



C800 Automation-Compatible Mail

C850 Barcoding Standards for Parcels

Summary C850 describes the technical standards for barcoded parcels. It defines parcel barcode characteristics, location, and content.

1.0 GENERAL

Basic Requirement Every parcel eligible for a barcode discount must bear a properly prepared barcode that represents the correct ZIP Code information for the delivery address on the mailpiece plus the appropriate verifier character suffix or application identifier prefix characters as described in 1.0 through 4.0. The combination of appropriate ZIP Code and verifier or application identifier characters uniquely identifies the barcode as the postal routing code.

1.1

Permissible Barcode Symbologies Until January 10, 2004, barcodes must be printed in one of the following symbologies: UCC/EAN Code 128, USS Code 128, USS Code I 2/5, and USS Code 39. Effective January 10, 2004, only the UCC/EAN Code 128 may be used.

1.2

Postal Routing Barcode Elements Postal routing barcodes must contain the following elements:

1.3

- a. UCC/EAN Code 128. For barcodes prepared using the UCC/EAN Code 128 symbology the postal routing barcode must consist of the leading Application Identifier (AI) of “420” followed by the ZIP Code for the address on the mailpiece. The ZIP Code for the address on the mailpiece may be either the 5-digit ZIP Code or the ZIP+4 code. The AI indicates the meaning of the barcode. The USPS has designated 420 as the AI for domestic postal routing barcodes (and 421 as the AI for international postal routing barcodes). UCC/EAN Code 128 barcodes must not include the trailing verifier character “9.”
- b. Other Permissible Symbologies. For the USS Code 128, USS Code I 2/5, and USS Code 39 symbologies, the postal routing barcode must consist of the 5-digit ZIP Code for the address on the mailpiece, followed by the 1-digit verifier character “9.” Barcodes prepared under these symbologies must not include the prefix “420.”

Use With Delivery Confirmation and Signature Confirmation Services A mailer may qualify for the machinable parcel barcode discount and may apply Delivery Confirmation and Signature Confirmation barcodes in one of the following ways:

1.4

- a. Separate Barcodes. Mailers may place both a postal routing code prepared under 1.0 through 4.0 and separate Delivery Confirmation or Signature Confirmation barcodes on the same mailpiece.
- b. Single Concatenated Barcode. Mailers may print on the same mailpiece a single concatenated barcode that combines the postal routing code and Delivery Confirmation and/or Signature Confirmation information as follows:
 - (1) Only the UCC/EAN Code 128 barcode symbology may be used.
 - (2) The barcode must be prepared according to the barcode specifications for the UCC/EAN Code 128 in S918, S919, and Publication 91.

- (3) The barcode must be prepared according to the data format requirements for concatenated barcodes in Publication 91, Appendix G, Table 25. This format contains the start code, function one code, the “420” application identifier, the 5-digit code of the delivery address on the mailpiece, the function one code, the “91” application identifier, the service type code, the customer ID, the sequential package ID, the MOD 10 check digit, the MOD 103 check digit, and the stop code. The MOD 10 check digit must be calculated using only the Delivery Confirmation barcode or Signature Confirmation barcode elements. The function one codes, the “420” application identifier, and the 5-digit code of the delivery address are not included in the MOD 10 check digit calculation.
 - (4) Instead of the requirements in 3.0 and 4.0, mailers must use the format, placement, and human-readable information requirements found in S918, S919, and Publication 91. The human-readable numeric representation of the concatenated barcode must show the “420” application identifier, the 5-digit code of the delivery address, the “91” application identifier, the service type code, customer ID, sequential package ID, and MOD 10 check digit. The human-readable information also must include the “USPS Delivery Confirmation” or “USPS Signature Confirmation” text and identification bars.
 - (5) [7-11-02] In addition to the human-readable requirements in S918, S919, and Publication 91, the word “ZIP” must be printed on the barcode label either (a) above the barcode, left-justified with a hyphen to separate text (e.g., “ZIP-USPS DELIVERY CONFIRMATION”), or (b) to the left of the barcode in 12-point or larger sans serif type. For the second option, a clear zone between the end of the word “ZIP” and the beginning of the barcode must be maintained. The clear zone must be no less than 10 times the average narrow bar or space element width and no more than 1/2 inch to the left of the barcode. A clear zone of 0.25 inch is recommended.
 - (6) If a mailpiece bears a concatenated barcode, then no other barcodes that appear on the mailpiece may contain the postal routing code structure (see 1.5).
 - (7) All barcode symbols must be printed on substrate material that preserves the optical specification as described in the AIM-USA Uniform Symbology Specification documents. Typically, white label stock commonly used for barcode generation is suitable, providing it is not glossy (causing mirror-like (specular) reflection) nor prone to smearing or smudging.
- c. A single integrated barcode may be used by Delivery Confirmation electronic option mailers who choose to combine Delivery Confirmation or Signature Confirmation service with insurance. Mailers printing their own barcodes and using the electronic option must meet existing specifications in S918 or S919. Two required changes are:
- (1) Change the text above the barcode to identify the service requested. Exhibits are included in Publication 91.
 - (2) Change the service type code in the barcode to identify the class of mail and/or type of special service combined with Delivery Confirmation. Additional information on the Service Type Code Matrix can be found in Publication 91.



Technical Specifications
 1.5 UCC/EAN Code 128 barcodes must meet the technical specifications in UCC/EAN-128 Application Identifier Standard, which can be obtained from Uniform Code Council, Inc. (see [G043](#)), and the specifications in [2.0](#). USS Code I 2/5, USS Code 39, and USS Code 128 barcodes must meet the technical specifications in Uniform Symbology Specification (USS) documents USS-I 2/5, USS-39, and USS-128, respectively, and the specifications in [2.0](#). The USS Code specifications are available from Automatic Identification Manufacturers (AIM) (see [G043](#)).

One Postal Routing Barcode
 1.6 A mailer may include more than one barcode on a mailpiece provided there is only one barcode that is prepared under the postal routing code structure. That is, a mailpiece must contain only one barcode encoded with a 5-digit numeric code followed by the character “9” or encoded with “420” followed by a 5-digit or 9-digit numeric code.

2.0 BARCODE CHARACTERISTICS

Dimensions
 2.1 The preferred range of widths of narrow bars and spaces is 0.015 inch to 0.017 inch. The width of the narrow bars or spaces must be at least 0.013 inch but no more than 0.021 inch. All bars must be at least 0.75 inch high. The wide/narrow bar width ratio for Code I 2/5 and Code 39 must be at least 2.5 to 1.

Reflectance
 2.2 When measured in the red spectral range between 630 nanometers and 675 nanometers, the minimum white bar (space) reflectance (Rs) must be greater than 50%, and the maximum bar reflectance (Rb) must be less than 25%. The minimum print reflectance difference (Rs-Rb) is 40%. Reflectance must be measured with a USPS-specified reflectance meter or barcode verifier.

Quality
 2.3 All barcodes in each mailing must measure American National Standards Institute (ANSI) grade C or above. At least 70% of the barcodes in each mailing must measure ANSI grade A or B. For all printing processes, it is strongly recommended that the symbols be tested to ensure that they meet specification requirements. Information concerning ANSI guidelines X3.182-1990 may be obtained from the American Standards Institute (see [G043](#)).

Substrate Material
 2.4 All barcode symbols must be printed on substrate material that preserves the optical specification as described in the AIM-USA Uniform Symbology Specification documents. Typically, white label stock commonly used for barcode generation is suitable, providing it is not glossy (causing mirror-like (specular) reflection) nor prone to smearing or smudging.

3.0 BARCODE LOCATION

General Standards
 3.1 **[8-7-03]** The address and barcode must be on the side of the mailpiece with the largest surface area, except that the address and barcode must be on the top surface of the mailpiece when its shape requires specific orientation for stability during automated processing. The barcode should be placed immediately adjacent to the address and at least 1 inch from the edge of the mailpiece. The delivery address or barcode may be printed on an attachment or on an enclosure in a window envelope, subject to the reflectance standards in [2.2](#). The barcode may be placed on a separate label or an alternate location on the address label, or the address side of the mailpiece, subject to the clearance standards in [3.2](#). Barcodes that are not placed immediately adjacent to the address must not

encroach on any space reserved for required markings and endorsements. A label that is separate from a prepared address label must be placed on the same side of the parcel as the address label and aligned parallel with the address as read. Separate labels must not overlap any adjacent side.

Barcode Clear Zone

3.2 The barcode must be located as specified in 3.1. No printing may appear in an area 1/8 inch above and below the barcode regardless of location. A minimum clear zone equal to 10 times the average measured narrow element (bars or space) width must be maintained to the left and right of the barcode.

4.0 HUMAN-READABLE BARCODE INFORMATION

If the barcode is printed on the same label as the mailing address and in close proximity to that address, the human-readable equivalent of the ZIP Code or ZIP+4 code encoded in the barcode may be omitted. If the barcode is printed on a separate label from the mailing address, the human-readable equivalent of the 5-digit ZIP Code or ZIP+4 code encoded in the barcode (i.e., omitting the existing "420" Application Identifier for UCC/EAN 128 and omitting the existing "9" verifier character for the other three barcode symbologies) must be printed between 1/8 inch and 1/2 inch below the barcode preceded by the word "ZIP" in 10 point or larger bold sans serif type. In addition, the location of the word "ZIP" may be alternatively placed no less than 10 times the average narrow bar or space element width and no more than 1/2 inch to the left of the barcode, in 12 point or larger bold sans serif type.