EDEKA Pfand Barcode Generation Algorithm

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1. Overview

This document describes the algorithm used to generate scannable EDEKA Pfand (bottle deposit) barcodes. The barcode follows a structured format that encodes:

- Store Prefix (identifies the EDEKA location)
- Receipt Number (unique to each transaction)
- Date Code (encodes the transaction date)
- Refund Amount (encoded differently for small and large amounts)
- Checksum (validation digits)

The generated barcode is compatible with standard barcode scanners (CODE128 format).

2. Barcode Structure

Segment Length	Length	Description	Example
Store Prefix	8	Identifies the EDEKA store (98409456 or 98409452)	98409456
Receipt Number	3	Zero-padded transaction ID (1-999)	062 → 062
Date Code	5	Encodes the day of the year (format: 20 + day number)	2087 (March 28)
Refund Code	4-6	Encodes the refund amount (see §3.3)	1005 (€1.00)
Checksum	2	Last 2 digits of (receipt_number × 3)	62 × 3 = 186 → 86

3. Algorithm Steps

3.1 Store Prefix Selection

- EDEKA 1: 98409456
- EDEKA 2: 98409452

3.2 Receipt Number Formatting

- Must be between 1–999.
- Padded with leading zeros to 3 digits:
    - 5 → 005
    - 62 → 062

3.3 Date Encoding

- Convert the transaction date to day of the year (1–365/366).
- Prefix with 20:
    - March 28 (Day 87) → 2087
    - March 29 (Day 88) → 2088

3.4 Refund Amount Encoding

Refund Amount	**Encoding Rule**	**Example**
≤ €1.00	(cents) + "05"	€0.50 → 50 + 05 → 5005
> €1.00	(cents × 7.777) (rounded)	€2.25 → 225 × 7.777 ≈ 1750 → 1750

3.5 Checksum Calculation

1. Take the last 2 digits of the receipt number.
2. Multiply by 3.
3. Take the last 2 digits of the result.

   Example:

   - Receipt 062 → Last 2 digits = 62
   - 62 × 3 = 186 → Checksum = 86

4. Full Barcode Generation Example

Input:

- Store: EDEKA 1 (98409456)
- Receipt: 62
- Date: March 28, 2025 (Day 87)
- Refund: €1.00

Steps:

1. Store Prefix: 98409456
2. Receipt Number: 062
3. Date Code: 2087
4. Refund Code:
    - €1.00 → 100 cents → 100 + 05 = 1005
5. Checksum :
    - Last 2 digits of receipt: 62
    - 62 × 3 = 186 → 86

Final Barcode:

98409456 + 062 + 2087 + 1005 + 86 → **9840945606220871005 86**

5. Appendix

5.1 Supported Refund Amounts

- From €0.25 to €99.75 (in €0.25 increments).

5.2 Error Handling

- Invalid receipt numbers (<1 or >999) → Error.
- Missing date → Error.

5.3 Sample Barcodes

Store	Receipt	Date	Refund	Barcode
EDEKA 1	5	Jan 5 (Day 5)	€0.50	98409456005200500515
EDEKA 2	337	Mar 29 (Day 88)	€1.50	984094523372088125011

6. References

Below are the different Pfand bills from Edeka used as reference to decrypt the above algorithm