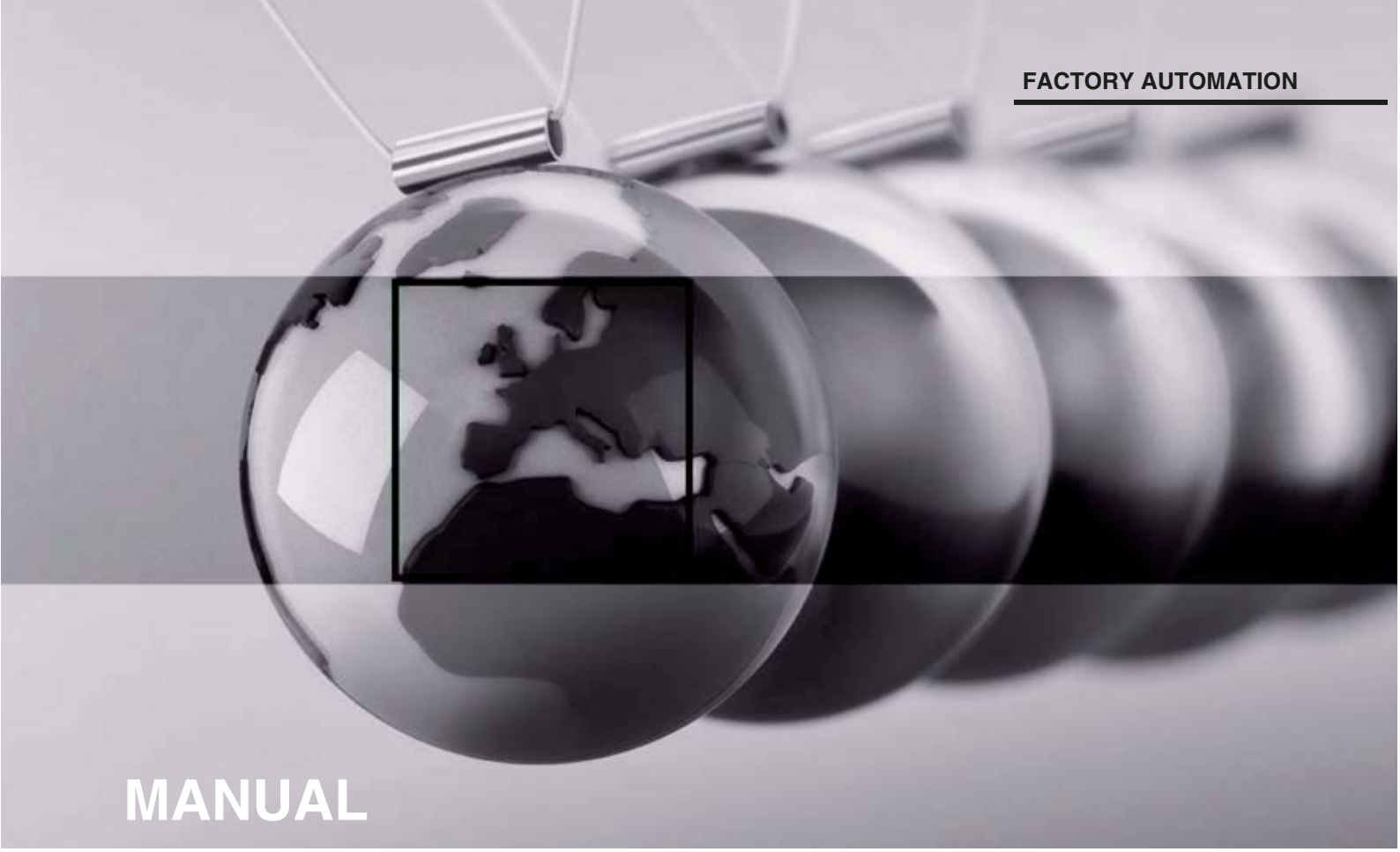


MANUAL

VB6-240-V
BARCODE SCANNER

CE

PEPPERL+FUCHS
SENSING YOUR NEEDS

PEPPERL+FUCHS

CONTENTS

REFERENCES

CONVENTIONS

This manual uses the following conventions:

“User” or “Operator” refers to anyone using a VB6.

“Device” refers to the VB6.

“You” refers to the System Administrator or Technical Support person using this manual to install, mount, operate, maintain or troubleshoot a VB6.

SAFETY REGULATIONS

LASER SAFETY

The following information is provided to comply with the rules imposed by international authorities and refers to the correct use of the VB6 scanner.

Standard Regulations

This scanner utilizes a low-power laser diode. Although staring directly at the laser beam momentarily causes no known biological damage, avoid staring at the beam as one would with any very strong light source, such as the sun. Avoid that the laser beam hits the eye of an observer, even through reflective surfaces such as mirrors, etc.

This product conforms to the applicable requirements of both EN 60825-1and CDRH 21 CFR 1040 at the date of manufacture. The scanner is classified as a Class 2 laser product according to EN 60825-1 regulations and as a Class II laser product according to CDRH regulations.

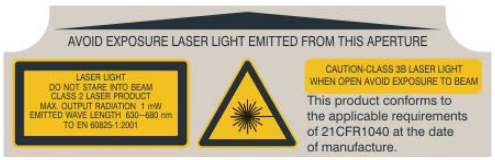
There is a safety device, which allows the laser to be switched on only if the motor is rotating above the threshold for its correct scanning speed.

The laser beam can be switched off through a software command.

WARNING *Use of controls or adjustments or performance of procedures other than those specified herein may result in exposure to hazardous visible laser light.*

The laser light is visible to the human eye and is emitted from the window on the front of the scanner (Figure A, 8).

Warning labels indicating exposure to laser light and the device classification are applied onto the body of the scanner (Figure A, 6).



Warning and Device Class Label

For installation, use and maintenance it is not necessary to open the scanner.

The laser diode used in this device is classified as a class 3B laser product according to EN 60825-1 regulations and as a Class IIIb laser product according to CDRH regulations. As it is not possible to apply a classification label on the laser diode used in this device, the following label is reproduced on the right.

Laser Diode Class Label

Any violation of the optic parts in particular can cause radiation up to the maximum level of the laser diode (35 mW at 630 to 680 nm).

POWER SUPPLY

This device is intended to be supplied by a UL Listed or CSA Certified Power Unit with «Class 2» or LPS power source, which supplies power directly to the scanner via the 15-pin connector.

WEEE COMPLIANCE

GENERAL VIEW

VB6

Figure A

1. Laser Beam Output Window
2. Test Key
3. Power On LED
4. Good Read LED
5. External Trigger/Ready LED
6. Tx Data/Active LED
7. Laser On LED
8. Warning and Device Class Label
9. Mounting Holes
10. 15-pin D-sub High-density Male Connector

GUIDE TO INSTALLATION

The following can be used as a checklist to verify all of the steps necessary for complete installation of the VB6 scanner.

1) Read all information in the section "Safety Precautions" at the beginning of this manual.

2) Correctly mount the reader using the bracket provided according to the information in par. 2.2.1.

3) Position the reader at the correct reading distance according to your model as shown in paragraphs 2.5 and 3.4.

4) Make electrical connections to your VB6 scanner by either:

   a) Connecting the test cable to the VB6 scanner as described in par. 2.4.

   b) Providing correct and complete system cabling according to the signals necessary for the layout of your application.
   - Layout: Point-to-point, Pass-Through, RS232 Master/Slave, Multiplexer. See sub-paragraphs under 2.6 for reference.
   - Cabling: Power, Main Serial Interface, Auxiliary Interface (RS232), Inputs, Outputs, etc. For further details, see all sub-paragraphs under 2.3.

5) Configure the VB6 scanner by installing and running the VisoSetup configuration program. The main steps are:
   1 Select the codes to be read
   2 Set-up the communication parameters
   3 Define data formatting parameters
   4 Fine tune your VB6 scanner using the Test Mode.

6) Exit the configuration program and run your application.

The installation is now complete.

1 Introduction

1.1 Product Description

The VB6 industrial laser scanner is the combination of extremely compact dimension and powerful high-speed reading capabilities, which makes the scanner ideal for OEM integration projects.

VB6 miniaturization allows an easy OEM integration in pieces of equipment and automatic machinery. Concurrently, the high scan rate and code reconstruction software effectively address demanding applications.

The availability of ACB™ (Advanced Code Builder) embedded reconstruction software algorithm allows effective decoding of damaged or normally unreadable codes due to a high tilt angle.

VB6 installation and configuration is easy and simple thanks to the compact size and to the new test operating mode with bar graph. Test Mode is activated by means of a key on the scanner (no external PC is required), and the bar graph shows real time scan rate, which is of great help for installation and reading performance monitoring purposes.

VB6 operates at a speed up to 1200scan/s. Furthermore, the scanner motor can be switched ON and OFF via software command while keeping the unit powered. This allows a prompt restore of full operation and drastically increases the product life.

The main VB6 features are:

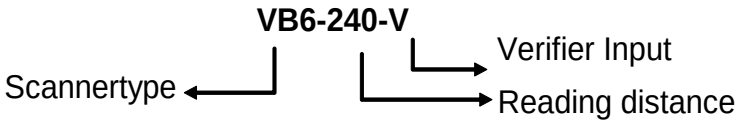
- Extremely compact dimensions and light weight
- High scan rate software programmable (up to 1200 scan/s)
- ACB (Advanced Code Builder) code reconstruction software embedded
- Ease of use thanks due to Test Mode with reading performance bar graph
- Reads all popular barcode symbologies
- 5 operating modes available to suit most common application requirements
- Code verifier option embedded
- Completely configurable via serial interface (VisoSetup configuration SW)
- Serial communication interfaces (RS232)
- Low power consumption

1.2 Applications

VB6 target applications are primarily OEM integration in application characterized by space constraints, demanding reading performance, ruined or low quality barcodes, chemical and biomedical analysis machines, ATL (Automated Tape Library), packaging machines.

1.3 Model Description

The following scheme illustrates the model description of the VB6 scanner:



The following tables display the scanner reading performance.

Max Code Resolution	Speed
mm (mils)	scans/s
0.15 (6)	800
0.20 (8)	1200

Reading Distance

40 mm (1.6 in) - 240 mm (9.4 in) on 0.50mm (20 mils) codes

See reading diagrams for further details.

1.4 Indicators

The five LEDs indicate the following:

LED	Standard Mode	Test Mode
POWER ON (green) (Figure A, 3)	Indicates the reader is connected to the power supply.	
GOOD READ (green) (Figure A, 4)	Indicates the possibility of a successful barcode reading.	
EXT TRIG/RDY (yellow) (Figure A, 5)	Indicates external trigger activity..	Refer to par. Activating Test Operating Mode.
TX DATA/ACT (red) (Figure A, 6)	When blinking, it indicates data transmission.	Refer to par. 1.5.1.
LASER ON (red) (Figure A, 7)	Indicates laser ON state.	

1.5 Test Key Functioning

VB6 provides an external key, which can be used for the following:

- Restoring dual RS232 interface at power on
- Activating Test Mode from the current operating mode

1.5.1 Activating Test Operating Mode

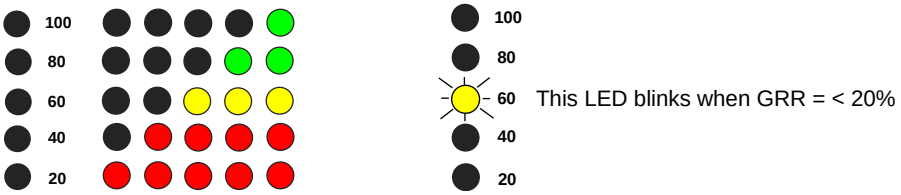
To launch the Test Mode by the external key, proceed as follows:

1. From any operating mode, press the Test key: the TX Data/ACT LED turns on.
2. Keep the Test key pressed for minimum one second while the Ext Trig/RDY LED turns on. Both LEDs hold this status if the key is not released.
3. Release the Test key. Both LEDs turn off, the Test Mode starts and the Bar Graph is active.

If the Test key is released before Ext Trig/RDY LED turns on, the test mode is not executed. The device holds the previous operating mode.

During the Test Mode, the Bar Graph repeatedly indicates the Good Read Rate (GRR) every 100 scans (about 1 second). At the end of each sampling all the LEDs turn OFF.

The test mode data are transmitted on the serial interfaces according to the current configuration.



To exit the Test Mode, repeat the above procedure: when the TX Data/ACT and the Ext Trig/RDY LEDs turn off the Test Mode has been disabled.

The previous operating mode will be restored.

NOTE

If the scanner has been configured in Test Mode via software,the first Test key press will produce no effect. The second Test key press will exit the Test Mode and enable the Default On Line mode.

NOTE

The Test Mode is not permanently saved.

2 Installation

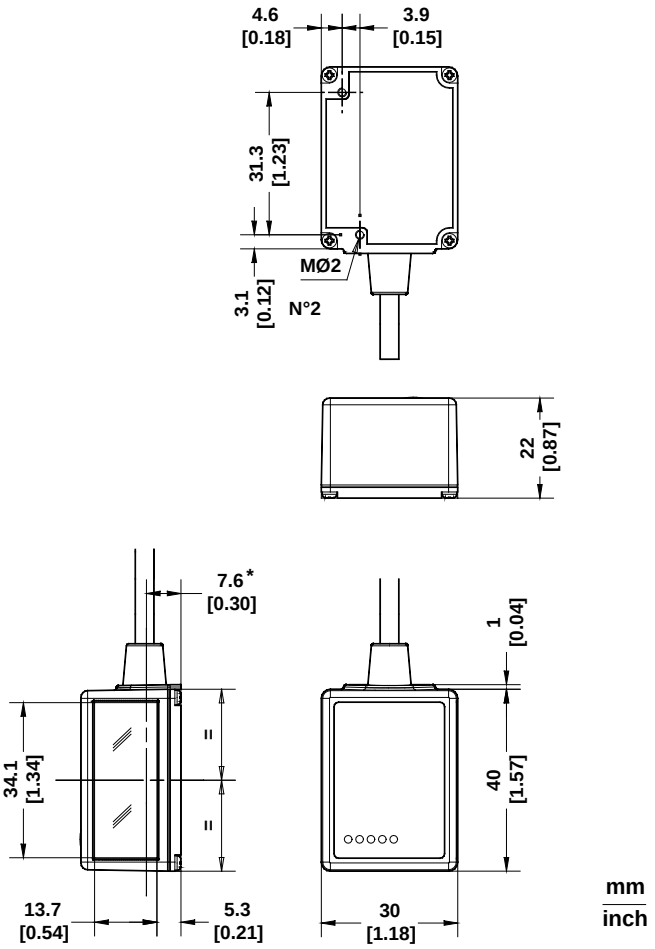
2.1 Package Contents

Verify that the VB6-240-V reader and all the parts supplied with the equipment are present and intact when opening the packaging; the list of parts includes:

- VB6-240-V reader with cable
- Laser caution label
- Mounting kit:
  - bracket
  - screws
  - laser warning labels

2.2 Mechanical Installation

VB6-240-V can be installed to operate in different positions. The two screw holes (M2 x 4) on the body of the reader are for mechanical mounting (Figure A, 1). The diagrams below give the overall dimensions of the scanner and mounting bracket and may be used for installation.



* The quote refers to the scan line.

Figure 1 – VB6-240-V Overall Dimensions

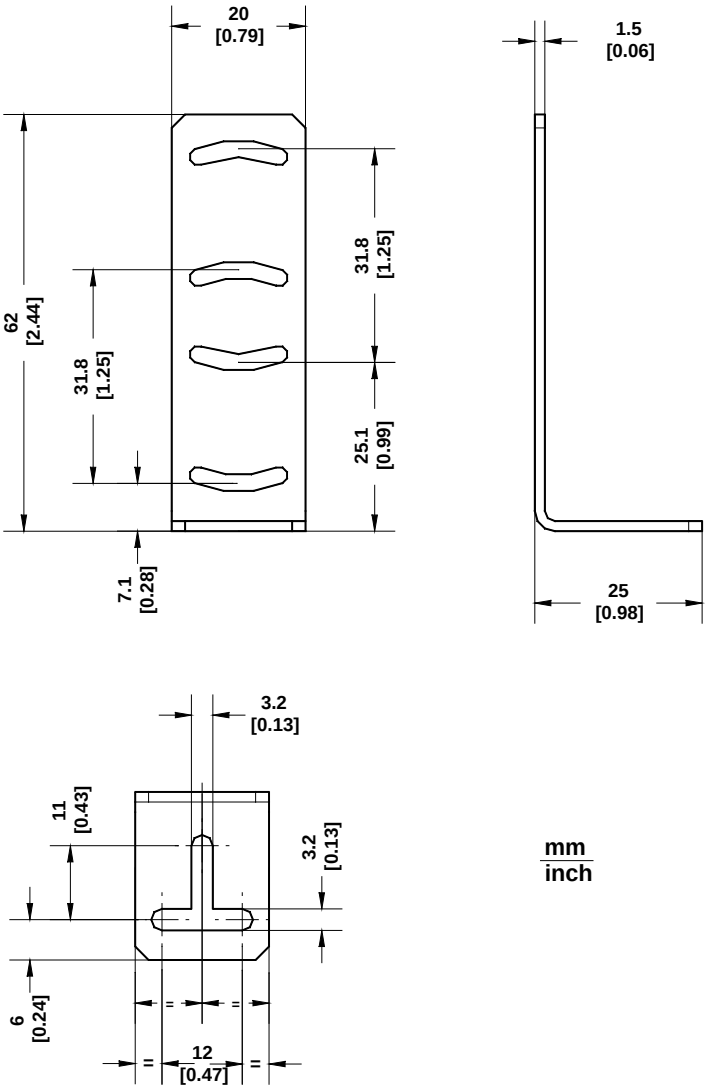


Figure 2 – Mounting Bracket Overall Dimensions

2.2.1 Mounting VB6-240-V

Using the VB6-240-V mounting bracket you can obtain the most suitable position for the reader as shown in the figure below:

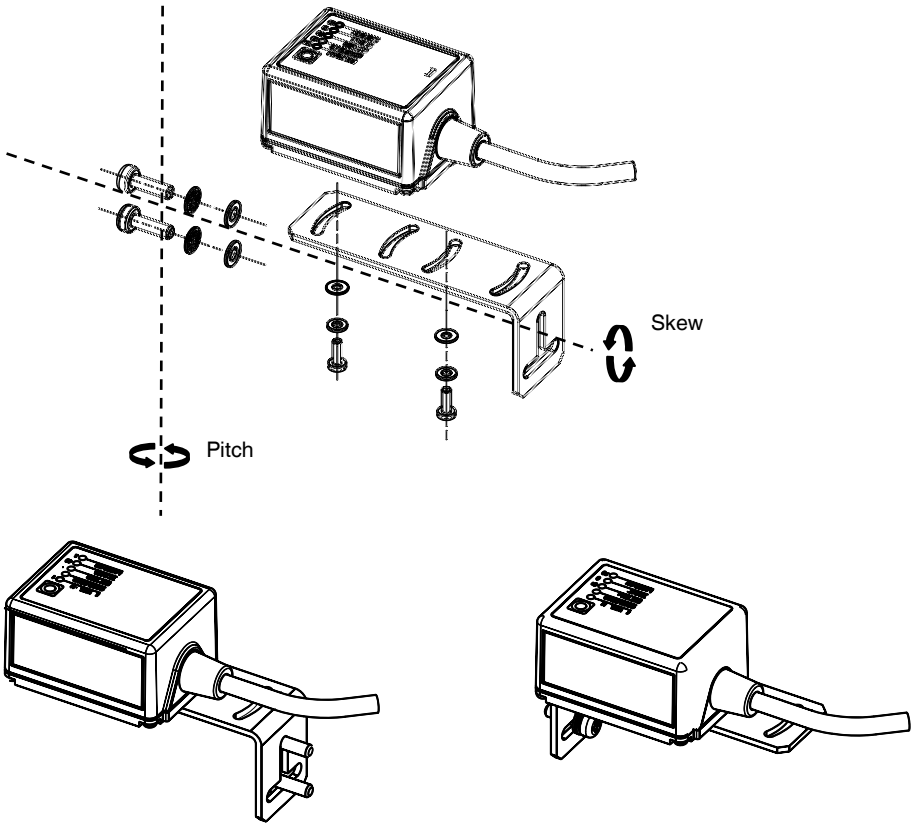


Figure 1 – Positioning with Mounting Bracket

2.3 Electrical Connections

All VB6-240-V models are equipped with a cable terminated by a 15-pin male D-sub high-density connector for connection to the power supply and input/output signals. The details of the connector pins are indicated in the following table.

CAUTION

Do not connect GND and SGND to different (external) ground references. GND and SGND are internally connected through filtering circuitry which can be permanently damaged if subjected to voltage drops over 0.8 Vdc.

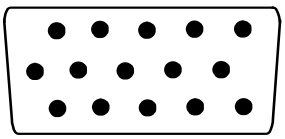


Figure 5a- 15-pin D-sub High-Density Male Connector of VB6-240-V

15-pin D-sub HD male connector pinout

Pin	Name	Function
1	VS	Power supply input voltage +
5	GND	Power supply input voltage -
8	PE	Protective Earth Ground
13	SHIELD	Cable Shield
9	EXT	External Trigger -
7	OUT1 +	Output 1 +
14	OUT2 +	Output 2 +
2	Verifier A	Verifier contact A
3	Verifier B	Verifier contact B
6	TX	TX RS232
10	RX	RX RS232
4	SGND	Signal Ground
11, 12, 15	NC	Not Connected

2.3.1 Power Supply

Power can be supplied to the scanner through the pins provided on the 15-pin connector used for communication with the host (Figure 6):

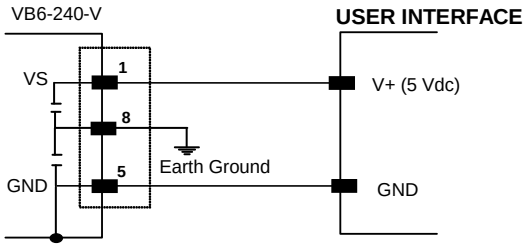


Figure 6 - Power Supply Connections

The power must be 5 Vdc only.

It is recommended to connect pin 8 (Protective Earth Ground) to a common earth ground.

NOTE

GND is internally connected to the chassis.

2.3.2 Serial RS232 Interface

The serial interface is used in this case for point-to-point connections; it handles communication with the host computer and allows both transmission of code data and the programming of the scanner. This is the default setting.

The following pins are used for RS232 interface connection:

Pin	Name	Function
6	TX	transmit data
10	RX	receive data
4	SGND	signal ground

It is always advisable to use shielded cables. The overall maximum cable length must be less than 15 m (49.2 ft).

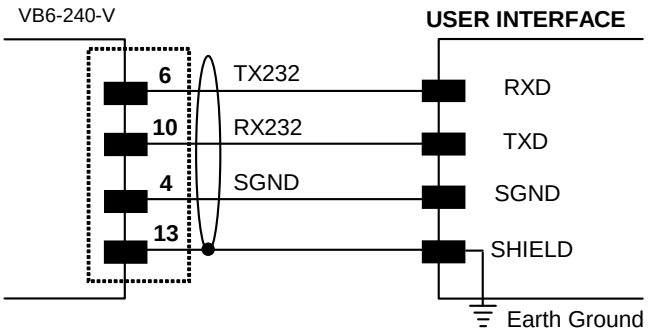


Figure 7 – RS232 Interface Connections

NOTE

The pin 13 of the SHIELD line is not internally connected to the chassis.

2.3.3 Code Verifier

If the VB6-240-V is used as a Code Verifier, it is possible to indicate to the scanner what code to store as the verifier code through the VisoSetup program or to teach in a verifier code by using a hardware signal (see Inputs for details).

2.3.4 Inputs

Trigger Input

The input available on the connector supplied with the scanner is the pin relative to the External Trigger, as indicated below:

Pin	Name	Function
9 5	EXT TRIG- GND	external trigger -

The External Trigger input is used in the On-Line operating Mode and tells the scanner to scan for a code. The active state of this input is selected in software.

The yellow LED (Figure A, 5) is on when the External Trigger forces a current flow through the EXT TRIG- and GND pins.

This input is designed to be driven by an NPN type command. The connections are indicated in the following diagrams.

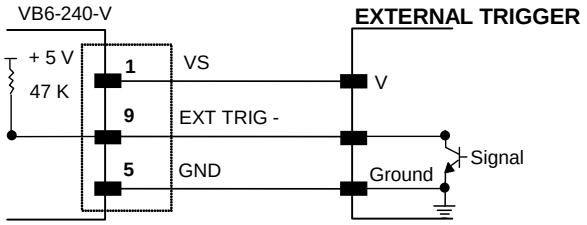


Figure 2 - External Trigger Input Command using Scanner Power

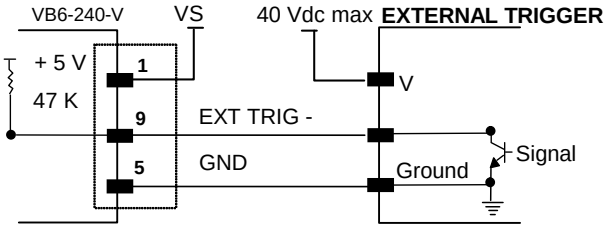


Figure 3 - External Trigger Input Command using External Power

An anti-disturbance hardware filter is implemented on the External Trigger input (< 5 milliseconds delay).

An additional 15 ms (typical) delay can be implemented through a dedicated software parameter.

Verifier Input

Pin	Name	Function
2	Verifier A	Verifier Contact A
3	Verifier B	Verifier Contact B

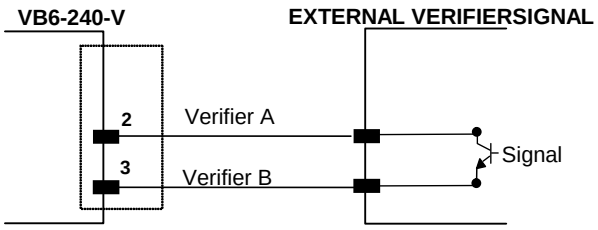


Figure 7 - External Verifier Input

The external verifier input is used in the combination with the On-Line operating mode and tells the scanner to store the next read code as verifier code. This input can be deactivated with help of the VisoSetup software.

The storage of a verifier code has to be done in this specific order:

1. Activate verifier (close the contact between Verifier A and B)
2. Activate external trigger (hardware or software trigger)
3. Read the code to be stored within the scanner
4. Deactivate verifier (open the contact between Verifier A and B)
5. Deactivate external trigger

2.3.5 Outputs

Two general purpose outputs are available. These outputs can only be connected as open collector configurations. The following pins are present on the 15-pin connector of the scanner:

Pin	Name	Function
7	OUT1+	output 1 +
14	OUT2+	output 2 +
5	GND	output reference

The meaning of the two outputs OUT1 and OUT2 can be defined by the user (No Read, Right, Wrong, or a combination).

By default, OUT1 is associated with the No Read event, which activates when the code signaled by the external trigger is not decoded, and OUT2 is associated with the Right event, which activates when the code is correctly decoded.

These outputs are both level and pulse configurable.

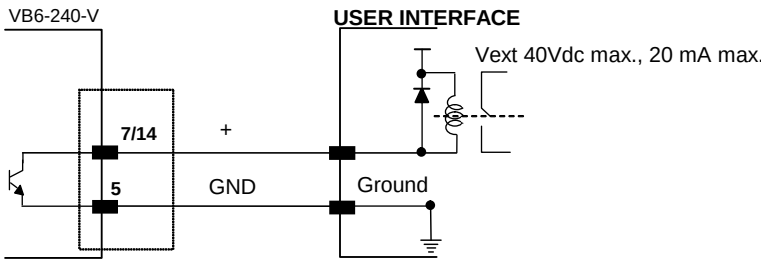


Figure 8 - VB6-240-V Output Connections

V_{CE} max = 40 Vdc

I max = 20 mA continuous

2.4 Positioning

The VB6-240-V scanner is able to decode moving barcode labels at a variety of angles, however significant angular distortion may degrade reading performance.

When mounting the VB6-240-V take into consideration these three ideal label position angles: **Pitch 0°, Skew 15° to 30° and Tilt 0°**.

Follow the suggestions for the best orientation:

The **Pitch** angle is represented by the value **P** in Figure 20. Position the reader in order to **minimize** the **Pitch** angle.

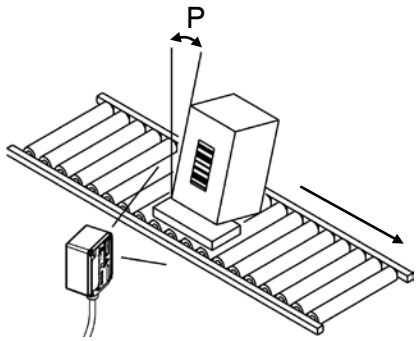


Figure 20- Pitch Angle

The **Skew** angle is represented by the value **S** in Figure 21. Position the reader to **assure at least 10°** for the **Skew** angle. This avoids the direct reflection of the laser light emitted by the VB6-240-V.

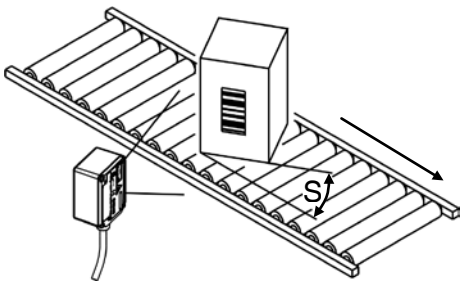


Figure 21- Skew Angle

The **Tilt** angle is represented by the value **T** in Figure 22. Position the reader in order to **minimize** the **Tilt** angle.

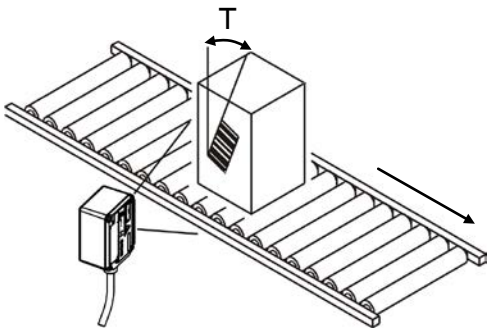


Figure 22 - Tilt Angle

By using the ACB (Advanced Code Builder) software parameter, the tilt angle is less critical and can be decoded even if the scan line doesn't cross the entire code.

2.5 Typical Layout

The following typical layouts refer to system hardware configurations. Dotted lines in the figures refer to optional hardware configurations within the particular layout.

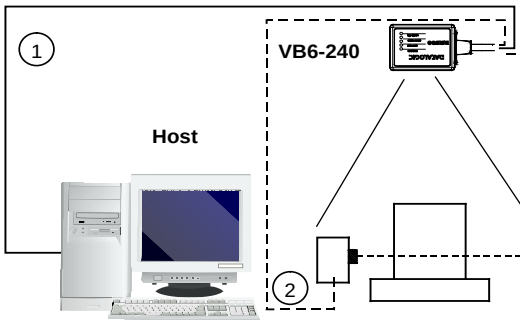
These layouts also require the correct setup of the software configuration parameters.

2.5.1 Point-to-Point

In this layout the data is transmitted to the Host on the main serial interface. Host Mode programming can be accomplished either through the main interface or the Auxiliary interface.

In Local Echo communication mode, data is transmitted on the RS232 auxiliary interface independently from the main interface selection.

When On-Line Operating mode is used, the scanner is activated by an External Trigger (photoelectric sensor) when the object enters its reading zone.



1 Main serial interface
2 External Trigger (for On-Line mode)

Figure 23– RS232 Point-to-Point Layout

3 Reading Features

3.1 Advanced Code Builder (ACB)

In addition to linear reading, the Advanced Code Builder (ACB) allows code reading by “stitching” together two partial reads of it. ACB is not as powerful as Advanced Code Reconstruction due to limits on tilt angle, speed and Multi-label function; but it is effective in the case of close-to-linear, small height codes, damaged codes, or poor print quality codes.

ACB is used to read a code label when the scan line does not cross the label along its entire length (excessive tilt angle).

Linear Reading

Linear Reading

ACB Reading

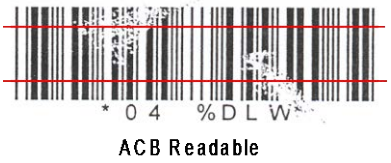
ACB Reading

ACB reads two fragments of a label containing a start or a stop character and a number of digits, and puts them together to build the complete label.

ACB also has an intrinsic ability to increase the reading percentage of damaged codes as in the examples below:

ACB Readable

Not ACB Readable



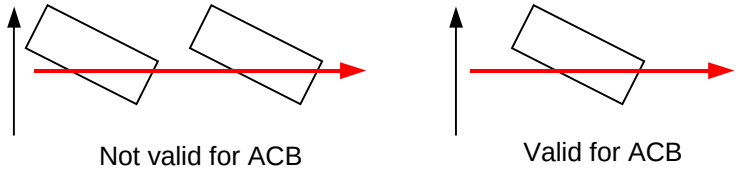
ACB Readable

ACB is disabled by default but can be enabled for the following code types:

- Code 25 Interleaved
- Code 39 Family
- Codabar
- Code 128/EAN128
- EAN/UPC (without ADD-Ons)
- Code 93

3.1.1 Important ACB Reading Conditions

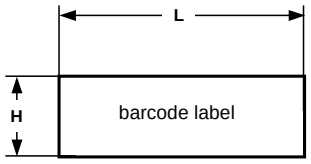
- **Do not use ACB for omni-directional reading stations.**
- ACB can be activated for each symbology independently from the others.
- ACB requires that the code be in movement with respect to the scanner.
- ACB requires fixed length barcode reading.
- The codes read with ACB enabled must pass in front of the scanner one at a time.



- Code concatenation and ACB are not compatible and therefore cannot be enabled simultaneously on the same code.
- For correct operation, ACB requires at least 5 scans for each of the two fragments

3.1.2 Tilt Angle Improvement with ACB

ACB allows barcode reading with an increased tilt angle. The tilt angle depends upon the code aspect ratio defined as H/L according to the table below:



Aspect Ratio H/L	Max theoretical linear tilt angle	Max practical ACB angle
0.33	18°	30°
0.25	14°	23°
0.125	7°	11°

3.2 Linear Code Reading

The number of scans performed on the code by the VB6 and therefore the decoding capability is influenced by the following parameters:

- number of scans per second
- code motion speed
- label dimensions
- scan direction with respect to code motion

At least 5 scans during the code passage should be allowed to ensure a successful read.

3.2.1 Step-Ladder Mode

If scanning is perpendicular to the code motion direction (Figure 28), the number of effective scans performed by the reader is given by the following formula:

SN = [(LH/LS) * SS] – 2 Where: SN = number of effective scans

LH = label height (in mm)

LS = label movement speed in (mm/s)

SS = number of scans per second

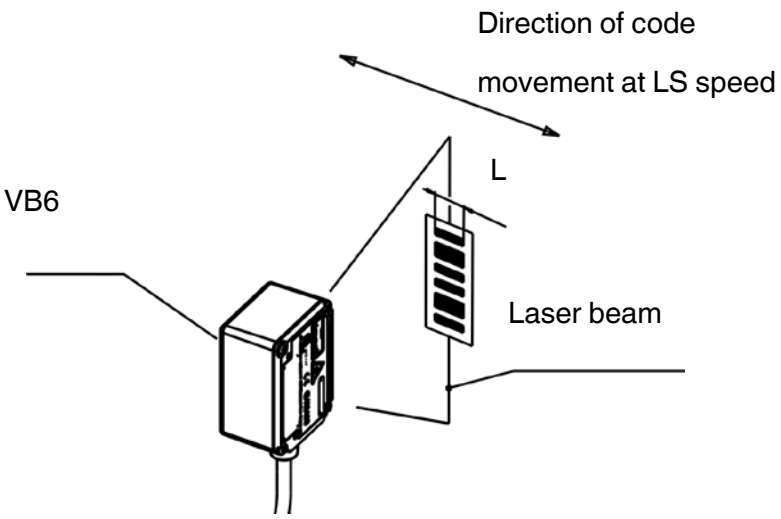


Figure 28 - "Step-Ladder" Scanning Mode

For example, the VB6 (1200 scans/sec.) for a 20 mm high code moving at 1200 mm/s performs:

[(20/1200) * 1200] - 2 = 18 effective scans.

3.2.2 Picket-Fence Mode

If scanning is parallel to the code motion, the number of effective scans is given by the following formula:

SN = [((FW-LW)/LS) * SS] -2 Where:SN = number of effective scans

FW = reading field width (in mm)

LW = label width (in mm)

LS = label movement speed (in mm/s)

SS = scans per second

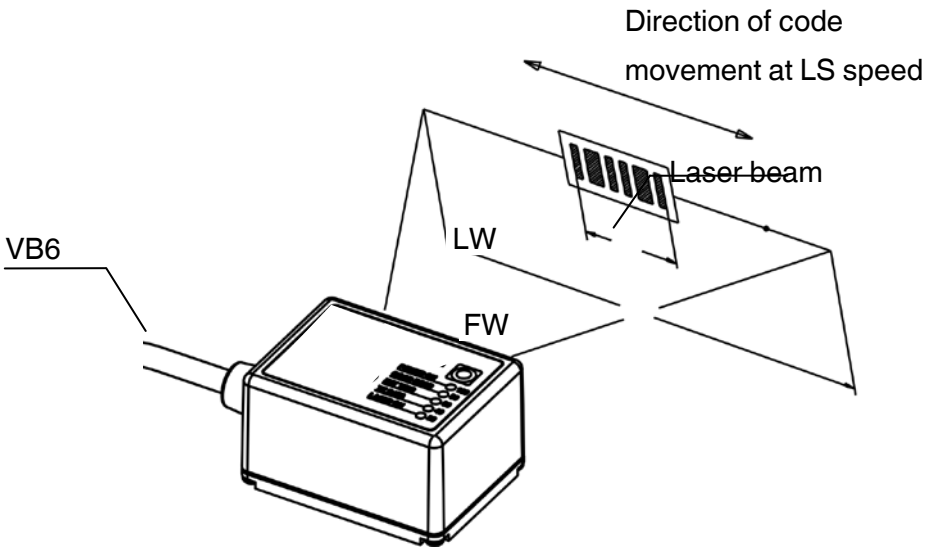


Figure 29 - "Picket-Fence" Scanning Mode

For example, for a 60 mm wide code moving in a point where the reading field is 100 mm wide at a 1500 mm/s speed, the VB6 (1200 scans per sec.), performs:

[((100-60)/1500) * 1200] - 2 = 30 effective scans

4 Performance

The VB6 scanner has the following performances:

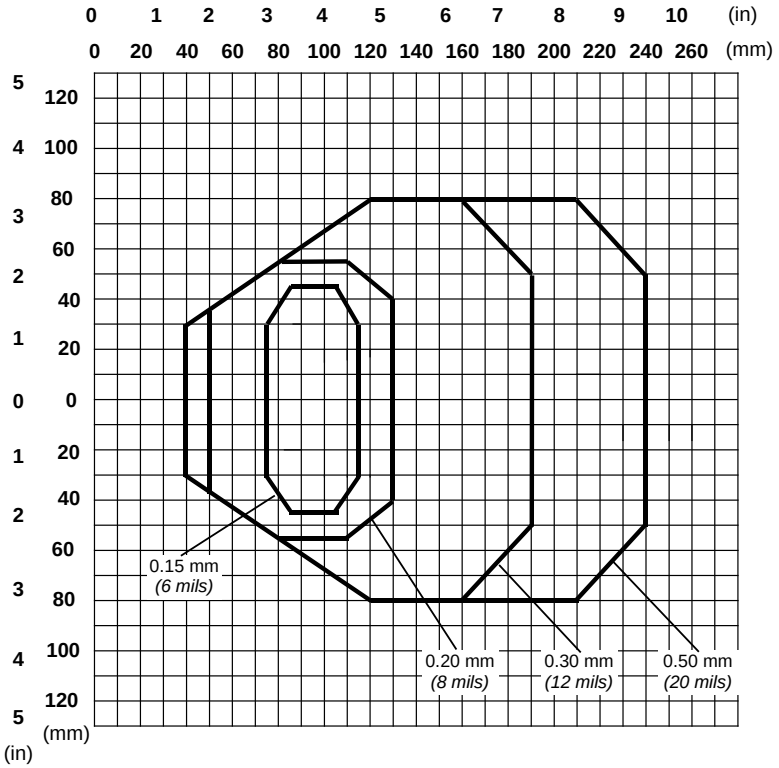
Max Code Resolution	Speed
mm (mils)	scans/s
0.15 (6)	800
0.20 (8)	1200

Reading Distance
40 mm (1.6 in) - 240 mm (9.4 in) on 0.50 mm (20 mils) codes

Refer to the diagrams given in par. 4.1 for further details on the reading features. They are taken on various resolution sample codes at a 25 °C ambient temperature, depending on the conditions in the notes under the diagrams.

4.1 Reading Diagrams

VB6-240-V



NOTE: (0,0) is the center of the laser beam output window.

CONDITIONS

Code = Interleaved 2/5 or Code 39

PCS = 0.90

"Pitch" angle = 0°

"Skew" angle = 15°

"Tilt" angle = 0°

*Motor Control = Speed_3 (800 scans/s) for 0.15mm codes, Speed_4 (1200 scans/s) for 0.20mm codes and greater

* Parameter selectable in VisoSetup

5 Maintenance

5.1 Cleaning

Clean the laser beam output window periodically for continued correct operation of the reader.

Dust, dirt, etc. on the window may alter the reading performance.

Repeat the operation frequently in particularly dirty environments.

Use soft material and alcohol to clean the window and avoid any abrasive substances.

WARNING

Clean the window of the VB6 when the scanner is turned off or, at least, when the laser beam is deactivated.

6 TROUBLESHOOTING

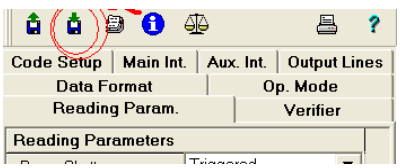
6.1 General Guidelines

When wiring the device, pay careful attention to the pin number of the signals.

If you need information about a certain reader parameter you can refer to the VisoSetup program help files. Either connect the device and select the parameter you're interested in by pressing the F1 key, or select **Help/Contents/VB6 Configuration** from the command menu.

If you do not get a connection between the Scanner and the VisoSetput Software, make sure, that the correct port is selected. Furthermore the template-installer has to be activated once after the installation of the VisoSetup software. An indication for the need to start the template-installer is the message "Template is missing". You find it in the folder of the VisoSetup software.

If you are unable to fix the problem and you are going to contact your Pepperl+Fuchs GmbH, we suggest providing (if possible) the Device Configuration files (*.cfg). Connect through VisosSetup and click the **Save icon** from the edit configuration window. Also note the exact Model and Order Number of the device.



TROUBLESHOOTING GUIDE	
Problem	**Suggestions**
Power On: the “Power On” LED is not lit	Is power connected? If using a power adapter, is it connected to a wall outlet? If using rail power, does rail have power? Measure voltage at pin 1 and pin 5.
On line Mode: EXT TRIG LED is not lit (when external trigger activates)	Is sensor connected to EXT TRIG pins (9 and 5 for 15-pin connector)? Is power supplied to photo sensor? Are the photo sensor LEDS (if any) working correctly? Is the sensor/reflector system aligned?
On line Mode: EXT TRIG LED is correctly lit but nothing happens (no reading results)	Is the software configuration consistent with the application condition (operating mode etc.)? In the VisoSetup program select the OPERATING MODE tab and check for related parameters
Serial On line Mode: the reader is not triggered (no reading results)	In the VisoSetup program select the OPERATING MODE tab and check if serial on line is enabled as operating mode Are the Start – Stop characters correctly assigned? Is the serial trigger source correctly connected and configured?
On line Mode and Serial On Line: Reader does not respond correctly to the expected external signals end	In the VisoSetup program select the OPERATING MODE tab and check the TIMEOUT parameterization.

TROUBLESHOOTING GUIDE	
Problem	**Suggestions**
Reading: Not possible to read the target barcode (always returns No Read)	Check synchronization of reading pulse with object to read Is the scan line correctly positioned? Place barcode in the center of scan line and run TEST MODE (by VisoSetup as an Operating Mode or by the external key, see par. 1.5.2). If you still have trouble, check the following: • Is the reading distance within that allowed (see reading diagrams)? • Is the Tilt angle too large? • Is the Skew angle less than 10° (direct reflection)? • Choose the CODE tab and enable different code types (except Pharmacode). LENGTH = Variable • Is the Bar Code quality sufficient?
Communication: Device is not transmitting anything to the host	• Is the cable connected? • Is the correct wiring respected? • Are serial host settings equivalent to the serial device setting?
Communication: Data transferred to the host are incorrect, corrupted or incomplete	• In the VisoSetup program select the DATA FORMAT tab and check for values of HEADER, TERMINATOR, SEPARATOR, FILL CHARACTERS • Also check the CODE FIELD LENGTH value • Are the COM port parameters correctly assigned?
Communication: Always returns the Reader Failure Character (<BEL> char as default)	• Contact Pepperl+Fuchs GmbH, because either a Motor or Laser failure has occurred. • Note the exact model of the device

7 Technical Features

ELECTRICAL FEATURES	
Input Power	
Supply voltage	5 Vdc ± 5%
Power consumption max.	2 W
Serial Interface	
Auxiliary	RS232
Baud Rates	150 to 115200
Inputs	External Trigger
Voltage max.	40 Vdc
Outputs	OUT1, OUT2
V_{CE} max.	40 Vdc
Collector current max.	20 mA continuous;
V_{CE} saturation	0.3V at 6 mA max.
Power dissipation max.	100 mW at 45 °C (Ambient temp.)
OPTICAL FEATURES	
Light source	Semiconductor laser diode
Wave length (Note 1)	630 to 680 nm
Safety class	Class 2 - EN 60825-1; Class II - CDRH
READING FEATURES (Note 2)	
Scan rate (software programmable)	800 to 1200 scans/sec
Aperture angle	See reading diagrams
Maximum Reading distance	
Maximum resolution	
USER INTERFACE	
LED indicators	Laser ON, Tx Data/ACT, Ext Trig/RDY, Good Read, Power ON

SOFTWARE FEATURES	
READABLE CODE SYMBOLOGIES * EAN/UPC EAN/UPC (including Add-on 2 and Add-on 5) * 2/5 Interleaved * Code 39 (Standard and Full ASCII) * Codabar * Code 93 * Code 128 * EAN 128 ISBT 128 Pharmacode *ACB Readable. Other symbologies available on request.	
Code Selection	up to six different codes during one reading phase
Decoding Safety	can enable multiple good reads of same code
Headers and Terminators	up to four headers and four terminators
Operating Modes	On-Line, Serial-On-Line, Automatic, Continuous,
Configuration Modes	•through menus using VisoSetup utility •receiving commands from the serial port (HOST
Special Functions	Verifier
Parameter Storage	Non-volatile internal EEPROM
ENVIRONMENTAL FEATURES	
Operating temperature (Note 3)	0° to 45 °C (32° to 113 °F)
Storage temperature	-20° to 70 °C (-4° to 158 °F)
Humidity max.	90% non condensing
Vibration resistance IEC 68-2-6 test FC 2 hours on each axis	14 mm @ 2 to 10 Hz 1.5 mm @ 13 to 55 Hz 2 g @ 70 to 200 Hz
Shock resistance IEC 68-2-27 test EA	 30 g; 11 ms
Protection class	IP65
PHYSICAL FEATURES	
Mechanical dimensions	40 x 30 x 22 mm (1.57 x 1.18 x 0.86 in)
Weight without cable	44 g (1.55 oz)

Note 1: The features given are typical at a 25 °C ambient temperature (if not otherwise indicated).

Note 2: Further details given in par. 3.3.

Note 3: If the reader is used in high temperature environments (over 40 °C), it is advised the use of the Beam-shutter (see the VisoSetup configuration program) and/or a thermal conductive support (such as the metal bracket provided).

8 GLOSSARY

ACB (Advanced Code Builder)

Advanced Code Builder (ACB) allows code reading by “stitching” together two partial reads of it. ACB is effective in reading codes positioned close-to-linear, small height codes, damaged codes, or poor print quality codes. See par. 3.1

Aperture

Term used on the required CDRH warning labels to describe the laser exit window.

Barcode

A pattern of variable-width bars and spaces which represents numeric or alphanumeric data in machine-readable form. The general format of a barcode symbol consists of a leading margin, start character, data or message character, check character (if any), stop character, and trailing margin. Within this framework, each recognizable symbology uses its own unique format.

Barcode Label

A label that carries a barcode and can be affixed to an article.

Baud Rate

A unit used to measure communications speed or data transfer rate.

CDRH (Center for Devices and Radiological Health)

This organization (a service of the Food and Drug Administration) is responsible for the safety regulations governing acceptable limitations on electronic radiation from laser devices.

Code Positioning

Variation in code placement that affects the ability of a scanner to read a code. The terms Pitch, Skew, and Tilt deal with the angular variations of code positioning in the X, Y and Z axes. See pars. 2.2.1 and 2.5. Variations in code placement affect the pulse width and therefore the decoding of the code. Pulse width is defined as a change from the leading edge

of a bar or space to the trailing edge of a bar or space over time. Pulse width is also referred to as a transition. Tilt, pitch, and skew impact the pulse width of the code.

Decode

The process of translating a barcode into data characters using a specific set of rules for each symbology.

Decoder

As part of a barcode reading system, the electronic package which receives the signals from the scanner, performs the algorithm to interpret the signals into meaningful data and provides the interface to other devices. The decoder is normally integrated into the scanner.

EAN

European Article Number System. The international standard barcode for retail food packages.

EEPROM

Electrically Erasable Programmable Read-Only Memory. An on-board non-volatile memory chip.

Full Duplex

Simultaneous, two-way, independent transmission in both directions.

Half Duplex

Transmission in either direction, but not simultaneously.

Host

A computer that serves other terminals in a network, providing services such as network control, database access, special programs, supervisory programs, or programming languages.

Interface

A shared boundary defined by common physical interconnection characteristics, signal characteristics and meanings of interchanged signals.

LED (Light Emitting Diode)

A low power electronic device that can serve as a visible or near infrared light source when voltage is applied continuously or in pulses. It is commonly used as an indicator light and uses less power than an incandescent light bulb but more than a Liquid Crystal Display (LCD). LEDs have extremely long lifetimes when properly operated.

Multidrop Line

A single communications circuit that interconnects many stations, each of which contains terminal devices. See RS485.

Parameter

A value that you specify to a program. Typically parameters are set to configure a device to have particular operating characteristics.

Picket-Fence Orientation

When the barcode's bars are positioned vertically on the product, causing them to appear as a picket fence. The first bar will enter the scan window first. See par. 3.2.2.

Pitch

Rotation of a code pattern about the X-axis. The normal distance between center line or adjacent characters. See pars. 2.2.1 and 2.5.

Position

The position of a scanner or light source in relation to the target of a receiving element.

Protocol

A formal set of conventions governing the formatting and relative timing of message exchange between two communicating systems.

Raster

The process of projecting the laser beam at varied angles spaced evenly from each other. Typically, the mirrored rotor surfaces are angled to create multiple scan lines instead of a single beam.

Resolution

The narrowest element dimension which can be distinguished by a particular reading device or printed with a particular device or method.

RS232

Interface between data terminal equipment and data communication equipment employing serial binary data interchange.

RS485

Interface that specifies the electrical characteristics of generators and receivers for use in balanced digital multipoint systems such as on a Multidrop line.

Scanner

A device that examines a printed pattern (barcode) and either passes the uninterpreted data to a decoder or decodes the data and passes it onto the Host system.

Serial Port

An I/O port used to connect a scanner to your computer, generally identifiable by a 9-pin or 25-pin connector.

Signal

An impulse or fluctuating electrical quantity (i.e.: a voltage or current) the variations of which represent changes in information.

Skew

Rotation about the Y-axis. Rotational deviation from correct horizontal and vertical orientation; may apply to single character, line or entire encoded item. See pars. 2.2.1 and 2.5.

Step-Ladder orientation

When the barcode's bars are positioned horizontally on the product, causing them to appear as a ladder. The ends of all bars will enter the scan window first. See par. 3.2.1.

Symbol

A combination of characters including start/stop and checksum characters, as required, that form a complete scannable barcode.

Tilt

Rotation around the Z axis. Used to describe the position of the barcode with respect to the laser scan line. See pars. 2.5 and 3.1.

Trigger Signal

A signal, typically provided by a photoelectric sensor or proximity switch, which informs the scanner of the presence of an object within its reading zone.

UPC

Acronym for Universal Product Code. The standard barcode type for retail food packaging in the United States.

Visible Laser Diode

A light source used in scanners to illuminate the barcode symbol. Generates visible red light at wavelengths between 630 and 680 nm.

FABRIKAUTOMATION – SENSING YOUR NEEDS

Zentrale weltweit
Pepperl+Fuchs GmbH
68307 Mannheim · Deutschland
Tel. +49 621 776-0
E-Mail: info@de.pepperl-fuchs.com

Zentrale USA
Pepperl+Fuchs Inc.
Twinsburg, Ohio 44087 · USA
Tel. +1 330 4253555
E-Mail: sales@us.pepperl-fuchs.com

Zentrale Asien
Pepperl+Fuchs Pte Ltd.
Singapur 139942
Tel. +65 67799091
E-Mail: sales@sg.pepperl-fuchs.com

www.pepperl-fuchs.com

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