









AIDC - Capacities of numbering systems for items

FAQs often include the question „what is the capacity of alphanumeric numbers versus numerics?“. The examples below address this question by illustrating the capacities of numbers of different length and a comparison with specific numeric strings. Completed samples of ISO/IEC 15459-4 conforming product/item codes and serial numbers follow below.





1. Examples of capacities of alphanumeric character sets [0 to 9, A to Z (36)] of different length (1 to 8)

Character length „an“	Examples alpha	Examples alphanumeric	Formula $an \times 36^x$ for fixed length examples	in the case of variable lengths, the values add up
1	A	1	36	36
2	AB	A1	1.296	1332
3	ABC	A1C	46.656	47.988
4	ABCD	AB3D	1.679.616	1.727.604
5	ABCDE	1B3D4	60.466.176	62.193.780
6	ABCDEF	123DEF	2.178.782.336	2.240.976.116
7	ABCDEFG	ABCD567	78.364.164.096	80.605.140.212
8	ABCDEFGH	A2C4E6G8	2.821.109.907.456	2.901.715.047.668

2. Examples of ISO/IEC 15459-4 product/item codes applied with ASC DI „25P“ with SI prefix: „.“ (Dot), IAC: „QC“, CIN: „COMP“ and followed by alphanumeric PNs of different length (e.g. 5 to 12 characters)









Character length of PN „an“	UID examples alphanumeric	Formula: $SN \times 36^x$ for fixed length SNs	in the case of variable lengths, the values add up
5	.25PQCCOMP <u>1B3D5</u> 	60.466.176	62.193.780
6	.25PQCCOMP <u>123DE6</u> 	2.178.782.336	2.240.976.116
7	.25PQCCOMP <u>ABCD567</u> 	78.364.164.096	80.605.140.212
8	.25PQCCOMP <u>A2C4E6G8</u> 	2.821.109.907.456	2.901.715.047.668
9	.25PQCCOMP <u>1234DEFG9</u> 	101.559.956.668.416	104.461.671.716.084
10	.25PQCCOMP <u>ABCD567X10</u> 	3.656.158.440.062.976	3.760.620.111.779.060
11	.25PQCCOMP <u>A2C4E6G8Y11</u> 	131.621.703.842.267.136	135.382.323.954.046.196
12	.25PQCCOMP <u>1234DEFG9012</u> 	4.738.381.338.321.616.896	e.t.c.
etc.			

3. Capacity of numeric article numbers of 5 to 8 digits length in comparison with alphanumerics

Character length	UID examples numeric	Possibilities for fixed length numerics	*comparison with fixed length alphanumerics
5	.25PQCCOMP <u>12345</u> 	99.999	5 an: 60.466.176
6	.25PQCCOMP <u>123456</u> 	999.999	6 an: 2.178.782.336
7	.25PQCCOMP <u>1234567</u> 	9.999.999	7 an: 78.364.164.096
8	.25PQCCOMP <u>12345678</u> 	99.999.999	8 an: 2.821.109.907.456

* Values from table above, column 3

4. Examples of ISO/IEC 15459-4 Serial Numbers (UID) applied with SI prefix: „.“ (Dot) IAC: „QC“, CIN: „COMP“ and followed by alphanumeric SNs of different length (1 to 8 characters)

Character length of SN „an“	UID examples alphanumeric	Formula: SN x 36 ^x for fixed length SNs	in the case of variable lengths, the values add up
1	.25SQCCOMP <u>1</u> 	36 possibilities	36 possibilities
2	.25SQCCOMP <u>A1</u> 	1296	1.332
3	.25SQCCOMP <u>A1C</u> 	46.656	47.988
4	.25SQCCOMP <u>AB3D</u> 	1.679.616	1.727.604
5	.25SQCCOMP <u>1B3D4</u> 	60.466.176	62.193.780
6	.25SQCCOMP <u>123DEF</u> 	2.178.782.336	2.240.976.116
7	.25SQCCOMP <u>ABCD567</u> 	78.364.164.096	80.605.140.212
8	.25SQCCOMP <u>A2C4E6G8</u> 	2.821.109.907.456	2.901.715.047.668

Note: The principle of the capacity of numeric and alphanumeric number ranges applies to all corresponding applications.

5. ABBREVIATIONS & TERMS

Abbreviation	Term	Description
AIDC	Automatic Identification and Data Capture	Method of automatic data communication by means of barcode, 2d-symbologies RFID and OCR.
CIN	Company Identification No.	Numeric or alphanumeric company ID assigned by an accredited Issuing Agency and used in conjunction with IAC to generate globally unique data elements for encoding in ADC media according to ISO/IEC 15459 and in conjunction with ISO/IEC 15418 data identifiers.
IAC	Issuing Agency Code	IACs are registered in the ISO/IEC 15459 Registry and are used to position in front of the company IDs registered by them and in conjunction with ISO/IEC 15418 data identifiers supplying the meaning of the data element.
SI	System Identifiers	Prefixes identifying the coding syntax, like „+“ (PLUS) for HIBC, „FNC1“ for GS1, header „[> ^R “ for ADC High Cap Syntax ISO/IEC 15434, „.“ (DOT) für DIN 16958 & EDIFICE Keyboard and WEB compatible Syntax
UID	Unique Identification	Unique Identification of items is globally standardized by „ISO/IEC 15459 Unique Identification“, a UID is also the synonym for a „Unique ID“ encoded in AIDC media.