



*PowerScan<sup>®</sup> RF*

---

# Handheld Bar Code Scanner



# User's Guide

---

---

## PSC Inc

959 Terry Street  
Eugene, Oregon 97402  
Telephone: (541) 683-5700  
Fax: (541) 345-7140

An Unpublished Work - All rights reserved. No part of the contents of this documentation or the procedures described therein may be reproduced or transmitted in any form or by any means without prior written permission of PSC Inc. or its wholly owned subsidiaries ("PSC"). Owners of PSC products are hereby granted a non-exclusive, revocable license to reproduce and transmit this documentation for the purchaser's own internal business purposes. Purchaser shall not remove or alter any proprietary notices, including copyright notices, contained in this documentation and shall ensure that all notices appear on any reproductions of the documentation.

Should future revisions of this manual be published, you can acquire printed versions by contacting PSC Customer Administration. Electronic versions may either be downloadable from the PSC web site ([www.psc.com](http://www.psc.com)) or provided on appropriate media. If you visit our web site and would like to make comments or suggestions about this or other PSC publications, please let us know via the "Contact PSC" page.

### Disclaimer

Reasonable measures have been taken to ensure that the information included in this manual is complete and accurate. However, PSC reserves the right to change any specification at any time without prior notice.

PSC is a registered trademark of PSC Inc. The PSC logo is a trademark of PSC. All other trademarks and trade names referred to herein are property of their respective owners.

### 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 • 6211397 • 6223986 • 6230975 • 6230976 • 6237852 • 6244510 • 6259545 • 6260763 • 6266175 • 6273336 • 6276605 • 6279829 • 6290134 • 6290135 • 6293467 • 6303927 • 6311895 • 6318634 • 6328216 • 6332576 • 6332577 • 6343741 • 6454168 • 6478224 • 6.568.598 • 6.578.765 • 6705527 • 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 • GB2252333 • GB2284086 • GB2301691 • GB2304954 • GB2307093 • GB2308267 • GB2308678 • GB2319103 • GB2333163 • GB2343079 • GB2344486 • GB2345568 • GB2354340 • ISR107546 • ISR118507 • ISR118508 • JP1962823 • JP1971216 • JP2513442 • JP2732459 • JP2829331 • JP2953593 • JP2964278 • MEX185552 • MEX187245 • RE37166 • Other Patents Pending

---

---

# PSC INC. POWERSCAN<sup>®</sup> END USER LICENSE AGREEMENT

**Notice to End User:** The PSC Product you have acquired contains embedded Software, which is integral to the product's operation. This Software is being provided to you under license, subject to the terms and conditions of this Agreement. If you use the PSC Product, you will be deemed to have accepted the terms and conditions of this Agreement. If you do not intend to be bound to the terms of this Agreement, PSC is not willing to license the Software to you, you may not use the PSC Product or the Software, and you must contact the party from whom you acquired the PSC Product for instructions.

This End User Software License Agreement ("Agreement") is a legally binding agreement governing the licensing of the Software and Documentation by PSC Inc. and its wholly owned subsidiaries and affiliates ("PSC") to the entity or person who has purchased or otherwise acquired a PSC Product ("End User"). For purposes of this Agreement, any software that is associated with a separate end-user license agreement is licensed to you under the terms of that license agreement. PSC and End User hereby agree as follows:

## **1. Definitions.**

- 1.1 "Documentation" means materials such as user's guides, program reference guides, quick reference guides, manuals, or similar materials associated with or related to the PSC Product, whether in printed, "online", or other form.
- 1.2 "Proprietary Information" means: (a) source code, object code, software, documentation, and any related internal design, system design, data base design, algorithms, technology, technical data or information, implementation techniques, and trade secrets related to the Software, (b) any other trade secrets marked appropriately or identified as proprietary or confidential, and (c) any information that End User, under the circumstances, should recognize as confidential. Proprietary Information does not include any information that the receiving party can establish was (1) in the public domain, (2) already in the receiving party's possession or rightfully known prior to receipt, (3) rightfully learned from a third party not in violation of any other's proprietary rights, or (4) independently developed without access to Proprietary Information.
- 1.3 "PSC Product" means the PSC Powerscan<sup>®</sup> series, Powerscan<sup>®</sup> Imager series, Powerscan<sup>®</sup> EP series, Powerscan<sup>®</sup> LR series, Powerscan<sup>®</sup> HD series, and/or Powerscan RF<sup>®</sup> series scanner and/or scanner/scale product, including all embedded Software in and all Documentation related to such product, which has been purchased or otherwise acquired by End User, whether obtained directly or indirectly from PSC.
- 1.4 "Software" means any software or computer programs of PSC or its third party licensors in machine readable form which is embedded in the PSC Product, whether obtained directly or indirectly from PSC, including any replacement, update, upgrade, enhancement or modification.

## **2. Scope Of License Granted.**

- 2.1 PSC grants to End User a non-exclusive, non-transferable, perpetual license to use the Software, solely on the PSC Product in which it is embedded ("designated PSC Product"), in machine-readable form only, solely for End User's internal business purposes. This Agreement does not convey ownership of the Software to End User. Title to the Software shall be and remain with PSC or the third party from whom PSC has obtained a licensed right. As used in this Agreement, the term "purchase" or its equivalents when applied to the Software shall mean "acquire under license." End User is not entitled to receipt or use of the source code to any Software.
- 2.2 End User shall not copy, modify, decompile, disassemble, reverse engineer, or otherwise reproduce or remanufacture the Software, whether modified or unmodified, nor sell, assign, sublicense, distribute, lend, rent, give, or otherwise transfer the Software to any other person or organization, for purposes other than as expressly provided in this Agreement, without PSC's prior written consent.

## **3. Transfers, Support.**

- 3.1 Any copying, installing, reproduction, remanufacture, reverse engineering, electronic transfer, or other use of the Software on other than the designated PSC Product will be a material breach of this Agreement. However, PSC may elect not to terminate this Agreement or the granted licenses, but instead may elect to notify End User that End User is deemed to have ordered and accepted a license for each breaching use. End User shall pay PSC the applicable list price for such licenses as of the date of such breach.
- 3.2 End User shall not sell, assign, sublicense, distribute, lend, rent, give, or otherwise transfer the PSC Product to any third party unless such third party agrees with PSC in writing to be bound by the terms and conditions of this Agreement. Any such transfer of the PSC Product absent such agreement shall be null and void.
- 3.3 End User may obtain support for Software from PSC at PSC's standard support fees and under PSC's standard support terms and conditions in effect at the time the support is requested.

## **4. Intellectual Property.**

End User acknowledges that the Software constitutes valuable trade secrets of PSC or PSC's third party licensors and that the Software is protected by intellectual property laws and treaties. The license set forth in this Agreement does not transfer to End User any ownership of PSC's or its third party licensors' copyrights, patents, trademarks, service marks, trade secrets, or other intellectual property rights and End User shall have no right to commence any legal actions to obtain such rights. End User shall not remove, modify, or take any other action that would obscure any copyright, trademark, patent marking, or other intellectual property notices contained in or on the PSC Product.

## **5. Proprietary Information.**

- 5.1 End User acknowledges that Proprietary Information is the confidential, proprietary, and trade secret property of PSC and PSC's third party licensors and End User acquires no right or interest in any Proprietary Information.
- 5.2 End User shall not disclose, provide, or otherwise make available the Proprietary Information of PSC or its third party licensors to any person other than End User's authorized employees or agents who are under confidentiality agreement, and End User shall not use the Proprietary Information other than in conjunction with use of the PSC Product exclusively for End User's internal business purposes. End User shall take steps to protect the Proprietary Information no less securely than if it were End User's own intellectual property.
- 5.3 The provisions of this Proprietary Information Section shall survive and continue for five (5) years after the termination of this Agreement.

## **6. Limited Warranty.**

- 6.1 PSC warrants that, under normal use and operation, the PSC Product will conform substantially to the applicable Documentation for the period specified in the Documentation. During this period, for all reproducible nonconformities for which PSC has been given written notice, PSC will use commercially reasonable efforts to remedy nonconformities verified by PSC. End User agrees to supply PSC with all reasonably requested information and assistance necessary to help PSC in remedying such nonconformities. For all defects reported to PSC within the warranty period, PSC's liability is limited to providing End User with one copy of corrections or responding to End User's problem reports according to PSC's standard assistance practices. PSC does not warrant that the product will meet End User's requirements or that use of the product will be uninterrupted or error free, or that PSC's remedial efforts will correct any nonconformance. This limited warranty does not cover any product that have been subjected to damage or abuse, whether intentionally, accidentally, or by neglect, or to unauthorized repair or unauthorized installation, and shall be void if End User modifies the prod-

- uct, uses the product in any manner other than as established in the Documentation, or if End User breaches any of the provisions of this Agreement.
- 6.2 EXCEPT AS PROVIDED IN THIS AGREEMENT, THE PSC PRODUCT IS PROVIDED "AS IS" AND PSC MAKES NO WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, WRITTEN OR ORAL, WITH RESPECT TO THE PRODUCT, AND SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

#### **7. Infringement.**

- 7.1 PSC will defend End User against any claim in a lawsuit that the PSC Product furnished hereunder infringe a United States patent or copyright of a third party and PSC will pay any damages finally awarded against End User by a court of competent jurisdiction that are attributable to such claim or will pay End User's part of any settlement that is attributable to such claim, provided, that 1) End User notifies PSC promptly in writing of the claim, 2) PSC controls the defense or settlement of the claim, and 3) End User cooperates fully with PSC in such defense or settlement. All notices of a claim should be sent to PSC Inc., Legal Department, 111 SW Fifth Ave. Suite 4100, Portland, OR 97204-3644.
- 7.2 In the defense or settlement of any such claim, PSC may, at its option, 1) procure for End User the right to continue using the PSC Product, 2) modify the PSC Product so that it becomes non-infringing, 3) replace the PSC Product with an equivalent product not subject to such claim, or 4) provide End User an opportunity to return the PSC Product and receive a refund of the purchase price paid, less a reasonable allowance for use.
- 7.3 PSC shall have no liability to End User for claims of infringement based upon 1) the use of any PSC Product in combination with any product which PSC has not either furnished or authorized for use with such PSC Product 2) the use of any PSC Product designed, manufactured, or modified to the specifications of End User, or 3) End User's modification of the PSC Product without written authorization from PSC.
- 7.4 THE FOREGOING STATES PSC'S COMPLETE AND ENTIRE OBLIGATION CONCERNING CLAIMS OF PATENT, COPYRIGHT, OR OTHER INTELLECTUAL PROPERTY INFRINGEMENT, CANCELS AND SUPERCEDES ANY PRIOR AGREEMENTS, WHETHER ORAL OR WRITTEN, BETWEEN THE PARTIES CONCERNING SUCH CLAIMS, AND WILL NOT BE MODIFIED OR AMENDED BY ANY PAST, CONTEMPORANEOUS, OR FUTURE AGREEMENTS OR DEALINGS BETWEEN THE PARTIES, WHETHER ORAL OR WRITTEN, EXCEPT AS SET FORTH IN A FUTURE WRITING SIGNED BY BOTH PARTIES.

#### **8. Limitation Of Liability.**

EXCEPT AS PROVIDED IN SECTION 7, PSC SHALL NOT BE LIABLE FOR ANY CLAIMS AGAINST END USER BY ANY OTHER PARTY. IN NO EVENT SHALL PSC'S LIABILITY FOR DAMAGES, IF ANY, WHETHER BASED UPON CONTRACT, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY, STRICT LIABILITY, WARRANTY, OR ANY OTHER BASIS, EXCEED THE PRICE OR FEE PAID BY END USER FOR THE PSC PRODUCT. UNDER NO CIRCUMSTANCES SHALL PSC BE LIABLE TO END USER OR ANY THIRD PARTY FOR LOST PROFITS, LOST DATA, INTERRUPTION OF BUSINESS OR SERVICE, OR FOR ANY OTHER SPECIAL, CONSEQUENTIAL, CONTINGENT, INDIRECT, INCIDENTAL, PUNITIVE, EXEMPLARY, OR OTHER SIMILAR DAMAGES, EVEN IF PSC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### **9. Government Restricted Rights; International Use.**

- 9.1 Use, duplication, or disclosure of the Software by the U.S. Government is subject to the restrictions for computer software developed at private expense as set forth in the U.S. Federal Acquisition Regulations at FAR 52.227-14(g), or 52.227-19 or in the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013(c)(1)(ii), whichever is applicable.
- 9.2 If End User is using the PSC Product outside of the United States, End User must comply with the applicable local laws of the country in which the PSC Product is used, with U.S. export control laws, and with the English language version of this Agreement. The provisions of the "United Nations Convention on International Sale of Goods" shall not apply to this Agreement.

#### **10. Termination.**

- 10.1 Either party may terminate this Agreement or any license granted under this Agreement at any time upon written notice if the other party breaches any provision of this Agreement.
- 10.2 Upon termination of this Agreement, End User immediately shall cease using any non-embedded software and shall return to PSC or destroy all non-embedded software covered by this Agreement, and shall furnish PSC with a certificate of compliance with this provision signed by an officer or authorized representative of End User. For embedded software, End User agrees to sign a waiver prepared by PSC concerning further use of the embedded Software. End User's resumed or continued use of the embedded Software after termination shall constitute End User's agreement to be bound by the terms and conditions of this Agreement for such use.

#### **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 supercedes 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 PSC.
- 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 PSC shall be sent to the attention of Contract Administration, PSC Scanning Inc., 959 Terry Street, Eugene, OR 97402, or such other address as may be specified by PSC 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 PSC 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.

---

---

## Standard Warranty

PSC warrants to Customer that PSC's products will be free from defects in materials and workmanship for a period of two years from product shipment.

In order to obtain service under this Warranty, Customer must notify PSC of the claimed defect before the expiration of the Warranty period and obtain from PSC a return authorization number for return of the product to designated PSC service center. If PSC determines Customer's claim is valid, PSC will repair or replace product without additional charge for parts and labor. Customer shall be responsible for packaging and shipping the product to the designated PSC service center, with shipping charges prepaid. PSC shall pay for the return of the product to Customer if the shipment is to a location within the country in which the PSC service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

Warranty is subject to the limitations and exclusions set forth below. Warranty set forth above is in lieu of any other warranties, expressed or implied, including merchantability and fitness.

### Exclusions

Warranty coverage shall not apply to any claimed defect, failure or damage which PSC determines was caused by: improper use of product; failure to provide product maintenance, including but not limited to cleaning of the scan windows in accordance with product manual; installation or service of product by other than PSC representatives; use of product with any other instrument, equipment or apparatus; modification or alteration of product. External cables and replacement of scan windows due to scratching, stains or other degradation will not be covered under the Warranty. Products returned for service must be accompanied by the original external power supplies for performance of service.

### Limitations of Liability

PSC repair or replacement of defective product as set forth above is the customer's sole and exclusive remedy on account of claims of breach of warranty or product defect. Under no circumstances will PSC be liable to customer or any third party for any lost profits, or any incidental, consequential indirect, special or contingent damages regardless of whether PSC had advance notice of the possibility of such damages.

#### Assignment

Customer may not assign or otherwise transfer its rights or obligations under Warranty except to a purchaser or transferee of product. No attempted assignment or transfer in violation of this provision shall be valid or binding upon PSC.

### Risk of Loss

Customer shall bear risk of loss or damage for product in transit to PSC. PSC shall assume risk of loss or damage for product in PSC's possession or product being returned to Customer by PSC, except such loss or damage as may be caused by the negligence of Customer, its agents or employees. In the absence of specific written instructions for the return of product to Customer, PSC will select the carrier, but PSC shall not thereby assume any liability in connection with the return shipment.

---

---

# NOTES

---

---

## TABLE OF CONTENTS

Unpack and Inspect Your Scanner .....	1
References .....	1
Quick Start Instructions .....	1
Installing the Battery .....	2
Verifying Scanner Operation .....	3
Connecting the Base Station to the Host Terminal .....	3
Linking the Scanner to a Base Station .....	5
Verifying Scanner-to-Base Station <b>Communications</b> .....	<b>7</b>
Using the PowerScan RF System .....	8
Battery Charging and Maintenance .....	8
Tips for Extending Battery Life .....	9
Disposing of Batteries .....	9
Four Station Charger .....	10
How to Scan .....	11
Depth of Field .....	12
LED and Beeper Indications .....	16
Active Symbologies .....	19
Enhanced Scanning for Hard-to-Read Bar Codes .....	20
Laser Cautions .....	21
Radio Frequency Interference .....	22
Maintenance .....	23
Troubleshooting .....	24
Sample Bar Codes .....	25



---

---

## Unpack and Inspect Your Scanner

After unpacking your new scanner, check the contents of the shipping carton to ensure all the items you ordered are included:

- PowerScan® RF handheld scanner
- Battery Pack(s)
- User's Guide (this manual)
- Optional Accessories that you ordered. (The scanner can be purchased with or without accessory kits.)

If your package contains wrong or missing components, contact your place of purchase. If there are damaged components, immediately file a claim with the carrier. You may want to save your packing material in case you need to ship the scanner at some later time.

## References

For more information about this product, its associated publications, software, and accessories, visit our website listed on the back cover of this manual.

## Quick Start Instructions

The basic steps below must be performed to set up the RF scanner. Each of these steps is detailed in this manual.

- Installing the Battery
- Verifying Scanner Operation
- Connecting the Base Station to the Host Terminal
- Linking the Scanner to a Base Station
- Verifying Scanner-to-Base Station Communications

---

## Installing the Battery

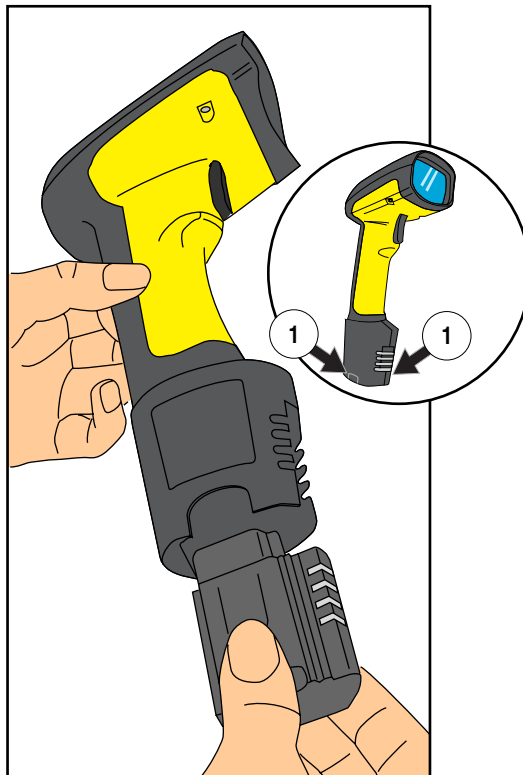


### NOTE

To assure maximum usage, batteries should always be fully charged before their initial use. (See “Battery Charging and Maintenance” on page 8.)

Orient the battery as shown in Figure 1, then push it into the scanner until it snaps in place. To remove the battery, push in on the release tabs on both sides of the battery’s base and pull it straight out of the scanner.

**Figure 1. Installing the Battery**



1. Battery Release Tabs

---

## Verifying Scanner Operation

Once a charged battery has been installed in the scanner, scan the sample bar codes in the back of this manual that correspond to the symbologies your scanner is programmed to read. If unsure how to do this, see the section on *How to Scan* in this manual. The system may signal with one or a combination of indicators depending upon how the scanner and Base Station are programmed to respond (see *LED and Beeper Indications* for details). If your scanner fails to read a sample bar code of a symbology it's programmed to read, turn to the section titled, *Troubleshooting*.

## Connecting the Base Station to the Host Terminal

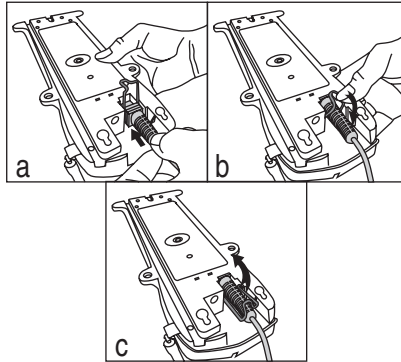


### NOTE

It is important that the interface (I/F) cable be connected to the Base Station prior to applying power to the system. This is because the interface type (RS-232, IBM, Keyboard Wedge, etc.) is selected by the Base Station subject to the I/F cable it is connected to at the time of power-up.

1. Connect the I/F cable to the Base Station (see Figure 2A). The I/F cable is inserted into the connector and the cable retainer clip is rotated over the cable overmold until the retainer snaps in place (see Figure 2B). To disconnect the cable, push in on the retainer (away from the catch on the plastic wall) to release it and enable it to swing upward, allowing the cable to be pulled free (see Figure 2C).

**Figure 2. Connecting/Disconnecting the Interface (I/F) Cable**



2. Consult your Host Terminal manual to determine the required communication parameters for the Host Terminal (e.g., baud rate, parity, etc.) and, if necessary, modify the programmed parameters to be compatible with those requirements. Scanner and Base Station programming is performed using one of the following:

- *Configurator Express™ Programming Software*
- *PowerScan™ Bar Code Scanner Programming Guide*



**NOTE**

See *References* for more information about how to obtain software and manuals for this product.



**CAUTION**

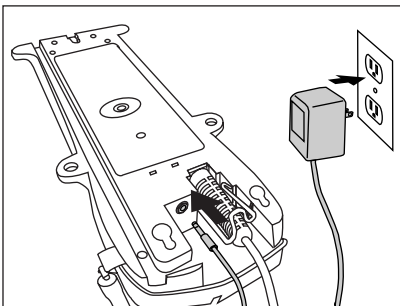
The Host Terminal manual should also be consulted as to whether power must be turned off before connecting peripheral devices. Ensure that the correct procedure is followed to avoid damage to equipment or interruption of system functions.

3. Connect the I/F cable to the proper port on the Host Terminal (check your Host Terminal manual to determine hardware requirements).
4. Connect the AC Adapter's power cord at the Base Station and plug the AC/DC adapter in at the wall outlet (see Figure 3).

---

The Base Station's POWER LED should be illuminated when the unit is properly connected to power.

**Figure 3. Connecting Power to the Base Station**



5. Apply power to the Host Terminal.
6. Verify communication with the Host Terminal by aiming the linked scanner at a sample bar code from the back pages of this manual, and pulling the trigger (see *How to Scan* for tips about scanning bar codes). Confirm that the scanner/Base Station sent the data to the host terminal. If not, see the section, *Troubleshooting*. Once all communications are verified, the system is ready for use.

### **Linking the Scanner to a Base Station**

To link a scanner to a Base Station, simply scan the Base Station ID bar code located on the top of the desired Base Station. As the scanner searches for the Base Station, a short beep is heard as it seeks for the correct channel. When the Base Station responds to the request, the scanner's beeper will either sound a "Link Granted," or "Link Denied" signal (see the section, *LED and Beeper Indications* for more information).

---

The existing Base Station system configuration can be automatically downloaded to the scanner. This automatic download feature is configurable and can be disabled. See the Systems Manual for more information about this feature. If downloading occurs, a slight delay with link verification announcement will occur.



**CAUTION**

Since a new/replacement scanner may have been shipped with a custom configuration or may have been modified with other special programming, it may not be desirable to download a potentially older configuration from an existing Base Station. In this case, reference the Systems Manual, or the *Configurator Express™* On-Screen Programming Software and consider uploading the scanner's newer configuration to the Base Station prior to linking.

---

---

## Verifying Scanner-to- Base Station Communications

Point the linked scanner at a sample bar code from the back pages of this manual, and pull the trigger (see *How to Scan* for tips on scanning bar codes). Watch the TX/RX (transmit/receive) indicator LED on the Base Station and/or scanner green LED while scanning the bar code. The LEDs should flash momentarily as the two devices communicate. If no communication is indicated, refer to the troubleshooting section of the Systems Manual.

When the scanner is programmed to do so, communication can also be indicated by a second "acknowledgement" tone<sup>1</sup> that is sounded after a "good read" tone. If a transmission error beep (warble) is heard following a "good read" tone instead of the single acknowledgement tone, communication between the devices may have failed<sup>2</sup>. Refer to the sections *Using the PowerScan RF System*, and *Troubleshooting* for possible remedies, should this occur.



**CAUTION**

### **Mexico ONLY**

**Operation in Mexico must voluntarily be restricted to channels 1,2,8 and 9. See RF Channel Selection in the Systems Manual to set channels. The frequency range on channels 3 through 7 have been allocated by Mexico government standards.**

- 
1. See *LED and Beeper Indications* for more details about beeper signals.
  2. Other reasons for a "warble" are that the Base Station may be configured differently than the scanner, or that the system's interface doesn't support the symbology (bar code type) you're trying to scan.

---

---

## Using the PowerScan RF System

This section covers the following topics:

- Battery Charging and Maintenance
- How to Scan
- LED and Beeper Indications

### Battery Charging and Maintenance

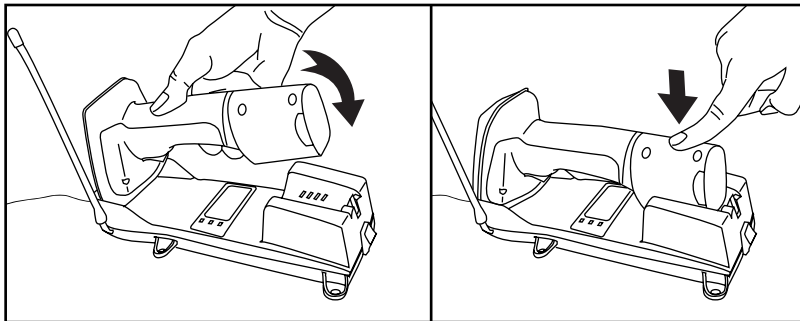


#### NOTE

When the scanner is in use, a low battery condition is indicated by a repeated two-flash signal from the scanner's green LED every time the trigger is pulled before the laser is enabled. This indicator may have been disabled via custom programming. See *LED and Beeper Indications* for more information.

Seat the scanner in the Base Station as shown in Figure 4, ensuring that the battery fully engages the station's metal contacts. The CHARGE LED on the Base Station should flash, indicating the battery is charging.

**Figure 4. Charging the Battery**



---

Rapid flashing indicates that charging is taking place. Rapid charging occurs when the battery temperature is between 10°C (50°F) and 46°C (115°F), and/or voltage of the battery is between 2.0 and 3.2V. Charge time is less than 4.2 hours. Rapid charge ends with the battery at approximately 90 to 95% capacity. The CHARGE LED remains on steady when trickle charging or after the charge cycle is complete.



**NOTE**

**A scanner may be charged simultaneously while other scanners are in use with the Base Station.**



**NOTE**

**Batteries will not charge if their temperature is below 0°C (30°F). If a battery that is too cold is inserted into the Base Station, the Charge LED will not illuminate.**

### **Tips for Extending Battery Life**

Nickel Metal Hydride (NiMH) batteries will better hold a charge if allowed to discharge at least once a week. The chemical reactions that correspond to charge and discharge in a rechargeable battery should occur to obtain the maximum number of charge/discharge cycles in the battery. If a battery is removed from the scanner and stored, it should be fully charged when stored. Batteries will lose the ability to hold a charge when stored for long periods of time (weeks, months, or longer).

Batteries will typically have about 30% charge capacity when shipped. To assure maximum usage, the battery should be fully charged before use.

Store your battery in a cool dry place. Do not leave your battery exposed to direct sunlight or temperatures below 0°C (30°F) and above 38°C (100°F).

### **Disposing of Batteries**

There presently are no US, North America or World disposal requirements for NiMH batteries, so when they won't hold a charge anymore, the batteries can be disposed of, preferably through a recycling center.

## Four Station Charger

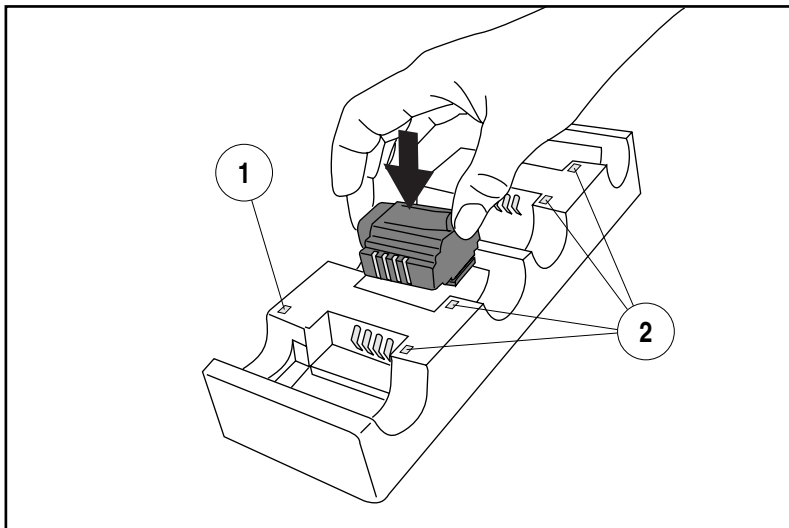
If you have a Four Station Charger, batteries are inserted for charging as shown in Figure 5. A 90% rapid charge can be achieved in only two hours when using this optional accessory, half the time than when a Base Station is used for charging. The LEDs at each battery station operate the same as the CHARGE LED on the Base Station, with rapid flashing indicating that rapid charging is taking place and on steady during trickle charging or when the rapid charge cycle is finished.



### NOTE

If you insert a battery into the Four Station Charger and no LEDs illuminate, the battery may be too cold. Batteries must be at 0°C or higher to charge. Do not attempt to charge cold batteries, since placing them in the charger will curtail the charging of other batteries already present in the unit.

Figure 5. Using the Four Station Charger Accessory



1. Device Power LED

2. Station Charge LEDs

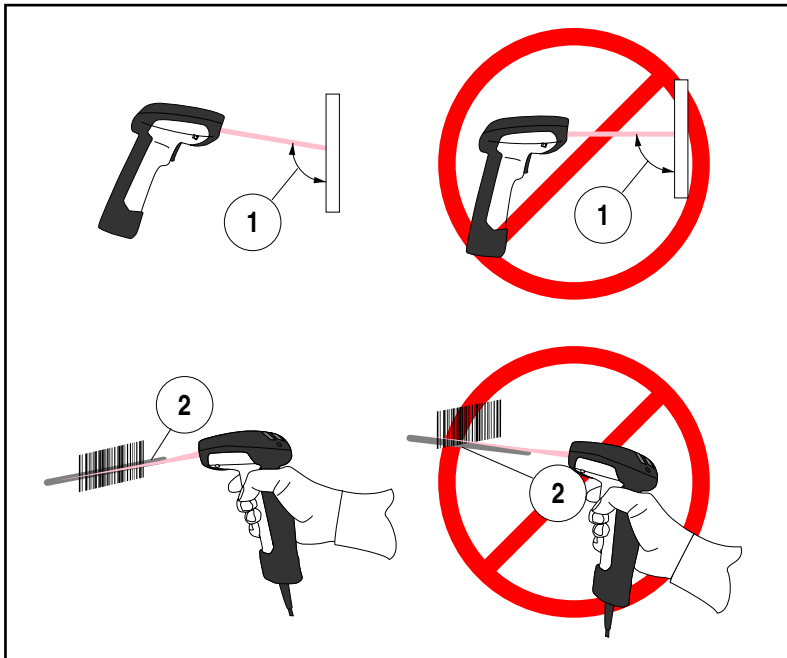
---

## How to Scan

Figure 6 illustrates some tips to help get the best scanning results:

1. The scanner must be pointed at a slight angle to the bar code. Do not hold the scanner perpendicular to the bar code.
2. The laser beam must cross the entire bar code. The scanner cannot correctly read if the entire bar code is not scanned.

**Figure 6. Scanning Tips**



## Depth of Field

There are currently four different range models for the scanner. Depending upon the model type of your scanner, you'll need to hold the unit at a given distance from the bar code to achieve optimum scanning results. The following diagrams provide depth of field information for each of the models when scanning grade A, Code 39 bar codes: Standard Range (SR), High Density (HD), Long Range (LR) and Extra Long Range (XLR).

### Definition of a "mil"

A "mil" is equal to 0.001 inches. In the context of the illustrations in this section, a mil represents the minimum bar code element width. Thus a 5 mil bar code would have a minimum element width of 5 mils (or 0.005 inches).

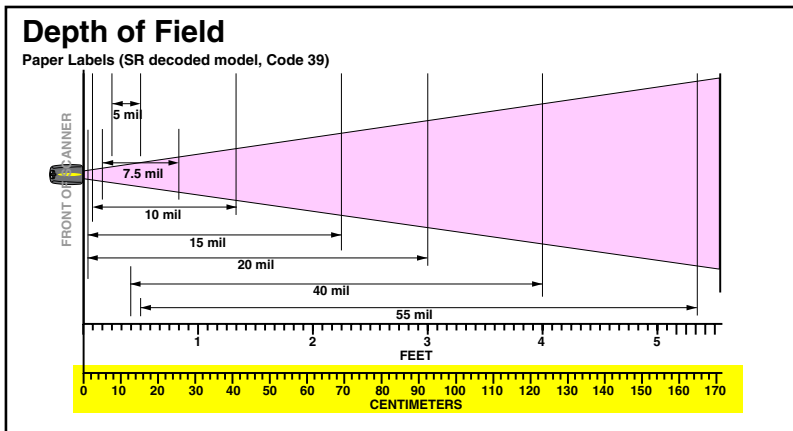


#### NOTE

Measurements are based on SR models set with the standard 28° scan width (as opposed to the Half Angle setting of 14°). Reference the Programming Manual for more information about the Half Angle feature.

Specifications are subject to change without notice.

Figure 7. Depth of Field (SR)



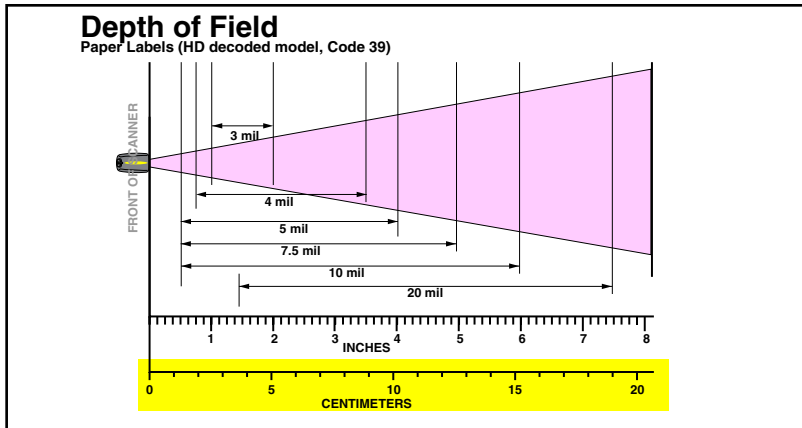


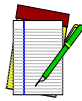
**NOTE**

See the section titled, *Definition of a "mil"* for more information about reading this chart. Measurements are based on HD models set with the standard 28° scan width (as opposed to the Half Angle setting of 14°). Reference the Programming Manual for more information about the Half Angle feature.

Specifications are subject to change without notice.

**Figure 8. Depth of Field (HD)**



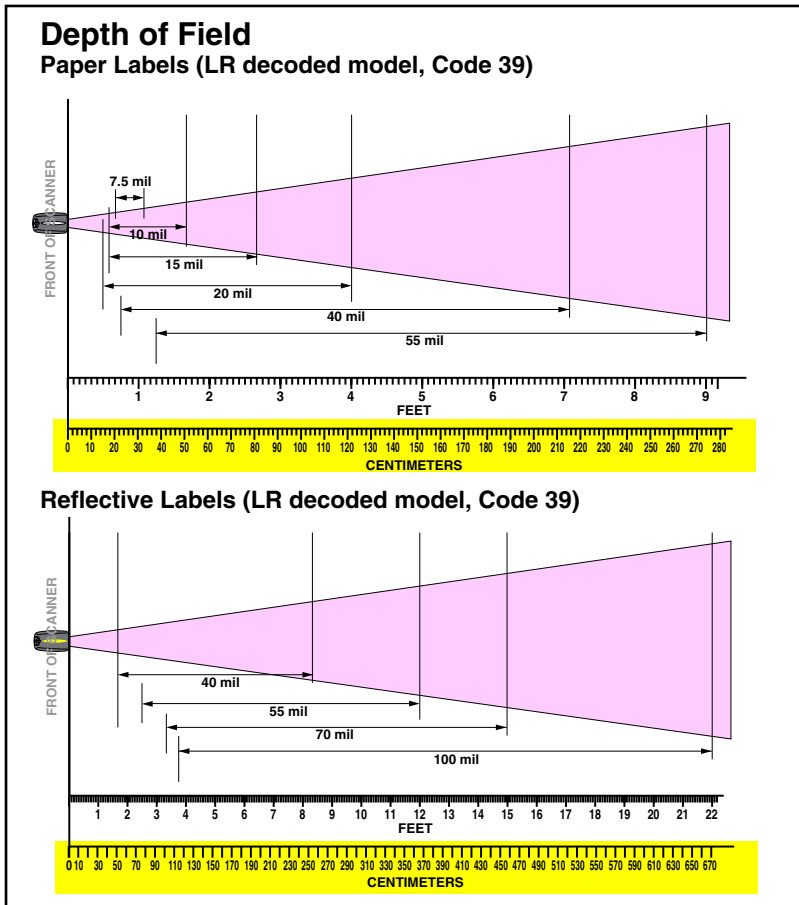


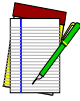
See the section titled, *Definition of a "mil"* for more information about reading this chart. Measurements are based on LR models set with the 14° scan width (as opposed to the alternate Full Angle setting of 28°). Reference the Programming Manual for more information about the Half Angle feature.

**NOTE**

Specifications are subject to change without notice.

**Figure 9. Depth of Field (LR)**



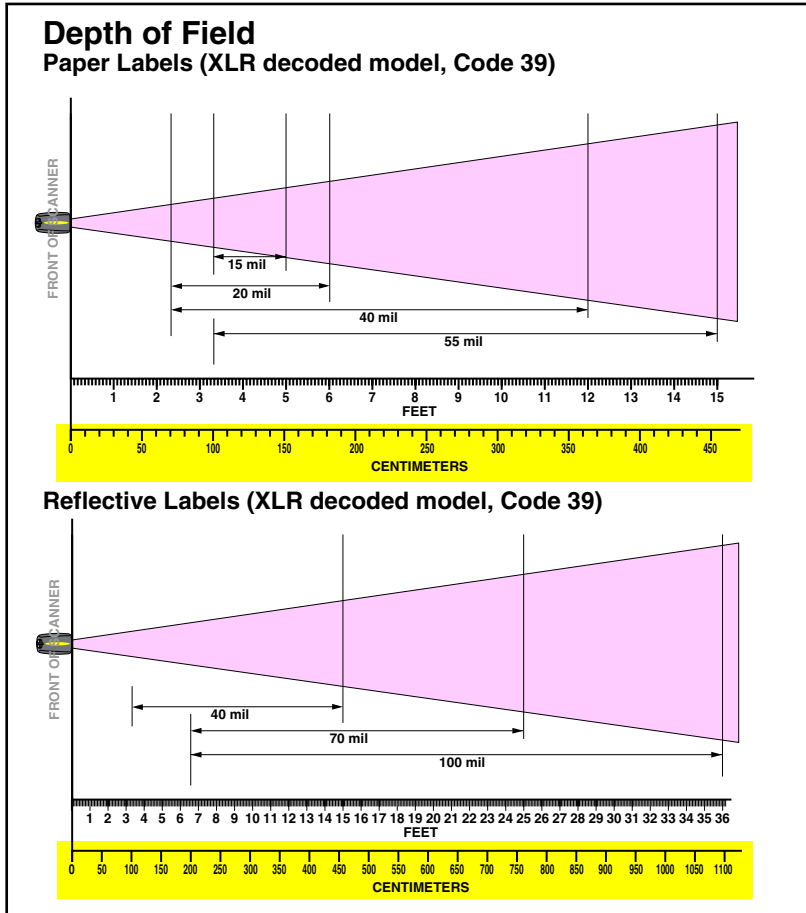


See the section titled, *Definition of a "mil"* for more information about reading this chart. Measurements are based on XLR models set with a 10° scan angle width.

**NOTE**


Specifications are subject to change without notice.

**Figure 10. Depth of Field (XLR)**



## LED and Beeper Indications






The Base Station LED indicators and the scanner's LEDs and beeper are used to announce system status and perform other useful signals. The tables below list the default function of each of the various indicators.




**NOTE**

Some LED and beeper indications can be disabled or modified via scanner programming. The tables indicate the default behavior of the indicators, with shaded rows representing features that are programmable.






**Table 1. Scanner GREEN LED Functions**





LED INDICATION	DURATION	COMMENT
Disable Indication	100ms on, 900 ms off 	Indicates the scanner has been disabled.
Good Read Indication	500 ms on 	Indicates a bar code has been read and decoded.
Program Mode Indication	500 ms on, 500 ms off Continuous flashing 	Indicates the scanner is in Programming Mode.
Field Replaceable Unit (FRU) Indications	Varies. Consists of a long flash followed by multiple short flashes. 	Enables service technicians to identify Field Replaceable Unit (FRU) errors.
Low Battery Indication	Two flashes at 100 ms on, 350 ms off. 	Occurs at trigger pull before the laser is enabled. Indicates the battery is in need of recharging.

**Table 2. Scanner YELLOW LED Functions**




LED INDICATION	DURATION	COMMENT
Laser on indication	On Steady 	The yellow LED illuminates whenever the laser is on.




**Table 3. Scanner BEEPER Functions**

SPEAKER INDICATION	DURATION	COMMENT
Scanner Not Currently Linked	Six beeps consisting of 20 ms on, 20 ms off 	Indicates a bar code was read before the scanner was linked to a Base Station.
Good Read Beep	100 ms on (short)   250 ms on (medium)  500 ms on (long) 	Three programmable functions are available. This indicates a bar code has been read and decoded.
Partial Read Bip	20 ms on 	A very short beep ("bip") is sounded when one bar code of a two-bar code pair has been successfully decoded.
Base Station Acknowledgment Beep	100 ms on (short)   250 ms on (medium)  500 ms on (long) 	Indicates a successful bar code transmission to the host (configurable), a successful change of channel, or a successful transmission of a new configuration to the host.

SPEAKER INDICATION	DURATION	COMMENT
Transmission Error Beep	High, then low, then high, then low. 	Indicates unsuccessful transmission to the host.
Link Beep	Low, then medium, then high. 	Indicates a scanner has been successfully linked to a base station.
Unlink Beep	High, then medium, then low. 	Indicates a scanner has been successfully unlinked from a base station.
Field Replaceable Unit (FRU) Indications	Varies. Consists of a long tone followed by multiple short tones. 	Enables service technicians to identify Field Replaceable Unit (FRU) errors.

**Table 4. Base Station LED Functions**

LED INDICATION	DURATION	COMMENT
TX/RX (Transmit/Receive)	Lit for variable time <sup>a</sup> 	Indicates communications activity to or from the Base Station.
	Continuous rapid flashing at power-up 	Indicates a broken radio.
	Varies. Consists of a long flash followed by multiple short flashes. 	Enables service technicians to identify Field Replaceable Unit (FRU) errors.

LED INDICATION	DURATION	COMMENT
Charge (Battery)	Continuous flashing 	When a scanner is nested in the station, this indicates its battery is being quick charged.
	Lit Constantly 	When a scanner is nested in the station, this indicates its battery is at or near full charge.
	Not Lit	A scanner is not present or incorrectly inserted into the station. It can also mean the battery is below 0°C (too cold for charge)
Power	Lit Constantly 	Indicates that power is on.

- a. The LED remains on while the unit is actively processing code which requires a TX/RX to occur. The duration of the LED is dependent upon the length of the message.

### Active Symbologies

The active (enabled) bar code symbologies in the standard factory defaults are:

- Code 39 (C39)
- Code 128 (C128)
- Interleaved 2 of 5 (I 2 of 5)

Your scanner should be pre-programmed with these standard factory default settings, unless...

...it was shipped to you programmed with unique, customer configuration settings.

...you or another user have made changes to scanner programming.

**Enhanced Scanning for Hard-to-Read Bar Codes**

Decoded scanners can be programmed to decode extremely poor quality bar codes by activating advanced Quadralogic II™ Decoding. To select this feature, see the Programming Guide.

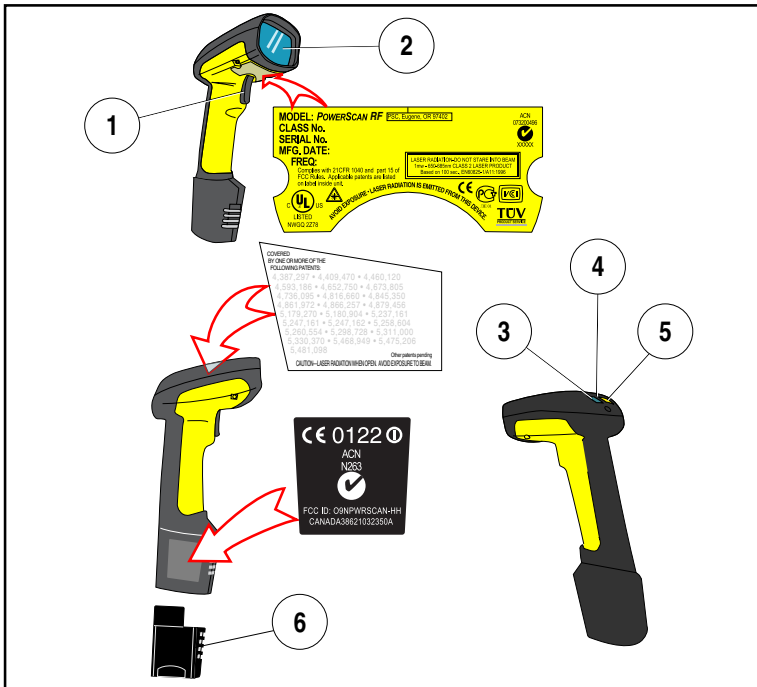
Scanner programming can also be performed using your PC and the Configurator Express™ On-Screen Programming Kit.



**NOTE**

Information about manuals, kits and programming software for this product are available at our web-site. See the back cover for our web address.

**Figure 11. Scanner Labeling and Nomenclature**



- |                |                |
|----------------|----------------|
| 1. Trigger     | 4. Tether Hook |
| 2. Scan Window | 5. Yellow LED  |
| 3. Green LED   | 6. Battery     |



#### NOTE

Figure 11 above shows label placement **ONLY**. For actual regulatory, patent and other applicable information, view the labels on the product itself, or call your nearest sales or service representative.

## Laser Cautions

The PowerScan RF bar code scanner is certified in the U.S. to conform to the requirements of *DHHS/CDRH 21CFR Subchapter J for Class II laser products (SR and LR) and Class IIIa (XLR)*. Class II and IIIa products are not considered to be hazardous. The scanner contains a Visible Laser Diode (VLD) at a wavelength of 650-670 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.



#### CAUTION

In the unlikely event that a bright laser spot is experienced rather than a scan line, do not stare into the beam or attempt to repair the unit. Discontinue operation and return the unit to your dealer. Note that when using Marker Beam Mode, a single aiming dot is projected momentarily preceding a scan line and is not considered a malfunction.



#### CAUTION

Do not 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. The optics system is a factory only repair item.



#### NOTE

The PowerScan® RF scanner is required to be used in conjunction with the PSC Base Station, Model: PowerScan RF Base Station.

---

---

## Radio Frequency Interference

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.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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 these 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:

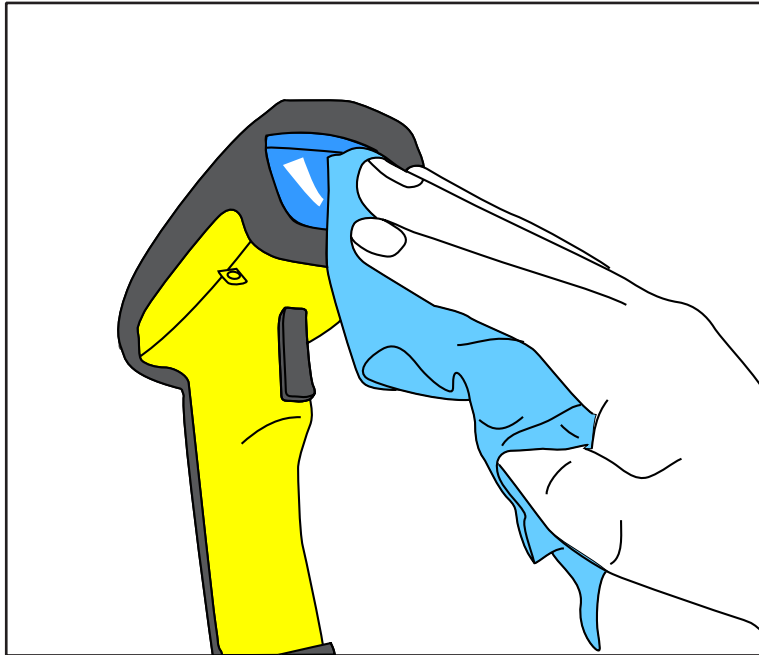
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

---

## Maintenance

The scan window will require occasional cleaning to remove smudges, dust and other debris. To ensure optimal performance, clean the Scan Window using a soft cloth or lens tissue dampened with isopropyl alcohol (or equivalent). See Figure 12. The scanner body can also be cleaned using this method.

**Figure 12. Cleaning the Scan Window**



---

---

## Troubleshooting

Troubleshoot your RF scanning system by performing the following checks:

For the RF system, ensure that...

- the battery is charged. See “Battery Charging and Maintenance” on page 8.
- the battery is properly installed. See “Installing the Battery” on page 2.
- the scanner is linked to the desired Base Station. See “Linking the Scanner to a Base Station” on page 5.
- the scanner is within reasonable operating range of the Base Station, with no major obstructions between the radio units such as thick walls or heavy machinery. (At the time of this writing, maximum line-of-sight range is specified at 150 feet.)
- there is no local signal interference with other radio-operated equipment. Consult the Systems Manual concerning selection of alternate channels.
- the Base Station is powered-on. You can verify the Base Station’s AC Adapter by using a known-good AC Adapter.
- the Base Station interface cable is securely attached to the host. Consult your technical support manager or refer to your host system manual to identify the proper cable connection for the scanner. If necessary, verify interface cable function by using a known-good interface cable.

If the problem is specific to scanning, verify that...

- the bar codes you are trying to scan are of satisfactory quality. Bar code label verifiers are available from your dealer if you need precise reporting of label details. Bar codes that are damaged (wrinkled, smudged, or torn) may cause the scanner to read poorly or not at all. If bar code quality seems to be the problem, check to see if the scanner will read a sample bar code from the following pages.
- the programmable setting for advanced *Quadralogic II™* decoding is set optimally for your system. (See “Enhanced Scanning for Hard-to-Read Bar Codes” on page 20.)

---

## Sample Bar Codes

Use these test bar codes to check the scanner's ability to read the various symbologies represented.

Code 128



Code 39



Interleaved 2 of 5



Standard 2 of 5



Codabar



Code 93



MSI/Plessey



14476925 4

UPC-A



0 00112 23344 0

UPC-A with 2 digit Add-on



0 60992 01118 7 4 9

UPC-A with 5 digit Add-on



0 08029 51041 8 6 9 0 0 0

UPC-E



0 998875 0

EAN-8



0021 0126

EAN-13



1 101234 567891

## DECLARATION OF CONFORMITY

PSC hereby declares that the Equipment specified below has been tested and found compliant to the following Directives and Standards:

**Directives:** EMC 89/336/EEC  
Low Voltage 73/23/EEC  
R & TTE 1999/5/EC

**Standards:** ETS 300 683:1997 ETS 300 220-3:2000  
EN60825-1:1996 EN60950:1997

**Equipment**

**Type:** Bar Code Scanning Equipment

**Product:** PowerScan® RF Bar Code Scanner



Brad West  
Vice President  
Quality and Process Management  
PSC, Inc.  
959 Terry Street  
Eugene, OR 97402  
U.S.A.



Peter Lomax  
Vice President  
Europe, Middle East & Africa  
PSC Bar Code Ltd.  
Axis 3, Rhodes Way  
Watford  
Hertfordshire WD24 4TR  
UK

**Asia Pacific**

PSC Hong Kong  
Hong Kong  
Telephone: [852]-2-584-6210  
Fax: [852]-2-521-0291

**Australia**

PSC Asia Pacific Pty Ltd.  
North Ryde, Australia  
Telephone: [61] 0 (2) 9878 8999  
Fax: [61] 0 (2) 9878 8688

**France**

PSC S.A.R.L.  
LES ULIS Cedex, France  
Telephone: [33].01.64.86.71.00  
Fax: [33].01.64 46.72.44

**Germany**

PSC GmbH  
Darmstadt, Germany  
Telephone: 49 (0) 61 51/93 58-0  
Fax: 49 (0) 61 51/93 58 58

**Italy**

PSC S.p.A.  
Vimercate (MI), Italy  
Telephone: [39] (0) 39/62903.1  
Fax: [39] (0) 39/6859496

**Japan**

PSC Japan K.K.  
Shinagawa-ku, Tokyo, Japan  
Telephone: 81 (0)3 3491 6761  
Fax: 81 (0)3 3491 6656

**Latin America**

PSC S.A., INC.  
Miami, Florida, USA  
Telephone: (305) 539-0111  
Fax: (305) 539-0206

**United Kingdom**

PSC Bar Code Ltd.  
Watford, England  
Telephone: 44 (0) 1923 809500  
Fax: 44 (0) 1923 809 505



***www.psc.com***

**PSC Inc.**

959 Terry Street  
Eugene, OR  
Telephone: (541) 683-5700  
Fax: (541) 345-7140

