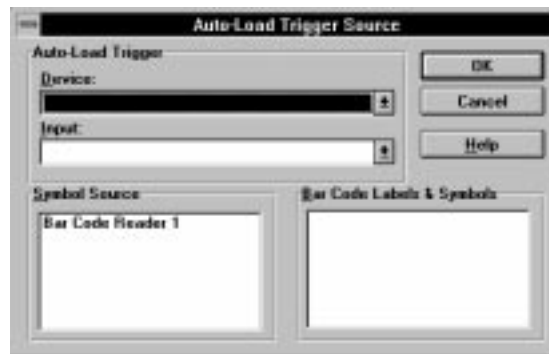
Match table operations allow you to search for bar codes with specific contents. Based on the results of a match table, the Reader can:

- turn on an output
- replace the bar code data with an ASCII string
- determine if a package has been read



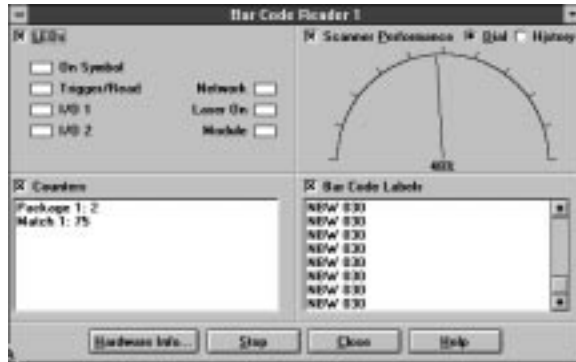
## Auto-Load

Automatically inserts the contents of bar code symbols into a match table. There is no need to manually enter data strings and other symbology data. Auto-Load typically uses a keyswitch connected to an input module of a Reader. With the keyswitch in the Auto-Load position, match table data is entered as the Reader scans and decodes bar code labels.



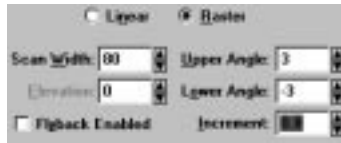
## System Monitoring

The software monitors the local Reader or any Reader on a network. Use the monitor feature for initial setup and adjustment.



## Online Adjustments

Make online adjustments to one or more Readers on a network. From a single connection, you can fine-tune operations such as scanning.



## Help

Both general and context sensitive help is available. Help topics are accessed from the menu bar or directly from the dialog boxes.



## Dynamic Data Exchange (DDE)

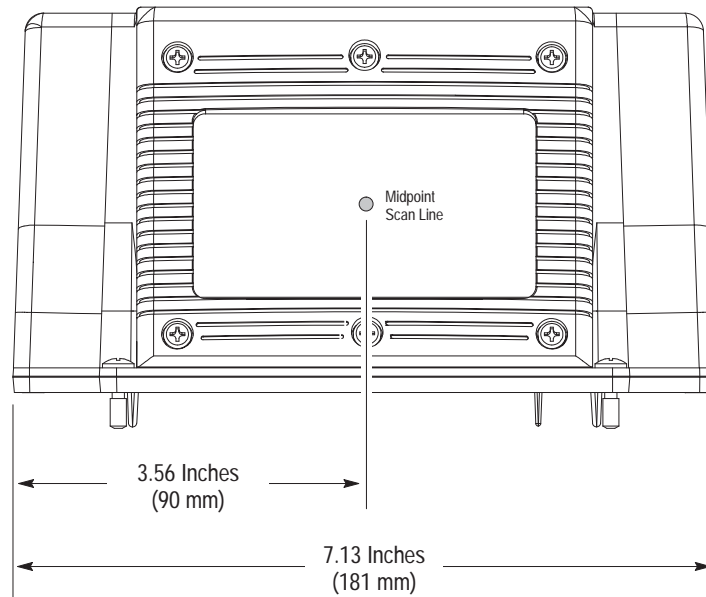
Exchange data with other Windows applications supporting DDE such as Microsoft Excel®. Both software applications must be running with the AdaptaScan Software minimized.

## Dimensions

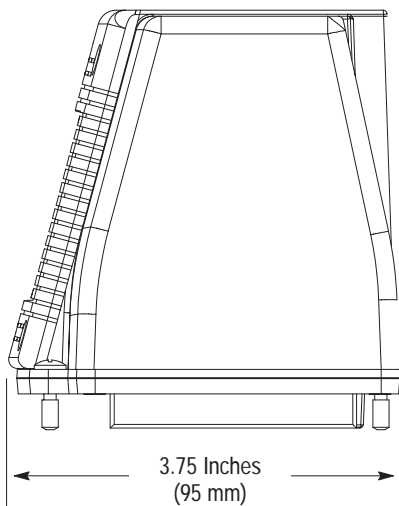
The following dimensions are for reference only.

### Reader

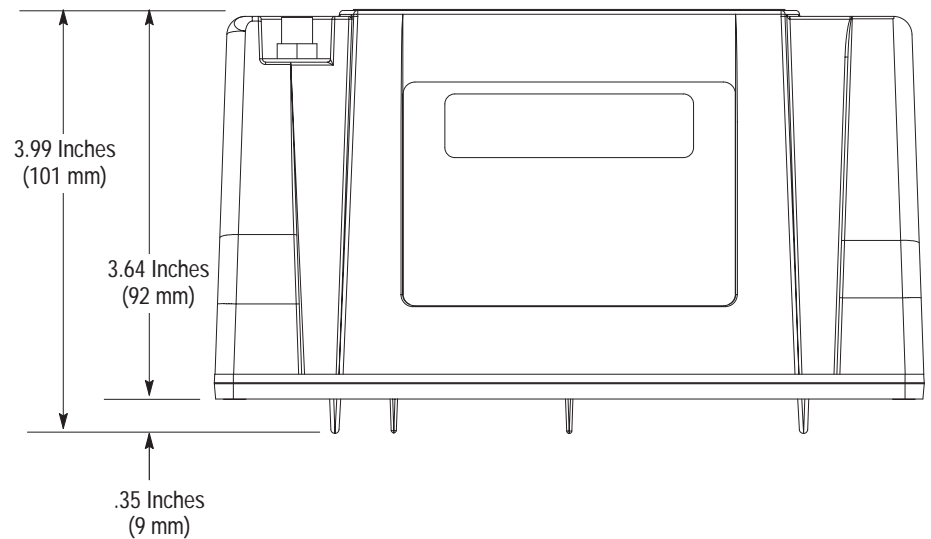
Front View



Side View

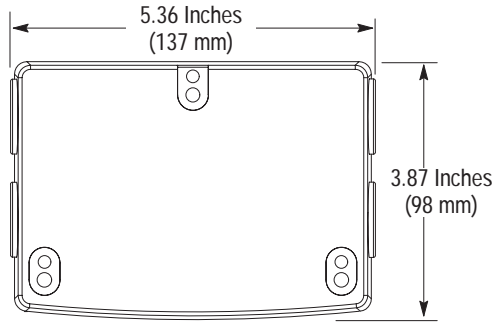


Back View

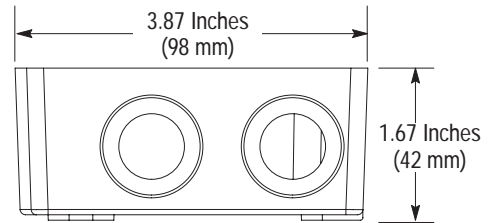


### Wiring Base

The following dimensions are for reference only.

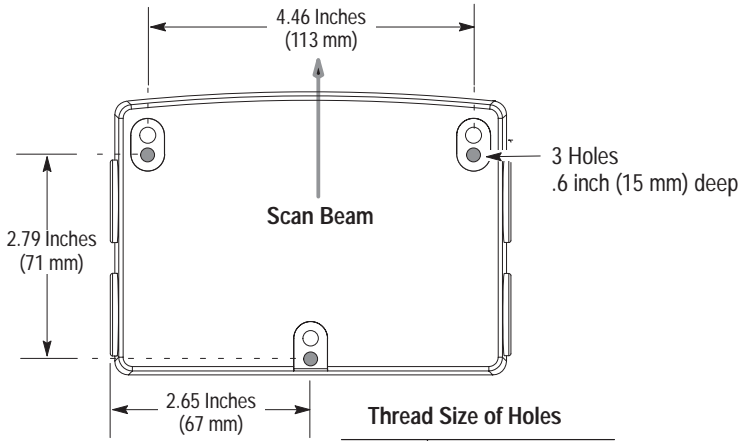


Bottom View



End View

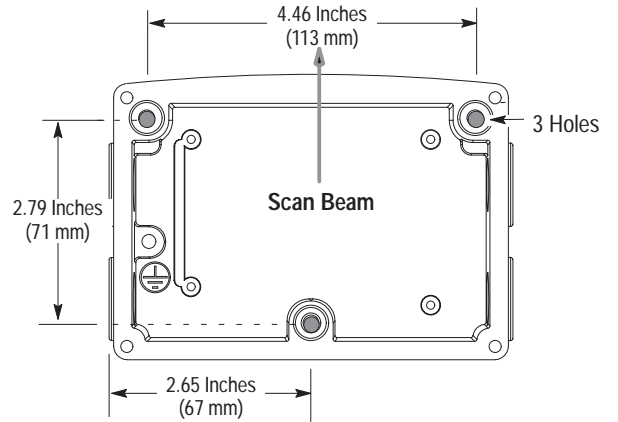
#### Bottom Mounting Holes



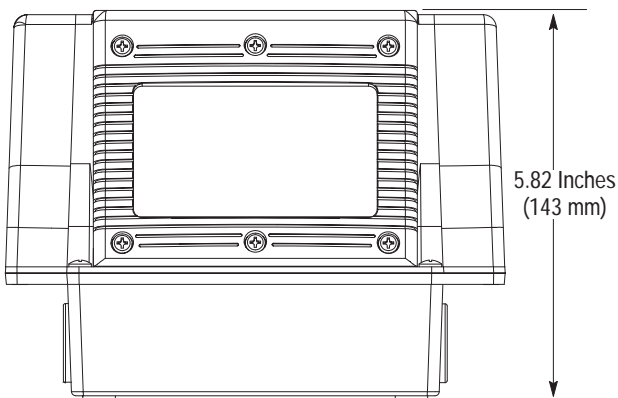
#### Thread Size of Holes

U.S.	#10-32 UNF-2B
Metric	M5 x .8

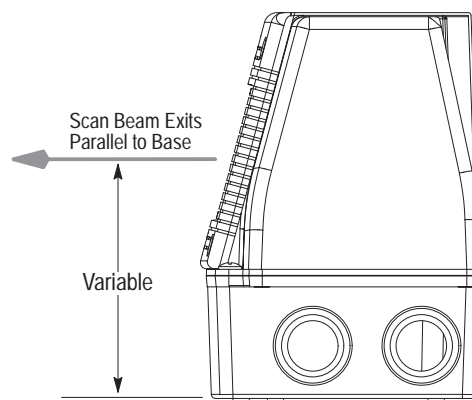
#### Top Mounting Holes



### Reader / Base Assembly



Front View



Side View



## Options and Accessories

The following items are available.

Item	Description	Catalog No.
Wiring Bases	Reader wiring base: US version Metric version	2755-NB40 2755-NB41
Window Kits	Replacement scan window kit includes window, bezel, mounting screws and instructions. Plastic window kit Glass window kit	2755-NW44 2755-NW45
Power Supplies	24 VDC power supply powers a single Reader 120 VAC Input, 60 Hz (US) 240 VAC input, 50 Hz (European)	2755-PW46 2755-PW47
Mounting Bracket Kit	Provides almost any combination of tilt, pitch and rotational positioning.	2755-NM42
Communication Cable	Cable, 9 feet 10 inches (3 meters) connects Reader configuration port to a personal computer. Has a 9 pin D shell connector for the computer's RS-232 com port.	2755-NC43
I/O Modules	DC Output Module – rated at 3 to 60 VDC	2755-OB5S
	AC Output Module – rated at 12 to 140 VAC	2755-OA5S
	AC Output Module – rated at 24 to 280 VDC	2755-OM5S
	DC Input Module – accepts 3.3 to 32 VDC	2755-IB5S
	AC/DC Input Module – accepts 90 to 140 VRMS or VDC	2755-IA5S
	AC/DC Input Module – accepts 180 to 280 VRMS or VDC	2755-IM5S

## Specifications

The following specifications are subject to change without notice.

<b>Electrical</b>	Voltage	12 to 28V DC
	Power	14 Watts maximum
<b>Mechanical</b>	Enclosure	NEMA Type 4 (when used with properly sealed wiring base)
	Connectors	Terminal block (screw terminal) connections in wiring base
	LED Indicators	
	On Symbol	Yellow
	Trigger / Read	Yellow / Green
	I/O 1	Yellow
	I/O 2	Yellow
	Network	Green / Red
	Laser On	Yellow
	Module	Green / Red
	Approximate Weight (Reader & Wiring Base)	4.6 lbs (2.1 kg)
	Dimensions (Reader & Wiring Base)	
	Inches	5.375 (H) x 7.25 (W) x 4.125 (D)
	Millimeters	136.5 (H) x 184.2 (W) x 104.8 (D)
	Shock	30G operating, 50G nonoperating
	Vibration	2G, 10 to 150Hz (3 axis) operating
<b>Environment</b>	Ambient Temperature	
	Operating	0 to 50° C (32 to 122° 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, Thermo-Electric Cooled
	Wavelength	660 nm
	Output Power	1.0 mW maximum
	Scan Rate (Nominal)	
	Catalog No. 2755-SN3	300 Scans/Second
	Catalog No. 2755-SN5	500 Scans/Second
	Catalog No. 2755-SN8	800 Scans/Second
	Mechanical/Optical Scan Angle (Default is underlined)	
	Catalog No. 2755-SN3	22°, 29°, 36°, 43°, 50°, <u>58°</u> , 65°, 72°
	Catalog No. 2755-SN5	15°, 20°, 25°, 30°, 35°, <u>40°</u> , 45°, 50°
	Catalog No. 2755-SN8	15°, 15°, 15°, 18°, 21°, <u>24°</u> , 27°, 30°
	Maximum Usable Scan Angle	80% of mechanical/optical scan angle
<b>Package Detect</b>	External, +12 V DC, @ 100 mA max.	
	5 mA current sink (minimum)	
<b>CDRH Standards</b>	Meets Class II Standards	

## Bar Code Site Survey

### Purpose

Pages 27 through 34 provide a standard form for entering information on new bar code applications. Someone who is knowledgeable of the application should complete the survey. If necessary, an Allen-Bradley sales representative can assist you.

After completing the survey, give it to your Allen-Bradley sales representative along with bar code samples (if necessary). The sales representative will review and use the survey to propose the appropriate bar code scanner for your requirements.

### Using Product Data Sheets to Select a Scanner

Allen-Bradley offers a number of bar code scanners, providing a variety of read ranges and scan speeds. Product Data sheets, which describe the bar code scanners in detail, are available from your Allen-Bradley sales office or distributor. See Related Publications on page 34.

The first step in selecting the correct scanner is to match the scanner to the speed of your application. This site survey contains formulas for determining the correct scanner. If the bar code label you want to scan is of good quality and the *Scans Per Label* calculation is at least 5 scans per label, you can order bar code scanners directly from the product data sheets.

### Determining Bar Code Label Quality

Bar code symbols that are:

- of questionable quality
- printed directly on a product (e.g. ink jet or laser etched symbols)
- metallic

should be sent to Allen-Bradley for evaluation.

You can determine a scanner's capability of reading a particular bar code symbol by:

1. Measuring the *Narrow Bar Width* (NBW) or "X" dimension.
2. Selecting a scanner that can read this *Narrow Bar Width*.
3. Using the *Read Range* charts in the product data sheets to verify that the bar code label can be read throughout the expected *Read Range* for the *Narrow Bar Width*.

## Customer Information

Company Name \_\_\_\_\_

Purchase Order Number \_\_\_\_\_

Quantity Ordered \_\_\_\_\_

Customer Contact \_\_\_\_\_

Phone Number (       ) \_\_\_\_\_

End User \_\_\_\_\_

Customer Contact \_\_\_\_\_

Phone Number (       ) \_\_\_\_\_

## Label Information

Type of Label

3 of 9 (Code 39)       Number of Characters \_\_\_\_\_

Interleaved 2 of 5       Number of Characters \_\_\_\_\_

Codabar       Number of Characters \_\_\_\_\_

Code 128       Number of Characters \_\_\_\_\_

UPC (Version A or E)

EAN-8 or -13

Pharmacode

## Label Surface

Flat

Concave       Radius (inches) \_\_\_\_\_

Convex       Radius (inches) \_\_\_\_\_

**Material**

- Paper
- Mylar
- Metal
- Other: \_\_\_\_\_
- Laminated: \_\_\_\_\_

**Standards**

- AIAG \_\_\_ Version B-2, \_\_\_ Version B-3, \_\_\_ Version B-7, \_\_\_ Version B-9
- HIBC
- Other: \_\_\_\_\_

**Sample(s)**

- Attached
- To be provided by: \_\_\_\_\_
- Not available

**Operational Specifications**

Power Source Voltage

- 110 Volts AC
- 220 Volts AC

Average Ambient Temperature at Scanner Location: \_\_\_\_\_

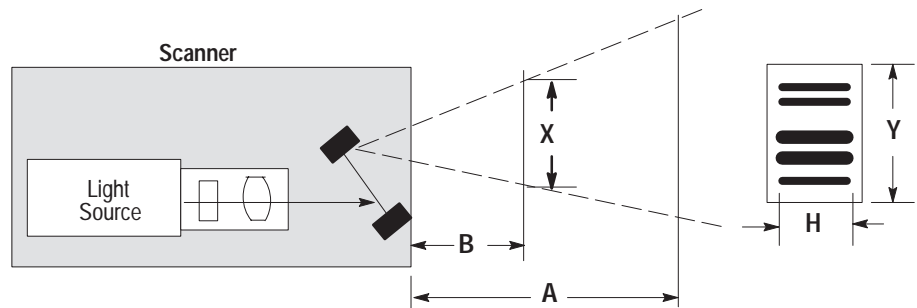
## How to Determine the Correct Scanner

To determine the best scanner for an application:

1. Start with the lowest speed scanner that you might use in the application.
2. Obtain the optical information specified on the next page.
3. Calculate *Scans per Label* using the formulas on page 32.
4. If the *Scans per Label* is less than 5, repeat steps 1 through 4 with the next higher speed scanner. If the *Scans per Label* is greater than or equal to 5, proceed to step 5.
5. Refer to the Product Data to select the lens combination based on the *Narrow Bar Width* and *Read Range* required.

## Optical Information

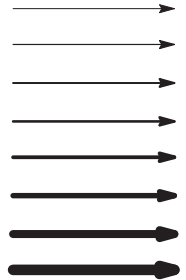
The following diagram shows variables to consider when specifying a scanner. Use this information to determine the number of *Scans per Label* as described on page 32.



Narrow Bar Width (NBW) . . . . . \_\_\_\_\_

Determine the narrowest bar width of your bar code symbol. Compare the smallest bar or space of your bar code symbols to the lines below. If in doubt, select the smaller bar code width.

MILS  
 (1/1000 inch)



Maximum Reading Distance (A) from window (in inches) . . . . . \_\_\_\_\_

Minimum Reading Distance (B) from window (in inches) . . . . . \_\_\_\_\_

Usable Beam Length (X) at minimum reading distance (in inches) \_\_\_\_\_

To determine useable beam length, refer to the useable beam chart in the scanner's Product Data Sheet.

Bar Code Height (H) . . . . . \_\_\_\_\_

Bar Code Width (Y) include quiet zones on both ends . . . . . \_\_\_\_\_

Label Speed (Z) (feet/minute) . . . . . \_\_\_\_\_

(inches/second) . . . . . \_\_\_\_\_

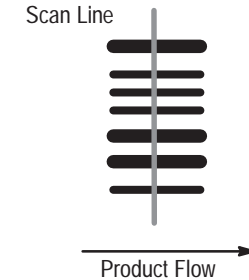
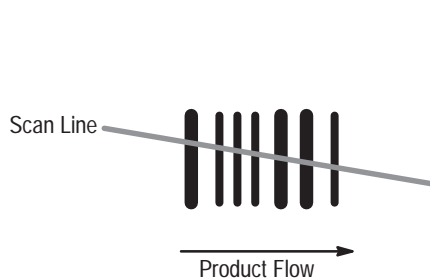
$$\frac{\text{Feet Per Minute}}{60} \times 12 = \text{Inches Per Second}$$

Minimum Carton Separation . . . . . \_\_\_\_\_

Label Orientation

Picket Fence  
 (horizontal orientation)

Step Ladder  
 (vertical orientation)



## Calculating Scans per Label

Use the following formulas to calculate the number of scans per label and the minimum number of scans per second needed for an application. The minimum scan speed required is based on five scans per label.

	Formulas	
	Picket Fence Orientation	Step Ladder Orientation
Scans per Label	$\frac{(X-Y)}{Z} A$	$\frac{A \times H}{Z}$
Minimum Scan Speed Required	$\frac{Z \times 5}{X-Y}$	$\frac{Z \times 5}{H}$

**Where:**

- A = Derated Scan Rate (Nominal Scan Rate -5%)
  - = 190 SPS for Catalog No. 2755-L4, -L5 scanners
  - = 190 SPS for Catalog No. 2755-LD4 scanners
  - = 332 SPS for Catalog No. 2755-L7 scanners
  - = 475 SPS for Catalog No. 2755-LD8 scanners
  - = 760 SPS for Catalog No. 2755-L9 scanners
  - = 285 SPS for Catalog No. 2755-SN3 scanners
  - = 475 SPS for Catalog No. 2755-SN5 scanners
  - = 760 SPS for Catalog No. 2755-SN8 scanners

H = Height of bars in bar code. In inches<sup>①</sup>.

X = Usable beam length at minimum read distance. In inches<sup>①</sup>.

Y = Bar code length including quiet zones. Typically in inches<sup>①</sup>.

Z = Label speed. In inches per second<sup>①</sup>.

MINIMUM SCANS PER LABEL MUST BE  $\geq 5$ .<sup>②</sup>

- ① You can use other units of measure, such as meters, as long as all measurements use the same unit.
- ② When using Verify Mode, 3 scans per label is acceptable.





## Who completed this survey?

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

## Related Publications

Publication Number	Title
2755-2.30	Enhanced Medium-Speed Scan Head Product Data
2755-2.34	Industrial Medium and High-Speed Bar Code Scanners Product Data
2755-2.38	Hand-Held Laser Scanner Product Data
2755-2.43	Single/Dual-Head Enhanced Bar Code Decoders Product Data
2755-2.44	Visible Laser Diode Hand-Held Scanners Product Data
2755-2.46	Visible Laser Diode Fixed-Mount Scanners Product Data
2755-2.47	Single and Dual-Headed Bar Code Decoders with Pharma-Code Option Product Data





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