



OneCode Solution

4-State Customer Barcode Technical Resource Guide for OneCode Confirm™ and OneCode ACS™

Rev 2.2

Prepared by:
Intelligent Mail Planning and Standards
United States Postal Service

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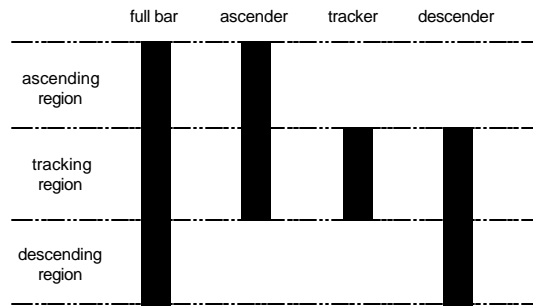
Information conveyed in this document is preliminary.
The information in this document is intended to give mailers and service providers preliminary information on the use of 4-
State Customer Barcode for OneCode Confirm™ and OneCode ACS™ services .
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Information in this document is derived from official US Postal Service publications, including the Domestic Mail Manual.
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What is 4-State Customer Barcode?

The US Postal Service is implementing the Intelligent Mail® strategy under the Transformation Plan. As part of the OneCode Vision™, the USPS, in partnership with the Mailing Industry, has developed the 4-State Customer Barcode (4-CB). It is the next generation in the evolution of USPS barcode technology. It does not replace existing barcodes – it offers a more effective alternative by increasing the amount of information carried on letter and flats mailpieces, allowing for expanded tracking capability, and creating greater visibility into the mailstream.

4-CB is a height-modulated barcode using four distinct, vertical bar types. It encodes a 31-digit string into 65 vertical bars each representing one of four possible states: full bar, ascender, tracker, and descender.



The following table compares the dimensions of 4-CB to those of the POSTNET® and PLANET™ Code.

| | 11-digit POSTNET | 13-digit PLANET | 4-CB |
|--------------------|----------------------|----------------------|----------------------|
| Number of bars | 62 | 72 | 65 |
| Bar Width | 0.020 ± 0.005 inch | 0.020 ± 0.005 inch | 0.020 ± 0.005 inch |
| Horizontal Pitch | 22 ± 2 bars per inch | 22 ± 2 bars per inch | 22 ± 2 bars per inch |
| Height of Full Bar | 0.125 ± 0.010 inch | 0.125 ± 0.010 inch | 0.182 ± 0.048 inch |

What Services Does 4-CB Support?

Under the OneCode Vision™, the USPS intends to offer a suite of services for letters and flats using the 4-CB. This suite of services is called the OneCode Solution™ suite. At the initial launching of 4-CB on September 1, 2006, mailers have the option to use 4-CB on letter-size mail for the Confirm® Service and a



version of Address Change Service (ACS) for First-Class Mail®. These services will be called OneCode Confirm™ and OneCode ACS™.

The launching of 4-CB does not compel mailers to migrate to 4-CB. The USPS offers 4-CB as an alternative to the mailers to reduce the real estate taken up by barcodes on mailpieces and offer value-added services. However, the USPS will continue to support the use of POSTNET barcode for encoding the delivery point barcode, PLANET Code barcode for encoding tracking information for Confirm, and alphanumeric characters for conveying participant code and keyline information for ACS.

What are the Fields in 4-CB?

4-CB carries a payload 31 digits comprised of the following elements.

| Type | Field | Digits |
|--------------------|-------------------------|---------------------------|
| Tracking Code | Barcode Identifier | 2 (2nd digit must be 0–4) |
| | Service Type Identifier | 3 |
| | Customer Identifier | 6 |
| | Sequence Number | 9 |
| Routing Code | Delivery Point ZIP Code | 0, 5, 9, or 11 |
| Total Data Payload | | 31 maximum |

The Barcode Identifier field is a 2-digit field that is reserved for future use to encode the presort identification that is currently printed in human readable form on the optional endorsement line (OEL) so as to provide additional functionalities. Initially, this field should be left as “00” by OneCode Confirm™ and OneCode ACS™ users. At a later date, the USPS may require the proper coding of this field.

The Service Type Identifier field is a 3-digit field that identifies the types of service. In the long run, the field is intended to allow a single 4-CB to support multiple services in addition to or instead of Confirm and ACS. At the initial launch, only the following codes could be used:



| Service Requested and Mail Class | Service Type ID in 4-State Customer Barcode |
|---|---|
| Destination Confirm (First-Class Mail) | 040 |
| Destination Confirm (Standard Mail) | 042 |
| Destination Confirm (Periodicals) | 044 |
| Origin Confirm | 050 |
| Address Service Requested | 080 |
| Address Service Requested with Destination Confirm (First-Class Mail) | 140 |

The Customer Identifier and the Sequence Number fields are numeric fields designed to carry service-specific information. Depending on the services requested by the Service Type Identifier, the Customer Identifier field and the Sequence Number field may be combined and reallocated to carry other fields pertinent to the services requested.

The following table shows the payload layout for 4-CB for use with OneCode Confirm. The corresponding fields from PLANET Code barcode are also shown.

| 4-State Customer Barcode | | PLANET Code Destination Confirm | | PLANET Code Origin Confirm | |
|--------------------------|----------------|---------------------------------|--------|----------------------------|---------|
| Field Name | Length | Field Name | Length | Field name | Length |
| Barcode ID | 2 ¹ | | | | |
| Service Type ID | 3 | Service Type ID | 2 | Service Type ID | 2 |
| Customer Identifier | 6 | Subscriber ID | 5 | Customer ID | 9 or 11 |
| Sequence Number | 9 | Mailing ID | 4 or 6 | | |
| Routing ZIP | 0, 5, 9, 11 | | | | |

The Customer Identifier field is a 6-digit number identifying the mailer or subscriber. At the initial launching of 4-CB, Destination Confirm subscribers will append a leading zero to their assigned 5-digit Subscriber ID to fill this field.

The Sequence Number is a 9-digit field. For Destination Confirm, this field will hold the existing Mailing ID field, which is a 4- or 6-digit field. Subscribers can

¹ The second digit of Barcode ID must be 0–4.



expand the Mailing ID field to 9 digits if so desired. Otherwise, leading zeros should be used to fill the field completely. When using 4-CB for Origin Confirm, subscribers may combine the Customer Identifier field and the Sequence Number field into a 15-digit field to hold the existing 9- or 11-digit Customer ID field plus additional digits. Subscribers can expand this field to 15 digits if so desired. Otherwise, leading zeros should be used to fill the field completely.

Currently, ACS users are assigned a 7-character participant code, which uniquely identifies the mailer for each particular mail class. Mailers who want to participate in OneCode ACS will be assigned a 6-digit Customer Identifier, which will be used to fill the Customer Identifier field. OneCode ACS users will use the Sequence Number field to encode the information previously stored in or associated with the keyline field.

The Routing ZIP Code field will accommodate 0, 5, 9 or 11 digit ZIP Code information. Confirm requires a 9- or 11-digit Routing ZIP to serve as “Subscriber ID” for Origin Confirm users. The Routing ZIP Code inserted into the 4-CB must be registered within subscriber’s Confirm account.

When using OneCode Confirm service with seeding in an automation-rate mailing, a non-seeded mailpiece may use the 4-CB with a proper routing ZIP Code to meet the automation-rate eligibility. Such 4-CB should have a Service Type ID of “000” to indicate that the piece is not intended to generate Confirm information. The Customer Identifier field should contain the appropriate Subscriber ID.

Additional details pertaining to using 4-CB for ACS and Confirm will be available in addenda to Publication 8, *Address Change Service*, and Publication 197, *Confirm® Service User Guide*. Additional information can be downloaded from the Rapid Information Bulletin Board System (RIBBS) website at: <http://ribbs.usps.gov/OneCodeSolution/>

How are 4-CB Barcodes Printed?

Encoding data into a POSTNET or PLANET Code is very straightforward: each digit in the payload is represented by a predefined pattern of 5 bars. Encoding data into a 4-CB is more complex. The encoding algorithm that translates the 31 digits in the payload into 65 bars is defined in the USPS publication, *Specification USPS-B-3200*, which is available for download at same RIBBS web site.

To facilitate the adoption of 4-CB, the USPS has developed, and is making available at no charge, a web-based, interactive encoder-decoder tool, and an extensive library of encoding software and fonts suitable for encoding and printing 4-CB in mail production environments using selected operating systems



and printing architecture. These resources are available at the same RIBBS web site.

To download the library of encoding software and fonts at the RIBBS website, you must first request a user ID and password by calling the NCSC Help Desk at 877-640-0724. You must log in using your assigned user ID and password before you can download from the library.

Once logged in, you will be able to download the encoding software package for any particular operating system of interest. Each package contains all the files needed to use the encoder software under that operating system in any of the languages or applications that are supported. The USPS currently provides software for a total of 20 combinations of operating system, language, and application environments:

| Operating System | Language and Applications Supported | | | | | |
|--------------------------------|--|--------|-------|------|-----------|----------|
| | C | Java 2 | COBOL | PL/1 | MS Access | MS Excel |
| MVS, z/OS, and OS/390 | Yes | Yes | Yes | Yes | | |
| VSE/ESA | Yes | | Yes | Yes | | |
| OS/400 | Yes | Yes | Yes | | | |
| AIX | Yes | Yes | | | | |
| Linux for pSeries | Yes | Yes | | | | |
| Linux for Intel ² | Yes | Yes | | | | |
| Programmer Version for Windows | Yes | Yes | | | | |
| MS Office Version for Windows | | | | | Yes | Yes |

For each operating system, the encoding software package is distributed as a standard ZIP file. Use any utility that can handle a PKZIP file to extract the individual files and store them in the path stored on the ZIP File. A user guide is included in each package to provide detailed operating system- and language-specific instructions on how to install and use the files in the package. All the required binary loadable software modules and a number of source files for installation verification are also included in the package.

² Including Intel-compatible systems



Independent of operating system and language, the encoding software works as follows. Each call to the encoder requires two arguments: a 20-digit tracking code, and a 0-, 5-, 9-, and 11-digit routing code. The encoder will return the status of the encoding function along with a 65-character string of the letters F, A, D, or T, representing a full bar, ascender, descender, or tracker, respectively.

For example, a tracking code of 01234567094987654321 and a routing code of 01234567891 will be encoded into the following 65-character string:

AADTFDFDADTAADAATFDTDAAADDTDTTD AFADADDFTFFDDTTADFAAADFTDAADA

When the string is printed with the appropriate font, the actual barcode will be produced:



From the same RIBBS website, registered and logged in users will be able to download the font package for any operating system of interest. Each package contains all the files needed to install and use the font for that operating system. The USPS currently provides fonts for five major production printing environments:

- The Advanced Function Printing (AFP) environment defined by IBM;
- The XEROX Metacode, defined by XEROX
- Hewlett Packard's PCL (Print Control Language)
- Adobe's Postscript
- TrueType

Where can 4-CB be printed?

The placement configurations of a 4-CB on a letter-size envelope are defined in the *Domestic Mail Manual (DMM™)*. This section presents the following commonly used placement configurations. For additional details concerning barcode placement, please refer to 202.5 and 503.13.3 of the *DMM*.

In describing code placement, the terms "above" and "below the address" are used here to mean the following, as defined in 202.5 of the *DMM*. The term "above the address" here means either:

- Above the address line containing the recipient's name, or
- Above or below the keyline information, or
- Above or below the optional endorsement line.

The term "below the address" means:

- Below the city, state, and ZIP Code line.

The mail piece images used to illustrate these configurations are not meant to be exact or exhaustive.



Configuration 1

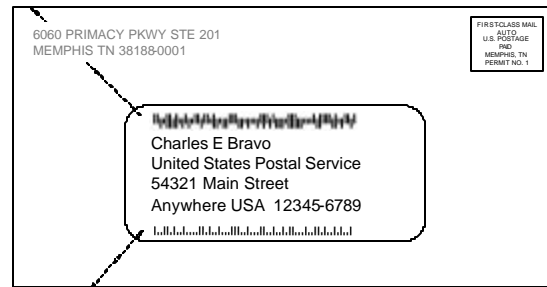
- Mailer applies 4-CB above or below the address within the address block.
- Mailer encodes the delivery point code in the 4-CB along with the tracking code.

4-CB Directly Applied by Mailer



Configuration 1 (with 4-CB above address)

4-CB Directly Applied by Mailer



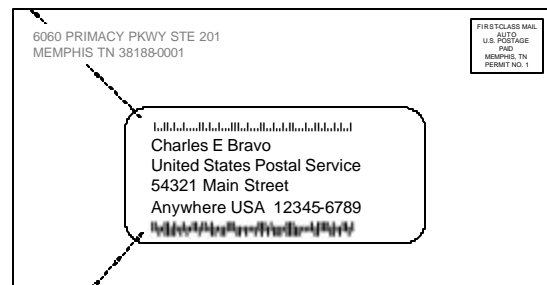
POSTNET Barcode Directly Applied by Mailer

Configuration 2(a)

Configuration 2(a)

- Mailer applies 4-CB above the address within the address block.
- Mailer encodes the delivery point code in a POSTNET barcode below the address in the address block.

POSTNET Barcode Directly Applied by Mailer



4-CB Directly Applied by Mailer

Configuration 2(b)

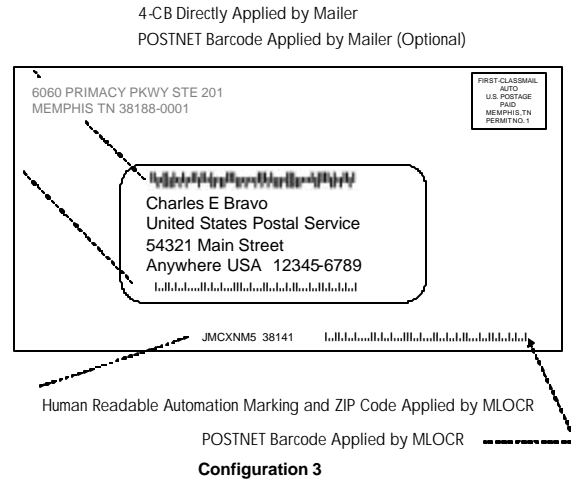
Configuration 2(b)

- Mailer applies 4-CB below the address within the address block.
- Mailer encodes the delivery point code in a POSTNET barcode above the address in the address block.



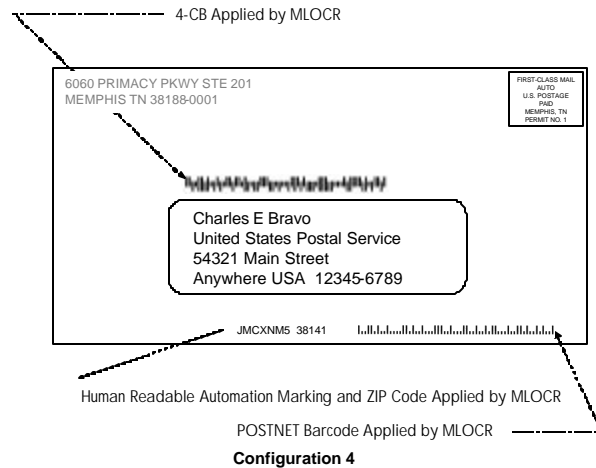
Configuration 3

- Mailer applies 4-CB with or without POSTNET barcode within the address block as in Configuration 1, 2(a), or 2(b).
- MLOCR applies POSTNET barcode in the barcode clear zone, along with the human readable automation marking³ and ZIP Code to the left.



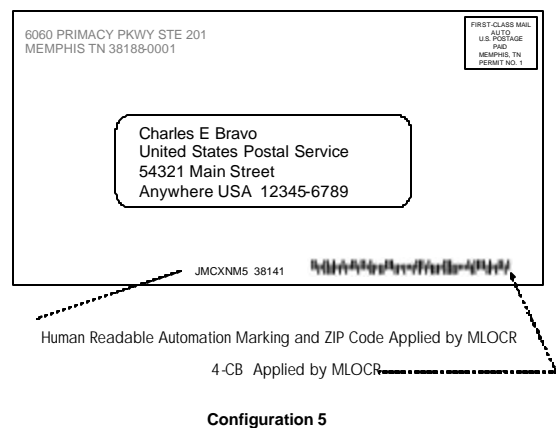
Configuration 4

- Mailer does not apply POSTNET barcode or 4-CB directly in the address block.
- MLOCR applies the POSTNET barcode in the barcode clear zone, along with the human readable automation marking and ZIP Code to the left.
- In addition, MLOCR applies a 4-CB containing the tracking code above the address block.



Configuration 5

- Mailer does not apply POSTNET barcode or 4-CB directly in the address block.
- MLOCR applies a 4-CB containing the routing code and tracking code in the barcode clear zone, along with the human readable automation marking and ZIP Code to the left.



³ It is also known as automation rate marking. Requirement for automation marking is stated in 604.9.4.14(e) of the DMM. Specification for automation marking is in 705.5.3.2 of the DMM.



Any yellow forwarding label applied by the Computerized Forwarding System (CFS) and Postal Automated Redirection System (PARS) will not interfere with the 4-CB applied by the mailer or the MLOCR when the 4-CB is placed above the address. The tracking information in the 4-CB will continue to be available.

Any forwarding label applied may obscure the 4-CB applied below the address within the address block or in the barcode clear zone, and the tracking information will no longer be available. To preserve the tracking information, it would be necessary to add a new capability to combine the new routing code with the tracking code in the original 4-CB into a new 4-CB that is then printed on the forwarding label. Changes to enable PARS to print a new 4-CB on the forwarding label are being evaluated and will likely be implemented no earlier than 2007. **Therefore, placing 4-CB below the address within the address block or in the barcode clear zone cannot be supported at the initial launching of OneCode ACS. OneCode ACS users must apply 4-CB above the address only until PARS changes are implemented.**

In some of these code placement configurations, the mail piece may end up with more than one routing code in either POSTNET barcode or 4-CB. The mail processing equipment uses the following precedence rules to select the routing code to use for sorting:

If a valid routing code is present in the barcode at the lower right barcode clear zone, it has the highest precedence for routing regardless of whether it is a 4-CB or a POSTNET barcode.

Otherwise, if there are more than one POSTNET barcode or 4-CB elsewhere on the mailpiece, precedence, from the highest to the lowest, is as follows:

- POSTNET barcode with delivery point code
- POSTNET barcode with ZIP+4 code
- POSTNET barcode with 5-digit ZIP code
- Any 4-CB

How reliable is 4-CB?

The 4-CB decoding software on various mail processing equipment has undergone rigorous testing both in controlled and live production environments. Virtually all Delivery Bar Code Sorters (DBCS), Carrier Sequence Bar Code Sorters (CSBCS), and Automated Flats Sorting Machines (AFSM) have been upgraded and successfully tested.



Several mailers helped expand the test scenarios to include live mail testing at diverse mail processing locations. Participating mailers include the National Customer Service Center (NCSC) that applies 4-CB on Move Validation Letters (MVL) to request Confirm Service. Scan records captured by the mail processing equipment were carefully analyzed to ensure that the equipment performed as expected.

Want More Information?

For general information, or to download specifications, addenda to publications for various services, and the library of encoding software and fonts, please visit the RIBBS web site at: <http://ribbs.usps.gov/OneCodeSolution/>.

If you want to obtain user ID and password to download the library of encoding software and font, or if you need technical assistance in using the online tool or the library of encoding software and font, please contact the NCSC Help Desk at (877) 640-0724.

Help Desk for Confirm Service can be reached at (800) 238-3150.

Help Desk for ACS can be reached at (800) 331-5746.