

# LVS<sup>®</sup> 9510 Operating Instructions

English



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Throughout this manual, trademarked names might be used. We state herein that we are using the names to the benefit of the trademark owner, with no intention of infringement.

## GS1 Solution Partner

### Disclaimer

The information and specifications described in this manual are subject to change without notice.

### Latest Manual Version or Technical Support

For the latest version of this manual, or for technical support, see your local Omron website. Your local Omron website can be located by visiting <https://automation.omron.com> and selecting your region from the Global Network panel on the right side of the screen.

## Security Measures

### Anti-Virus Protection

Install the latest commercial-quality antivirus software on the computer connected to the control system and maintain to keep the software up to date.

### Security Measures to Prevent Unauthorized Access

Take the following measures to prevent unauthorized access to our products:

- Install physical controls so that only authorized personnel can access control systems and equipment.
- Reduce connections to control systems and equipment via networks to prevent access from untrusted devices.
- Install firewalls to shut down unused communications ports and limit communications hosts and isolate control systems and equipment from the IT network.
- Use a virtual private network (VPN) for remote access to control systems and equipment.
- Adopt multifactor authentication to devices with remote access to control systems and equipment.
- Set strong passwords and change them frequently.
- Scan for viruses to ensure safety of USB drives or other external storage devices before connecting them to control systems and equipment.

### Data Input and Output Protection

Validate backups and ranges to cope with unintentional modification of input/output data to control systems and equipment.

- Check the scope of data.
- Check validity of backups and prepare data for restore in case of falsification or abnormalities.
- Safety design, such as emergency shutdown and fail-soft operation in case of data tampering or abnormalities.

### Data Recovery

Back up and update data periodically to prepare for data loss.

When using an intranet environment through a global address, connecting to an unauthorized terminal such as a SCADA, HMI or to an unauthorized server may result in network security issues such as spoofing and tampering.

You must take sufficient measures such as restricting access to the terminal, using a terminal equipped with a secure function, and locking the installation area by yourself.

When constructing an intranet, communication failure may occur due to cable disconnection or the influence of unauthorized network equipment. Take adequate measures, such as restricting physical access to network devices, by such means as locking the installation area.

When using a device equipped with the SD Memory Card function, there is a security risk that a third party may acquire, alter, or replace the files and data in the removable media by removing or unmounting the removable media. Please take sufficient measures, such as restricting physical access to the controller or taking appropriate management measures for removable media, by means of locking the installation area, entrance management, etc.

### Software

To prevent computer viruses, install antivirus software on the computer where you use this software. Make sure to keep the antivirus software updated.

Keep your computer's OS updated to avoid security risks caused by a vulnerability in the OS.

Always use the latest version of this software to add new features, increase operability, and enhance security. Manage usernames and passwords for this software carefully to protect them from unauthorized uses.

Set up a firewall (e.g., disabling unused communication ports, limiting communication hosts, etc.) on a network for a control system and devices to separate them from other IT networks.

Make sure to connect to the control system inside the firewall.

Use a virtual private network (VPN) for remote access to a control system and devices from this software.

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## Important Information

- The LVS-9510 arrives site packaged in a specially designed shipping carton. DO NOT discard this shipping carton in case the system needs to be shipped or stored for any reason. Failure to use this carton when returning the product to Omron Microscan will void the warranty.
- This guide is intended to help the user understand the features and functionality of the LVS-9510. Be sure to reference the following additional resources:
- Refer to the "LVS-95XX Series Software Installation Guide" for steps on installing the LVS-95XX software. A hard copy version of the "LVS-95XX Series Software Installation Guide" is packaged with the system and an electronic version is located on the installation media.
- Refer to the "LVS-95XX Series Barcode Quality Station Operations Manual" for comprehensive steps on operating the LVS-95XX software. This manual is located on the installation media packaged with the system.
- For questions or concerns about the performance of the LVS-9510, please contact a local Omron Distributor or Omron Technical Support:

## Safety Instructions

The LVS-9510 has been carefully designed to provide years of safe, reliable performance. However, as with all electrical equipment, there are some basic precautions to avoid personal injury or damage to the system:

- Before using the system, carefully read all the installation and operating instructions.
- Observe all warning instruction labels on the system.
- Never insert anything into the openings of the system.
- Do not use the system near water or spill liquid into it.
- All components used to create the system are CE approved. All circuits were designed to incorporate maximum safety. However, any equipment using electrical voltages may cause personal injury if improperly handled.
- Do not attempt to work on the system with the USB cable connected.
- To avoid damaging the system, unplug the USB cable before cleaning.
- If the system ever needs repair, consult Omron Microscan or an Omron Microscan Distributor.

## Korean Radio Regulations (KC Mark)



R-REM-MKO-XX-XX

The LVS-9510 has been registered under Clause 3, Article 58-2 of the Radio Waves Act.

이 기기는 업무용(A급) 전자파적합기기로서 판

매자 또는 사용자는 이 점을 주의하시기 바라

며, 가정외의 지역에서 사용하는 것을 목적으로

## Statement of Compliance



Manufacturer: Omron Microscan Systems, Inc., 33930 Weyerhaeuser Way S, Suite 210, Federal Way, WA 98001, USA

Производитель: «Омрон Майкроскан Системс Инк., США, Федерал-Вэй, Вашингтон 98001, 33930 Weyerhaeuser Way S, Suite 210

Representative: Omron Electronics Limited Liability Company, 125040, Russian, Moscow, Ulitsa Pravdy, 26. OGRN 10677746976582

Представитель: Общество с ограниченной ответственностью "Омрон Электроникс", 125040, Российская Федерация, город Москва, улица Правды, дом 26, ОГРН 10677746976582

Date of Manufacture: The first two digits of the serial number are the two-digit year of manufacture, or the year of manufacture +20 for serial numbers starting with 3.

Дата изготовления: первые две цифры серийного номера являются двумя последними цифрами года изготовления + 20 для серийных номеров, начинающихся с 3.

## About the LVS-9510

The LVS-9510 is a barcode verifier designed for off-line verification of barcodes to ISO/IEC standards. The LVS-9510 is a 5.0 megapixel camera-based system that grades linear (1D) and two-dimensional (2D) codes up to 6.250 inches wide (158.75mm) and up to 4 inches tall (101mm) (including the quiet zone). See the “Quiet Zone” section below for more information on quiet zones.

The LVS-9510 verifies barcode labels located on a variety of surfaces including corrugated cardboard boxes, shipping containers, and on a static (non-moving) web. The LVS-9510 grades barcodes in either picket fence or ladder orientation.

Picket Fence Orientation



Ladder Orientation



The LVS-9510 is 21 CFR Part 11 Compliant-Ready.

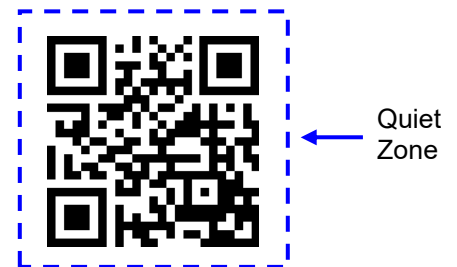
## Quiet Zone

The **quiet zone** is a clear space preceding the start character of a barcode symbol and follows the stop character. When reading/grading a barcode symbol, adequate space for the quiet zone must be allowed. The required quiet zone space for each barcode varies by symbology. An error message appears on the computer screen if not enough space has been allowed for the quiet zone.

1D Barcode Quiet Zone



2D Barcode Quiet Zone



## Hardware Overview

The LVS-9510 includes the following hardware components:



LVS-9510 shown with a label to be verified.

Top cover minimizes ambient light and flattens the barcode label.



Installation drive containing software installation files and user documentation.



## LVS-95XX Software Steps

Refer to the sections below for steps on:

- Logging in to LVS-95XX software
- Turning on the LVS-9510 camera
- Calibrating the LVS-9510

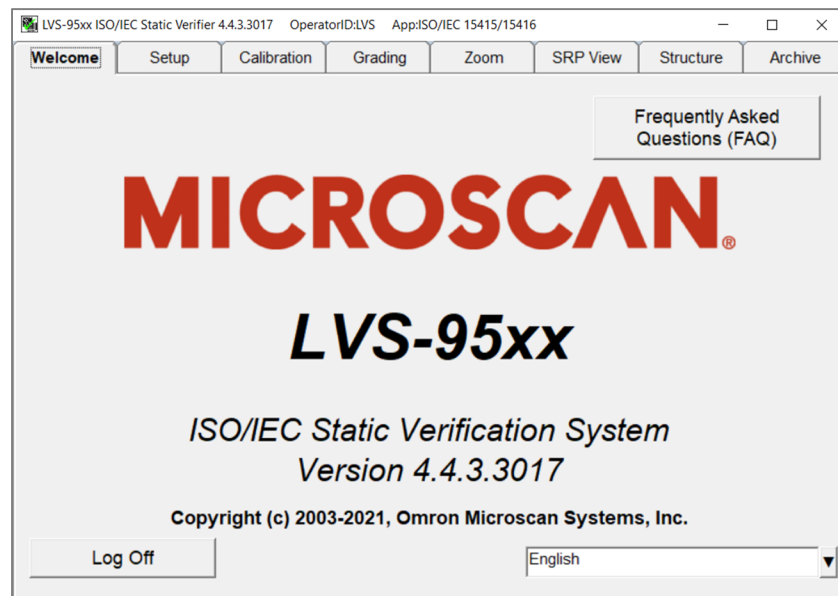
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**Note:** Refer to the “LVS-95XX Series Software Installation Guide” for step-by-step instructions on installing the LVS-95XX software; a hard copy version of this guide is packaged with the system and an electronic version is located on the installation media.

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## Log In to LVS-95XX Software

1. Start the LVS-95XX software. The “Welcome” screen appears (see below).



2. Click the "Setup" tab. The "Login" box appears.



3. Enter **admin** (not case sensitive) in the **Operator ID** field and in the **Password** field.
4. Click "OK." LVS-95XX Software will open.
5. Turn on the LVS-9510 camera by following the steps in the next section entitled "Turn on the LVS-9510 Camera."



## Turn On the LVS-9510 Camera

1. Click the "Setup" tab and select "9510" in the "Camera" section (see below).

The screenshot shows the 'Setup' tab of the LVS-9510 software interface. The 'Camera' section is highlighted with a blue box, and the 'Grading mode' section is also highlighted with a blue box. Annotations with blue arrows point to specific settings:

- LVS-9510 camera:** Points to the '9510' option in the 'Camera' list.
- Additional camera:** Points to the '#2 (5MP)' option in the 'Camera' list.
- Select the "Auto-Sector" option:** Points to the 'Auto-sector' option in the 'Grading mode' list.

The interface includes the following sections:

- Welcome:** Setup (selected), Calibration, Grading, Zoom, SRP View, Structure, Archive.
- Camera:** Off, 9510, #2 (5MP).
- Grading mode:** Automatic, Manual, Auto-sector.
- Application standards:** GS1 1D Report.doc, Table 1 - Trade Items Scanned in General Retail POS and not General Dis, Don't generate warning if Xdim or symbol height is outside GS1 limits. Includes a 'Configure available standards' button and an 'Override aperture' checkbox.
- Optional features:** List of options (choose one): Single sector verification (normal). Includes an 'Optional Features Activation' button.
- Change password:** A button at the bottom.
- Current information:** Local Time: 24-Feb-2017 08:35, GMT: 24-Feb-2017 16:35, Time Zone: GMT -8.
- System Settings:** Minimum passing score: 1.5, Days before password expires: n/a, Minutes before auto logoff: n/a, Days before calibration needed: n/a, Allow non-ISO blemish to affect grade, QRCode quiet zone >1X, Automatically start program, Lock language when decoding. Includes a 'Metric' dropdown (Off/On) and fields for 'Reference' and 'Additional reference'.
- Company name on reports:** Microscan Systems, Inc.
- Buttons:** Setup operators, Product lookup, Distributor information.

**Note:** When using only the LVS-9510 (with no other LVS-95XX barcode verifier, such as the LVS-9580), "9510" will be the only camera listed in the "Camera" section. When using the LVS-9580 with the LVS-9510 (5 MP), both cameras appear in the "Camera" section. Select "9510."

2. Select "Auto-Sector" in the "Grading Mode" section (see screenshot above). This allows the LVS-95XX software to locate a barcode within the field of view and automatically draw a sector around the barcode.
3. Next, calibrate the LVS-9510 (if using for the first time). See the next section for calibration steps.

## Calibrate the LVS-9510

### IMPORTANT:

The LVS-9510 should be calibrated regularly. The entire calibration process takes less than 30 seconds to complete and ensures the LVS-9510 is certified according to industry standards.

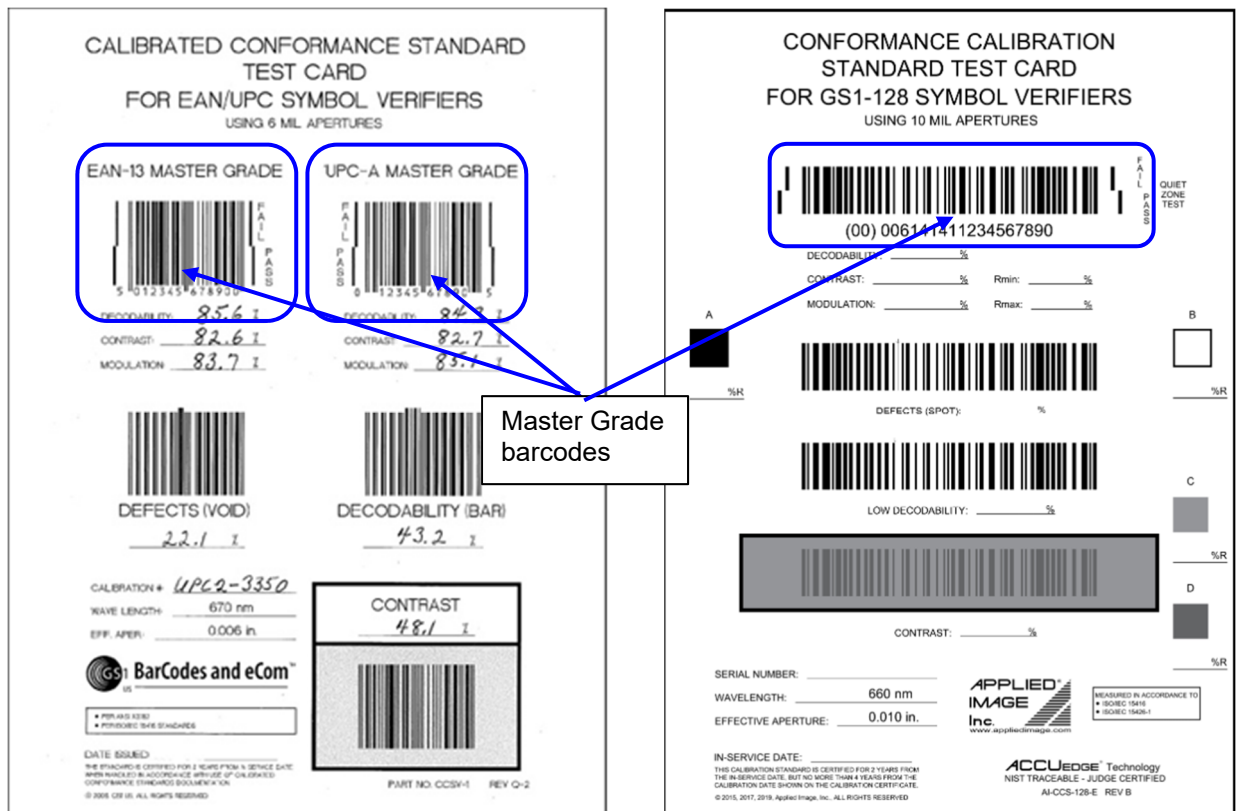
The Calibrated Conformance Standard Test Card should be replaced every two years.

It is recommended to clean the LVS-9510 window prior to calibration. See the "Cleaning Instructions" section for more information. It is recommended that the internal LED's be turned "on" for at least 5 minutes before beginning the calibration process.

There are two types of Calibration Test Cards used to calibrate a 9510. The 3.0 inch through 4.5 inch field of view products will use a EAN/UPC Calibration Test Card. The 6.25 inch field of view must use a "Conformance Calibration Standard Test Card for GS1-128 Symbol Verifiers."

1. To calibrate the LVS-9510, click the "Calibration" tab.

Locate the correct Calibrated Conformance Standard Test Card ("test card") that was packaged with the system and place this test card onto the LVS-9510 red window. Below are two Calibration Test Card examples. The EAN/UPC Test Card is to be used on the 3.0 inch, 4.0 inch, and 4.5 inch FOV systems. The GS1-128 Test Card is exclusively used for the 6.25 inch FOV system.



Place the test card face down. Place the top cover on top of the Calibration Card so as to block ambient light and hold the calibration card flat on the red window.

2. Place the test card face down on the LVS-9510 window. If necessary, hold the test card in place using the top cover to prevent movement of the card and minimize ambient light. See example of Master Grade barcodes above. It is important to note that not all of the card will fit onto the verifier window.

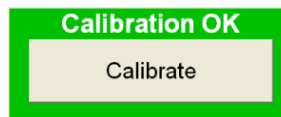
3. On the "Calibration" tab, make sure the blue line travels through the middle of the PASS portion of the barcode as shown below.

The blue line must pass through the "PASS" portion of the barcode.

Calibration label	
Mils	13
Effective aperture	06
Field of view	3"
	Goal Actual
Decodability	86.8 88
Contrast	81.5 81
Modulation	85.0 86
Rmax	87.0 88

**Calibration OK**  
Calibrate

4. Click the "Calibrate" button.
- Successful calibration is indicated by a green "Calibration OK" message.



- Failed calibration is indicated by a red "Calibration Needed" message.



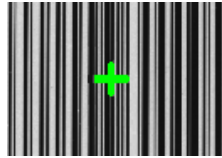
5. If calibration fails:
- Re-scan the Master Grade barcode and follow the above steps to calibrate. It may take two or three attempts before calibration is complete.
  - If calibration continues to fail, contact Omron Microscan or an Omron Microscan representative for further instructions.

**IMPORTANT:** The calibration score will hardly ever match exactly; this is normal and acceptable as long as the scores are within +/- 3 percentage points.

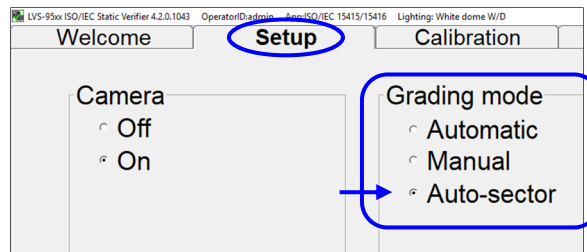
6. When calibration is complete, click the "Grading" tab to grade barcodes. See the next section for steps on grading barcodes.

## Grading Barcodes

1. Click the "Grading" tab.
2. Place the test card over the LVS-9510 window ensuring the card rests on the window.
3. The barcode image appears on the customer-supplied computer screen with a green plus symbol (+) located on the barcode image.



**Note:** If the green plus symbol (+) is not appearing on the barcode image, click the "Setup" tab and make sure "Auto-sector" is selected in the "Grading mode" section (see below).



4. Slowly move the test card as needed to place the green plus symbol over the center of the barcode image.

**Tip:** Positioning the green plus symbol over the center of the barcode image may take a few moments when first learning to use the LVS-9510. Position the center of the barcode image as close as possible to the center of the LVS-9510 window. Please note that when moving the barcode image, the camera reads in a mirrored view. For example, when the barcode image is moved to the right, the image moves left. If the barcode image is moved up, the image moves down.

5. The LVS-95XX software analyzes the barcode and reports a grade score between 4.0 (A grade) and 0.0 (F grade) on the "Grading" tab.

4.0/06/660

0.0/06/660

Refer to the "Grading Tab" section in the "LVS-95XX Series Barcode Quality Station Operations Manual" for more information on grading barcodes; this manual is located on the installation media packaged with the system.

## Cleaning Instructions

The LVS-9510 window may need to be cleaned daily, depending on use. Debris on the window may cause the LVS-9510 to not grade accurately.

Locate the following supplies:

- Commercially available household glass cleaner, such as Windex®, Glassex®, or Mr. Muscle®.  
**Do not use an industrial-strength glass cleaner.**
- Soft, lint-free, non-abrasive towel or cloth

Dampen the cloth with the household glass cleaner and gently wipe the window. Inspect the window closely, looking for any label debris that may be stuck on the window. Do not scrape the window with a sharp object as this may damage the window. Any damage to the window will be detected during the calibration process.

### **IMPORTANT:**

DO NOT directly spray the window with glass cleaner; always spray a towel or cloth with household glass cleaner and then gently wipe the window.

DO NOT use an industrial-strength glass cleaner.

For cleanroom environments, IPA (Isopropyl alcohol) up to 70% may be used to clean the outside of the window.

Do not clean the inside of the window due to special coating requirements.

Please contact an Omron Distributor or Omron Technical Support with questions or concerns about the performance of the LVS-9510.

# LVS-9510 Hardware Specifications

**NOTICE: LVS-9500 was discontinued in 2013 and is no longer available. We recommend LVS-9510 as a replacement solution.**

## Physical Properties

Height	10.5"	266.7 mm
Width	11.125"	282 mm
Depth	9.062"	230 mm
Viewing Window	5" x 7"	127 mm x 177.79 mm
Weight	<ul style="list-style-type: none"> <li>Unpackaged weight (standalone LVS-9510 unit) = 6 pounds (2.72 kg)</li> <li>Shipping weight (includes all items packaged in shipping box, such as power supply, cables, manuals, etc.) = 13 pounds (5.89 kg)</li> </ul>	



## Video Camera

- Monochrome. 5.0 megapixel

## Minimum PC Requirements (PC Supplied by User)

- Windows® 10<sup>1</sup>
- Intel® Core™ 2 Duo Processor (or equivalent)
- 2 GB RAM
- One available USB 2.0 port (additional ports required for each Auxiliary Readhead in use)
- The user-supplied computer connecting to the 5.0 MP Auxiliary Readhead must be running LVS-95XX software version 3.0.8 or higher.

## Top Cover

- 5.5" x 7.5" (139.7 mm x 190.5 mm)
- Weight = 5.5 oz (162.65 grams)

## Light Source

- White Light
- Red (660 nm) filter. Optional clear window available for purchase.
- LED Safety: EN IEC 62368-1 (Risk Group 2)

## Inputs / Outputs

- USB 2.0 port
- Power Supply 12 vdc @ 2.5 amps (minimum)

## Operating Temperature

- 10° C (50° F) to 30° C (86° F)

## Storage Temperature

- 0° C (32° F) to 40° C (104° F)

## Relative Humidity

- Operating: 20% to 80% (non-condensing)
- Storage: 20% to 95% (non-condensing)

## Calibration

One of the following:

- EAN/UPC Calibrated Conformance Test Card
- GS1-128 Calibrated Conformance Test Card

*Specifications and images subject to change.*

<sup>1</sup> The LVS-95XX software is currently supported on Windows 10 Professional and Windows 10 Enterprise operating systems. When this documentation refers to Windows 10, it is meant to refer to either of these two editions Windows 10 and excludes all other editions.

## Supported Symbolologies and Standards

### Supported Symbolologies

Symbology	Supported Symbology and Application Standards
Aztec	ISO/IEC 24778
Codabar	AIM BC3
Code 39	ISO/IEC 16388
Code 93	AIM BC5
Code-128	ISO/IEC 15417, ISO/IEC 15434
Data Matrix	ISO/IEC 16022; ISO/IEC 29158, ISO/IEC 15434, ISO/IEC 21471:2000, MIL-STD-130N1, MIL-STD-130N1 + UII, HIBC
Data Matrix Rectangular Extensions	ISO/IEC 21741
EAN-13	ISO/IEC 15420 & GS1 General Specifications
EAN-13 with 2- and 5-Digit Supplemental	ISO/IEC 15420 & GS1 General Specifications
EAN-13 with CC-A and CC-B	ISO/IEC 15420, ISO/IEC 24723 & GS1 General Specifications
EAN-8	ISO/IEC 15420 & GS1 General Specifications
EAN-8 with CC-A and CC-B	ISO/IEC 15420, ISO/IEC 24723 & GS1 General Specifications
GS1 Data Matrix	ISO/IEC 16022 and GS1 General Specifications
GS1 Databar	ISO/IEC 24724 & GS1 General Specifications
GS1 Databar Stacked	ISO/IEC 24724 & GS1 General Specifications
GS1 Databar Stacked with CC-A and CC-B	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1 Databar with CC-A and CC-B	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1 Databar Expanded	ISO/IEC 24724 & GS1 General Specifications
GS1 Databar Expanded CC-A and CC-B	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1 Databar Expanded Stacked	ISO/IEC 24724 & GS1 General Specifications
GS1 Databar Expanded Stacked with CC-A and CC-B	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1 Databar Limited	ISO/IEC 24724 & GS1 General Specifications
GS1 Databar Limited with CC-A and CC-B	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1 Databar Omnidirectional	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1 Databar Stacked Omnidirectional	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1 Databar Truncated	ISO/IEC 24724, ISO/IEC 24723 & GS1 General Specifications
GS1-128	ISO/IEC 15417 & GS1 General Specifications



<b>Symbology</b>	<b>Supported Symbology and Application Standards</b>
GS1 Digital Link URI	ISO/IEC 16022, ISO/IEC 18004 & GS1 Digital Link Standard
GS1-128 with CC-A, CC-B, and CC-C	ISO/IEC 15417, ISO/IEC 24723 & GS1 General Specifications
GS1 QR Code	ISO/IEC 18004 & GS1 General Specifications
Han Xin	Draft AIM Specification
Interleaved 2 of 5	ISO/IEC 16390
ITF-14	ISO/IEC 16390 & GS1 General Specifications
Laetus Pharmacode	Laetus
MaxiCode	ISO/IEC 16023
Micro QR Code 2005	ISO/IEC 18004; ISO/IEC 29158, MIL-STD-130N1, MIL-STD-130N1 + UII
MicroPDF417	ISO/IEC 24728
PDF417	ISO/IEC 15438
PPN (Pharmacy Product Number)	IFA Coding System / PPN-Code Specification
QR Code 2005	ISO/IEC 18004; ISO/IEC 29158, ISO/IEC 15434, MIL-STD-130N1, MIL-STD-130N1 + UII, HIBC
UPC-A	ISO/IEC 15420 & GS1 General Specifications
UPC-A with 2- and 5-Digit Supplemental	ISO/IEC 15420 & GS1 General Specifications
UPC-A with CC-A and CC-B	ISO/IEC 15420, ISO/IEC 24723 & GS1 General Specifications
UPC-E	ISO/IEC 15420 & GS1 General Specifications
UPC-E with 2- and 5-Digit Supplemental	ISO/IEC 15420 & GS1 General Specifications
UPC-E with CC-A and CC-B	ISO/IEC 15420, ISO/IEC 24723 & GS1 General Specifications
USPS-128	USPS Barcode Standards
USPS Intelligent Mail Barcodes and USPS Mailmark	USPS Barcode Standards

#### Additional Notes

- GS1 General Specifications can be obtained by contacting your local GS1 office.
  - ISO/IEC Symbology Standards can be obtained from this link: <https://www.iso.org/standards.html>.
  - AIM Symbology Standards can be obtained from this link: <https://www.aimglobal.org/aim-standards.html>.
- In addition to adherence to the symbology specifications, LVS-95XX systems comply with the following standards:
- ISO/IEC 15415 - Barcode print quality test specification - Two-dimensional symbols
  - ISO/IEC 15416 - Barcode print quality test specification - Linear symbols
  - ISO/IEC 15426-1 - Barcode verifier conformance specifications - Part 1: Linear symbols
  - ISO/IEC 15426-2 - Barcode verifier conformance specification - Part 2: Two-dimensional symbols

## Application Standards

An Application standard is a specific protocol established by a group or industry, such as the military, hospitals, FDA, etc. Currently, the LVS-95XX Series supports the following Application standards:

- *AIAG / JAMA / JAPIA / ODETTE*
- *ALDI*
- *Chinese Sensible (Han Xin) Code*
- *DHL*
- *DPM (ISO/IEC 29158)*
- *DPM + HIBC*
- *DPM + MIL-STD-130N1*
- *DPM + MIL-STD-130N1 + UII*
- *FPMAJ*
- *French CIP*
- *GS1 1D Report.doc<sup>2</sup>*
- *GS1 2D Report.doc<sup>1</sup>*
- *GS1 General Specifications*
- *GS1 NTIN*
- *HDMA Guidelines*
- *HIBC*
- *IFAH*
- *ISO/IEC 15415 and ISO/IEC 15416*
- *ISO/IEC 15415/15416 with ISO/IEC 15434 Data Syntax*
- *Italian Pharmacode*
- *Japanese Codabar*
- *Laetus Pharmacode*
- *MIL-STD-130N1*
- *MIL-STD-130N1 + UII*
- *Miniature Pharmacode*
- *Postal (IMB, Japan Post, Mailmark, PostNet)*
- *Postmatrix Code (PMC) with size checking*
- *Postmatrix Code (PMC) without size checking*
- *PPN Code*
- *PZN (German Pharmacode)*
- *USPS Code 128*

**Note:** The LVS-9510 does not support direct part mark (DPM) applications.

<sup>2</sup> *GS1 1D Report.doc and GS1 2D Report.doc are the default custom reports. You can create your own custom report(s) by following the steps outlined in Appendix G: Special Features (refer to the section entitled "Custom Reports").*