

THE OPTICAL PRODUCT CODE (OPC) GUIDE FOR LENSES

REVISED MAY 2018

Developed by:
The Vision Council

225 Reinekers Lane
Suite 700
Alexandria, VA 22314
thevisioncouncil.org

Comments or suggested changes to this document should be addressed to:

The Vision Council
225 Reinekers Lane
Suite 700
Alexandria, VA 22314
www.thevisioncouncil.org

© May 2018

All rights reserved. Reproduction or distribution of this document in any way without the express permission of the publisher is forbidden.

TABLE OF CONTENTS

| | |
|--|----|
| Introduction and Uses of the OPC..... | 3 |
| Frequently Asked Questions | 4 |
| The Optical Product Code | 5 |
| Getting Started..... | 6 |
| How to Create the Check Digit | 7 |
| Manufacturing Guide | 8 |
| Specifications | 9 |
| Customer Order File Format..... | 10 |
| Description of Fields | 11 |
| • Customer Order Record Format..... | 11 |
| • Detail Records | 12 |
| • Example of Printout..... | 12 |
| Transmission Standard Protocol | 13 |
| • Hand Held Units & Personal Computers | 13 |
| Reserve Block Code for Internal Use | 14 |
| The Vision Council..... | 15 |
| References..... | 16 |

INTRODUCTION

The Optical Product Code (OPC) program was developed in the 1990's by what was then the Optical Manufacturers Association, (OMA) in concert with industry experts.

OPC codes are designed to provide unique benefits and at competitive pricing to ophthalmic lens companies around the world. OPC codes have for many decades been the defacto leader for ophthalmic finished and semi-finished lenses.

The maintenance of the OPC system and the associated costs are covered by the annual fees collected for each block of numbers. OPC code block prices have traditionally lagged well behind other competitive data exchange bar-coding schemes. Code blocks prices were raised of January 2015 to reflect administrative costs after nearly 20 years of service.

USES OF THE OPTICAL PRODUCT CODE

The Optical Product Code (OPC) can be used as an identification system when placed on optical products, purchase orders, bills of lading and invoices.

The OPC symbol allows the use of automated data entry devices. As the product is processed, it is passed through an optical scanner that reads the OPC symbol, decodes it and transmits this code number to the computer LMS or PMS system. The computer can capture and store item usage information, which may be used to generate product replacement orders and produce a wide variety of marketing and control reports for management.

The benefits in using this system can be any or all of the following:

- Savings in time and manpower
- Faster re-order time for your products that utilize an OPC
- Fewer human errors in your orders
- Improved inventory control
- Marketing analysis and product acceptance by your customers

Frequently Asked Questions

Q. How do I determine whether or not I should use the OPC System?

A. If you are spending any time collating orders or creating and placing your reorders on the telephone with your optical product suppliers, it is time to consider using the OPC barcode system.

Q. What is the difference in use between an OPC barcode and a UPC barcode?

A. The OPC barcodes are exclusively used for optical products and UPC is used for all other products in the wholesale and retail environment. For example, lenses use OPC codes while frames are most often identified with UPC codes.

Q. Is it expensive to get started and maintain the system?

A. No. The average minimum cost of an entry level, hand-held scanner is several hundred dollars.

Q. How difficult is it to train my staff to use the system?

A. It is very easy to secure the appropriate equipment, training and support necessary to establish your system.

Q. Once I have the system, will I be limited to just one or two suppliers or manufacturers?

A. Definitely not. You have access to all manufacturers that utilize using OPC's.

Q. How much does it cost to purchase an Optical Product Code?

A. The price for a single range of 10K codes is \$425 per year and \$425 for each additional range of 10K codes, renewable on an annual basis at the same set price.

Q. Do I need to buy more than one barcode range?

A. This will depend entirely on the number of products you manufacture. One range of OPC's will provide you with 99999 barcodes. Each five digit code can be used to code up to 10,000 products

Q. I have acquired another company that is using a barcode; do I need to start using the new company name on the barcode?

A. You can make the change at your convenience.

The OPC CODE

The key to the OPC system is the unique code and machine-readable symbol assigned to every product. This code allows simple and accurate product identification. The OPC barcode makes possible the use of scanner-equipped data entry devices.

The OPC is a 10-digit, numeric code that identifies the manufacturer and product.

Manufacturer Identification Number: The manufacturer identification number is a five-digit number received from The Vision Council.

Item Identification Number: The item is a four-digit number assigned and controlled by the optical manufacturer. The item number must be unique to each individual product.

Check Digit: The item is a one-digit number that enables the scanner system to immediately verify the accurate data translation of the Optical Product Code as the symbol is scanned. The nine-digit Optical Product Code, plus a scanner readable check digit equals the ten-digit total. It is represented in the bars and spaces that make up the complete scanner readable symbol. (See Figure A)



Figure A. Example of an OPC Barcode

GETTING STARTED

You can order a five-digit Optical Product Code Manufacturer Identification Number by visiting <https://opcmgr.thevisioncouncil.org/>. You have the ability to create an account if you do not have one and depending on your user level you will be able to order codes, view the registry, view your history and pay online.

If you already have an account you would just login using your username and password. You will receive an email once your codes have been approved.

The screenshot displays the OPC Manager website interface. At the top left is the logo for THE VISION COUNCIL. At the top right, there are links for VISIT THE VISION COUNCIL.ORG and OPC MANAGER. The page is divided into two main sections: LOGIN and NEW USER SIGN UP.

LOGIN Form:

- Section: LOGIN
- Input fields: USERNAME, Password (masked with dots)
- Button: LOGIN
- Text: DID YOU FORGET YOUR PASSWORD?

NEW USER SIGN UP Form:

- Section: NEW USER SIGN UP
- Text: REGISTRATION IS REQUIRED TO DOWNLOAD A REAL-TIME LIST OF OPC PREFIXES.
- Input fields: USERNAME, EMAIL, Password *, Confirm password *
- Company selection: Company (dropdown menu with "- None -" selected)
- OR
- Company selection: Company Type (dropdown menu with "--Select One--" selected)
- Math question *: 5 + 2 = [input field]. Text: Solve this simple math problem and enter the result. E.g. for 1+3, enter 4.
- Button: SIGN UP

Each five-digit number you order can be used for multiple products. Each manufacturer identification number can be used to code up to 10,000 products.

Assign Item Identification Numbers: The optical product manufacturer will then assign a four-digit item identification number to each item. It is essential that no two products be assigned identical identification numbers.

In combination with the five-digit manufacturer identification number, this will form a nine-digit number for each product. This nine-digit number and the check digit will create the full ten-digit OPC number/symbol.

All item numbers must be carefully recorded Duplication of item numbers can create chaos for the optical manufacturer and its customers.

Provide Information to Staff and Customers: All production, marketing and accounting personnel must be aware of the OPC manufacturer number and OPC policies. The optical product manufacturer should provide customers with a complete product list reflecting the OPC numbers for their records. It is recommended that the manufacturer make available an ASCII PC compatible file consisting of the OPC number and product description. (For lens products, the [Lens Description Standard v2.2](#) should be followed).

HOW TO CREATE THE CHECK DIGIT

An example on how to calculate an OPC barcode is listed below:

1. The Vision Council provides you with a five-digit barcode range. In this example it is **02071**.
2. You create your four-digit item identification number. In this example it is **1721**.
3. Multiply this nine-digit number (**020711721**) by the weighing factor **212121212**.

| | | | | | | | | | |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Sample nine-digit code | 0 | 2 | 0 | 7 | 1 | 1 | 7 | 2 | 1 |
| Weighing factor | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Multiplied | 0 | 2 | 0 | 7 | 2 | 1 | 14 | 2 | 2 |

4. Next sum the product, treating double digit products as the sum of individual digits. (The number 14 is broken into 1 and 4).
5. This would give you the information below:

$$0 + 2 + 0 + 7 + 2 + 1 + 1 + 4 + 2 + 2 = 21.$$

6. Divide the total number (21) by 10.
7. This gives us 2 with a remainder of 1. ($21 \div 10 = 2$ remainder 1).
8. Subtract the remainder from 10. In this example the remainder is 1 so the result is $10 - 1 = 9$.
If the remainder from the previous step was zero (0) then use zero (0) as the result here.
9. The result is the check digit (**9** in our example) and the complete barcode is now **0207117219**.

MANUFACTURING GUIDES

Because the OPC symbol must be read by optical scanning equipment, it is very important that it be printed properly and be in an appropriate position on a package. The information presented below is an overview of the important points regarding printing and packaging.

Determine the Proper Size of the OPC Symbol: The size of the barcode and number is variable, but it is important that tolerances be exact. No reduction in symbol height beyond that stated in the specifications is acceptable. Such truncation or shortening of the bar height may lead to degradation of the scanning ability.

Determine the Proper position of the OPC Symbol: Variation in symbol placement can create difficulty for the user. Placement on the face or the top is the preferred locations. (See resources at the end of the document).

Package Printing: Any combination of colors that yields the proper reflectance and print contrast can be used. However, light colors provide a good background and dark colors provide good bars for the OPC symbol. The scanner reads the contrast between the light and dark areas. Therefore, it is imperative that the colors on the barcode comply with the minimum requirements for contrast. Printing of the bar symbol in red tones is unacceptable.

Maintain quality control: It is essential that quality control procedures be maintained on all products printed with the OPC symbol.

SPECIFICATIONS

| | |
|--|---|
| Symbology: | Interleaved 2 of 5 |
| Length | 10 Digits 1-5 = Manufacturers' ID 6-9 = Manufacturers' Product 10 = Check Digit |
| Bar Code Height: | 0.25" minimum, not to be less than 15% of the width |
| Check Digit:* | Mod 10:212 Version |
| Code Location: | At manufacturer's discretion. Assistance is available on The Vision Council website under the "Standards" section. |
| Human Readable: (Equivalent) | Yes. Digit location visible with barcode directly above or below symbol is recommended. Easy to read FONT suggested. |
| Barcode Dimension: | .0075" minimum to .015" maximum (Narrow Bar Width) |
| For Contact Lenses: | .0050" minimum to .015" maximum |
| Narrow Bar to Wide Bar Ratio: | Minimum 2.5:1-Maximum 3:1 |
| Quiet Zones: | A quiet zone (empty space) of 11 X – Dimension must immediately precede and follow the code. |
| Color: | Manufacturer's discretion. However, black bars** on a white background provides the highest contrast resolution and is highly recommended. Carbon based inks must be used. Alcohol based inks may not be acceptable because the print may be unreadable by some scanners. |

* Check Digit – see page 7 for example.

** Red is not an acceptable color. Print contrast ration of .70-1.0 is recommended for best results.

CUSTOMER ORDER FILE FORMAT

| TYPE | DATA RECORDS SEQUENCE | PREFIX | MIN |
|------|-----------------------------------|-------------------------------|-----|
| H | Format Number (STDA01) | F | 6 |
| H | Customer Number and/or Ship To | C | 6 |
| H | Depot Number (Shipper's Location) | A | 2 |
| H | Date of Order | D | 6 |
| H | Purchase Order Number | P | 4 |
| H | Ship via | S | 3 |
| H | Back Order | B | 1 |
| H | Rush | R | 1 |
| H | Ship Date | E | 6 |
| H | Cancel Date | G | 6 |
| H | Special Instructions-Order Header | Z | 1 |
| | | (Occurs up to five (5) times) | |
| D | Tray Number | T | 1 |
| D | OPC Number for Lenses | N | 10 |
| D | UPC Number (for Frames & Contact) | J | 12 |
| D | Quantity | Q | 1 |
| T | TOTAL PRODUCT QUANTITY | X | 7 |

Note: H= Header Record D = Detail Record (Repeat Numerous Times) T = Trailer Record

| MAX | Delimiter | DATA TYPE | REQ/OPT |
|-----|-----------|---------------|----------|
| 6 | +CR/LF | Alpha-Numeric | Required |
| 15 | +CR/LF | Alpha-Numeric | Required |
| 4 | +CR/LF | Alpha-Numeric | Optional |
| 6 | +CR/LF | Numeric | Required |
| 10 | +CR/LF | Alpha-Numeric | Optional |
| 15 | +CR/LF | Alpha-Numeric | Optional |
| 1 | +CR/LF | "Y" Or "N" | Optional |
| 1 | +CR/LF | "Y" Or "N" | Optional |
| 6 | +CR/LF | Numeric | Optional |
| 6 | +CR/LF | Numeric | Optional |
| 20 | +CR/LF | Alpha-Numeric | Optional |
| 10 | +CR/LF | Alpha-Numeric | Optional |
| 10 | +CR/LF | Numeric | Required |
| 12 | +CR/LF | Numeric | Required |
| 6 | +CR/LF | Numeric | Required |
| 7 | +CR/LF | Numeric | Required |

Comments: Description of Fields - Pages 11 & 12 Examples of Actual Field Print out – Page 12

DESCRIPTION OF FIELDS

CUSTOMER ORDER RECORD FORMAT

Header Records

| | |
|------------------------|--|
| Record Type: | Sequence of all data records including all fields: H = Header Record – order structure/information D = Detail Records – detail product information T = Trailer Records – order total quantity Note: Required or optical fields from customer order file format on pages 7 and 8 must follow this sequence. |
| Format Number: | Assigned by The Vision Council and must be the first record of transmission (required). |
| Customer Number: | Assigned and controlled by each manufacturer. Manufacturer's customer account number, and/or ship to customer number (required). |
| Depot Number: | Shipper's location assigned and controlled by each manufacturer. Depot number of manufacturer's shipping branch office. |
| Date of Order: | Should be entered as MMDDYY. (ex. 050597) – required. |
| Purchase Order Number: | Assigned and controlled by user. |
| Ship Via: | Special shipping instructions for order. |
| Back Order: | A flag either "Y" for ok to back order or "N" for no (no rush on this order). |
| Rush: | A flag either "Y" for yes (please rush) or "N" for no backorders. |
| Ship Date: | Specify if other than date of order. Should be entered as MMDDYY, example 050597. First acceptable shipping date. |
| Cancel Date: | Specify if needed. Should be entered as MMDDYY. (ex. 051097). |
| Special: | Any special comments needed. (May occur up to 5 times). |
| Instructions: | Therefore, providing the user with up to 100 characters (5 records of 20) |

DETAIL RECORDS

Tray Number*: Assigned and controlled by the user and is in reference to the following OPC number or numbers for each item.

OPC Number*: The Optical Product Code Number for the item ordered.

Quantity*: The number of pieces ordered for the preceding OPC number.

Total Product Grand Total: Total number of all pieces ordered.

Quantity: number (The total of sequence 11)

Comments: Description of field as illustrated on pages 10 and 11.

**Repeat in sequence as many times as necessary to order product items.*

EXAMPLE PRINTOUT OF AN ACTUAL DATA FILE

HEADER RECORDS

| | |
|----------------------|--|
| FSTDA01+ | File Format (required) |
| C11002950000+ | Customer Account Number (required) |
| ALA+ | Depot Number (shipper's location) |
| D121590+ | Date of order (required) |
| PA555+ | P.O. Number (optional) |
| SUPS/RED+ | Ship via "Choice" (optional) |
| BY+ | Back order = Yes (optional) |
| RY+ | Rush order = + Yes (optional) |
| E122190+ | Ship Date (optional) |
| G122190+ | Cancel Date (optional) |
| Five Days or Cancel+ | Special Instructions (optional) |
| T220+ | Tray Number 220 (optional) |
| N0200790301+ | OPC Number (required) |
| Q1+ | Quantity of 1 (required) |
| x0000005+ | Total product order quantity of 5 (required) |

Comments: Customer Order File Format, see pages 10 & 11. Description of Fields, see pages 11 & 12.

TRANSMISSION STANDARD PROTOCOL

HAND-HELD UNITS

| | |
|--------------|------------------------------|
| Protocol: | Asynchronous |
| Modem Type: | 202S |
| Duplex: | Half |
| Baud Rate: | Minimum 1200 |
| Data Mode: | ACII |
| Data Bits: | 7 |
| Start Bits: | 1 |
| Stop Bits: | 1 - Required or 2 – Optional |
| Parity Bits: | Even or Odd |

Even Parity Transmission – The first character must be the first data character (F) and the last character must be an End of Transmission (EOT) character.

Odd Parity Transmission – The first character must be a Start of Text (STX) character and the last character must be an End of Text (ETX) character.

PERSONAL COMPUTERS

| | |
|-----------------|--------------------------|
| Protocol: | Asynchronous |
| Error Checking: | XModem |
| Modem Type: | 212A (Hayes Compatible)* |
| Duplex: | Full |
| Baud Rate: | Minimum 2400 |
| Data Bits: | 8 |
| Start Bits: | 1 |
| Stop Bits: | 1 |
| Parity Bits: | None |

*Hayes modem is a registered trademark of Hayes Microcomputer Products, Inc.

RESERVE CODE BLOCK FOR INTERNAL USE

The Vision Council has reserved a range of Manufacturer Identification Numbers that will never be assigned to a specific manufacturer. These numbers are in the range of 99990 to 99999 and may be used by any manufacturer, laboratory, wholesaler or dispenser for its own internal numbering schemes and within its own building or systems for functions such as internal inventory systems, cross referencing to manufacturers assigned numbers or tray tracking systems. Use of this range of numbers in any public domain is forbidden.

Since each five-digit Manufacturer Identification Number can accommodate up to 10,000 part numbers, this gives any user a total of up to 100,000 assignable numbers in the range 99990XXXX to 99999XXXX (where XXXX is a number between 0001 and 9999). A tenth digit that would append to the right is a check digit, described on page 5 in this booklet.

THE VISION COUNCIL

The Vision Council serves as the global voice for vision care products and services. The Vision Council represents the manufacturers and suppliers of the optical industry. We position our members to be successful in a competitive marketplace through education, advocacy, consumer outreach, strategic relationship building and industry forums.

In this capacity, we are the management and information center for users participating in the OPC system. We specifically control the issuing of OPC's and serve as the support organization for this system.

Although using the Optical Product Code is voluntary, payment of a fee is required prior to issuance of the manufacturer's identification number. The initial registration fee is \$425.00 per block of 10K codes with an annual renewal fee per block in the same amount. The Vision Council will not reassign un-renewed numbers for a period of not less than five years.

Administration

The Administration Office for information pertaining to the OPC System and the website to order codes is:

The Vision Council
Attn: OPC Manager
225 Reinekers Lane
Suite 700
Alexandria, VA 22314

<https://opcmgr.thevisioncouncil.org/>

Resources:

[Lens Description Standard v2.2](#)

[Country of Origin for Lenses Standard](#)

[2D Barcode Standard for Lenses \(Optical Product Code / Country of Origin](#)