



**Supplementary Contractual Terms and
Conditions
of Deutsche Bahn AG (DB AG) and its Affiliated Companies for Serialized
Product Marking
According to the GS1 Application Stand-
ard (Supplementary Contractual Terms
for Serialization)**

– Version dated January 1, 2025 –

1. Preamble

- 1.1 Compliance with legal requirements, traceability requirements and the improvement of supply chain processes of Deutsche Bahn AG and its affiliated companies (hereinafter: “Customer”) require the serialization of products. The application standard of the non-profit standardization organization GS1 (Global Standard One) “Identification of components and parts in the rail industry” (hereinafter: “GS1 Application Standard”) has become established for this purpose within the rail industry and defines rules and tools for the unique identification of products.
- 1.2 Within these supplementary contract terms and conditions (hereinafter: “SCC”), the requirements for the serialization (identification at serial number level) of products, their packaging, and accompanying documents are described in accordance with the GS1 Application Standard. Therefore, the term “marking” chosen in this document always refers to serialization as defined in the current version of the GS1 Application Standard or in the version attached to the order documents.

2. Subject matter of the Agreement

2.1 Obligation for serialization in accordance with the GS1 Application Standard

The requirement as to how a product, its packaging and, if applicable, its product components (e.g. subcomponents) are to be provided with a serial-number-based identification code in accordance with the GS1 Application Standard (“Identification of components and parts in the rail industry”) is specified in the statement of work or in the specifications (if applicable, via list structure) per assembly or in the purchase order per item.

The specifications of this SCC supplement the requirements of the statement of work. Requirements from the statement of work take priority over this SCC and the GS1 Application Standard.

All previous obligations regarding the marking of products (incl. packaging, containers, accompanying documents) continue to apply regardless of this SCC.

The Contractor is responsible for the implementation of the serialization requirements from the statement of work, this SCC, and the GS1 Application Standard, taking into account the relevant standards and state of the art. The Contractor is also responsible for the contractual fulfillment of these requirements throughout the supply chain.

2.2 Traceability using GS1 serial numbers

Data on the traceability of products and the reference to the contractual agreement agreed for this purpose with the Contractor (hereinafter “Contract”) must be linked to the GS1 serial number of the specific product and archived by the Contractor for at least ten years in accordance with the legal and normative specifications.

The data must include at least the relevant information and certificates regarding the manufacture or reconditioning of the classified products.

During the archiving period, this data must be kept by the Contractor in a tabular structure and in plain text and, if required, handed over in an electronic format (e.g. spreadsheets in .xml format, associated reports in .pdf format) within the period specified by the Customer. The Contractor shall be available free of charge to the extent required for the data transfer and a random authenticity check by the Customer. This also applies to product components (e.g. subcomponents) with serialization requirements, even if they are manufactured or marked by subcontractors.

2.3 General provisions regarding the marking solution

Serialization in accordance with the GS1 Application Standard shall be implemented by means of physical marking of the product in accordance with the requirements in Section 3.2.

In the event of any marking deviating from this SCC or the statement of work, the Customer shall be informed of the matter in text form without undue delay. This also applies to requirements that cannot be implemented, overlap, or cannot be met simultaneously (e.g. due to component geometry or environmental conditions). Deviations and clarifications are possible only after prior consultation with the client and must be filed with reference to the Contract in the form specified in the Contract for changes.

The costs of implementing this SCC, such as applying the marking to products, packaging, and accompanying documents and maintaining the data, must be included in the price and are fully covered by the contract price.

The need to apply markings with different content and purpose, e.g. for handling, moisture protection, storage, and stackability, remains unaffected by the requirements in this document.

2.4 Liability for defects

Non-compliance with the requirements of this SCC constitutes a material defect to which the contractual and statutory provisions on liability for defects apply. For instance, the Contractor shall bear the cost (e.g. packaging, transport) of remedying a defect.

3. Technical requirements for serialization

3.1 General requirements

Unless otherwise contractually agreed, the identification of a product or a product component (e.g. subcomponents) must always take place at the level of the individual item (globally unique number/serial ID). The permanent marking of products with the serialized identification code shall take place physically on the product itself, on its packaging, and on the accompanying documents.

Only the implementation in accordance with the GS1 marking standard (see applicable norms and standards as per Section 4) should be used.

The requirements for the marking solution to be used are described below.

3.2 Requirements for the physical marking solution

The marking shall be carried out by the Contractor or its subcontractor. The following requirements must be implemented when the physical marking is attached:

- **Type of marking:** Products can be physically marked in machine-readable form in a variety of ways. The following are generally applicable:
 - direct marking on the product/product component (e.g. subcomponent), for example via direct part marking (DPM)
 - indirect marking, for example with a durable label or a plate
- **Location of the marking:** The following requirements apply, wherever technically feasible, to the attachment of the data carriers or identification code in plain text:
 - 1st priority: Ensure it is visible and can be scanned when the item is installed.
 - 2nd priority: The data media or identification code must be attached on or near the existing nameplate.

Regarding the labeling location, both of the listed requirements are fulfilled, if possible. However, at least one of the two requirements must be complied with, whereby the first priority over the second.

- **Readability:** Commercially available readers, such as smartphones or scanners, must be able to reliably capture the data of the marking when it is viewed from the front. Curved surfaces and loose, easily removable, or highly reflective substrates should be avoided. Markings with bar codes should not be attached in shaded corners to avoid a reduction in contrast and consequently difficulties in reading or scanning.
- **Robustness and durability:** The marking must remain permanently attached to the product and be insensitive to environmental conditions in the vicinity of the product that are customary in rail operations. Cleaning with customary cleaning agents used in the environment of the product must not impair machine readability. Relevant regulatory specifications regarding the environmental conditions of the product must be complied with.
- **Functional safety:** Applied markings must not impair the function or safety of the product itself. Technical risks, for example with regard to flammability or electromagnetic compatibility (EMC), must be eliminated. The limits of permitted clearance shall be observed.
- **Electromagnetic compatibility:** The data carriers themselves must be resistant to electromagnetic influences in the environment in which they are used.
- **Risk assessment:** Risks of death or injury, for example from falling signs, must be eliminated. Risk of injury, for example from sharp edges or protruding tips, must be avoided by design.
- **Marking of assemblies or systems:** Each product to be physically marked in accordance with the statement of work shall be given only one identification code. For more extensive marking requirements, please refer to the statement of work.
- **Dealing with other markings:** If the Contractor additionally applies its own markings (e.g. for internal processes) to the product, they must be attached so they are not visible (when the parts are installed) or must be clearly distinguishable from the contractually required marking.
- **Encryption and plain text:** The encryption on the marking medium must meet the requirements of Table 1:

Table 1: Technical requirements for the marking of products

Requirement	Description
Identification code (per item)	Globally unique identification code/serial ID in accordance with GS1 Application Standard (SGTIN or GIAI)
Data carrier - optical	<ul style="list-style-type: none"> • GS1 data matrix (preferred) or • GS1 QR code • GS1-128 (only after prior consultation and approval by DB)
RFID data carrier (required in the Contract)	Passive UHF transponder as per <ul style="list-style-type: none"> • EPC Global Class1 Gen2 (cf. GS1's EPC Tag Data Standard (TDS) and • EPC UHF Gen2 Air Interface Protocol)
NFC data carrier (required in the Contract)	NFC Forum NFC type 4 & 5 tag (according to ISO/IEC 14443); the NFC tag must be readable with commercially available mobile end user devices (smart phones).
X-module size	≥ 20 mil (1 mil = 1/1000 inch = 0.0254 mm)

Plain text information	HRI format of the GS1 Application Standard, representation without spaces (see General GS1 Specifications).
	The application identifiers (AI) (01) “GTIN” required for serialization must always be prepended together with (21) “serial number” or, alternatively, AI (8004) “GIAI”. In addition, further AIs can be agreed in the respective contracts with the Contractor.
	In the event of variances from the plain text information, the Customer must be informed immediately in text form.

3.3 Requirements for package marking and marking on accompanying documents

A machine-readable marking repeating the product identification numbers of the individual items in accordance with Section 3.2 of this SCC shall be applied to the product packaging.

If contractually agreed, all items to be marked must be listed in machine-readable form in the accompanying documents (e.g. delivery notes, inspection certificates (only for new production)). Marked product components (e.g. subcomponents of an assembly) must also be listed in machine-readable form.

For product packaging and accompanying documents, the requirements of Table 1 apply, without the specific requirements of RFID and NFC data carriers.

3.4 Quality check of the marking solution

The Contractor must perform a symbol check for all marking solutions it uses, taking into account the following standards: ISO/IEC 15415, ISO/IEC 15416, and ISO/IEC TR 29158. The quality check must be carried out for the marking solutions used, regardless of how many products this solution is used for. Symbol checks must also be requested from subcontractors.

The symbol check must be carried out again without prompting in the event of technical or procedural changes. Examples of such changes may include:

- Change of label manufacturer, RFID tag manufacturer etc.
- Change in the size of the marking

Quality check reports must be submitted without delay at the request of the Customer.

If the quality checks reveal that the markings/deliverables of this SCC have not been performed in accordance with the Contract, they must be rectified or replaced in accordance with the contractual agreements.

4. Other applicable norms and standards

The current versions of the following standards and norms are to be applied.

Norm/standard	Title
GS1 Application Standard	Identification of Components and Parts in the Rail Industry - Application Standard German: Identifikation von Komponenten und Bauteilen im Bahnwesen

GS1 GenSpecs	GS1 General Specifications German: Allgemeine GS1 Spezifikationen
ISO/IEC 15415	Information technology - Automatic identification and data capture techniques - Bar code symbol print quality test specification - Two-dimensional symbols
ISO/IEC 15416	Information technology - Automatic identification and data capture techniques - Bar code print quality test
ISO/IEC 29158	Information technology - Automatic identification and data capture techniques - Direct Part Mark (DPM) Quality Guideline
ISO/IEC 14443	Identification cards - Contactless integrated circuit cards
ISO/IEC 15693	ISO/IEC 15693 Identification cards - Contactless integrated circuit cards - Vicinity cards
TDS	GS1's EPC Tag Data Standard (TDS)
EPC "Gen2"	EPC UHF Gen2 Air Interface Protocol

All other standards, norms, regulations and documents referred to in the above-mentioned standards or norms must also be observed.

5. Definition of terms

Assemblies

For the purposes of this document, assemblies are systems assembled from components or sub-assemblies.

Components

For the purposes of this document, components are the “smallest exchangeable units” of an assembly.

Data carriers

Physical, machine-readable marking directly on the product or identification plate with encrypted identification number and further information such as GS1 data matrix, GS1 QR code, NFC, RFID

Direct part marking

Process by which permanent markings are created on the surface of a part. Processes that enable the direct application of data matrix and DPM codes include inkjet processes, laser marking with color change, electrochemical engraving, and needle marking.

EPC data carrier

Electronic product code, identification via electromagnetic communication based on RFID

Identification code

A GS1 identification code is the globally unique serial number for identifying individual items. In this document, only GIAI and SGTIN identification codes, which allow individual items to be identified, are used.

Item

Each individual manifestation of a product (example: an order for 10 pieces of a component contains 10 items)

Marking

For the purposes of this document and unless explicitly described otherwise, marking always means permanent marking with the serialized GS1 identification code.

Plain text

Presentation of data/information that can be read and evaluated by people without technical aids

Machine-readable or auto-ID-enabled marking

Markings (e.g. bar code, data matrix, NFC, RFID) for the automatic identification of objects

Product

For the purposes of this document, the product is the physical object named in the respective order line or applicable provision in the Contract. A product can be a system, an assembly, or a component.

Package marking

Marking that is applied to the packaging of the individual product

