

Section 4.0:

Association of Element Strings to Form Valid Messages

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4.1 Introduction

The main purpose of automatic data capture (ADC) is to replace manual entry of visually captured information. This implies that an ADC message has to provide all information required for a transaction without human intervention. EAN.UCC System data may be used, for example, to record entities in computer files, to sort goods on conveyor belts, to check completeness of a consignment, to verify dates, and to record physical stock taking.

Element Strings may be applied directly on physical goods or printed in catalogues or documents. The scanning source and the type of transaction determine the required information in a given business application. Since all ADC data is being used in Electronic Data Processing (EDP) applications, strict validation of data to be processed is an absolute prerequisite.

For correct processing of scanned data, certain business applications may require the association of Element Strings representing a particular combination of identification data. The EAN.UCC System enables users to achieve the needed level of data accuracy through the use of adequate Element Strings.

The logical set up of the data standard of the EAN.UCC System enables system users to validate scanned data messages (see [Section 7.0, System Processing in EDP Applications](#)).

Validation is effected on two levels. The first is validation of the data for conformity with system rules (e.g., to provide a message that contains all information to be processed logically without human intervention). The second level is validation of the data for conformity with the requirements of a particular business application.

Figures [4.3 – 1](#) and [4.4 - 1](#) show the rules for the first verification level (e.g., validate data to conform with the system logic). [Figure 4.3 - 1](#) defines the pairs of Element Strings that cannot appear on the same physical entity. [Figure 4.4 – 1](#) defines the Element Strings that mandate the appearance of another Element String on the same physical entity. All other combinations of Element Strings are possible at the first level of verification, although they may not make sense at the second, the application level.

4.2 Basic Considerations

The Element Strings that require specialised software and/or scanner set up are not covered by these rules. These are the Element Strings with EAN.UCC Prefixes 0001 to 0007, 02, 04, 05, 20 to 29, 980, and 99; EAN/UCC-8 Prefixes 0 and 2; two-digit and five-digit Add-On Symbols; and AIs (8100) to (8102).

Duplicate Element Strings appearing on the same physical entity must have the same value.

In [Figures 4.3–1](#) and [4.4–1](#), the Application Identifiers (AIs) are used to indicate the Element String. The AI (01) is used to indicate Global Trade Item Number™ (GTIN™), however the Element Strings that encode GTINs are defined in [Sections 3.2.1, 3.3.1, 3.5.1, 3.5.2, 3.5.3, 3.6.2, 3.6.3, and 3.6.52](#). GTINs may be encoded in bar code symbols from the EAN/UPC Symbology family, ITF-14 Bar Code Symbols, RSS Symbology family, and UCC/EAN-128 Bar Code Symbols using AI (01) or AI (8006).

4.3 Invalid Pairs of Element Strings

Figure 4.3 – 1 defines the pairs of Element Strings that cannot appear on the same physical entity.

Figure 4.3 – 1

Pair of Element Strings				Comment
AI	Designation	AI	Designation	
01	Identification of a trade item	01	Identification of a trade item	Duplicate Global Trade Item Numbers™ (GTINs™) with different values
01	Identification of a trade item	02	Identification of logistic unit contents	AI (02) must not be used for the identification of trade items contained in a trade item.
22	Secondary data for the health industry	30	Count	Duplicate counts with different values
22	"	10	Batch/lot number	Duplicate lot numbers with different values
22	"	17	Expiration date	Duplicate expiration date with different values
22	"	21	Serial number	Duplicate serial numbers with different values
420	Ship to postal code, single postal authority	421	Ship to postal code with ISO country code	Only one ship to postal code may be applied on an item.
422	Country of origin of a trade item	426	Country of full processing	Duplication of country of origin of a trade item (covered by country of full processing)
423	Country of initial processing	426	Country of full processing	Duplication of country of initial processing (covered by country of full processing)
424	Country of processing	426	Country of full processing	Duplication of country of processing (covered by country of full processing)
425	Country of disassembly	426	Country of full processing	Duplication of country of disassembly (covered by country of full processing)
390n	Amount payable – single monetary area	391n	Amount payable – with ISO currency code	Only one amount payable Element String may be applied on a payment slip.
8006	Component identification	01	Identification of a trade item	Other GTINs cannot be used with AI (8006). The trade item is identified by a GTIN contained in the AI (8006).

4.4 Mandatory Association of Element Strings

Figure 4.4 – 1 defines the Element Strings that mandate the appearance of another Element String on the same physical entity.

Figure 4.4 – 1

If Element String AI	Designation	Then Mandatory Associated Element String	Comment
01 or 02 with N ₁ = 9	Identification of a Variable Measure Trade Item	30, 3nnn ¹ or 3nnn ² or 8001	Mandatory association with variable measure information Only UCC/EAN-128, ITF-14, and RSS Expanded Bar Code Symbols can encode a GTIN with N1 = 9.
02	Identification of logistic unit contents	00	Mandatory association with a Serial Shipping Container Code (SSCC)
02	Identification of logistic unit contents	37	Mandatory count of the contained trade items
10	Batch/lot number	01 or 02	Mandatory association with a Global Trade Item Number™ (GTIN) or with the identification of logistic unit contents
11, 13, 15, 17	Dates	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
12	Due date	8020 and 415	Mandatory association with the Payment Slip Reference Number (AI (8020)) and the EAN.UCC Global Location Number (GLN) of the invoicing party
20	Product variant	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
21	Serial number	01	Mandatory association with a GTIN of a single trade item (a serial number cannot apply to a grouping of trade items)
22	Secondary data health industry	01	Mandatory association with a GTIN
240	Additional product identification	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
241	Customer part number	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
250	Secondary serial number	01	Mandatory association with a GTIN (a secondary serial number cannot apply to a grouping of trade items)

If Element String		Then Mandatory Associated Element String	Comment
AI	Designation		
251	Reference to source entity	01	Mandatory association with GTIN of the trade item
30	Variable count	01 or 02	Mandatory association with a variable measure GTIN (e.g., an EAN/UCC-14 Identification Number starting with the digit 9) or the identification of variable measure content of a logistic unit
3nnn*	Trade measures which cannot be summed	01	Mandatory association with a variable measure GTIN (e.g., an EAN/UCC-14 Identification Number starting with the digit 9)
3nnn**	Trade measures which can be summed	01 or 02	Mandatory association with a variable measure GTIN (e.g., an EAN/UCC-14 Identification Number starting with the digit 9) or the identification of variable measure content of a logistic unit
3nnn***	Logistic measures	00 or 01	Mandatory association with an SSCC or a variable measure GTIN (e.g., an EAN/UCC-14 Identification Number starting with the digit 9)
337n	Kilograms per square metre	01	Mandatory association with a GTIN
37	Count of units contained	02	Mandatory association with the identification of logistic unit contents
390n	Amount payable – single monetary area	8020 and 415	Mandatory association with the Payment Slip Reference Number, AI (8020), and the GLN of the invoicing party
391n	Amount payable – with ISO currency code	8020 and 415	Mandatory association with the Payment Slip Reference Number, AI (8020), and the GLN of the invoicing party
392n	Amount payable – single monetary unit	01	Mandatory association with variable measure GTIN (e.g., an EAN/UCC-14 Identification Number starting with the digit 9)
393n	Amount payable – with ISO currency code	01	Mandatory association with variable measure GTIN (e.g., an EAN/UCC-14 Identification Number starting with the digit 9)
403	Routing code	00	Mandatory association with an SSCC
415	GLN of the invoicing party	8020	Mandatory association with Payment Slip Reference Number, AI (8020)

If Element String		Then Mandatory Associated Element String	Comment
AI	Designation		
422	Country of origin	01 or 02	Mandatory association with a GTIN
423	Country of initial processing	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
424	Country of processing	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
425	Country of disassembly	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
426	Country of full processing	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
7001	NATO Stock Number	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
7002	UN/ECE Meat Carcasses and Cuts Classification	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
703(s)	Approval number of processor	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
8001	Variables of roll products	01	Mandatory association with a variable measure GTIN (e.g., an EAN/UCC-14 Identification Number starting with the digit 9)
8005	Price per unit of measure	01 or 02 with $N_1 = 9$	Mandatory association with a variable measure GTIN or the identification of variable measure content of a logistic unit
8007	International Bank Account Number, AI (8007)	8020 and 415	Mandatory association with the Payment Slip Reference Number, AI (8020), and the GLN of the invoicing party
8008	Date and time of production	01 or 02	Mandatory association with a GTIN or with the identification of logistic unit contents
8020	Payment Slip Reference Number, AI (8020)	415	Mandatory association with the GLN of the invoicing party

*AIs (3nnn) where the first three digits are 312, 313, 324, 325, 326, 327, 328, and 329.

**AIs (3nnn) where the first three digits are 310, 311, 314, 315, 316, 320, 321, 322, 323, 350, 351, 352, 356, 357, 360, 361, 364, 365, and 366.

***Als (3nnn) where the first three digits are 330, 331, 332, 333, 334, 335, 336, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 353, 354, 355, 362, 363, 367, 368, and 369.