Master Specification	
Wireless Barcode Scanner	
Product Name	OPL-2724
Specification No.	SS08057
Edition	Initial
Date of Publication	
Original Spec. No.	SS08045

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Revision History

Specification Number: SS08057
Product Name: OPL-2724

Revision	Date	Section	Description of Changes
Initial	2008/	-	

Table of Contents

1. Abstract

This manual provides specifications for the OPL-2724 wireless barcode scanner.
This scanner is a laser barcode scanner which is able to detect black or colored barcodes on the white or colored back ground.

2. Overview

- OPL-2724 is a wireless barcode scanner.
- The use of a short-wavelength red laser beam enhances visibility when scanning lines.
- To scan a barcode, press the trigger switch without the optical window of this scanner touching the objective barcode.
- Supported symbologies are: WPC (EAN, JAN, UPC-A / UPC-E), industrial 2of5, IATA, interleaved 2of5, NW-7 (Codabar), Code-39, Code-93, Code-128, EAN-128 and MSI Plessey.
- Code options, read options and communication settings can be configured by sending commands.
- Scanned data is transferred to the designated device via wireless communication (Bluetooth V2.0).
- If the OPL-2724 is disconnected because it is out of range or the Bluetooth device is not available, scanned data will be saved in the built-in memory of the scanner.
- OPL-2724 uses 2 size AAA alkali batteries for its power supply.
- This product is compliant with RoHS.

3. Physical Features

3-1. Dimensions

96 x 40 x 22 (in millimeters)

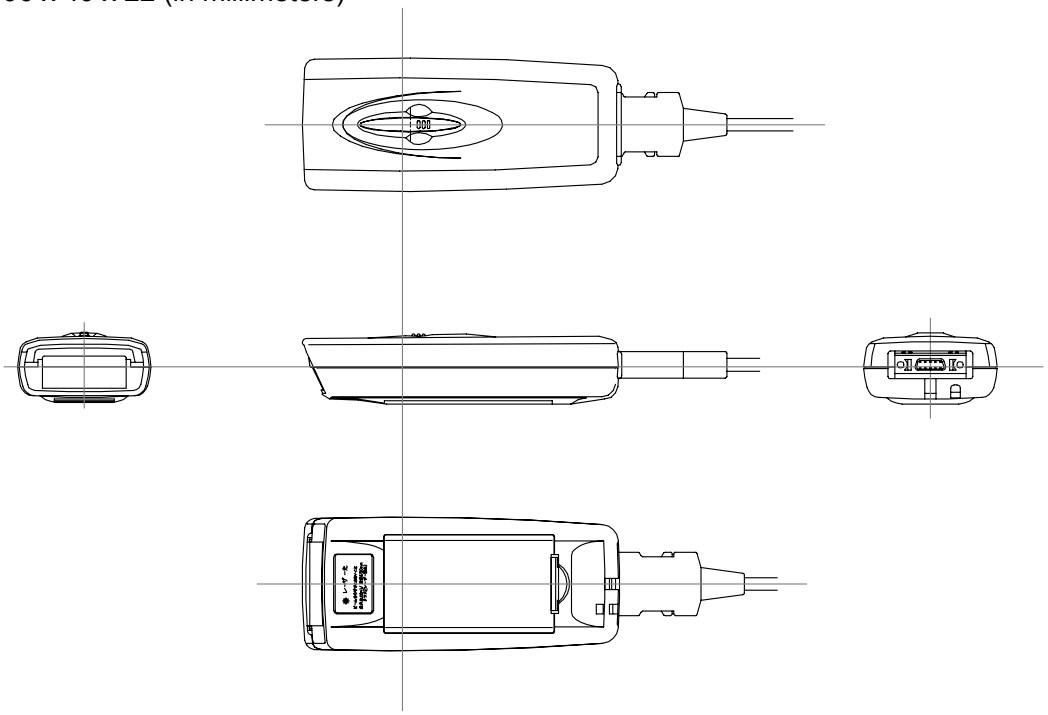


Figure 1: Physical Features

3-2. Weight

50 g Max. (excluding the weight of battery)

4. Detailed View

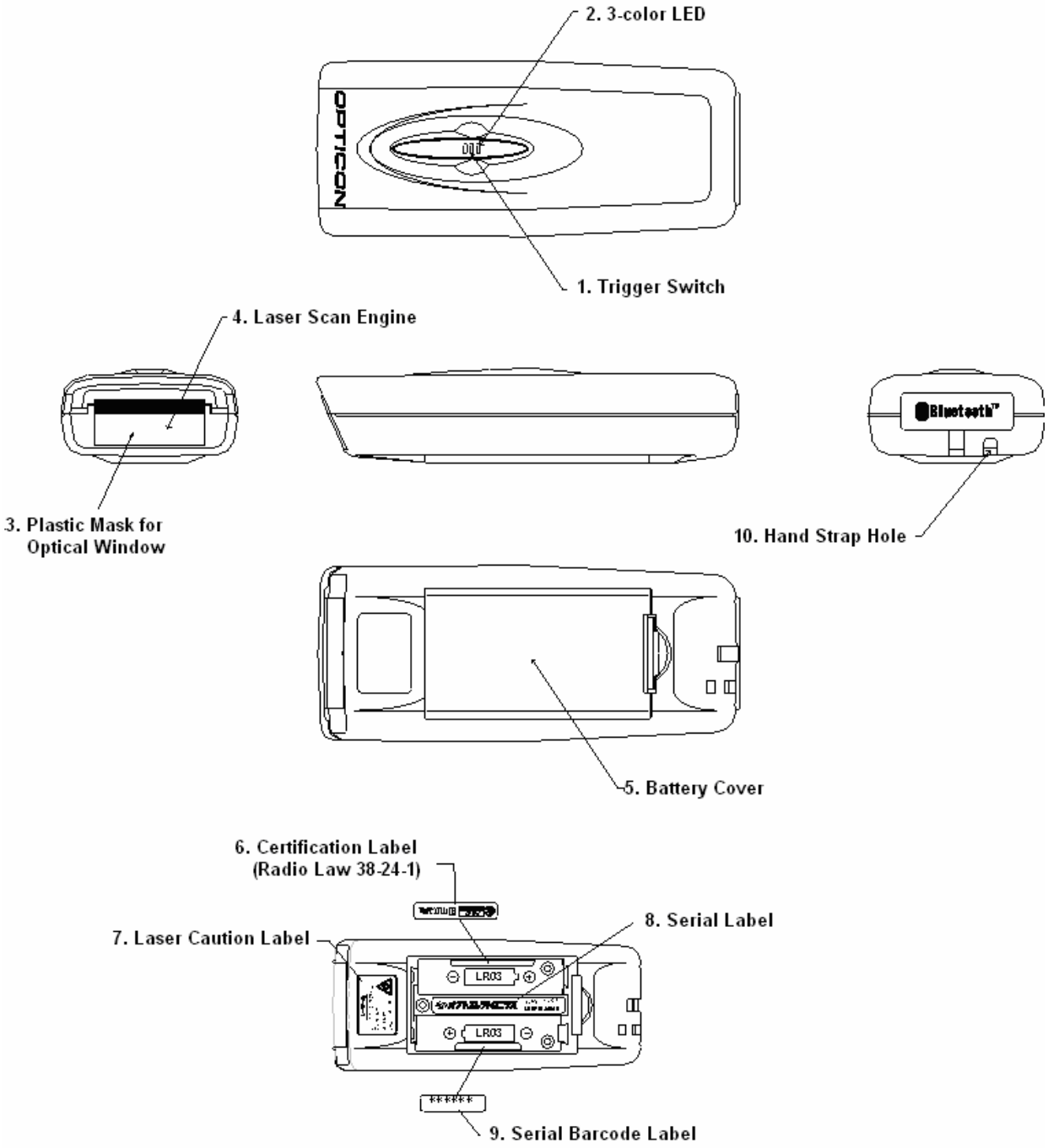


Figure 2: Detailed View

Name	Function
1. Trigger Switch	To scan barcodes and to enable or disable Bluetooth communication.
2. 3-color LED (Red, Green, Blue)	To notify the status of barcode scanning, Bluetooth communication, and warnings so on.
3. Plastic Mask for Optical Window	Optical window for laser barcode scanning.
4. Laser Scan Engine	Laser scan engine to scan barcodes.
5. Battery Cover	To protect batteries.
6. Certification Label	Label to notify the acquisition of Radio Law 38-24-1 certification.
7. Laser Caution Label	To warn about the laser beam.
8. Serial Label	Label to notify the model name and other product information.
9. Serial Barcode Label	Label to notify the serial number of the product.
10. Hand Strap Hole	To attach the hand strap to the scanner.

5. Basic Specifications

Item	Specifications		Notes
Control section	CPU	16-bit CISC CPU	
	Clock frequency	14.74 M Hz	
External memory	FROM	256 KB	For BIOS/AP
	SRAM	32 KB	For WORK/DATA
Display section	LED	3-color LED (red, green, blue)	
	Function	Notifies the status of barcode scanning, battery power remained, Bluetooth communication.	
Buzzer	Loudness	70 dBA or higher (when the scanner is set to “Loud”)	Buzzer noise was estimated at a point 10 cm behind the scanner.
Operation keys	Operation keys	1 key (trigger key / enable or disable Bluetooth communication)	
	Key durability	500,000 times	
Scanning section	Laser wavelength	650 ± 10 nm / under 1 mW	IEC68025-1 Class 2
	Scan rate	100scan/sec	
	Resolution	0.127 mm or higher	
	PCS	0.45 or higher	
	Depth of field	70 to 185 mm	Resolution: 1.0 mm PCS: 0.9 or higher
	Ambient light immunity	50,000lx	
	Supported symbologies	WPC(UPC,EAN,JAN),NW-7,Code-39, industrial 2of5, interleaved 2of5, Code-93,Code-128 etc and EAN-128	
Power Supply Section	Main battery	LR-03 (two size AAA alkali batteries)	
	Battery life 1	48 hours	When scanning twice in every 10 seconds with Bluetooth ON all time.
	Battery life 2 (*)	30 days or longer	Under conditions below.
	Current consumption	1.5 mA or less	In stand-by state
		125 mA or less	In operating state
	Data retention time	48 hours Lithium secondary battery (3.4 mAh)	After the discharge of main batteries.
Wireless Comm. Section	Frequency	2400 MHz to 2483.5 MHz	
	Specifications	Bluetooth Ver2.0 compliant	With SPP
	Transmission power	Class 2 compliant (Under 4 dBm)	
	Comm. range	10 m	Communication range may differ due to the environments.
	Baud rate	115.2 kbps	
	Antenna	1/4λ (surface mounted)	
Environmental Conditions	Operating temperature	-5 to 50 deg. C	
	Storage temperature	-10 to 60 deg. C	
	Operating humidity	30 to 80 %	No condensation
	Storage humidity	20 to 90 %	No condensation
	Water resistant	IP-X2	
	Shock	1.5 m onto a concrete floor. (Dropped once on each of 6 sides).	No defects found.
	Anti-static	Air discharge: ± 10 kV	No malfunctions found.
		Air discharge: ± 15 kV	No destruction found.
		Indirect discharge:± 10 kV	No malfunctions found.
Regulations	Others	Radio Law 38-24-1 certification Bluetooth logo certification	

* When scanning 100 times a day. (Connect Bluetooth only when transmitting data.)

6. Electrical Specifications

Item	Specifications	Unit
Light source	Red laser diode	—
Emission wavelength	650 ± 10 (at 25 deg. C） JIS C 6802 Class 1	nm
Light output	< 1.0 (IEC60825-1 Class 2)	mW
Scan method	Bi-directional scanning	—
Scan rate	100 ± 20	scans / sec
Scan angle	54 ± 5	Deg.
Scan angle	44°	Deg.
Resolution	0.127 or higher	mm

7. Technical Specifications

The conditions for technical specifications are as follows, unless otherwise specified in each section.

Item	Conditions
Ambient temperature and humidity	Room temperature and humidity
Ambient light	500 to 900 lx
Background	Black
Scan angle	54° (scan range: 44°)
Light detecting angle	40°
PCS (Note*)	0.45 or higher (over 70% of reflectivity of space and quiet zones.)
Barcode sample	OPTOELECTRONICS test sample (9-digit Code-39) Resolution: 0.25 mm
Distance	90 mm from the optical window
Angle	α = 0°, β = 15°, γ = 0°
Curvature	R = ∞

$$PCS=\frac{\text{Reflectance of white bar}-\text{Reflectance of black bar}}{\text{Reflectance of white bar}}$$

Scanning performance may decline if dirt or scratches mar the optical window. Keep the optical window clean.

7-1. Scan Area and Resolution

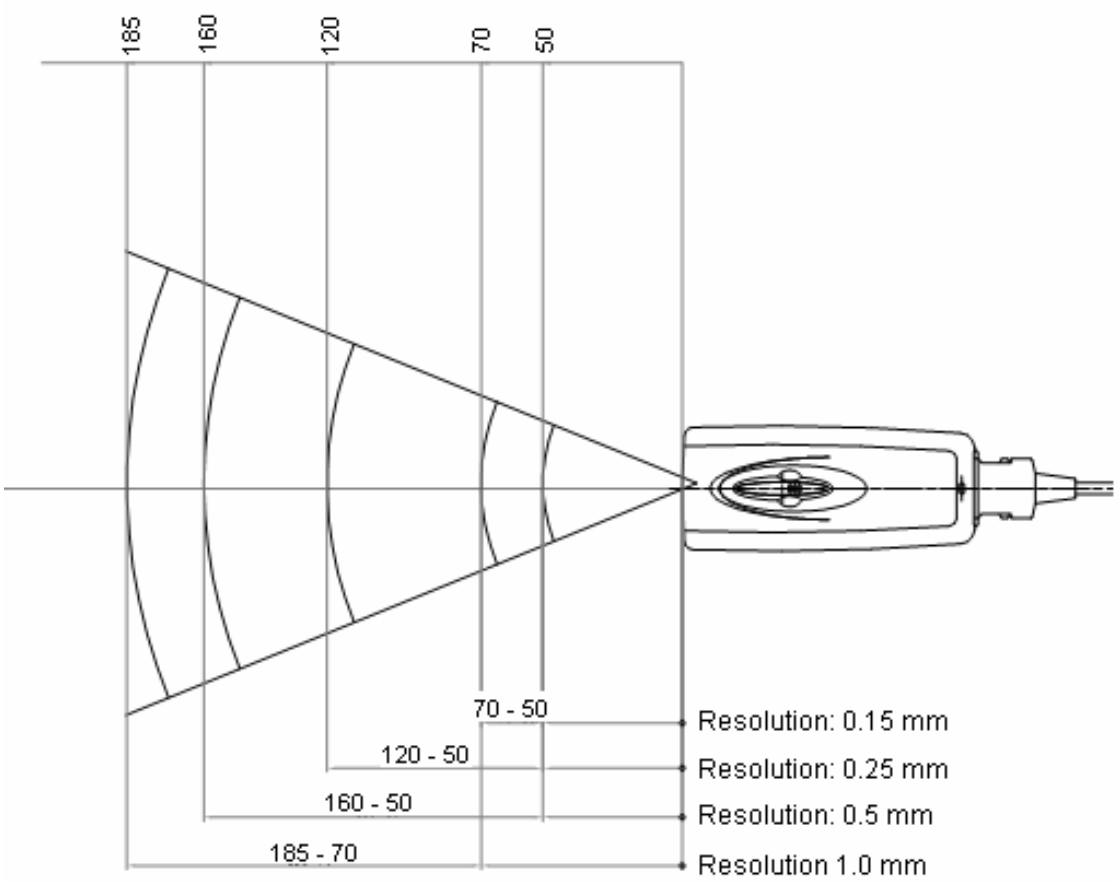


Figure 3: Depth of field in millimeters.

PCS	Resolution (mm)	Space	Depth of Field (mm)
0.9	1.0	25 mm	70 to 185
	0.5	18 mm	50 to 160
	0.25	10 mm	50 to 120
	0.15	7 mm	50 to 70

Details:
The depth of field is measured from the optical window of the scanner.
The scan area is a circular area centered on the beam, which appears at various resolutions.

Conditions:

Resolution	Symbology	No of Digit	Barcode Sample
1.0 mm	Code-39	1	OPTOELECTRONICS test sample, PCS = 0.9
0.5 mm	Code-39	3	OPTOELECTRONICS test sample, PCS = 0.9
0.25 mm	Code-39	8	OPTOELECTRONICS test sample, PCS = 0.9
0.15 mm	Code-39	10	OPTOELECTRONICS test sample, PCS = 0.9

7-2. Pitch Angle

Pitch angle: α = ± 25°

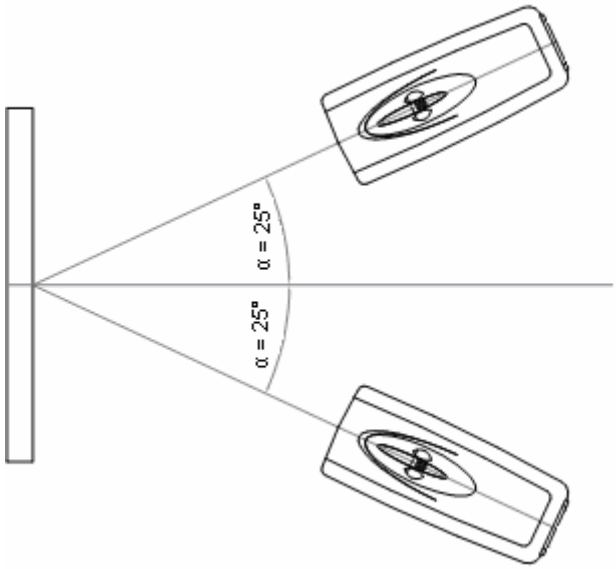


Figure 4: Pitch angle

7-3. Skew Angle

Skew angle: β = ± 50° (excluding dead zone)

7-4. Dead Zone

Dead zone: β = ± 8°
(There are some areas in which scanning may fail due to specular reflection.)

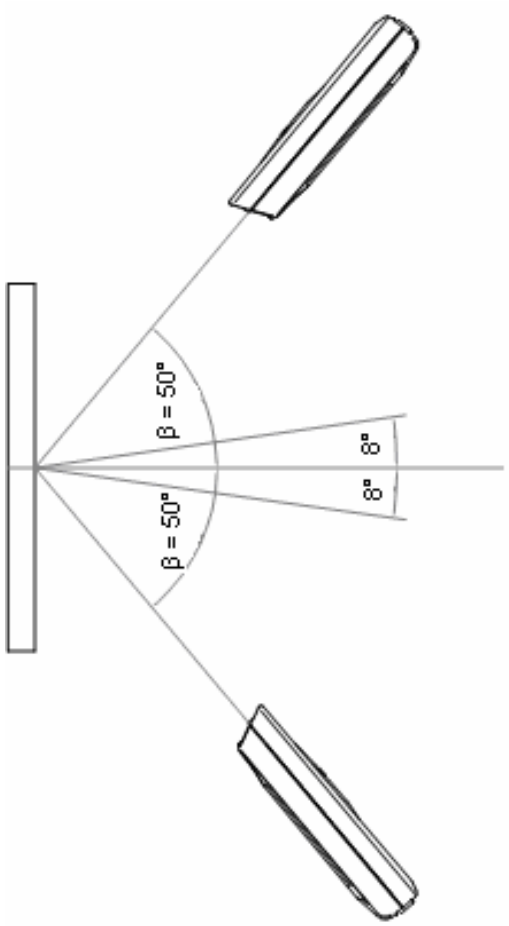


Figure 5: Skew angle and dead zone

7-5. Tilt Angle

γ = ± 20°

<Conditions>
Barcode Sample:OPTOELECTRONICS test sample
PCS: 0.9
Resolution: 0.26 mm
Symbologies: 13-digit JAN
(96 mm from the optical window of the scanner.)

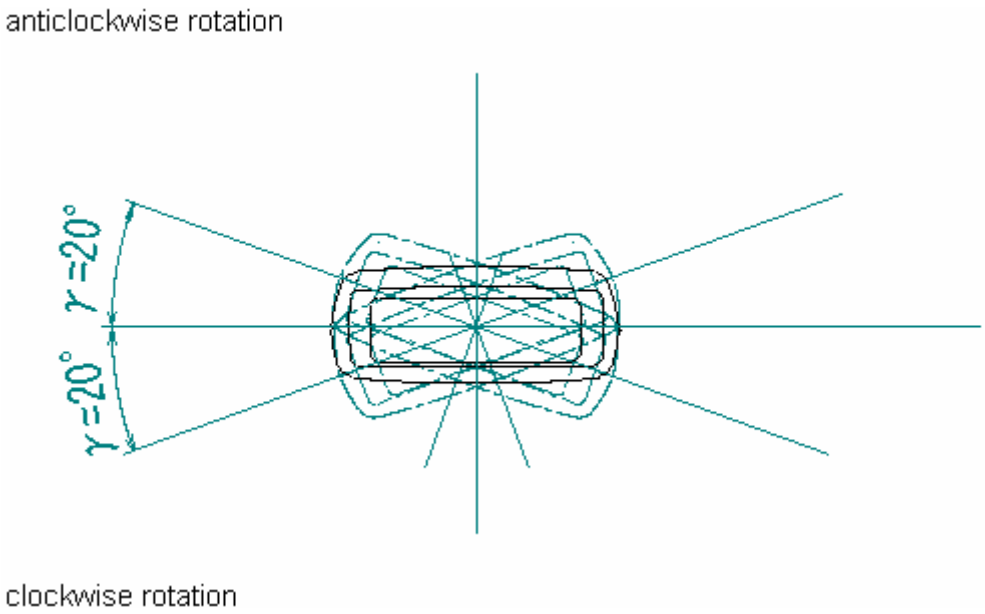


Figure 6: Tilt angle

7-6. Curvature

With 8-digit JAN barcodes, decoding performance is guaranteed when R≧15mm.
With 13-digit JAN barcodes, decoding performance is guaranteed when R≧20mm.
(96 mm from the optical window of the scanner.)

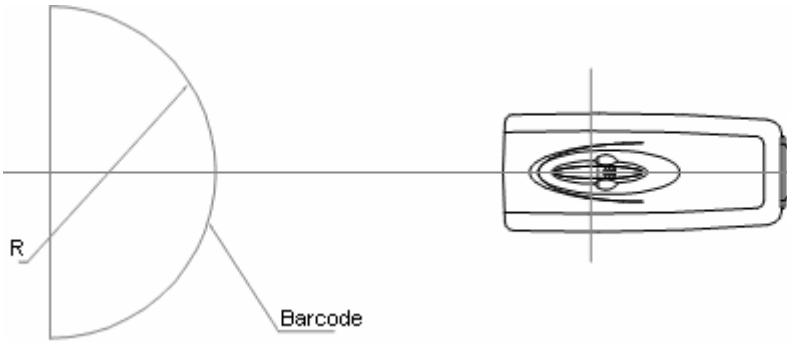


Figure 7: Curvature

<Conditions>
Barcode Sample:OPTOELECTRONICS test sample
PCS: 0.9
Resolution: 0.26 mm

7-7. Scan Width

Scannable barcode width differs depending on the depth of field.

7-8. Ambient Light Immunity

Scanning performance is guaranteed when the range of illumination on a barcode surface is between zero and the following values:

Incandescent Light: to 3,000 lx.
Fluorescent Light: to 3,000 lx.
Sunlight: to 50,000 lx

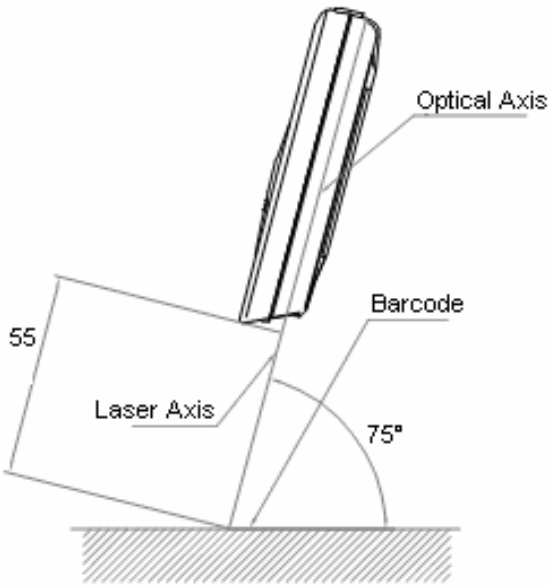


Figure 8: Ambient Light Immunity

<Conditions>
In the state shown in the figure above, carried out scanning test under the conditions below:
PCS: 0.9
Resolution: 0.25 mm
Symbology: 8-digit Code-39
Quiet zone: 10 mm
N/W ratio: 1:2.5
(Do not cause specular reflection of the light source.)

7-6. Supported Symbologies

- WPC (UPC, EAN, JAN)
- NW-7 (CODABAR)
- Industrial 2of5, Interleaved 2of5
- Code-39
- Code-93
- Code-128
- EAN-128
- MSI / Plessey

Scan rate	100 scans and 100 decodes per second Ambient temperature and humidity: Room temperature and humidity Ambient light: 500 to 900 lx

8. Interface Specifications

8-1. Wireless Specifications

OPL-2724 is a Bluetooth ver2.0 + EDR compliant device supporting SPP (serial port profile).
OPL-2724 uses Bluetooth as the wireless interface.
Therefore, the device which communicates with the OPL-2724 must support the same SPP.

Supported protocol stack
RF (Radio Frequency Protocol)
BB (Base Band Protocol)
LM (Link Manager Protocol)
L2CAP (Logical Link Control and Adaptation Protocol)
SDP (Service Discovery Protocol)
RFCOMM (serial port emulation)

-Supported profile
GAP (Generic Access Profile)
SPP (Serial Port Profile)

-Communication configuration
1 OPL-2724 to 1 Host System (Do not connect multiple scanners to one host system.)

-Operation mode of the scanner while connected to the host system
Master / Slave mode

-Security mode
Authentication enabled: These settings can be configured using menu barcodes.

-Encryption
Encryption enabled: These settings can be configured using menu barcodes.

*Encryption will be disabled if the device which communicates with the OPL-2724 does not support the encryption features.

-Communication range
Approximately 10 meters

*Communication range may differ due to the environments.

8-2. Configuration of Settings by Reading Menu Barcode Labels

Communication parameter settings of OPL-2724 can be configured by scanning menu barcodes.
(Refer to the instruction manual for further information of menu barcodes)

9. Operation Specifications

9-1. Buzzer and LED Display

OPL-2724 notifies its operation state with LED and buzzer on its head section.

Overview

Status	***Color***	***Light***	***Details of the Status***	***Buzzer***
Scanning	Green	Lighting	Shows that scanning of the barcode or transmission of scanned has been done successfully.	*Trrr*
	Orange	Lighting	Shows that scanned data is stored in memory while the scanner is disconnected.	*Trrrrrrrrrr*
	Red	Lighting	Shows that the scanned data was not successfully transmitted.	*Pip, Pip, Pip*
Bluetooth connect	Blue	Blinking	Shows that the scanner is making connection to Bluetooth.	---
	Blue	Blinking	Shows that Bluetooth connection was made successfully. (*1)	*Trrr, Trrr*
	Red	Lighting	Shows that Bluetooth connection was not made successfully.	―
Bluetooth disconnect	Red	Lighting	Shows that Bluetooth was disconnected.	*Pip, Pip, Pip*
	Red	Lighting	Shows that the Bluetooth device is out of range or not available.	*Trrrrrrrrrr*
Trigger Key operation	Red	Lighting	Notifies that the batteries are running low every time the user presses trigger key. (*2) It is possible to scan barcodes.	*Pip, Pip, Pip*
	Red	Lighting	Notifies that the batteries are running low every time the user presses trigger key. (*3) It is not possible to scan barcodes.	---

*1: When the scanner is automatically connected after scanning a barcode, Good Read buzzer will sound.
*2: Please prepare new batteries.
*3: Please change batteries.

9-2. Operating Time

Specifications	***Conditions***
About 48 hours	- When scanning once in every 5 seconds. - When Bluetooth is connected all time.
30 days or longer	- When scanning 100 times a day. - Connect Bluetooth only when transmitting scanned data.
Operating conditions	- Normal temperature - Barcode sample: Code-39 (PCS: 0.9, Resolution: 0.25mm)

*The foregoing performance is guaranteed when using alkali batteries.
*OPL-2724 may not satisfy the foregoing performance due to battery degradation.

10. Default Settings

To make it easier to configure the settings of OPL-2724 to the default settings, there are [U1] menu barcodes. For communication settings, there are [INIT] menu barcodes.

At the time of shipment from the factory, all settings are configured to [U1]. ([INIT] menu barcodes are included in [U1] menu barcodes.

[U1] Default Settings 1: Supported symbologies

Code type	Reading	Transmit code length	Transmit CD	Calculate CD	Transmit others	Set prefix	Set suffix
UPC-A	○	×	○	○		—	CR
UPC-A Add-on	×	×	○	○		—	CR
UPC-E	○	×	×	○		—	CR
UPC-E Add-on	×	×	×	○		—	CR
EAN-13	○	×	○	○		—	CR
EAN-13 Add-on	×	×	○	○		—	CR
EAN-8	○	×	○	○		—	CR
EAN-8 Add-on	×	×	○	○		—	CR
Code-39	○	×	○	×	ST/SP Transmission	—	CR
NW-7(Coda bar)	○	×	×	×	Transmit as abcd/abcd	—	CR
D.2of5	○	×	○	×		—	CR
I.2of5	○	×	○	×		—	CR
Code-93	×	×	-	○		—	CR
Code-128	×	×	-	○		—	CR
EAN-128	×	×	-	○			CR
MSI/Plessey	×	×	○	○		—	CR
IATA	×	×	○	×		—	CR

Note:

1) In the “Reading” column,”○” means “Enable to read” and “×” means “Disable to read.”
2) In the “Transmit code length” column,”○” means “Transmit code length” and “×” means “Not transmit code length.”
3) In the “Transmit CD” column,”○” means “Transmit check digit” and “×” means “Not transmit check digit.
   Also,”-” means “there is no setting for check digit transmission.”
4) In the “Calculate CD” column,”○” means “calculate check digit” and “×” means “do not calculate check digit.”
5) In the “Setting prefix” column,”-” means “there is no setting for prefix.”

[U1] Default Settings 2: Read, trigger and buzzer options

Item	Default setting
Setting the number of characters	Fixed length OFF all codes
Read mode	Single read
Multiple read reset time	500 msec
Add-on wait mode	500 msec
Redundancy	Read 3 time, redundancy = 2
NW-7 inter-character gap check	Within 1 character
Multiple columns read	Disable multiple columns read
Trigger switch	Enable trigger
Read time	2 seconds
Buzzer durations	200 msec
Buzzer tone	3 kHz + 2.5 kHz
Buzzer loudness	Loud
Indicator duration (Green LED)	200 msec

[U1/INIT] Default Settings 3: Communication options

Item	Default setting
BD address automatic connection setting	Enabled
Barcode automatic connection setting	
No reception memory setting	Disabled
Data correction mode setting	Disabled
Enable / Disable connection with trigger switch	Enabled
Trigger key for connecting hold time setting	3 seconds
Trigger key for disconnecting hold time setting	5 seconds
Automatic disconnection time setting	3 minutes
Automatic re-connection valid time setting	Disabled
Select a sound when disconnected	Enabled
ACK/NACK control	Nonprocedural
ACK/NACK	1 second
Time required for connecting to slave mode	2 minutes

U1/INIT] Default Settings 4: Bluetooth options

Item	Default setting
Connection mode	Master mode
BD address setting	Disabled
Authentication	Disabled
PIN-code label	Disabled
Encryption	Disabled

11. Durability

11-1. Water Resistant and Dust-proof Features

Item	Specifications
Water Resistant	IP-X2

11-2. Anti-static Electricity Features

Item	Specifications	Notes
Anti-static Electricity	Air discharge: ±10 kV	No malfunction
	Air discharge: ±15 kV	No destruction
	Indirect discharge: ±19 kV	No malfunction
Test	IEC61000-4-2 compliant	

11-3. Drop Test

Item	Conditions	Notes
Drop Test *	Dropped from a height of 150 cm onto a concrete floor.	Once on each of 6 sides.

*Note:
- Scratches on the scanner's case are not deemed as defects.
- The scanner must perform normally after the test.
- Battery cover should not fall apart during or after the test.

12. Reliability

Item	Section	Life
MTBF	Laser scan engine (when not ON all time)	10,000 hours
Keystroke verification	Trigger key	500,000 times
	Conditions: Press trigger key with 2kgf force.	

13. Electrical Specifications

13-1. Absolute Maximum Ratings

Item	Specifications	Unit
Power Supply Vol.	-0.3 to 3.6	V

13-2. Current Consumption

Item	Specifications	Conditions
In standby state	1.5 mA or less	No Bluetooth communication No laser scanning
In communication	35 mA or less	With Bluetooth communication No laser scanning
Maximum current	125 mA or less	With Bluetooth communication With laser scanning
Testing conditions	Power supply voltage: 3.0 V, Operating temperature: 25 deg. C	

14. Regulatory Compliance

14-1. Laser Safety

- JIS C 6802: 2005 Class 1
- IEC825-1/EN60825-1: Laser class 1
- FDA CDRH Laser class 1. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50 dated July 26, 2001.

Class 1 laser devices are not considered to be hazardous when used for their intended purpose. Avoid staring into the laser beam.

14-2. Product Safety

- IEC60950-1
- EN60950-1

14-3. EMC

- EN55022
- EN55024
- FCC Part 15 Subpart B Class B
- FCC Part 15 Subpart C Class B

> 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.

- VCCI Class B

> This is a Class B product, to be used in a domestic environment, based on the Technical Requirement of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference.

14-3. R&TTE

- EN300 328
- EN301 489

14-4. Others

- Radio Law 38-24-1
- Bluetooth logo certification

15. RoHS

OPL-2724 is a RoHS compliant product.

*RoHS: The restriction of the use of certain hazardous substances in electrical and electronic equipment,2002/95/EC.

16. Display of Product Information

Attach serial label, laser caution label and model name label as shown below:

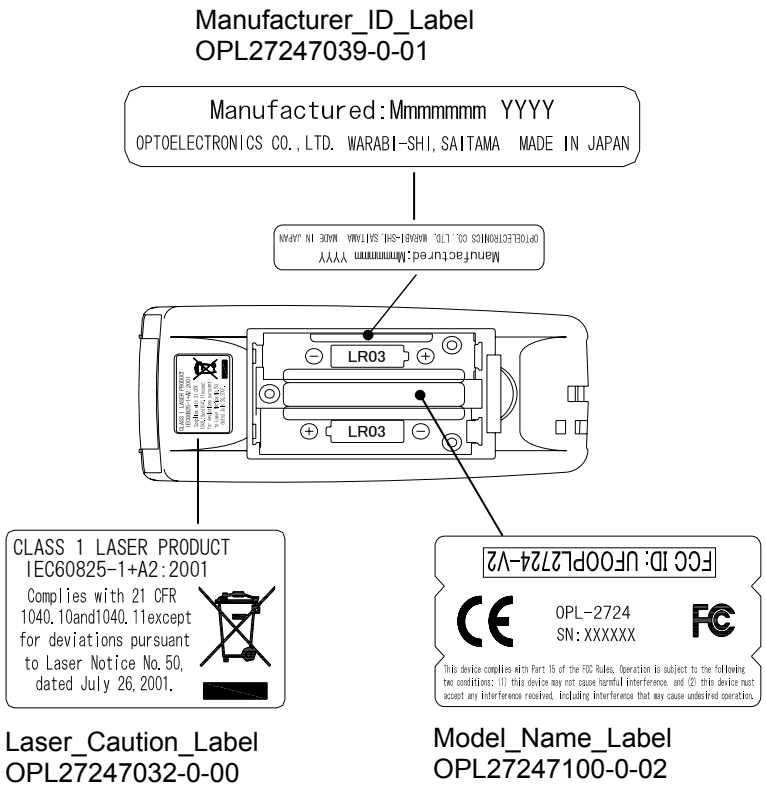


Figure 9: Product Information

16-1. Individual Packaging Box Label

Attach a label with the information listed below to the individual packaging box.

OPL—2724	Model name
OF2OPL2724	Specification No.
OPL2724	Item No.
* 1 2 3 4 5 6 *	Serisla No. (6 digits)

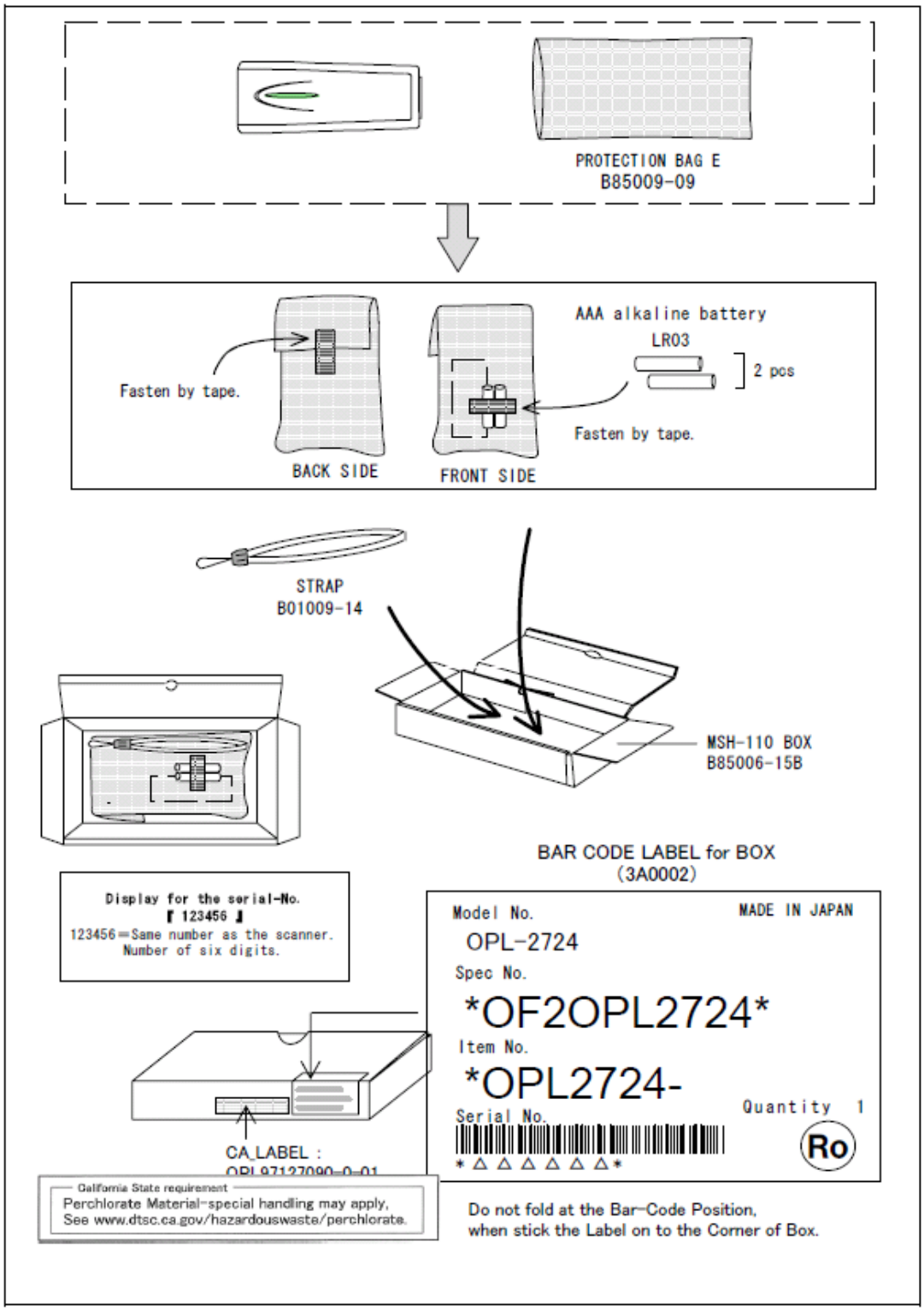
17. Packaging Specifications

17-1. Individual Packaging Specifications

Put the OPL-2724 into a protective bubble bag and put it into the individual packaging box.

Accessories:

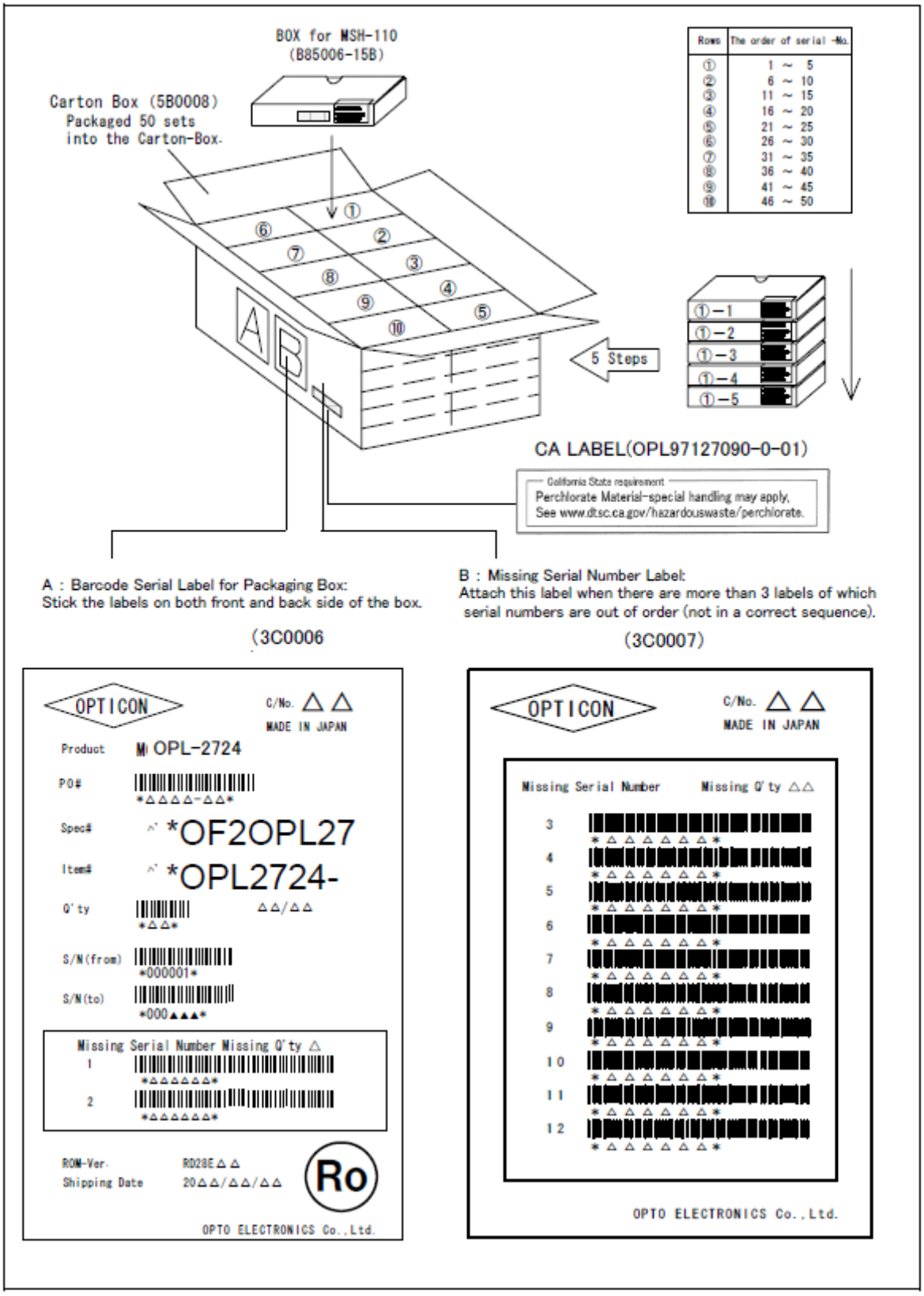
- Size AAA alkali batteries X 2
- Hand strap



17-2. Individual Packaging Box Specifications

Dimensions: 245 (W) x 110 (D) x 38 (H) mm

Note: The 'Ro' mark on the inner and outer packaging indicates that this product does not use any materials, components or parts that are restricted under RoHS standards (the restriction of the use of certain hazardous substances in electrical and electronic equipment, 2002/95/EC). This is an internal determination by Optoelectronics and carries no legal weight in the EU.



18. Product Specification Changes

Any changes to the product specifications stated in this manual shall be discussed in advance.

19. Warranty

19-1. Warranty Period

Optoelectronics Co., Ltd. (hereinafter 'Optoelectronics') warrants that this product is free of defects and malfunctions for a period of 12 (twelve) months beginning on the last day of the month in which it is shipped. Optoelectronics will repair product defects or malfunctions that arise in the course of normal usage during the twelve-month warranty period free of charge.

Any repair or replacement of the product after the foregoing warranty period will be charged at regular rates.

Repair or replacement of the product due to defects or malfunctions that arise as a result of customer mishandling will be charged at regular rates, even during the foregoing warranty period.

19-2. Delivery Method

Products for maintenance or repair shall be sent back to Optoelectronics. The sender is responsible for all shipping costs.

19-3. Repair Timeframe

Repaired products will be sent back to the customer within 20 (twenty) days of acceptance by Optoelectronics.

Expedited repairs may be available, subject to terms agreed upon by Optoelectronics and the customer.

19-4. Maintenance Period

The maintenance period of this product is 5 (five) years after its shipment.

Optoelectronics may discontinue maintenance of this product during the 5 (five)-year maintenance period if a satisfactory replacement product or alternative maintenance solution is agreed to.

19-5. Other

Any additional warranty issues must be discussed with Optoelectronics on a case-by-case basis.

20. Precautions

20-1. Laser-related Caution

- Do not stare into the laser light from a scanning window. It may harm your eyes.
- Do not point the laser directly at others' eyes. It may harm your eyes.
- Do not stare into the beam with optical instruments. It may harm your eyes.

20-2. For the Radio Equipment

OPL-2724, a radio equipment for low power radio station of 2.4 GHz band advanced data communication system specified in the Radio Law, has obtained the Certification for Construction Design of Specified Radio Equipment. Therefore, it does not have radio station license in Japan.

The following activities are prohibited under the Radio Law:

- Remodeling and disassembly
- Peeling off the certificate label

Do not use this product for the devices or in the environments stated below:
It may cause radio interference and affect surrounding equipments, which may induce injury or physical damages.

- Safety and medical devices designed to protect human body
- Environments in which there may be serious damages to this product.

20-3. Handling

Handle this product carefully. Do not deliberately subject it to any of the following:

(1) Shock

- Do not throw or drop the scanner.
- Do not squeeze the scanner between heavy items.

(2) Temperature Conditions

- Do not use the scanner at temperatures outside the specified range.
- Do not pour boiling water on the scanner.
- Do not throw the scanner into the fire.

(3) Foreign Materials

- Do not put the scanner into water.
- Do not put the scanner into chemicals.

(4) Other

- Do not disassemble this product.
- Do not use the scanner near a radio or a TV receiver. It may cause reception problems.
- Do not use the scanner near a device which generates excessive static electricity. It may cause problems.
- The device may not perform properly when placed near a flickering light, such as a CRT.
- The information in this specification is subject to change without notice.

20-4. Export Administration Regulations

This product is subject to the strategically controlled exports regulated under "Foreign Exchange and Foreign Trade Laws". Therefore, export of this product may require an export permission of Japanese government.

21. Bluetooth

- Bluetooth® is a trademark owned by its proprietor and used by OPTOELECTRONICS Co., Ltd. under license.
- To communicate via Bluetooth, the divice which OPL-2724 is connected to, must support the same Bluetooth version and profile.
- OPL-2724 is compliant to Bluetooth standards. However, we cannot assure the connection between OPL-2724 and other Bluetooth devices which have not been tested.
- Bluetooth supporting devices use 2.4 GHz frequency band. However, many other sorts of devices also utilize this frequency band. It may effect the communication speed or communication range of this scanner.
- The use of OPL-2724 outside of the European Union, the United States and Canada is punishable under the law.
- Communication speed and communication range of OPL-2724 may differ due to the obstcles and radio wave conditions between OPL-2724 and the divice, which OPL-2724 is connected to. Conditions of the divice, which OPL-2724 is connected to, may also effect the communication speed and communication range of OPL-2724.
- Expected interference distance is up to 10 meters.

22. Frequency Band

The frequency band 2.4 GHz is utilized by this scanner. Read carefully the followings before using this product.

In the frequency band of this scanner, scientific, medical and industrial devices including microwaves are used. Also other radio stations including local private radio station for mobile object identification requiring license for such as manufacturing lines at factories, specific power-saving radio station requiring no license and amatuer radio station are managed.

1. **Please make sure that “other radio stations” are not managed in the frequency band 2.4 GHz before using this scanner.**
2. **In case that radio interference occurs between this scanner and “other radio stations,” change the service space immediately, or stop transmitting radiowave to avoid the interference.**

***If you have any questions or troubles, please contact our marketing group.**

Handle product in accordance with this specification.

FCC 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/TV technician for help.

FCC Radiation Exposure Statement

This device complies with Part 15 of FCC RF Rules. Operation is subject to the following two conditions:

1) this device may not cause interference and

2) this device must accept any interference, including interference that may cause undesired operation of the device.