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Industrial process measurement, control and automation – Digital nameplate

**Mesurage, commande et automatisation dans les processus industriels –
Plaque signalétique numérique**



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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	9
4 Contents of the digital code	10
4.1 General.....	10
4.2 Data structure of the digital code	10
4.3 Data description with characteristic names	11
5 Digital storage technologies.....	13
5.1 Two-dimensional barcodes (QR Code, Data Matrix).....	13
5.1.1 General	13
5.1.2 Symbol design.....	14
5.1.3 Data volume and module size.....	14
5.1.4 Error correction	15
5.1.5 Print quality	15
5.1.6 Durability	15
5.2 Transponders (RFID/NFC).....	15
5.2.1 Technical.....	15
5.2.2 Symbol design.....	16
5.2.3 Data format	16
5.2.4 Write protection	16
5.2.5 Durability	16
5.2.6 Use in potentially explosive atmospheres	16
5.2.7 Use in modular products.....	17
5.3 Firmware.....	17
5.3.1 General	17
5.3.2 Use in modular products.....	17
Annex A (informative) Information on the nameplate required by regulations and standards.....	18
A.1 General.....	18
A.2 Basic information in plain text	18
A.3 Conformity marks and symbols	18
A.4 Information for electrical equipment.....	18
A.5 Information for explosion-protected equipment.....	19
A.6 Information for pressure equipment.....	19
A.7 Further information	19
Annex B (informative) Semantic data description with standardized data dictionaries	20
B.1 International data dictionaries	20
B.2 The digital nameplate as a subelement of the digital twin.....	20
Bibliography.....	21
Figure 1 – Example of a conventional nameplate converted into a digital nameplate with QR code	11
Figure 2 – Example of a digital nameplate with a general data description	13
Figure 3 – Example of a separate label with the digital code	14

Figure 4 – Symbol design of the QR code of the digital nameplate 14

Figure 5 – Marking of a RFID transponder as a digital nameplate 16

Table 1 – Example of a nameplate with a general data description 12

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**INDUSTRIAL PROCESS MEASUREMENT, CONTROL AND AUTOMATION –
DIGITAL NAMEPLATE**

FOREWORD

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The text of this International Standard is based on the following documents:

Draft	Report on voting
65E/880/CDV	65E/931/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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INTRODUCTION

The primary purpose of a nameplate is to clearly identify the device and its manufacturer. Legal marks or approval symbols indicate conformity with the regulations for placing the device on the market and for safe use.

The project "Digital Nameplate" was started in response to the needs of manufacturers of explosion-protected equipment and operators of electrical plants in explosion hazardous areas. One objective is to ensure that all of the necessary information can be marked on the equipment, particularly considering the extent of the information required in the field of explosion protection. The requirements for marking products for the global markets have become as extensive that it is often no longer possible to include all of the necessary information on the nameplate, especially of smaller products (e.g. sensors). As an example, in Europe, different EU Directives and harmonized standards can apply to the same product, e.g. for electric safety, explosion safety, safety of machinery, pressure safety or food safety. If the product is to be sold worldwide, additional markings and approval symbols are required, e.g. IEC Ex marking, Ex marking for the North American market, UK CA marking for UK, EAC for the Eurasian Economic Area, RCM for Australia or CCC for China.

Within the context of smart manufacturing, it is also anticipated that products will have to be electronically identifiable in future. Equipment manufacturers can use machine-readable marking in the production process to automatically control the material flow by using a barcode. Operators can easily identify the product at the incoming inspection. Service engineers or the responsible authorities can electronically check all the required data and information for the application and safe use. The data from the machine-readable nameplate can be transmitted directly to an ERP system (Enterprise Resource Planning system) for error-free stocktaking. Operators and users have access to the device data in digital format.

One intention of the (offline) digital nameplate is to reduce the required space of the conventional nameplate. In the long term it is expected that the digital nameplate can replace the conventional text on the nameplate saving a lot of space, especially on small products.

This document describes alternative electronically-readable solutions to the current, conventional, plain text marking on the nameplate or packaging. It describes marking technologies that use 2D codes, transponders or the firmware of the products. In the case of a 2D code or transponder, the stored data can be read by commonly available scanning devices, e.g. smartphones. If the marking is stored in the firmware of the product, the nameplate can be shown, for example, on the product display or the data can be read via an electronic interface remotely.

Furthermore, the IEC 61406-1 is in development for a unique product identification via an Identification Link. This standard enables manufacturers to provide all product related data and documents via an Internet address in an electronic format. Product documentation such as technical information, operating instructions and product certificates can be downloaded. This standard defines a specific 2D or RFID code, which contains only the Identification Link string with limited characters. In IEC 63365, the Identification Link string is included as the first property in the digital nameplate, followed by the detailed marking properties. If an Internet connection to the manufacturer's website is available, additional product data (digital twin) and documentation can be accessed.

This document is also intended to increase acceptance of digital nameplates among legislative bodies. A long-term goal is to replace the conventional nameplate with an electronically readable nameplate as far as possible. Regulators require marking to be applied to devices permanently, clearly and legibly. This requirement could be met with digital marking as well. Digital nameplates that are permanently affixed to the product and provide the necessary data without the need for an Internet connection come very close to plain text marking. To ensure greater acceptance, the nameplate shows a minimum amount of marking in plain text. During a transition period, both, the plain text and the digital marking can be applied simultaneously at the product. Today electronic marking is being increasingly implemented and accepted on the international markets.

ISO/IEC 22603-1 was recently published and specifies a digital label representing the product marking. But that standard provides the product marking via a link to a Webserver, which contains the relevant information and does not contain the marking directly in the digital code.

INDUSTRIAL PROCESS MEASUREMENT, CONTROL AND AUTOMATION – DIGITAL NAMEPLATE

1 Scope

This International standard applies to products used in the process measurement, control and automation industry. It establishes a concept and requirements for the digital nameplate and provides alternative electronically readable solutions (e.g. 2D codes, RFID or firmware) to current conventional plain text marking on the nameplate or packaging of products.

The digital nameplate information is contained in the electronically readable medium affixed to the product, the packaging or accompanying documents. The digital nameplate information is available offline without Internet connection. After electronic reading, all digital nameplate information is displayed in a human readable text format. The digital nameplate also includes the Identification Link String according to IEC 61406-1 which provides additional online information for the product.

This document does not specify the contents of the conventional nameplate, which are subject to regional or national regulations and standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-14, *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*

IEC 61406-1, *Identification link*

ISO/IEC 15415:2011, *Information technology – Automatic identification and data capture techniques – Bar code symbology print quality test specification – Two-dimensional symbols*

ISO/IEC 16022, *Information technology – Automatic identification and data capture techniques – Data Matrix bar code symbology specification*

ISO/IEC 18004, *Information technology – Automatic identification and data capture techniques – QR Code bar code symbology specification*

ISO/IEC 18092, *Information technology – Telecommunications and information exchange between systems – Near Field Communication – Interface and Protocol (NFCIP-1)*

ISO/IEC 21471, *Information technology – Automatic identification and data capture techniques – Extended rectangular data matrix (DMRE) bar code symbology specification*

ISO/IEC 21481, *Information technology – Telecommunications and information exchange between systems – Near field communication interface and protocol 2 (NFCIP-2)*

ISO/IEC 29158, *Information technology – Automatic identification and data capture techniques – Direct Part Mark (DPM) Quality Guideline*