Component / Part Identification

GS1 Implementation Guideline

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1.   Introduction

This document is an implementation guideline clarifying where and how the Component/Part Identification (CPID) standard can be used. It does not change the CPID standard nor does it introduce any new normative statement.

This document's intended used is by any interested party in the GS1 community including User Companies, Solution Providers and Member Organisations.

The guideline is organised around the three dimensions of the GS1 System of Standards: Identify, Capture and Share. Readers should be familiar with the GS1 System Architecture (www.gs1.org/architecture).

2.   CPID scope

The Component / Part identifier is available for business processes where products are identified by the buyer. The buyer instructs his suppliers on how to identify and mark the products delivered to him. This may be case when manufacturers create finished goods by assembling components and parts produced by various companies. CPID should only be used when a manufacturer/assembler has an established practice of controlling the identification of components/parts supplied to him.

A Component/Part (C/P) is defined as an item that is intended to undergo at least one further transformation process to create finished goods for the purpose of downstream consumption. C/P examples may include:

- Drive motor for washing machine
- Fan assembly for a jet engine
- Pipe / tube
- Printed circuit board for television
- Starter motor for vehicle
- Wheel axle

Note: The GS1 System of Standards includes different identifiers (GS1 keys) for different purposes. It is not the nature of the item that determines the type of identifier to use, it is the type of business processes in which the item is used, e.g. open versus mutual agreement.

CPID is restricted for use by mutual agreement between parties. It is not an open supply chain standard because the actual construct of the key is dependent on the specific trade relations between manufacturers and their suppliers.

3.   Identify

CPID is a GS1 Key for identifying Components/Parts as described in the scope above.

CPID should not be confused with other GS1 standards that relate to the identification of parts and components (see Annex 1).

3.1.   CPID Assignment

The Component/Part identifier is available for business processes where items are identified by the manufacturer/assembler of the finished goods who instructs his suppliers on how to identify and mark the components and parts delivered to him.

The Component/Part reference portion of the CPID typically encodes a limited set of information meaningful to the manufacturer/assembler, which is used to trigger automated processes in the assembly lines controlled by dedicated terminals that need no permanent network access.

The CPID allocation rules are set at the discretion of the CPID issuer, i.e. the manufacturer/assembler of the finished goods.

CPID should not be used to carry external (non-GS1) identification schemes or if it does, this should make sense only to the parties in the mutual agreement.

3.2. CPID and GTIN

The Global Trade Item Number (GTIN) is the only GS1 standard identifier for trade items in open supply chains. A case such as for example a retailer using the CPID instead of the GTIN to impose its own identification system to its suppliers would not be compliant with the GS1 standards.

There may be circumstances in which user communities consider whether to use CPID or Global Trade Item Number, the established GS1 standard for identifying any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced, or ordered, or invoiced at any point in any supply chain. In such circumstances GTIN is always to be preferred as it is more generally applicable and has fewer restrictions.
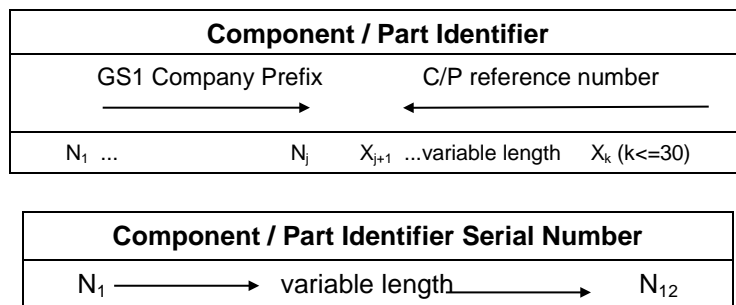
Any sector where adoption of GTIN is already taking place should continue in this direction and **not** introduce CPID. Examples at the time of writing include sectors upstream from grocery manufacturers (packaging, agricultural and horticultural raw materials, ingredients, chemicals and additives), the healthcare sector including medical devices and components thereof as well as railway parts and components.

The preferred approach for a primary identifier is GTIN, not CPID. It is sometimes necessary to represent the product identification number assigned by the manufacturer or by the customer on a given item in addition to the GTIN. This can be done through respectively Application Identifier (AI) 240 (Additional Product Identification Assigned by the Manufacturer) and AI 241 (Customer Part Number), which are attributes to the GTIN.

3.3. CPID Structure

CPID is a GS1 key consisting of a GS1 Company Prefix followed by an alpha-numeric item identifier assigned at the discretion of the GS1 Company Prefix holder. The item identifier part is variable length. The total length of the CPID cannot exceed 30 characters. An optional serial number may be used in conjunction with the CPID to identify each Component / Part individually. The key and serial number can be represented in GS1 standard bar codes and RFID/EPC.

The CPID serial number is numeric only, variable length, maximum 12 digits. The following figures show the structure of the CPID and CPID serial number:

Component / Part Identifier	
GS1 Company Prefix	C/P reference number
N_1 ... N_j	X_{j+1} ...variable length X_k (k<=30)

Component / Part Identifier Serial Number
N_1 variable length N_{12}

3.4. Character set

The character set that can be used to construct a CPID is restricted to numeric, alphabetic upper-case, plus the characters "#", "-", and "/". This restriction aims to minimize the size of the identifier when encoded in RFID tags.

3.5. CPID Attributes

The only attribute that can be used with CPID is the CPID serial number. Other GS1 standard data attributes that are commonly used in association with a GTIN, e.g. production date or batch number, cannot be used in association with a CPID.

4. Capture

The CPID and its associated optional serial number can be represented in the following GS1 standard data carriers:

- GS1-128
- GS1 DataMatrix
- RFID/EPC (HF and UHF)

The CPID supports two formats when encoded in RFID/EPC. The compact format CPI-96 enables using small RFID memory tags. The constraint is that the CPID comprising the GS1 Company Prefix and the Component / Part reference number is limited to 16 numeric digits. The other format called CPI-var enables encoding the complete alpha-numeric CPID without any restriction.

Note: The minimum / maximum dimensions and the minimum quality of the bar code symbols representing the CPID and associated optional serial number are set at the discretion of the manufacturer / assembler who issues the CPID.

5. Share

The Business Analysis Requirements that led to the development of the CPID standard did not call for any use of eCom standards. If a need to use CPID in eCom standards was identified in the future, one would expect work requests to be submitted and the required enhancements be made to the current set of eCom standards.

The Global Data Synchronisation Network (GDSN) service provided by GS1 is out of scope for CPID. CPID is restricted for use by mutual agreement and does thus not need an open global data synchronisation system.

The Tag Data Standard version 1.7 defines an EPC URI representation for CPID (if it includes a serial number), and so it may be used in the "what" dimension of EPCIS.

6. GS1 Glossary Terms and Definitions

Term	Definition
GS1 Application Identifier	The field of two or more digits at the beginning of an Element String that uniquely defines its format and meaning.
Component / Part	An item that is intended to undergo at least one further transformation process to create finished goods for the purpose of downstream consumption
Component / Part identifier	The unique identifier for a Component / Part, comprising a GS1 Company Prefix and a Component / Part reference
Global Trade Item Number (GTIN)	The GS1 Identification Key used to identify trade items. The key comprises a GS1 Company Prefix, an Item Reference and Check Digit.

Annex 1: Other GS1 standards related to parts and components

The table below lists GS1 identification scenarios or GS1 Application Identifiers that differ from the GS1 Component / Part Identifier even though a term or definition may sound similar.

GS1 standard	Comments
Customer Part Number (AI 241)	Mandatory association with GTIN; used for transitions from using part numbers for ordering to GTIN for ordering.
Made To Order Number (AI 242)	Mandatory association with GTIN-14; indicates a custom trade item is identified to support MRO.
Packaging Component Number AI (243)	Mandatory association with GTIN. Used for Consumer Trade Item Production Control.
Global Individual Asset Identifier or GIAI (8004)	The GIAI is designed to be used for the unique identification of individual assets to provide a means to store relevant data.
ID of Components of a Trade Item (8006)	Even though the word component appears in the term for this identifier, it is a component identified with a mandatory association with a GTIN.
Customer Specific Articles	Special application specifying the identification and procurement processes of items offering multiple options to the customer. This application is fully based on the GTIN.
Custom Trade Item	Special application specifying the identification and procurement processes of items one-of-a-kind for the Maintenance, Repair and Operations (MRO) environment. It is based on the GTIN possibly supplemented by a six-digit variable length made-to-order variation number.