Integrating with DPD for Selfprinter Setups **GeoLabel**

Version 2.0: DPD Belux 08/2021

Contents

Revision

Version	Changes	Author
Version 0.1	Initial version	Sebastian GÖRGEN, DPDgroup
Version 2.0	Reworked version DPD Belux (layout and references)	Andy Van Hove, DPD Belux

1. Introduction

The parcel label with its bar-coded information forms the logistical basis of the DPD system. For all parties involved these specifications define the standard, which is essential to the production and use of the DPD parcel label. The DPD system can only be operated at a high-quality level if these specifications are complied with.

If the parcel labels are printed by the customer, the DPD parcel label (including all barcode information) will be created at the time it is required. This makes it possible to associate customer- or order-specific data with the DPD parcel label number (complete parcel tracing from order processing to delivery: "reference number").

The logistic process in the DPD system and the Tracking parcel tracking IT solution are based on regular parcel scanning using stationary or mobile scanners. The necessary information is contained in a barcode that must be present on every parcel.

This document describes technicalities of generating and producing standard DPD parcel label, including sample labels and technical description of creating each label sections (Shipment zone, service area, routing area and Code128 barcode). The deliverable of this document is properly formatted DPDGroup Label.

There are two precedencies on two other subjects of customer integration to generate DPD Label:

- Routing specification – DPD Label requires depot and routing information to be displayed on the label. This information calculated by accessing GRDB – described in the {Routing specification document}
- Data specification – Information on the label should match the fields generated in GeoData file – described in Chapter

2. The parcel label and its components

To ensure correct and fast transport of parcels, the DPD label contains information in both text and code form. The parcel label always has the same structure and is divided in sections. If additional details are required to be specified on the label (for ex. Company-internal information) the changes will need to be agreed upon in advance with the appropriate depot to exclude possible errors.

2.1.   Label fields

Field	Description
Shipment Zone	
Legal Disclaimer	Standard legal disclaimer text
DPD Logo	
Origin Business Unit	Address of dispatch depot
Sender details	Address of the parcel's sender
Delivery address	Address of the parcel's receiver
Delivery details	Parcel receiver details
Optional Additional Information	Information from sender to receiver, optional
Parcel details	Number of parcels and parcel weight
Routing Text Zone	Text for parcel routing, this will be retrieved from the DPD Routing reference tables. Information is determined by origin, destination, service, time of day.
Barcode Zone	Primary barcode for parcel identification

2.2. Label structure

2.2.1. Routing details

Routing text is printed on the label to enable readable sorting. Text sizes and fonts are pre-defined and must accommodate the mandatory text.

2.2.2. Label Field Sizes

The text size is dependent on the font capabilities of the label printer. The label text size proportions must be maintained to ensure compatibility. The specified label font is [font].

2.2.3. Field contents

2.3. Print Quality

The print quality specifications are developed to ensure all scanners can read the barcodes. High quality white label stock along with high quality print is required to achieve the specified PCS. Thermal labels should be of a near Infra-Red type to support scanners operating in the 630nm to 670nm range. Labels should also perform stable prints through exposure to varying heat and temperature conditions

3. The shipment zone

The shipment zone contains all parcel-related data :

- Correct and complete delivery address (must be a physical address, no P.O. box)
- Correct and complete sender address (must be a physical address, no P.O. box)
- DPD dispatch depot address
- Damage notification
- Delivery details: customer specific information (e.g. reference numbers)
- Parcel details: parcel weight and number of parcels
- DPD Logo

Layout of the shipment zone:

The text of the damage notification appears in both English and the language of the country of dispatch.

The DPD dispatch depot address must be taken from the georouting database table: DEPOTS (for printing purpose column POSTCODE must be ignored and is replaced by column ADDRESSPOSTCODE).

3.1.   The service field

Position of the service field:

The relevant information about each service must appear in the service field. The information to be printed is directly related to the SOCode and must be taken from the georouting database. The table is language specific, eg.: SOSERVICEINFO.**EN**, field SOFIELDINFO

In the case of the export and/or department delivery services, further information must be printed in the service field. ___TBD: The required details for each service must be described.___

Layout of the service field:
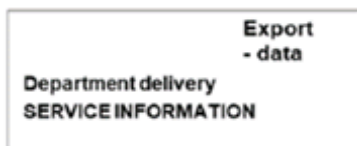
3.1.1.Customer barcode

If in addition to the details specified by DPD further a customer barcode is to be integrated in the service field area or applied to the parcel as a customer barcode, this has to be agreed in advance with the appropriate depot.

The application of customer codes with the symbols

- Code 128 (17-, 27- and 28-digit)
- Type 2/5-interleaved (any length)
- Aztec
- UPU (universal postal union)

must be avoided because these are code types which are used in the DPD system. If their use is essential, this must be agreed with the responsible depot and the code 128 barcode must never begin with a "%" (percent) or "!" (exclamation)

4. Routing Zone

In this chapter, we will describe in detail the routing zone of the label. This contains the information that DPD needs to operationally handle the parcel

Äusserlich nicht erkennbare Schäden müssen DPD innerhalb von 6 Tagen nach Ablieferung schriftlich gemeldet werden.
Notification on damage which is not recognisable from the outside has to be submitted to DPD within 6 days in writing.

dpd

Routing Sample
5.1

Bahnhofsstraße 1
AT-3100 St. Pölten

DEPOT0998
Walandstr. 1
DE-63741 Aschaffenburg
Phone +49 6021 4925

Testkunde DPD
Walandstraße 1
DE-63741 Aschaffenburg
Account 0123456
Phone.: +496021 4925

Contact: **Fred Smith**
Phone.: **+43123456789**
Ref.: **5689 3625 5385 2530**

Packages
1/3

Weight
5.00KG

0988 5100 0001 01 **V**   6-PM3-RDV

Track   Service

AT-DPD-0623

01   **184/B03-AT-3100**   **C001**

2020/11/03 14:59:1920110203 BNET

0003 100 0988 5100 0001 01 184 040 M

4.1. Routing Text Zone

This zone contains the eye readable information to handle the parcels manually.
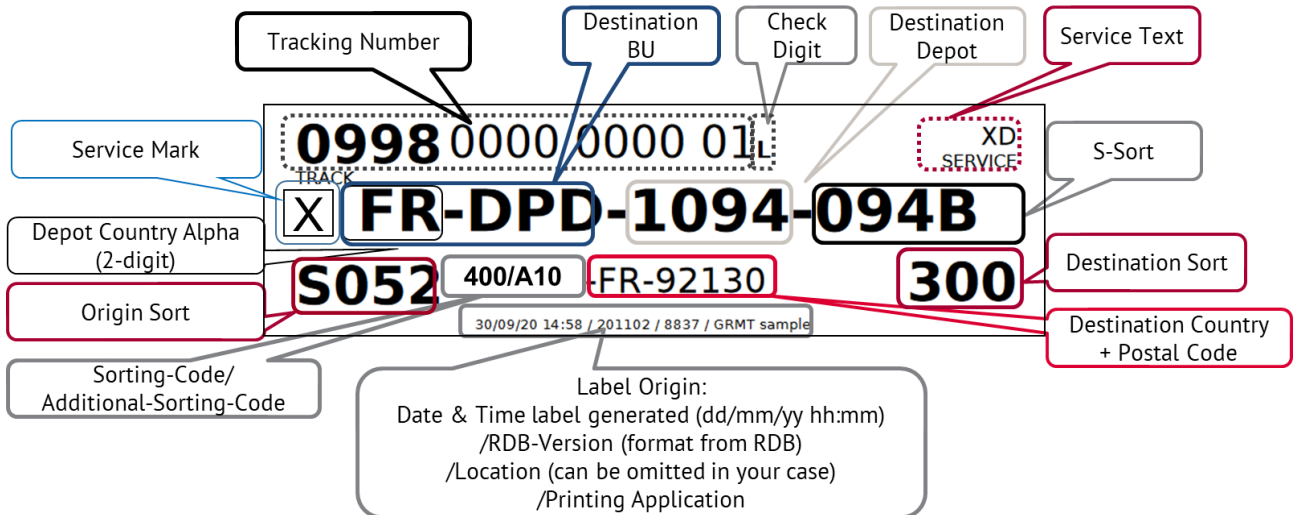
4.2. Barcode Zone
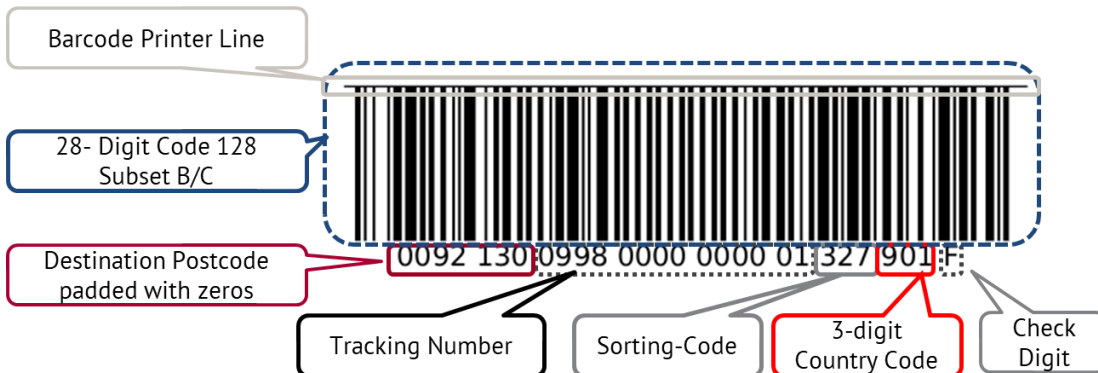
4.1. Label Field Sizes and Content

Field Name	Number of Characters	Comment
ROUTING TEXT ZONE		
Tracking Number	14	Tracking number as provided by the Sending BU
Check Digit	1	

Service Text	18	Service Text as returned from Routing process step 3 Validation
Service Mark Indicator	1	Character must appear in a box
Depot Country Alpha	2	Contains DDEPOTCOUNTRY from Routing specification chapter "4 Route calculation"
Destination BU	3	Field "DEPOTSTR" from BUSINESSUNIT Table matching to the BU ~~ca~~described in chapter 7. Tables only used to create Label
Destination Depot	4	Last 4-digits of the DDEPOT calculated in the routing process step "5 Route calculation"
S-Sort	5	SSORT calculated in the routing process step "5 Route calculation"
Origin Sort	5	Origin sort calculated in the routing process step "6 O-Sort calculation"
Sorting-Code/Additional Sorting code	3/3	SoCode /opt. AsCode used as input for the routing process
Destination Country Alpha / Destination Postal Code	2/9	Destination Country and Postal Code used as input for the routing process
Label Origin	35	Date & Time (dd/mm/yy)/ RDB-Version from Version Table/ Printing Application used to create label
BAR CODE ZONE		
Bar Code Printer Line (Visual quality verification)	-	Appear above and for the length of the bar code
28-Digit Code 128	-	See Chapter 1.3.2
Bar Code Text	28	Help to key enter content of the barcode

4.1.1. Check Digit calculation

Check digits are included after the tracking number in the Routing Text Zone and in the human readable interpretation of the DPDgroup code 128 bar code, this is designed to prevent errors for manual data entry. These check digits should not be confused with the internal code 128 symbology check digit. The symbology check digit is a required part of the code 128 symbol structure and is not counted as part of the user defined data encoded in the symbol. This check character is necessary for the bar code reader to ensure correct decode performance and is usually calculated by the bar code printing application.

Check Digit Calculation Algorithm

Check Digits will be generated using ISO/IEC 7064 mod 37/36 standard, the following table indicates the value to be used within the algorithm for each alphanumeric character of the field to calculate the check digit.

Character Table for ISO 7064 mod 37/36

Char	Value	Char	Value	Char	Value
0	0	A	10	N	23
1	1	B	11	O	24
2	2	C	12	P	25
3	3	D	13	Q	26
4	4	E	14	R	27
5	5	F	15	S	28
6	6	G	16	T	29
7	7	H	17	U	30
8	8	I	18	V	31
9	9	J	19	W	32
		K	20	X	33
		L	21	Y	34
		M	22	Z	35

4.2.   28-Digit Code 128 Barcode

Code 128 is a variable length, high-density alphanumeric symbology. Three different subsets tell the bar code reader which character set to use initially. Three shift codes permit changing character sets inside a symbol. DPDgroup requires subset C for the numeric portion of the bar code. The alphanumeric portion of the bar code uses subset B.

Subset A is prohibited

Subset	Description
Code 128 A	The first sub-set encodes all uppercase and ASCII control characters
Code 128 B	The second sub-set encodes all upper case characters.
Code 128 C	The third sub-set encodes numeric digit pairs 00 through 99.

Each subset has its own advantages. For example if no alpha data is to be encoded the data density within the code can be effectively doubled by using subset C. Code 128 has 106 different bar and space patterns. Each pattern can have different meanings depending upon which subset is used.

4.2.1. Barcode Data Content

The data content of the DPDgroup Code 128 bar code is 28 characters as specified below:

Character		Subset	Field	Description
1	1	B	Identification Tag = "%"	DPDgroup barcode identification
2-8	7	B - Alpha C - Numeric	Destination Postal Code	Postal Code for the destination country
9-12	4	C - Numeric	Origin Identification	Fixed Code to identify the DPDgroup Origin. The code will identify the origin location (eg. depot number).
13-22	10	C	Origin Parcel Number	Parcel Number linked to DPDgroup Origin
23-25	3	C	Sorting Code	Intra-DPDgroup Sorting Code
26-28	3	C	Destination Country Code	Extended ISO 3 digit Numeric country code (routing output)

The DPDgroup tracking number has 14 digits; this number is used within the barcode and data interfaces across the group. For presentation on documents and reports the tracking number must be shown with 15 digits, the extra digit is the check digit to provide number integrity on entry validation.

4.2.2.28 digit bar code structure

Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
A/N	A	A	A	A	A	A	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Field	%	P	P	P	P	P	P	P	T	T	T	T	T	T	T	T	T	T	T	T	T	T	S	S	S	C	C	C

- Character Type (A/N)

A   = Alphanumeric

N   = Numeric

- Character Contents (Field)

%   = DPDgroup identification Tag

P   = Destination Postal Code (7AN or 7N format)

> If the Postal Code is shorter the 7 digits then the field is padded with leading zeros.

> Examples:

56349 = 0056349

B61AA = 00B61AA

T   = Tracking Number (DPDgroup)

S   = Sorting Code

C   = Destination Country Code(result from the Routing Process)

4.2.3. Physical Properties

The specified physical properties of the DPDgroup bar code have been developed to ensure accurate readability with all bar code scanning systems in use and in the foreseeable future.

The individual components of the specification were determined as follows:

Bar / Space Width
Determined by the scanner type, depth of field and presentation speed.

X-Dimension
The width of the minimum narrow element (bar or space) is a dimensional parameter, which can be used to calculate the symbol's actual width

Bar / Space Tolerance
This is the amount the bars and/or spaces can vary from symbol to symbol without changing the overall print quality grade or significantly altering the size of the symbol. The tolerance is roughly equivalent to 20% of the X-dimension.

Horizontal Label Registration Tolerance
How much the different colors of ink used to print the bar code label can be out of alignment with one another. This is primarily related to multi-color offset printing.

Width
The overall width of the bar code is a result of the X-dimension and wide to narrow ratio. The width usually cannot be set independently.

Height
The overall height of the bar code was established to ensure that bar codes were not so small that they could pass between two scanners without being read. Maximum height is significant as increased height improves scan capability.

Quiet Zone
The specified Quiet Zone is a requirement taken from the Code 128 symbology specification and is equivalent to 10 times the maximum X-dimension. A 1mm quiet zone shall also be applied above and below the symbol.

4.2.4. Bar Code Metrics

The important physical properties evaluated on the DPDgroup Code 128 bar code are:

THERMAL PRINTED

Bar Size:

X-Dimension (Narrow Bar Width)

0.375mm (based on 203 dpi)

Overall Bar Code Size:

Dimensions of thermally printed bar codes

Min 79mm x 25mm height (Numeric only Postalcodes)

Max 91.5mm x 25mm height (Alpha Numeric Postalcodest)

Label Stock:

Use only white label stock. (Direct thermal printing preferred)

LASER PRINTED

Bar Size:

X-Dimension (Narrow Bar Width)

0.381 mm (based on 600dpi and higher)

Bar Code Size:

Dimensions of laser printed bar codes

Min 81 mm x 25mm height (Numeric Business Unit)

Max 93 mm x 25mm height (Alpha Business Unit)

Bar-Code Quiet Zones

10.0 times the X-Dimension on each side (3,8 mm)

3,8 mm on start and end of bar code

1mm on top and bottom of bars

Print Quality

The print quality specifications were developed to ensure all scanners could read the bar codes. The major print quality criteria are:

4.2.4.1.1.   Print Contrast Signal (PCS)

The Print Contrast Signal values were established to ensure the bar codes would be readable at the conveyor speeds used on the DPDgroup automated package sorters. The scanners cannot consistently read bar codes with low PCS values on the sorters, although they may read well with a hand scanner.

High quality white label stock along with high quality print is required to achieve the specified PCS. (Thermal labels should be of a Near Infra-Red type to support scanners operating in the 630nm to 670nm range. Labels should also exhibit stable print characteristics through exposure to varying heat and temperature conditions.)

4.2.4.1.2.   Decode Margin

Decode margin is a graded measure of de-codability; or how close a given scan comes to a reference decode failure. Lower margins indicate an increased susceptibility to decoding failure due to scanning errors.

4.2.4.1.3.   Average Bar Error

The average bar growth in the symbol relative to its X-dimension.

4.2.4.1.4.   Reflectance

Given in two parts, reflectance is a measure of the reflected laser light from the bars (dark) and spaces (light).

4.2.4.1.5.   Defects

This is a graded measure of the maximum element reflectance non-uniformity due to any noise within the element due to voids, spots, or fuzzy edges.

4.2.4.1.6. Overall Print Quality

Print Contrast Signal:

Minimum Print Contrast: 90%

Desirable Contrast Range: 95 - 100%

Symbol Contrast (min):   65%

Decode Margin (min):   "A" grade

Average Bar Error (max):   ±0.10X

Defects (max):   15%

Reflectance:

          Light: >=80%

          Dark: <=15%

5. Overview of Label Fields and sizes

The following table describes the individual fields of the label. Fields marked by an "M" describe mandatory fields. The used font type is Arial and the font sizes are in point.

5.1. Shipment Zone

Field name	Field type	Number of characters	Font size/Point	Font size/ mm	Comment/Source
Field headers	M	Variable			
Shipment zone					
Legal Disclaimer	M		10	1.9	Terms & Conditions
DPD Logo	M	-			

5.2. Origin Business Unit

Field name	Field type	Number of characters	Font size/	Font size/ mm	Comment/Source	GeoData corresponding field
Origin Business Unit						
Depot number alphanumerical	M	Variable	6	1.6	Origin Depot as agreed with your Customer Integration Contact.	SHIPMENT/SDEPOT
Name (company name)	M	Variable	6	1.6	Company name from DEPOT Table described in Chapter 5.2.1 in Routing Specification	not linked
Address (street/No.)	M	Variable	6	1.6	Street + PropNum from Table described in Chapter 5.2.1 in Routing Specification	not linked
Country code/Postal code/City	M	Variable	6	1.6	Country Code, Addresspostcode and CityName from Table described in Chapter 5.2.1 in Routing Specification	not linked
Telephone number	M	Variable	6	1.6	Phone Table described in Chapter 5.2.1 in Routing Specification	not linked

5.3.   Senders Details

Field name	Field type	Number of characters	Font size/point	Font size/ mm	Comment/Source
Sender Details					
Sender account	M		6	1.6	SENDER/SCUSTACCNUMBER
Name 1	M	35	6	1.6	SENDER/SNAME1 or SENDER/SCOMPNAME
Name 2	O	35	6	1.6	SENDER/SNAME2 (opt.)
Address (street/No.)	M	35/8	6	1.6	SENDER/SSTREET + SENDER/SPROPNUM
Country code/Postal code/City	M	03/09/1935	6	1.6	SENDER/SCOUNTRYCODE - SENDER/SZIPCODE - SENDER/STOWN
Telephone number	O	30	6	1.6	SENDER/SPHONE
Reference number					SHIPMENT/MPSCREF1

5.4.   Delivery Address

Field name	Field type	Number of characters	Font size/Point	Font size/ mm	Comment/Source
Delivery Address					
Name 1	M	35	10	1.9	Replace Sender by Receiver and S/R
Name 2	O	35	10	1.9	
Address (street/No.)	M	35/8	10	1.9	
Country code/Postal code/City	M	03/09/1935	10	1.9	

5.5.   Delivery Details

Field name	Field type	Number of characters	Font size/Point	Font size/ mm	Comment/Source
Delivery Details					
Contact	M		7	1.7	RECEIVER/RCONTACT
Telephone number			7	1.7	RECEIVER/RCONTACTPHO1
Info (delivery instructions)	O		7	1.7	-
Consignment			7	1.7	-

5.6.   Parcel Details

Field name	Field type	Number of characters	Font size/ points	Font size/ mm	Comment/Source
Parcel Details					
Shipment consists of	M	7	10	1.9	SHIPMENT/MPSCOUNT
Weight	M	5	10	1.9	SHIPMENT/DECLAREDWEIGHT

5.7.   Optionnal additional information

Field name	Field type	Number of characters	Font size/ points	Font size/ mm	Comment/Source
Optional Additional Information					
Customer reference number 1	O	35	8	1.8	SHIPMENT/MPSCREF1
Customer reference number 2	O	35	8	1.8	SHIPMENT/MPSCREF2

5.8. Routing Text Zone

Field name	Field type	Number of characters	Font size/ points	Font size/ mm	Comment/Source
Routing Text Zone					
Tracking number	M	15	20	10	PARCEL/PARCELNUMBER
Destination text (D-text)	M	17	28	13	-
Parcel tracking number	M	15	15	7	-
Outbound route sort (O-sort)	M	5	22	11	-
Inbound route sort (D-sort)	M	5	22	11	-
Service text	M	18	20	10	-
Label origin	M	35	8	1.8	Just the Routingdatabase version: SHIPMENT/ROUTINGPLANVERSION

5.9. Barcode Field

Field name	Field type	Number of characters	Font size/ points	Font size/ mm	Comment/Source
Barcode field					
Barcode plain text	M	28	8	1.8	-
Code 128 barcode	M	-	-		-
Horizontal bar above barcode	M	-	-		-

6. Label Samples

6.1. Thermal Label AZTEC **HOME/BUSINESS** delivery sample
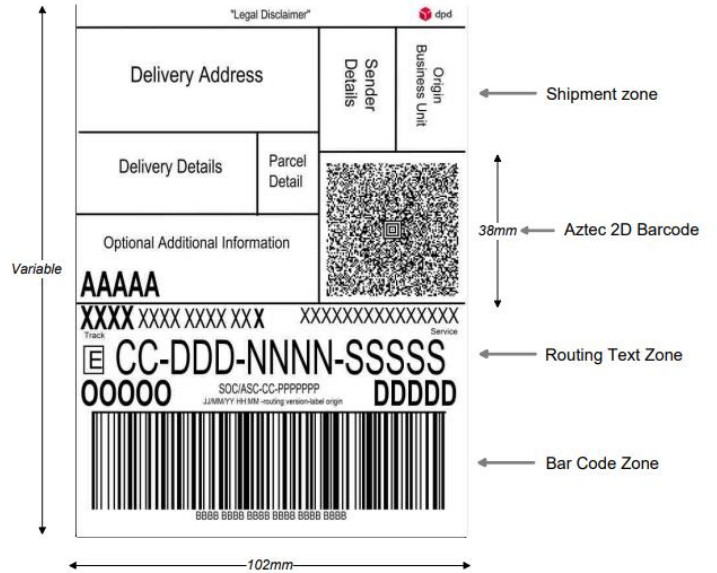
6.2. Thermal Label AZTEC **PUDO** delivery sample
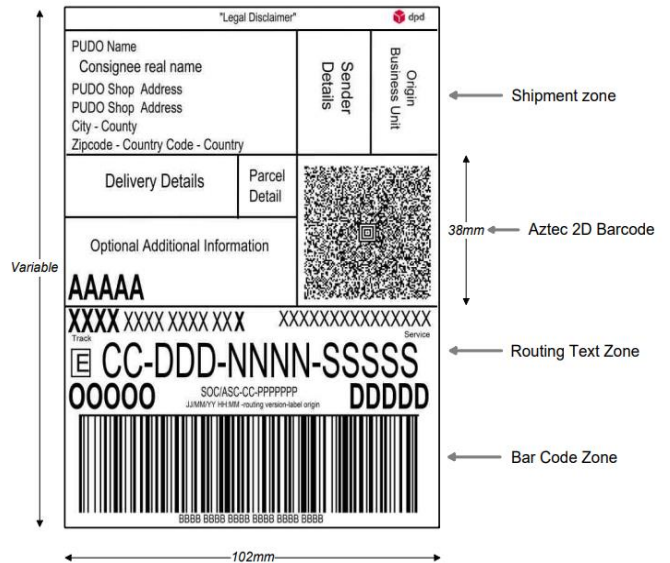
6.3. Thermo transfer (ZPL / EPL)

Eltron Programming Language (EPL) is a printer control language used to produce printed labels for various Eltron model printers. It was superseded by Zebra Programming Language (ZPL) after Zebra Technologies acquired Eltron.