

Barcode Specification for Mail Tracking & Reporting

Version 4.0

Mailers must barcode their PS Forms 8125 or 3152-A to receive entry scan notifications from Mail Tracking & Reporting. The barcode to be generated and affixed to (or included in) a shipment's PS Forms 8125 or 3152-A is the Shipment ID Barcode. When USPS takes ownership of the physical shipment (e.g. when the shipment has been unloaded at the destination entry facility), a USPS dock clerk scans the Shipment ID Barcode. This entry scan records the induction point and time for the shipment. The entry scans are uploaded to the Product Tracking System (PTS) and then processed by Mail Tracking & Reporting. Mail Tracking & Reporting notifies the respective customer of the entry scan times and locations via E-mail and/or FTP.

Please note that the barcode specification may change in the coming months. Please consider this potential for change when creating Barcode Generation systems.

Shipment ID Barcode Elements

The Electronic Mailing Data (EMD) Shipment ID Barcode and all integrated barcode solutions will use a 20-digit package ID barcode. The symbology for this barcode type has a fixed length of 20 characters. The data elements include:

Barcode Elements

Data	Overhead
	<i>Start Code</i>
Service Type Code — 2 digits	
D-U-N-S® Number — 9-digit Number	
Sequential Shipment ID — 8 digits	
Check Digit — MOD 10	
	<i>MOD 103 (Code 128 only)</i>
	<i>Stop Code</i>

Start Code

All barcodes must have a symbol start code. USS Code 128 Subset B must begin with a start code B. The start character is not shown in the human-readable presentation nor is it manually keyed or transmitted.

Service Type Code

The Service Type Code for the Shipment ID Barcode is a two-character value of UT.

D-U-N-S Number

The creator of the Electronic Mailing Data (EMD)'s D-U-N-S Number is a 9-digit number.

Customers may request their 9-digit D-U-N-S Number by contacting Dun & Bradstreet by phone at 1-800-333-0505 or via the Internet at www.dnb.com. This number uniquely identifies business entities at specific physical addresses. Customers generating mailings at multiple locations will be expected to use the D-U-N-S Number appropriate for each mailing location.

Sequential Shipment ID

Customers assign an 8-digit Sequential Shipment Identifier. The number must remain unique for at least 12 months. This string of numbers must contain a fixed string of 8 digits. (i.e. 00000012,00000123,etc)

Mod 10 Check Digit

A MOD 10 check digit is required in the last position of the barcode data for all barcodes and is used to detect errors resulting from manual data entry or data transmission errors. This check digit is included in the human readable characters of the printed bar code.

Mod 103 Check Digit

A MOD 103 check digit is required for USS Code 128 barcodes. This check digit follows immediately after the MOD 10 check digit and is not included in the human-readable presentation.

Stop Code

All barcodes must end with symbol stop code. The stop character is not shown in the human-readable presentation nor is it manually keyed or transmitted.

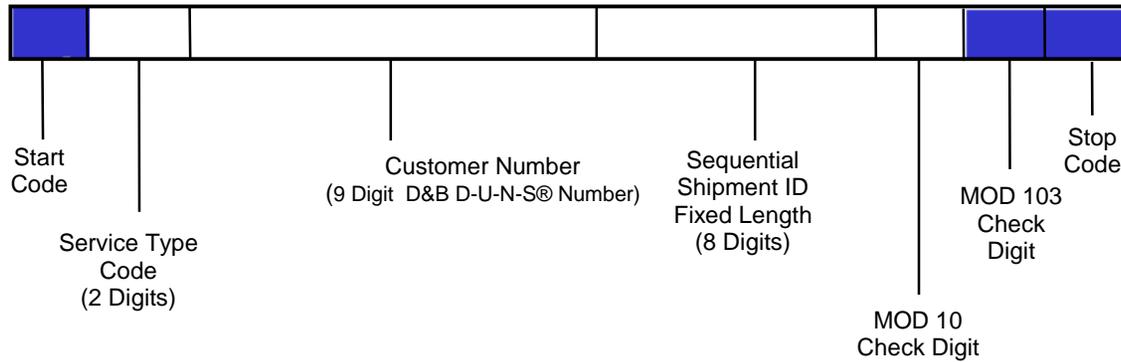
Symbology

The Shipment ID barcode must be printed using USS Code 128 - Subset B symbology.

Barcode Layout

A fixed length 20-digit barcode, in the format previously described, is required with the USS Code 128 symbology:

Data Format USS Code 128



Check Digit (USS Code 128)

Both MOD 10 and MOD 103 are used as checksums for USS Code 128 symbology. USS Code 128 symbology has a mandatory MOD 103 checksum digit. This additional digit is considered overhead; it is unique to the Code 128 symbology and is not a data element. The MOD 10 checksum is positioned as the last digit of the data and is part of the human-readable presentation of data. The MOD 10 checksum is also manually keyed and transmitted as data. The MOD 103 checksum is positioned as the last digit but is NOT part of the human-readable presentation of data. It is also NOT manually keyed nor transmitted as data.

Print Specifications

Dimensions

The preferred range of widths of narrow bars and spaces is 0.015 inch to 0.017 inch. The width of any narrow bars or spaces shall be no less than 0.013 inch, nor greater than 0.021 inch. All bars shall be at least 0.75 inch high.

The ratio of wide to narrow element widths for Interleaved 2 of 5 and Code 3 of 9 symbologies referred to as N, shall be 2.5 to 3.0 inclusive.

Clear Zone

No printing may appear in an area 0.125 inch above or below the barcode. A minimum clear or quiet zone equal to 10 times the average measured narrow element (bar or space) width shall be maintained on either side of the barcode per AIM specifications. When feasible, a left/right clear zone of 0.250 inches is recommended.

Reflectance

When measured in the red spectral range between 630 nanometers to 675 nanometers, the minimum white 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%. The measurements shall be made using a USPS specified reflectance meter or a USPS approved barcode verifier.

Barcode Quality

At least 70% of the barcodes must measure American National Standards Institute (ANSI) grade A or B and none of the remaining portion can measure lower than ANSI grade C. Information concerning ANSI guideline X3.182-1990 may be obtained from:

AMERICAN NATIONAL STANDARD FOR INFORMATION SYSTEMS
BARCODE PRINT QUALITY GUIDELINE
AMERICAN NATIONAL STANDARDS INSTITUTE
11 W 42ND ST
NEW YORK NY 10036-8002

Telephone: 212-642-4900

Web site: www.ansi.org

Barcode Construction

The symbol construction is based on AIM Uniform Symbology specifications:

Uniform Symbology Specification (USS) Code 128

These specifications can be obtained from:

AIM USA
634 ALPHA DR
PITTSBURGH PA 15238-2802

Telephone: 412-963-8588 (ask for Technical Department)

Web site: www.aimi.org

Barcode Identification

Text

Bold text placed no less than 0.125 inch and no more than 0.5 inch above the barcode, must contain the appropriate service, i.e. USPS Electronic Mailing Data (EMD). The minimum size of this text is 12-point bold sans serif type. Larger text is preferred but should not exceed the length of the barcode.

Numbers

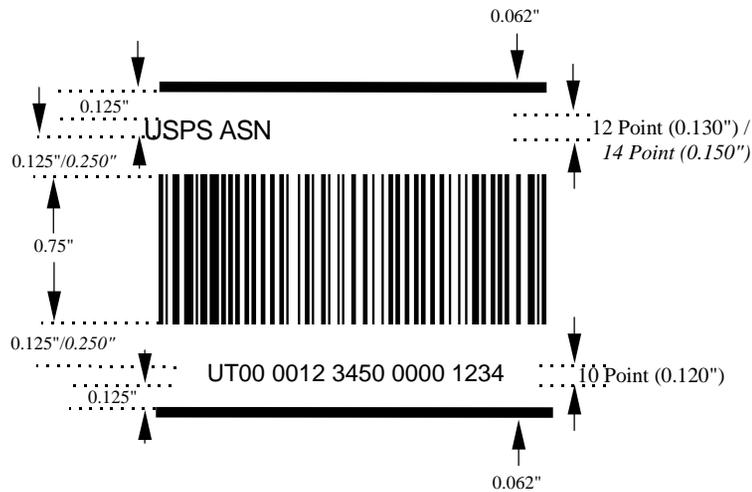
A human-readable numeric representation of the barcode must appear no less than 0.125 inch and no more than 0.5 inch below the barcode. It must be in bold sans-serif type and no less than 10 point. It is recommended that parsing of the human-readable numbers should be in groups no greater than four to facilitate manual entry when required.

Identification Bars

Bold horizontal lines at least 0.062 inch thick must appear between 0.125 inch and 0.5 inch above and below the human-readable text and numbers to segregate the USPS Electronic Mailing Data (EMD) Shipment ID barcode from other information on the shipping label. At a minimum, the line length must extend the width of the barcode, but it can extend the width of the label. For the Electronic Mailing Data (EMD) program, human-readable information, including the PIC, must meet the dimensional requirements below.

Identification Bars (NOT TO SCALE)

Minimum Dimensions (Preferred sizes in Italics)



Human-Readable Information

The human-readable information on the mail piece must meet the following requirements:

- The text above the barcode must read as appropriate: USPS ASN. See the following section for additional requirements for postage-evident items.
- The font must be sans serif bold, and the size must be a minimum of 12 point (14 point is preferred).
- The text must be printed in upper case letters and must be placed above the top clear zone of the barcode.
- The human-readable representation of the barcode symbol must be placed below the bottom clear zone of the barcode.
- The font must be sans serif bold, and the size must be a minimum of 10 point.

Parsing

The human-readable representation of the barcode should be parsed into 5 groups where each group contains 4 characters.

Calculating MOD 10 Check Digit for USS Code 128

Character positions are numbered from right to left for this calculation so the Mod 10 character position counts as position 1. For this calculation only, alpha characters are to be converted to their equivalent numeric values (2 digits) using Table 2: Code 128 Symbol Character Set found in the AIM Uniform Symbology Specification Code 128 (Appendix A). For example, assume that a label identifier number is UT012345678901234565. The numeric equivalent equals 5352012345678901234565.

The modulo 10 check character would be calculated using the following five (5) steps:

Step 1:

Using the numeric equivalent representation, set up a two-row matrix, labeled 1 through the number of digits* in the numeric equivalent representation (in this example 22). Position 1 is the most significant position in the matrix (the right most position). Starting from the least significant position of the matrix (position 22), copy each digit/character of the label ID all the way to position 2. Position 1 value is represented with a “?” as this is the check character to be calculated. Alpha characters are replaced with their equivalent numeric value identified in Table 2. For example, the “U” in the label ID above is replaced with the numeric value of 53 and the “T” is replaced with the value of 52.

POSITION	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
LABEL ID	5	3	5	2	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	?

*Length of numeric equivalent representation varies depending upon the number of alpha characters. The total number of characters for this calculation is the number of characters (each alpha character equates to two characters) in the data plus one for the modulo 10 digit.

Step 2:

Starting from position 2 of the matrix, add up the values in the even numbered positions

POSITION	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
LABEL ID	5	3	5	2	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	?

For example: $6 + 4 + 2 + 0 + 8 + 6 + 4 + 2 + 0 + 5 + 5 = 42$

Step 3:

Multiply the result of Step 1 by 3. For the example $42 \times 3 = 126$

Step 4:

Starting from position 3 of the number, add up the values in the odd-numbered positions, skipping position 1 as it is the position of the (unknown) check character.

POSITION	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
LABEL ID	5	3	5	2	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	?

For the example: $5 + 3 + 1 + 9 + 7 + 5 + 3 + 1 + 2 + 3 = 39$

Step 5:

Add up the results for steps 3 and 4. For the example: $126 + 39 = 165$

Step 6:

The check character is the smallest number that when added to the result obtained through step 5 gives a number that is a multiple of 10.
For the example: $165 + X = 170$ $X = 5$

“5” is the smallest number that when added to 165 results in a multiple of 10. Therefore, the check character is 5.

XML capabilities request for comment:

USPS is currently requesting comments from customer's planning to implement the Electronic Mailing Data (EMD) data specification as to their ability to implement the data file in an XML format. USPS is in the process of investigating XML for the file and methods of accepting the data. Early investigation indicates that Electronic Mailing Data (EMD) file size may be reduced in some cases with use of an XML file format.

Please submit comments via E-mail to Pat Laffey, USPS IT Program Office, at plaffey@email.usps.gov.

Appendix A – USS Code 128 Subset B Character Set

Bar Code 128 Subset B

ASCII Char Pos		Code B	Value	ASCII Char Pos		Code B	Value	ASCII Char Pos		Code B	Value
space			00	D	68	D	36	h	104	h	72
!	33	!	01	E	69	E	37	i	105	i	73
"	34	"	02	F	70	F	38	j	106	j	74
#	35	#	03	G	71	G	39	k	107	k	75
\$	36	\$	04	H	72	H	40	l	108	l	76
%	37	%	05	I	73	I	41	m	109	m	77
&	38	&	06	J	74	J	42	n	110	n	78
'	39	'	07	K	75	K	43	o	111	o	79
(	40	(	08	L	76	L	44	p	112	p	80
)	41	)	09	M	77	M	45	q	113	q	81
*	42	*	10	N	78	N	46	r	114	r	82
+	43	+	11	O	79	O	47	s	115	s	83
,	44	,	12	P	80	P	48	t	116	t	84
-	45	-	13	Q	81	Q	49	u	117	u	85
.	46	.	14	R	82	R	50	v	118	v	86
/	47	/	15	S	83	S	51	w	119	w	87
0	48	0	16	T	84	T	52	x	120	x	88
1	49	1	17	U	85	U	53	y	121	y	89
2	50	2	18	V	86	V	54	z	122	z	90
3	51	3	19	W	87	W	55	ı	161	{	91
4	52	4	20	X	88	X	56	ç	162	|	92
5	53	5	21	Y	89	Y	57	£	163	}	93
6	54	6	22	Z	90	Z	58	α	164	~	94
7	55	7	23	[	91	[	59	¥	165	DEL	95
8	56	8	24	\	92	\	60	ı	166	FNC3	96
9	57	9	25	]	93	]	61	§	167	FNC2	97
:	58	:	26	^	94	^	62	¨	168	Shift	98
;	59	;	27	_	95	_	63	©	169	Code C	99
<	60	<	28	`	96	`	64	ª	170	FNC4	100
=	61	=	29	a	97	a	65	«	171	Code A	101
>	62	>	30	b	98	b	66	¬	172	FNC1	102
?	63	?	31	c	99	c	67				
@	64	@	32	d	100	d	68	{	123		103
A	65	A	33	e	101	e	69	|	124	Start	104
B	66	B	34	f	102	f	70	}	125	Start	105
C	67	C	35	g	103	g	71	~	126	Stop	