



PowerScan[®] PD7100 Corded

Linear Imaging Reader



Quick Reference Guide

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Patents

This product may be covered by one or more of the following patents: 4603262 • 4639606 • 4652750 • 4672215 • 4699447 • 4709369 • 4749879 • 4786798 • 4792666 • 4794240 • 4798943 • 4799164 • 4820911 • 4845349 • 4861972 • 4861973 • 4866257 • 4868836 • 4879456 • 4939355 • 4939356 • 4943127 • 4963719 • 4971176 • 4971177 • 4991692 • 5001406 • 5015831 • 5019697 • 5019698 • 5086879 • 5115120 • 5144118 • 5146463 • 5179270 • 5198649 • 5200597 • 5202784 • 5208449 • 5210397 • 5212371 • 5212372 • 5214270 • 5229590 • 5231293 • 5232185 • 5233169 • 5235168 • 5237161 • 5237162 • 5239165 • 5247161 • 5256864 • 5258604 • 5258699 • 5260554 • 5274219 • 5296689 • 5298728 • 5311000 • 5327451 • 5329103 • 5330370 • 5347113 • 5347121 • 5371361 • 5382783 • 5386105 • 5389917 • 5410108 • 5420410 • 5422472 • 5426507 • 5438187 • 5440110 • 5440111 • 5446271 • 5446749 • 5448050 • 5463211 • 5475206 • 5475207 • 5479011 • 5481098 • 5491328 • 5493108 • 5504350 • 5508505 • 5512740 • 5541397 • 5552593 • 5557095 • 5563402 • 5565668 • 5576531 • 5581707 • 5594231 • 5594441 • 5598070 • 5602376 • 5608201 • 5608399 • 5612529 • 5629510 • 5635699 • 5641958 • 5646391 • 5661435 • 5664231 • 5666045 • 5671374 • 5675138 • 5682028 • 5686716 • 5696370 • 5703347 • 5705802 • 5714750 • 5717194 • 5723852 • 5750976 • 5767502 • 5770847 • 5786581 • 5786585 • 5787103 • 5789732 • 5796222 • 5804809 • 5814803 • 5814804 • 5821721 • 5822343 • 5825009 • 5834708 • 5834750 • 5837983 • 5837988 • 5852286 • 5864129 • 5869827 • 5874722 • 5883370 • 5905249 • 5907147 • 5923023 • 5925868 • 5929421 • 5945670 • 5959284 • 5962838 • 5979769 • 6000619 • 6006991 • 6012639 • 6016135 • 6024284 • 6041374 • 6042012 • 6045044 • 6047889 • 6047894 • 6056198 • 6065676 • 6069696 • 6073849 • 6073851 • 6094288 • 6112993 • 6129279 • 6129282 • 6134039 • 6142376 • 6152368 • 6152372 • 6155488 • 6166375 • 6169614 • 6173894 • 6176429 • 6188500 • 6189784 • 6213397 • 6223986 • 6230975 • 6230976 • 6244510 • 6259545 • 6260763 • 6266175 • 6273336 • 6276605 • 6279829 • 6290134 • 6290135 • 6293467 • 6303927 • 6311895 • 6318634 • 6328216 • 6332576 • 6332577 • 6343741 • 6454168 • 6478224 • 6568598 • 6578765 • 6705527 • 6857567 • 6974084 • 6991169 • 7051940 • 7170414 • 7172123 • 7201322 • 7204422 • 7215493 • 7224540 • 7234641 • 7243850 • 7374092 • 601 26 118.6 • AU703547 • D312631 • D313590 • D320011 • D320012 • D323492 • D330707 • D330708 • D349109 • D350127 • D350735 • D351149 • D351150 • D352936 • D352937 • D352938 • D352939 • D358588 • D361565 • D372234 • D374630 • D374869 • D375493 • D376357 • D377345 • D377346 • D377347 • D377348 • D388075 • D446524 • EP0256296 • EP0260155 • EP0260156 • EP0295936 • EP0325469 • EP0349770 • EP0368254 • EP0442215 • EP0498366 • EP0531645 • EP0663643 • EP0698251 • EP01330772 • GB2252333 • GB2284086 • GB2301691 • GB2304954 • GB2307093 • GB2308267 • GB2308678 • GB2319103 • GB233163 • GB2343079 • GB2344486 • GB2345568 • GB2354340 • ISR107546 • ISR118507 • ISR118508 • JP1962823 • JP1971216 • JP2513442 • JP2732459 • JP2829331 • JP2953593 • JP2964278 • MEX185552 • MEX187245 • RE37166 • RE40.071 • Other Patents Pending

Statement of Agency Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Class B Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Canadian Notice

This equipment does not exceed the Class B limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Power Supply

Models require either a Listed class II or class III with a Limited Power Source (LPS).

For the safety certification to be valid, class III input power sources must be IEC/EN60950-1 (EN 60335-series, EN 60065 or relevant) approved. CEC IV Efficiency Regulations Compliance.

Input: 90-264 VAC Output: 5 VDC

Max. Current: 0.5 AMax. Power: 12.5 W Max.

Use only the authorized power supplies supplied by your Datalogic reseller. The use of any other power supplies can damage the reader and void your warranty.



NOTE

For USB Power Off Terminal applications, attach to USB 1.0, 1.1 or 2.0 host device only.

Solids and Water Protection

The reader has an IEC rating of IP65.

Datalogic Scanning, Inc.

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11. General Provisions.

- 11.1 Entire Agreement; Amendment. This document contains the entire agreement between the parties relating to the licensing of the Software and supersedes all prior or contemporaneous agreements, written or oral, between the parties concerning the licensing of the Software. This Agreement may not be changed, amended, or modified except by written document signed by Datalogic.
- 11.2 Notice. All notices required or authorized under this Agreement shall be given in writing, and shall be effective when received, with evidence of receipt. Notices to Datalogic shall be sent to the attention of Contract Administration, Datalogic Scanning Inc., 959 Terry Street, Eugene, OR 97402, or such other address as may be specified by Datalogic in writing.
- 11.3 Waiver. A party's failure to enforce any of the terms and conditions of this Agreement shall not prevent the party's later enforcement of such terms and conditions.
- 11.4 Governing Law; Venue: This Agreement and the rights of the parties hereunder shall be governed by and construed in accordance with the laws of the State of Oregon U.S.A, without regard to the rules governing conflicts of law. The state or federal courts of the State of Oregon located in either Multnomah or Lane counties shall have exclusive jurisdiction over all matters regarding this Agreement, except that Datalogic shall have the right, at its absolute discretion, to initiate proceedings in the courts of any other state, country, or territory in which End User resides, or in which any of End User's assets are located.
- 11.5 Attorneys' Fees. In the event an action is brought to enforce the terms and conditions of this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees, both at trial and on appeal.

- END -

Software Product Policy

Datalogic reserves the right to ship its products with the latest version of software/firmware available. This provides our customers with the very latest in Datalogic software technology.

The only exception to this policy is when the buyer has a signed contract with Datalogic that clearly defines the terms and conditions for making software/firmware changes in products shipped to the buyer.

Customers Under Software Support

Customers that elect to subscribe to Datalogic Software Maintenance and Support Agreement will receive 30 days advance notification of: (1) the release of a new software version; and/or (2) discontinuation of any prior software version that will no longer be supported. Datalogic will provide maintenance for a fee that will assist customers in transitioning to the next software version. If a customer is currently using the software version being discontinued, the customer may elect to transition to any one of the newer versions, depending on the hardware in use.

To arrange for a Software Maintenance and Support Agreement please contact your Datalogic sales person.

Laser Cautions

The reader may contain a laser pointer (this is a value-added option), which is certified in the U.S. to conform to the requirements of DHHS/CDRH 21CFR Subchapter J for Class II and IEC 60825-1 for Class 2 products. Class II (2) products are not considered to be hazardous. Laser pointer models of the reader contain a Visible Laser Diode (VLD) at a wavelength of 655 nanometers and is designed so that there can be no human access to harmful levels of laser light during normal operation, user maintenance, or during prescribed service operations. See the Product Reference Guide (PRG) for laser pointer configuration information and barcodes.



CAUTION

Do not attempt to open or otherwise service any components in the optics cavity. Opening or servicing any part of the optics cavity by unauthorized personnel may violate laser safety regulations.

Technical Specification

Item	Description
Physical Characteristics	
Color	Yellow/Black Black/Black
Dimensions	Height 7.5"/190 mm Length 4.5"/115 mm Width 3.0"/75 mm
Weight (without cable)	Approximately 9.9 ounces/280 g (without cable)
Electrical Characteristics	
Voltage & Current	Input current at 5V = 285 mA (max) ^a 135 mA (standby) 2.5 mA (RS-232 sleep mode) 2.5 mA (USB suspend) Input Power = 1.5W max in the 4 - 14V range ^a
Performance Characteristics	
Light Source	Dual LEDs
Roll (Tilt) Tolerance	± 30° from normal
Pitch Tolerance	± 65°
Skew (Yaw) Tolerance	± 60°
Field of View	2" wide at 1" from the reader 7" wide at 7" from the reader

Item	Description
Depth of Field ^b	100 mil: typical 5.1" to 208.7" (13 cm to 530 cm) 55 mil: typical 1.9" to 118.1" (4.7 cm to 300 cm) 40 mil: typical 0.8" to 94.5" (2 cm to 240 cm) 20 mil: typical 0.1" to 46.9" (0.3 cm to 119 cm) 13 mil: typical 0" to 31.5" (0.1 cm to 80 cm) 10 mil: typical 0" to 23.6" (0 cm to 60 cm) 7.5 mil: typical 0.1" to 17.3" (0.2 cm to 44 cm) 5 mil: typical 0.6" to 5.5" (1.5 cm to 14 cm)
Minimum Element Width	3 mil
Print Contrast Minimum	15% minimum reflectance
Decode Capability	UPC/EAN/JAN, P2 /P5 add-ons; Code 39; Code 32 (Italian Pharmacode); Code 128; Code 128 ISBT; Code 128 add-ons; I 2 of 5; Standard 2 of 5; Code 11; Codabar; EAN 128; GS1 DataBar Omnidirectional, GS1 DataBar Limited, GS1 DataBar Expanded, Code 4, Code 5, Follett 2 of 5.
Interfaces Supported	RS-232 Std., RS-232 Wincor-Nixdorf, RS-232 OPOS, IBM 46xx (ports 5B and 9B), USB Com Std., USB Keyboard, USB Alternate Keyboard, USB OEM, Keyboard Wedge (AT with or w/o Alternate Key, IBM AT PS2 with or w/o Alternate Key, PC-XT, IBM 3153, IBM Terminals 31xx, 32xx, 34xx, 37xx make only and make break keyboard, Digital Terminals VT2x, VT3xx, VT4xx, and Apple) and Wand Emulation.
User Environment	
Operating Temperature	-22° to 122° F (-30° to 50° C)
Storage Temperature	-40° to 158° F (-40° to 70° C)
Humidity	Operating: 5% to 90% relative humidity, non-condensing Storage: 5% to 95% relative humidity, non-condensing
Drop Specifications	50 drops from 2 meters (6.5 feet) to concrete, -30°C to 50°C
Ambient Light Immunity	Up to 100,000 LUX in sunlight.
Contaminants Spray/rain Dust/particulates	IEC 529-IPX5 IEC 529-IP6X
Beeper Loudness	84 dBA typical for operator at a distance of 19" (50cm)
ESD Level	25 KV
Regulatory	
Electrical Safety	UL 60950, CAN/CSA-C22.2 No. 60950/IEC60950
Laser Safety	Complies with 21 CFR 1040 Class 2 and IEC/EN60825-1:2007 Class II when laser pointer installed.
EM/RFI	FCC Part 15 Class B, ICES-003 Class B, European Union EMC Directive ^c , Australian SMA, Taiwan EMC, Japan VCCI/MITI, Korean EMC

a. Typical input current with factory default configuration. Max input current = 315 mA @ 5V with factory default configuration. Changes to the default (scan mode or beeper settings) may increase the max input current up to 410 mA @ 5V and the max power up to 2.05 W.

b. 13 mil DOF based on UPC. All others are Code 39. All labels grade A, minimum illumination 300 LUX, 20°C, label inclination 10°.

c. USB cables CAB-465, CAB-467 and CAB-486 are certified to a residential level of immunity according to the EN 55024 and not recommended for industrial level EN61000 6-2:2005.

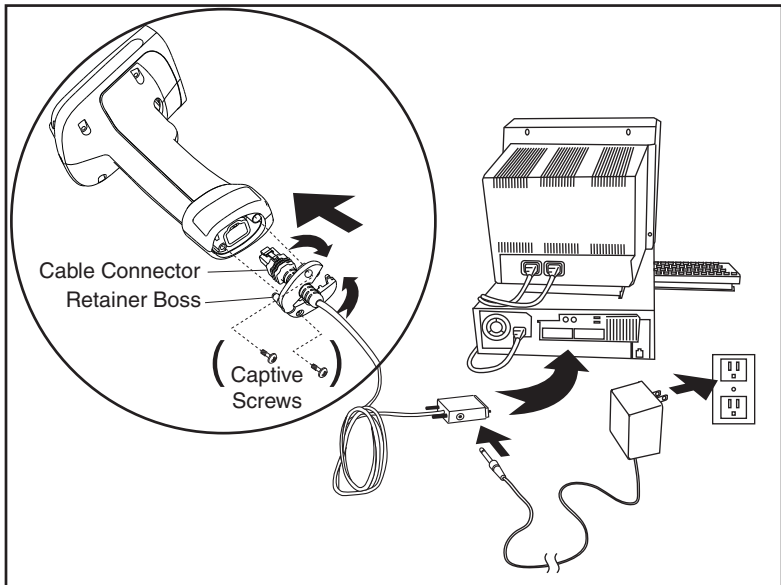
Getting Started

Connection

Use the appropriate instructions below to connect the reader to the terminal, PC or other host device. The reader cable connection is secured using the “clamshell” retainer referenced in the enlarged area of [Figure 1](#). Fit and clamp the retainer over the cable connector as shown in the illustration, then fully seat the cable assembly into the reader, aligning both the connector and the retainer boss with their respective openings. Secure the captive screws.

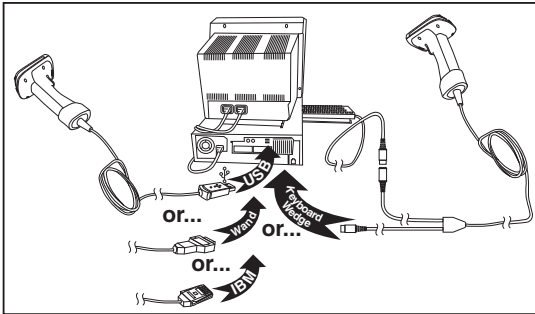
RS-232 Serial Connection — Turn off power to the terminal/PC and connect the reader to the terminal/PC serial port via the RS-232 cable as shown in [Figure 1](#). If the terminal will not support POT (Power Off the Terminal) to supply reader power, use the approved power supply (AC Adapter). Plug the AC Adapter barrel connector into the socket on the RS-232 cable connector and the AC Adapter plug into a standard power outlet.

Figure 1. RS-232 Serial Connection



USB Connection — Connect the reader to a USB port on the terminal/PC using the correct USB cable for the interface type you ordered. Reference [Figure 2](#).

Figure 2. Other Interface Connections



Wand Emulation Connection — Connect the reader to the appropriate port on the terminal/PC using the correct cable for the interface type you ordered. Reference [Figure 2](#).

IBM Connection — Connect the reader to the IBM port on the terminal/PC using the correct IBM cable. Reference [Figure 2](#).

Keyboard Wedge Connection — The Keyboard Wedge cable has a ‘Y’ connection from the reader. Connect the female to the male end from the keyboard and the remaining end at the keyboard port at the terminal/PC. Reference [Figure 2](#).

Programming

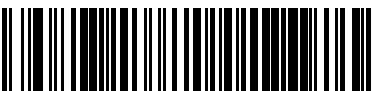

The reader is typically factory-configured with a set of default features. Reference [Defaults on page 11](#). You can select other options and customize your reader through use of the instructions and programming barcodes available in the Product Reference Guide (PRG). You can view and download this and other manuals from the website listed on the back cover of this manual.



NOTE

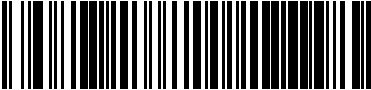






Some interfaces require the scanner to start in the disabled state when powered up. If additional scanner configuration is desired while in this state, pull the trigger and hold it for five seconds. The scanner will change to a state that allows programming with barcodes.


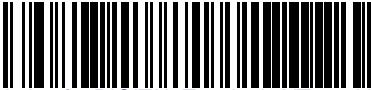

Select the desired interface by scanning the associated barcode below.

INTERFACE	SELECTION BARCODE
RS-232 Standard	
RS-232 Wincor-Nixdorf	
RS-232 for OPOS/UPOS/ JavaPOS	
Wand Emulation	
IBM 46XX Port 5B	
IBM 46XX Port 9B	
USB Com ^a	
USB Keyboard	
USB Alternate Keyboard	
USB OEM	

^a. Download the correct USB Com driver from www.datalogic.com

Interface selection — continued

INTERFACE	SELECTION BARCODE
Keyboard AT	 Keyboard Wedge for PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding
Keyboard AT-NK	 Keyboard Wedge for IBM AT PS2 with standard key encoding but without external keyboard
Keyboard AT-ALT	 Keyboard Wedge for AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key
Keyboard AT-ALT-NK	 Keyboard Wedge for IBM AT PS2 with alternate key encoding but without external keyboard
Keyboard XT	 Keyboard Wedge for PC/XT w/Standard Key Encoding
Keyboard IBM 3153	 Keyboard Wedge for IBM Terminal 3153
Keyboard IBM-M	 Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make only keyboard

INTERFACE	SELECTION BARCODE
Keyboard IBM-MB	 <p>Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make break keyboard</p>
Keyboard DIG-VT	 <p>Keyboard Wedge for DIGITAL Terminals VT2xx, VT3xx, VT4xx</p>
Keyboard USB-KBD-Apple	 <p>USB Keyboard for Apple computers</p>

Defaults

For your convenience, standard defaults are shown here for each of the major interface types. For more details or to change these settings, reference the Product Reference Guide (PRG).

RS-232 Standard Default Settings — 9600 Baud, no Parity, 1 Stop Bit, Handshaking disabled, no Intercharacter Delay, Beep on ASCII BEL disabled, Beep On Not On File enabled, ACK Character = 'ACK', NAK Character = 'NAK', ACK NAK Timeout Value = 600ms, ACK NAK Retry Count = 3, ACK NAK Error Handling = Ignore, Indicate Transmission Failure enabled, Disable Reader Command = 'D', Enable Reader Command = 'E'.

Wand Emulation Standard Default Settings — Wand Idle State = Low, Wand Polarity = Quiet Zones & Spaces High - Bars Low, No Label Symbology Conversion, Transmit Noise = Disabled.

OEM/IBM Standard Default Settings — OEM-USB Device Usage = Table Top Scanner, Transmit Labels in Code 39 Format = OEM Standard Format, 46xx Number of Host Resets = 6.

USB Standard Default Settings — USB Keyboard Speed = Fast (1ms).

Keyboard Standard Default Settings (Keyboard AT) — Country Mode = U.S., Caps Lock= OFF, Numlock Key =Unchanged, Send Control Characters = Disabled, Wedge Quiet Interval = 100ms, No Wedge Intercode Delay.

Resetting the Standard Product Defaults

If programming settings for your reader are in an unknown condition, factory settings can be restored by scanning the “Factory Default Settings” barcode below. A listing of factory default settings is available in the PRG. Settings can vary, depending upon the interface type.



Factory Default Settings

Symbologies

Symbologies are factory enabled or disabled in the reader as follows:

Enabled Symbologies

- UPC-A, UPC-E, EAN 13, EAN 8 — without add-ons, Check Character Transmission enabled, no Expansion, Minimum Reads = 1 (except In-Store Minimum Reads = 2), System Number Transmission = enabled, 2D Components = disabled, EAN 8 Guard Insertion/Substitution Options = disabled (except EAN 8 Guard Substitution), Stitching = disabled.
- Code 39 — Check Character Calculation/Transmission enabled, Start/Stop Character disabled, Full ASCII disabled, Quiet Zones = auto, Minimum Reads = 1, Decoding Level and Aggressiveness = 3, Variable Length Control, Length One = 2, Length Two = 50, Interdigit Ratio = 4, Character Correlation = Disabled, Stitching is enabled.
- Code 128 — No Expansion, Check Character Transmission enabled, SubCode Change not transmitted, Quiet Zones = Auto, Minimum Reads = 1, Decoding Levels and Aggressiveness = 3,

Variable Length Control, Length One = 1, Length two = 80, Character Correlation = disabled, Stitching = enabled.

- Interleaved 2 of 5 — Zero Pattern and Check Character Calculation = disabled, Check Character Transmission = enabled, Minimum Reads = 1, Decoding Levels and Aggressiveness = 3, Variable Length Control, Length One = 12, Length Two = 100, Character Correlation and Stitching = disabled.

Disabled Symbolgies

GS1 DataBar (Omnidirectional, Expanded and Limited), GTIN formatting, Pharmacode 39, Codabar, Code 93, Code 11, Standard 2 of 5.

How to Scan

When the trigger is pressed, the reader projects a red, horizontal illuminating beam. This beam will remain on until the trigger is released, a barcode is read, or until a time-out¹ period expires.



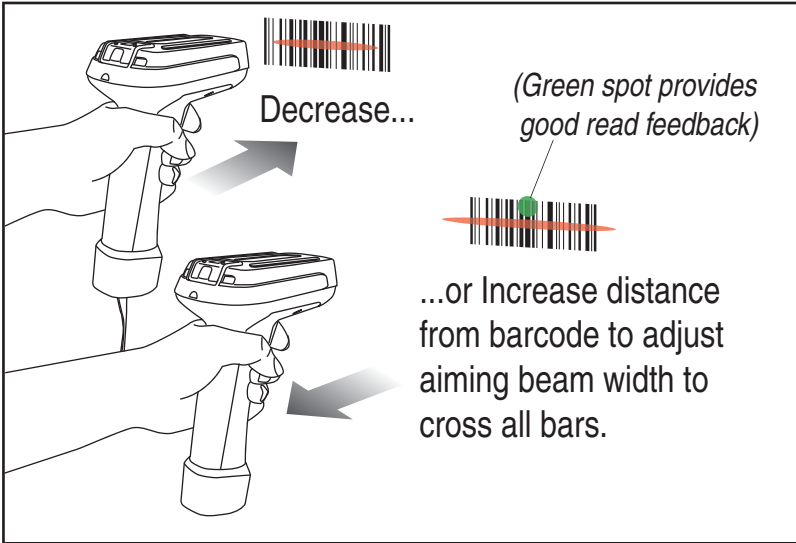
NOTE

If the surface being scanned is highly reflective (e.g., laminated), it may be necessary to tilt the item or the reader slightly (15° to 18°) to prevent unwanted reflection.

Linear Barcodes — To scan a linear barcode, center the illumination beam over the barcode as shown in [Figure 3](#). The reader must “see” across the width of all of the bars. Move the reader further away from the barcode to increase the scanning coverage area, and closer in to read very small barcodes.

1. Reference the Product Reference Guide (PRG) for more information about the aiming beam time-out period.

Figure 3. Scanning Barcodes



Troubleshooting

The reader will automatically perform a set of self-tests whenever you turn it on. If your reader doesn't seem to be functioning properly, follow these steps to try and isolate the problem.

1. Is the power on? Does the illumination beam come on?
If no illumination beam, check that...
 - all connections are fully seated and in the appropriate port(s).
 - the host system power is on (if external power isn't used).
 - the trigger works.
2. Is the reader having trouble reading your symbols?
If the reader isn't reading symbols well, check that the symbols...
 - aren't smeared, rough, scratched, or exhibiting voids.
 - aren't coated with frost or water droplets on the surface.
 - are enabled in the reader. See the Product Reference Guide (PRG) for more about configuring the reader to read symbologies.

3. Is the barcode displayed but not entered?

The barcode is displayed on the host device correctly, but you still have to press a key to enter it (the Enter/Return or Tab key, for example).

You need to program a suffix which enables the reader to output the barcode data plus the key you need (such as a carriage return “CR”) to enter the data into your application. Refer to the PRG for further information.

4. Does the reader read the barcode incorrectly?

If the reader reads a barcode, but the data is not displayed correctly on the host screen:

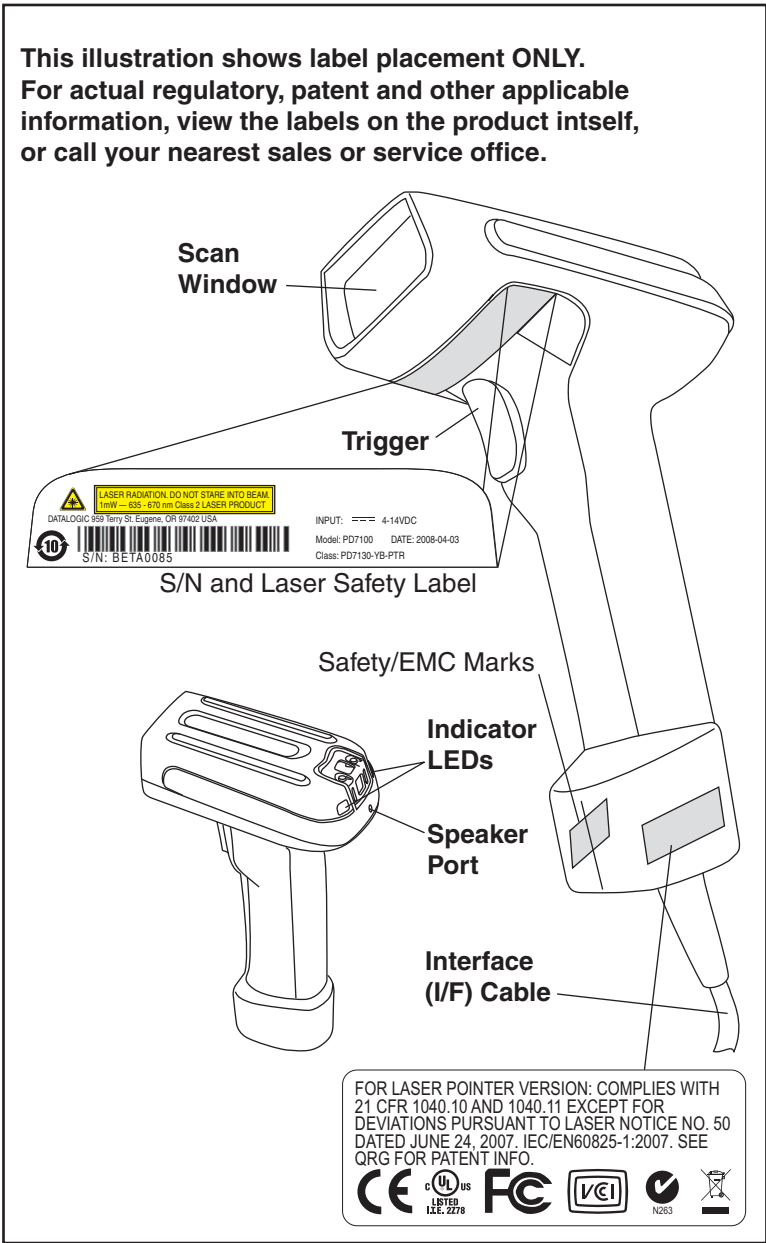
- The reader may not be programmed for the appropriate terminal interface. For example, you scan “12345” and the host displays “@es%.” Reprogram the reader with the correct interface selection barcode. See [Programming](#) in this manual and/or the PRG.
- The reader may not be programmed to output your barcode data properly. For example, you scan “12345” and the host displays “A12345B.” Reprogram the reader with the proper Data Editing selections. Reference the PRG.

5. The reader won’t read your barcode at all.

- Scan the part number barcode in the back of this manual or the samples from the PRG. If the reader reads sample barcodes, check that your barcode is readable.
- Verify that your barcode symbology is enabled. See the PRG.

6. If you aren’t sure what programming options have been set in the reader, or if you want the factory default settings restored, go to the [Resetting the Standard Product Defaults](#) section of this manual and scan the standard factory default settings barcode.

Figure 4. Labeling and Nomenclature



EUROPEAN DECLARATION OF CONFORMITY



Datalogic Scanning, Inc. hereby declares that the apparatus specified below has been tested and found compliant to the following European Council Directives and Harmonized Standards:

Apparatus: PowerScan PD7100 family

Directives: EMC 2004/108/EC
Low Voltage 2006/95/EC
RoHS 2002/95/EC
WEEE 2002/96/EC

Standards: EN 61000 6-4:2007	Generic Emissions — for Industrial environments
CISPR 22:2006	Generic Emissions
AN/NZS CISPR 22:2006	Generic Emissions
EN 61000 6-2:2005	Generic Immunity — for Industrial environments (Includes EN61000-4-2 (ESD), 4-3 (Radiated Immunity) 4-4 (EFT), 4-5 (Surge), 4-6 (Cond Immunity) and 4-11 (Voltage dips/interruptions)
EN 60950-1:2007	ITE Safety
EN 60825-1:2007	Laser Safety
EN 61000-3-2:2006	Harmonic Current
EN 61000-3-3:1995+A1:2001+A2:2005	Voltage Fluctuation/Flicker

Equipment Type: Handheld Barcode Scanning Equipment

Interface Protocol: RS-232, USB, Keyboard Wedge, IBM, Wand Emulation

Placed into EU Service: July 2008 under the Datalogic logo.

Responsible

Manufacturer: Datalogic Scanning, Inc. 959 Terry St. Eugene, OR 97402 USA

A handwritten signature in black ink that reads "Brad West".

July 18, 2008

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