Beacon EmbeddedWorks Model Number Explanation & Decoder

White Paper 293

Beacon EmbeddedWorks
Published: May 2005
Last revised: October 2023

Abstract

This white paper exists as a brief explanation of Beacon EmbeddedWorks' model numbering method, product identification, and reasons for undergoing a model number change; the paper also offers decoders for the model number format.

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Revision History

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	JAW	-Initial Release	HAR	05/25/05
B	JAW	-Updated doc with RoHS Compliance Details	HAR	06/14/05
C	JAW	-Added RoHS info to Custom SOMs and SBCs	JAW	06/20/05
D	JCA	-Added Model # Revision info; Removed “pre-release” modifier for Development Kits	JCA	03/23/06
E	JCA	-Added dash after Project Code and removed Model # Revision character in Custom SOM format; -Added Custom Silicon Defined format	ELH	08/09/06
F	JCA	-Reformatted document—added Introduction; -Added i.MX Model Number Format; -Added Legacy Model Number Format	JCA	11/16/07
G	JCA	-Section 5.2: Removed “touch” from the peripheral options description for letter J	JCA	05/02/08
H	JCA	-Updated Section 1; -Added Sections 2–4; -Section 5.2: Added Memory option 9, NAND option 8, Peripheral option P; Specified COM Express form factor as Type I	JMC & JCA	09/11/08
I	JCA	-Added Table of Contents; -Added explanation of an “X” that precedes processor names; -Section 5.2: Added NAND option 9; Peripheral options Q &R; Added form factor type J for SOM-M2; -Added Section 5.5 for DLP products model numbers; -Added Section 7.2 for legacy PXA270 SOM model numbers	JCA	04/26/10
J	JCA	-Sections 7.1 & 7.2: Added extended temp marker	JCA	01/20/11
K	SO	-Section 2: Updated example pictures and references to DM3730 Torpedo Development Kit and DM3730 Torpedo SOM; -Section 3.3: Updated to reflect that Pilot development phase receives alpha revision character, rather than numeric revision character; -Section 5.2: Added form factor type K for Torpedo + Wireless	SO	01/26/12
L	JMC	- Section 5.2: Added “A” for SDRAM memory size. Added “L” for SOM-M3 form factor. Added example list for Processor Types.	JMC, BB, AF	01/19/17
M	JMC	-Section 5.2: Updated NAND flash character to add eMMC flash memory densities.	JMC, BB	10/9/18
N	JMC	-Section 5.2: Updated Processor Type examples to include iMX8M and RZG2 processors. -Sections 5.1, 5.2, 5.3 and 5.4: Updated model number examples to more current products. -Overall document: Updated branding format and references to Beacon EmbeddedWorks.	JMC, BB	05/14/20

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P	JMC	-Section 2: Updated example pictures and text references to current products with Beacon EmbeddedWorks formatted label logos. Section 3: Updated model and part number references to correspond to changes in section 2. Section 5.1: Updated example to current product. Section 5.2: Updated model number format legend to current list of valid options.	JMC, BB	2/21/23
Q	JMC	Section 5.2: Updated model number format legend to add a 10 GB memory size character for NAND/eMMC Flash	JMC, BB	10/19/23

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1 Introduction

Sections 2–4 of this white paper will discuss the different methods to identify a Beacon EmbeddedWorks product, give a brief description of how and why a product undergoes a form/fit/function change, and explain how the customer is notified of that change. This paper is only meant to be a broad overview of the process and should not be confused with an actual procedure document.

Sections 5–7 of this white paper explain how to decode Beacon EmbeddedWorks' model numbers in order to understand the specific component configuration of each product.

In August of 2007, changes to the model number format were implemented in order to make the model number more consistent across form factors. These changes will affect new products and new configurations of existing products; board revisions of current configurations will continue with the legacy model number conventions (see Section 7).

2 Identifying Your Product

2.1 Identifying Your Development Kit

1. Look on the outside of the box and find the label that looks like this:

Figure 2.1: Development Kit Box Identifying Label

2. On the label, the line that begins with "(1P) MPN:" tells you the model number of your development kit. In the picture above, the model number is: **SDK-IMX8MMQ-10-2G32GR-A**.
3. Notice that the model number ends with **–A**. This tells you the revision of your development kit's model number.
4. The line that begins with "KIT. PN:" tells you the part number of your development kit (the part number is also sometimes referred to as the assembly number). In the picture above, the part number is: **1031025**.
5. Immediately following the part number of your development kit, you will find the revision of that part number. In the picture above, the part number revision is: **A**.
6. The line that begins with "KIT. SN:" tells you the serial number of your kit. In the picture above, the serial number is: **3921M00006**.
7. The first four digits of the serial number represent the "date code" of your development kit (the date it was manufactured). The first two digits represent the week it was manufactured

and the last two digits represent the year. In the picture above, the date code tells you that your development kit was manufactured during the 39th week of 2021.

8. The letter in the middle of the serial number represents the manufacturer location of the development kit. The last five digits of the serial number represent the unique identifier of this particular item; for example, the kit above was the 6th Beacon EmbeddedWorks product of this part number built at manufacturer M during the 39th week of 2021.

2.2 Identifying Your SOM

1. Inside the box, you will find the SOM included with your development kit. Just like your development kit, the SOM has a model number, part number, and serial number to help identify it. (Be aware that the numbers will be different since one set identifies the development kit and the other identifies just the SOM). Your SOM will look similar to the picture below:

Figure 2.2: SOM Identifying Label

2. On the SOM, find the label that looks like the one pictured above. This label tells you the part number, part number revision, serial number, and model number of your SOM.
3. The first number on the label tells you the part number of your SOM. In the picture above, the part number is: **1031561**.
4. The line directly below the part number tells you the revision of that part number. In the picture above, the revision is **A**.
5. The line following the part number revision tells you the serial number of your SOM. In the picture above, the serial number is **1622M00006**.
6. Remember that the serial number also includes the date code (the first four digits) that tells you when your SOM was manufactured. In the picture above, the SOM was manufactured in the 16th week of 2022 since the first four digits are: **1622**.
7. The final two lines on the label tell you the model number of your SOM. In the picture above, the model number is **SOMIMX8MMQ-11-1BD0SMIR-A**.
8. Notice that the model number ends with **–A**. This again indicates the revision of the model number. Sometimes the revision may be a number, and not a letter. Also, sometimes the model number will not have a revision associated with it.
9. Other labels may appear on your SOM, but they are not important when identifying your SOM.

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Note about examples above: The development kit box and SOM used in the pictures were each chosen at random; it should not be assumed that the SOM in the examples above was part of the development kit in the examples above.

3 How are model numbers and part numbers related?

From this point on, we will just use SOMs as examples, but understand that the same rules apply to development kits. Models are made up of an assembly of parts; therefore, every model has a model number that is tied to an assembly number (also referred to as a part number). In the SOM example above, the model number **SOMIMX8MMQ-11-1BD0SMIR-A** is tied to the part number **1031561 Rev A**.

3.1 Model Number

The model number represents the unique configuration for that SOM and is used when ordering the SOM and for means of identification. Usually, the model number is somewhat descriptive of the SOM. For instance, the model number shown above (**SOMIMX8MMQ-11-1BD0SMIR-A**) makes it clear that we are referring to An iMX8M SOM since those identifiers are included in the model number. The other letters also mean specific things about the configuration. You can review Sections 5–7 of this document to see what those letters mean, but for current purposes, just notice that the model number is more descriptive than the numerical part number.

3.2 Part (Assembly) Number

The part number (also referred to as an assembly number) represents the specific assembly of parts that make up the model. This number consists of 7 digits and a revision number or letter. For instance, the part number of the SOM pictured above is **1031561 Rev A**.

3.3 Revision Letter vs. Revision Number

For both model numbers and part numbers, the revision can be indicated using either a number or a letter. A number is used to indicate Alpha and Beta development phases; a letter is used once the product has reached the Pilot and Production development phases.

4 When do model numbers and part numbers change?

When Beacon EmbeddedWorks needs to change something on the product, the first thing that is determined is if this change will impact your use of the product. This is determined by following the rule of “form/fit/function”. If the change is minor and will not impact the form, fit, or function of the product as you use it, then the change will not require the model number or part number to be altered and will likely only result in changing the revision of the part number (e.g., from Rev A to Rev B). An example of this is if Beacon EmbeddedWorks needs to modify documentation on the Bill of Materials (BOM); the change does not impact the product’s functionality, but this change still requires a method to track when it occurred.

If the change may impact the form, fit, or function of the product, then the 7-digit part number will be altered to a different number and the model number will receive a new revision at the end of the number string. An example of this is if the processor silicon undergoes a revision change that could impact custom software or a custom baseboard design. Figure 4.1, below, gives a graphical representation of a change’s impact on the model number and part number.

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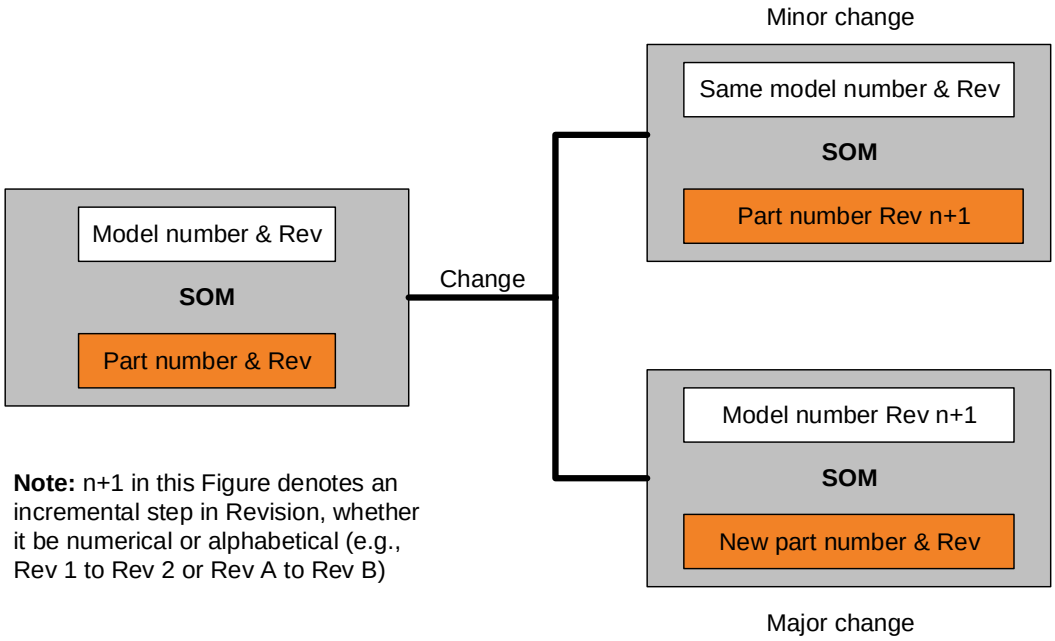

Figure 4.1: How a change impacts model and part numbers

4.1 Product Change Notifications

When a major change occurs, triggering a new part number and a revision increase to the model number, Beacon EmbeddedWorks will write a Product Change Notification (PCN) document to detail exactly what changed and the possible impact on custom designs or software. This PCN document will then be posted to the Beacon EmbeddedWorks website and made available to customers with registered products.

5 Beacon EmbeddedWorks Controlled Model Number Formats

5.1 Development Kit Model Number Format

SDK	-	IMX8MMQ	-	10	-	2G	32G	R	-	A
Specifies Development Kit		Processor max. 8 characters (an "X" preceding the processor name indicates pre-release silicon)		Version code		SDRAM size	Flash size	R= RoHS compliant Blank= non-RoHS compliant		Model # revision (can be an Alpha or Numeric character)

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5.2 Standard SOM Model Number Format

SOM IMX8MMQ -10 - 1 A E 4 S M I R - A

- **SOM** — Specifies System on Module
- **IMX8MMQ** — Processor Type, max. 8 characters (an "X" preceding the processor name indicates pre-release silicon)

Examples:
OMAP3530
OMAP3503
DM3730
AM3703
AM1808
OMAPL138
C6748
AM3517
IMX6S (single core)
IMX6D (dual core)
IMX6Q (quad core)
Z7020
IMX8MMQ (mini quad core)
IMX8MMQL (mini quad light)
IMX8MNS (nano solo core)
IMX8MNSL (nano solo light)
IMX8MPQ (plus quad core)
IMX8MPD (plus dual core)
RZG2M
RZG2N
RZG2H

- **10** — Version code
- **1** — Speed code (unique to each family, specified on Product Brief)
- **A** — Memory (SDRAM/SRAM/DDR):
  0 - 0 or 512KB (LH75401 only)
  1 - 2 MB (LH75401 only)
  3 - 16 MB
  4 - 32 MB
  5 - 64 MB
  6 - 128 MB
  7 - 256 MB
  8 - 512 MB
  9 - 1 GB
  A - 2 GB
  B - 4 GB
  C - 6 GB
  D - 8 GB
- **E** — NAND/eMMC flash:
  0 - 0 MB
  1 - 4 MB
  2 - 8 MB
  3 - 16 MB
  4 - 32 MB
  5 - 64 MB
  6 - 128 MB
  7 - 256 MB
  8 - 512 MB
  9 - 1 GB
  A - 2 GB
  B - 4 GB
  C - 8 GB
  D - 16 GB
  E - 32 GB
  F - 64 GB
  G - 128 GB
  H – 10 GB
- **4** — NOR flash:
  0 - 0 MB
  1 - 4 MB
  2 - 8 MB
  3 - 16 MB
  4 - 32 MB
  5 - 64 MB
  6 - 128 MB
  7 - 256 MB
- **S** — SOM specific peripheral options:
  A - Standard configuration (unique to each family)
  B - Touch
  C - Audio
  D - Wired Ethernet
  E - Audio, touch
  F - Wired Ethernet, touch
  G - Wired Ethernet, audio
  H - Wired Ethernet, audio, touch
  I - Wired Ethernet, audio, touch, Bluetooth, 802.11b/g
  J - Wired Ethernet, audio, touch, Bluetooth
  K - Audio, touch, Bluetooth, 802.11b/g
  L - Wired Ethernet, NO graphics
  M - Audio, NO graphics
  N - Wired Ethernet, audio, NO graphics
  P - Wired Ethernet, audio, touch, 802.11b/g
  Q - NO SATA
  R – Wired Ethernet, touch, Bluetooth, 802.11b/g
  S – Wired Ethernet, Bluetooth, 802.11 a/b/g/n/ac
  T – Wired Ethernet, Bluetooth, 802.11 a/b/g/n/ac, LTE CAT M1
- **M** — Form factor:
  A - Card Engine
  B - SOM-ETX
  C - COM Express Type I
  D - SOM-LV Type I
  E - SOM-LV Type II
  F - SOM-LV Type III
  G - Torpedo
  H - SOM-M1
  J - SOM-M2
  K - Torpedo + Wireless
  L - SOM-M3
  M - SOM-M4
  N - SOM-L4
- **I** — Temperature rating:
  C = 0 to +70 °C
  I = -40 to + 85 °C
  X = Extended temp (unique to each SOM)
- **R** — R = RoHS compliant
  Blank = non-RoHS compliant
- **A** — Model # revision (can be an Alpha or Numeric character)

5.3 Display Kit Model Number Format

LCD - 4.3 - WQVGA - 20 R - A

- **LCD** — Diagonal screen size in inches
- **4.3** — Display resolution
- **WQVGA** — Version code
- **20** — R= RoHS compliant
  Blank= non-RoHS compliant
- **R** — Model # revision (can be an Alpha or Numeric character)

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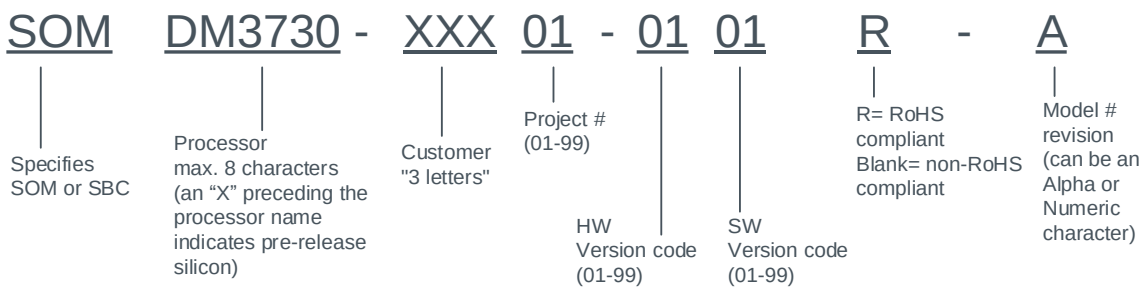
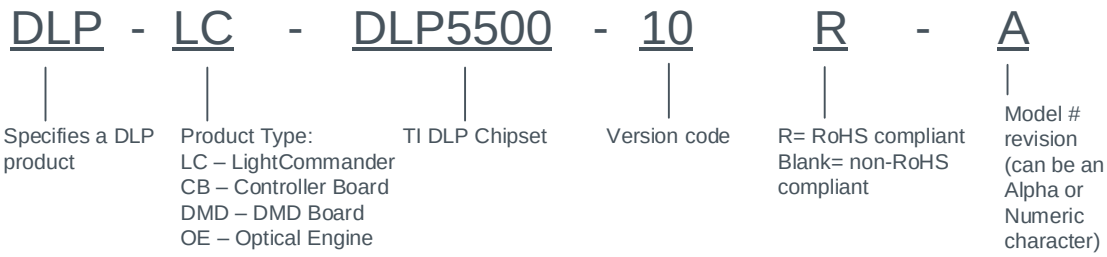
5.4 Custom (Customer) SOM/SBC Model Number Format

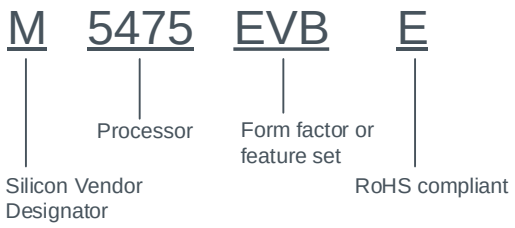


5.5 DLP Products Model Number Format

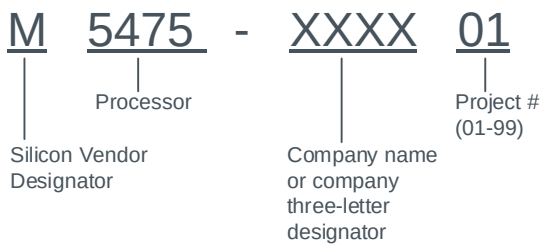


6 Silicon Partner Controlled Model Number Formats

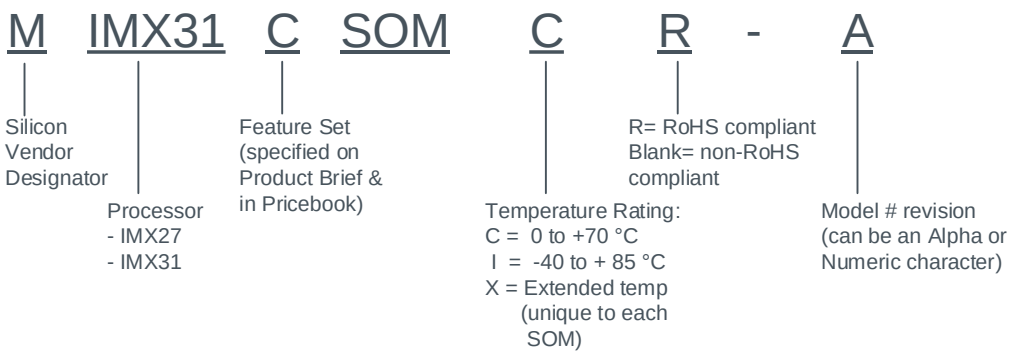
6.1 Silicon Defined Development Kit Model Number Format



6.2 Custom (Customer) Silicon Defined Model Number Format

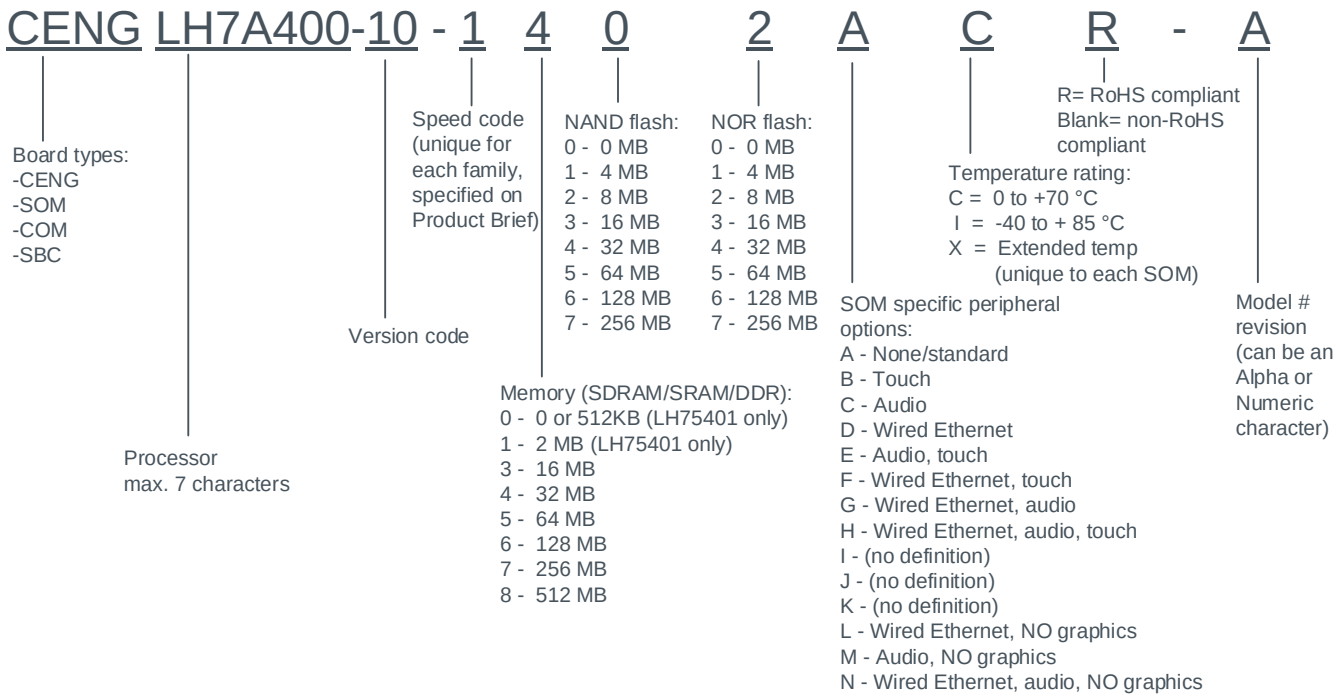


6.3 Standard i.MX-Based SOM Model Number Format



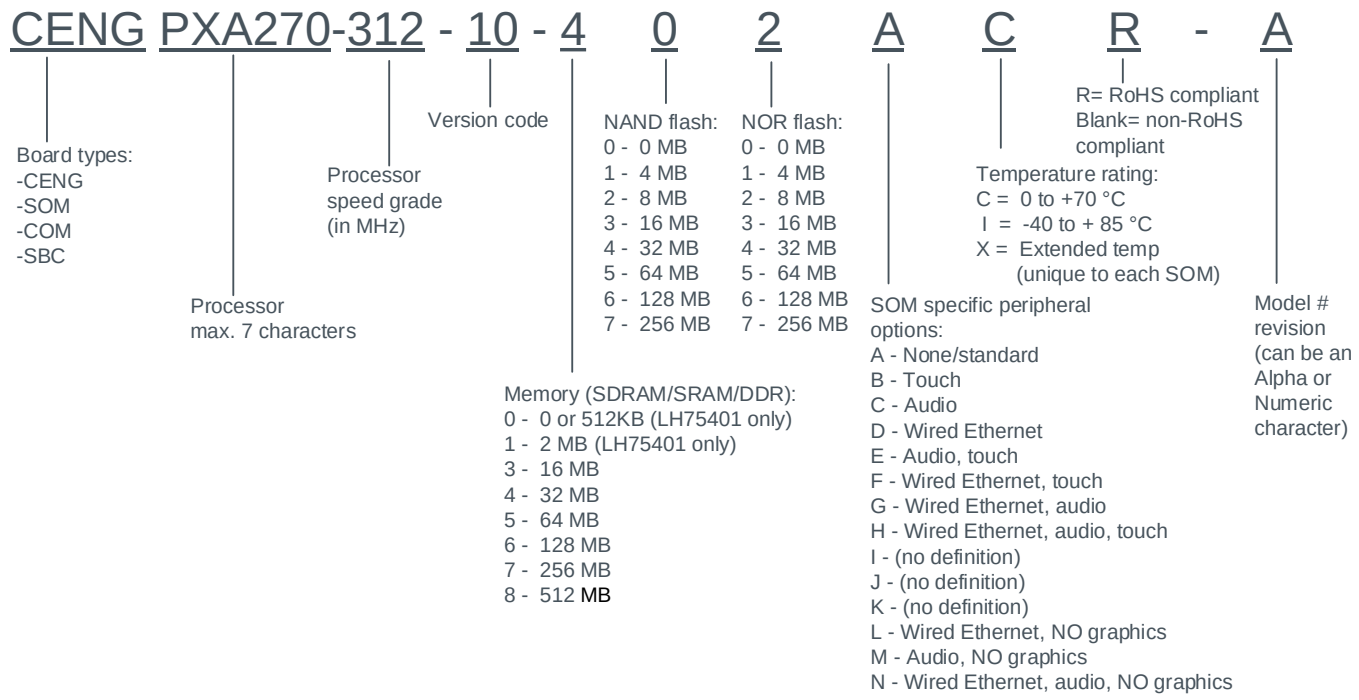
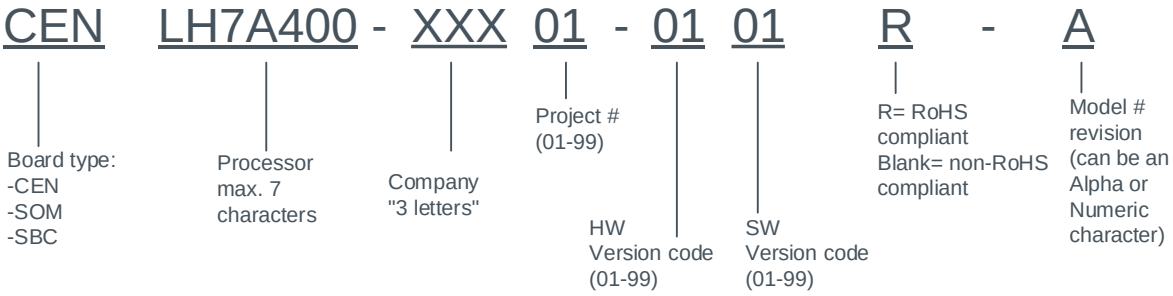
7 Legacy Model Number Formats

7.1 Legacy Standard SOM Model Number Format



7.2 Legacy PXA270 Card Engine SOM Model Number Format

The PXA270 Card Engine SOM model number specifically called out the different processor speed grades; this was prior to implementing the Speed Code identifier in the model number string.



7.3 Legacy Custom SOM Model Number Format