

ICS 35.100
CCS L79



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42563-2023

**Information technology - Telecommunications and information exchange
between systems - Fusion mapping of object linking and embedding for process
control unified architecture and time sensitive networking**

信息技术 系统间远程通信和信息交换 OPC统一架构与时间敏感网络融合映射

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents" drafting: This document is proposed and managed by the National Information Technology Standardization Technical Committee (SAC/TC28): Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is drafted by: China Electronics Standardization Institute, Huazhong University of Science and Technology, Shanghai Xinwen Technology Co., Ltd., Jiangsu Saixike Technology Development Co., Ltd., Shenzhen Saixi Information Technology Co., Ltd., Zhijiang Laboratory, Beijing Saixi Technology Development Co., Ltd., Shanghai Communications University, Shanghai Green Times Technology Development Co., Ltd., Xi'an Aerospace Automation Co., Ltd., Beijing Zhixin Microelectronics Technology Co., Ltd., heavy Qing University of Posts and Telecommunications, Beijing Guyuan Network Technology Co., Ltd., Suxin IoT Technology (Nanjing) Co., Ltd., and China Railway Engineering Service Co., Ltd: The main drafters of this document: Yang Hong, Wang Ting, Guo Xiong, Chen Bing, Han Li, Cui Zishang, Zhuo Lan, Han Shihao, Sun Xu, Hu Lin, Chen Gang, Fu Luoyi, Chen Ye, Guo Rui, Wei Min, Li Bo, Liu Suimei: Telecommunication and information exchange between information technology systems OPC Unified Architecture and Time Sensitive Network Fusion Mapping

1 Scope

GB/T 42563-2023 joins the two halves of the industrial communication problem. OPC UA solves the semantic half: it lets a controller, a robot and a supervisory system describe their data in a way each can interpret without a bespoke integration. Time-sensitive networking solves the temporal half: it makes ordinary Ethernet deliver a frame within a bounded latency so a control loop can depend on it. Each is useless to the other by itself - OPC UA does not guarantee when a message arrives, and TSN does not care what the message means - and the industrial architectures now being built need both at once. This document

proposes the OPC UA and TSN converged protocol stack architecture and specifies the communication mechanism for the convergence, together with the mapping and configuration of OPC UA PubSub onto TSN. It applies to the design, development and application of converged OPC UA and TSN systems. Under ICS 35.100 and CCS L79, it is written for the vendors of industrial controllers, drives and switches, and for the system integrators building factory networks where determinism and interoperability have to hold at the same time. It is the companion to GB/T 42586-2023 on TSN configuration.

This document proposes the OPCUA and TSN fusion protocol stack architecture, and specifies the communication mechanism and communication mechanism for OPCUA and TSN fusion: Mapping configuration of OPCUAPubSub and TSN: This document is applicable to the design, development and application of OPCUA and TSN fusion system:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB/T 33863:6-2017 OPC Unified Architecture Part 6: Mapping ISO /IEC /IEEE8802-1AS Telecommunications and information exchange between information technology systems Local area network and metropolitan area network specific ISO /IEC /IEEE8802-1CB Telecommunications and information exchange between information technology systems Local area network and metropolitan area network specific ISO /IEC /IEEE8802-1Q:2020 Requirements for telecommunication and information exchange between information technology systems in local and metropolitan area networks works) ISO /IEC /IEEE8802-3:2021 Requirements for telecommunication and information exchange between information technology systems in local and metropolitan area networks Sub)

3 Terms and Definitions

The following terms and definitions apply to this document: 3:

1 Used to manage mapping configurations between time-sensitive networks and OPC Unified Architecture: