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

GB/T 25919.3-2026

**Modbus test specification - Part 3: TCP security protocol
conformance testing specification**

Modbus测试规范 第3部分：TCP安全协议一致性测试规范
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 3 of GB/T 25919, "Modbus Test Specification". GB/T 25919 has the following parts published.

---Part 1: Modbus Serial Link Conformity Test Specification;

---Part 2: Modbus Serial Link Interoperability Test Specification;

---Part 3: TCP Security Protocol Consistency Testing Specification Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Industrial Process Measurement, Control and Automation (SAC/TC124).

Introduction

GB/T 25919, "Modbus Test Specification," aims to standardize the test methods and judgment requirements for Modbus devices. It is proposed to consist of three parts.

constitute.

---Part 1: Modbus Serial Link Conformity Test Specification. The purpose is to standardize the conformance of Modbus serial link devices.

Sexual test.

---Part 2: Modbus Serial Link Interoperability Test Specification. The purpose is to standardize the interoperability of Modbus serial link devices.

To conduct a test.

---Part 3: TCP Security Protocol Conformity Testing Specification. The purpose is to standardize conformance testing of TCP security protocol products.

Currently published national standards for the Modbus protocol include.

---GB/T 19582.1-2008 Industrial Automation Network Specification Based on Modbus Protocol Part 1: Modbus Applications protocol;

---GB/T 19582.2-2008 Industrial Automation Network Specification Based on Modbus Protocol Part 2: Modbus Protocol Implementation guidelines on serial links;

---GB/T 19582.3-2008 Industrial Automation Network Specification Based on Modbus Protocol Part 3: Modbus Protocol Implementation Guide on TCP/IP;

---GB/T 25919.1-2010 Modbus Test Specification Part 1: Modbus Serial Link Conformance Test Specification;

---GB/T 41868-2022 Modbus TCP Security Protocol Specification.

The Modbus protocol was originally developed in 1979 as a serial protocol for communication between industrial controllers and computers or other host computers. In.1996...

In.2000, the Modbus protocol was extended to Ethernet, using port 502 registered with IANA, supporting Modbus TCP based on...

Ethernet protocol. Meanwhile, ModbusTCP maintains consistency and compatibility with the Modbus RTU serial protocol, which makes...

Implementing bridged communication between Modbus serial devices via Modbus TCP became very easy. In.2002, Modbus abstracted a suitable...

Modbus application layer for serial and Ethernet began using the concept of Modbus PDU and released the Modbus application layer specification.

Fan, for different ADUs (Automatic Design Units) for serial and TCP, also released specifications for serial and Ethernet. At the same time, Modbus also joined...

IEC 61784 is one of the industry standards.

Based on the Modbus protocol specification in IEC 61784, my country has issued the GB/T 19582 series of recommended national standards for Modbus.

Accuracy. It was also due to the release of national standards that interoperability testing according to these standards became possible. Later, standards were formulated and released.

The GB/T 25919 series of standards greatly improves the consistency and interoperability of numerous Modbus applications, which is beneficial to industrial automation systems.

System development and integration.

Like all industrial communication protocols, Modbus was not initially designed with information security features. However, with the increasing demands for data security in industrial communication and applications...

With increasing demands for confidentiality, integrity, and device identification, the Modbus TCP security protocol uses common TLS transport layer encryption.

The technology extends the Modbus protocol, making encrypted Modbus communication more resistant to common attacks such as replay and man-in-the-middle attacks.

The ability.

The ModbusTCP security protocol maintains the same ADU as ModbusTCP, which makes ModbusTCP communication easy.

The migration to the ModbusTCP security protocol. The ModbusTCP security protocol uses port 802, registered with IANA, for security.

Communication. The Modbus TCP security protocol only allows the use of TLS 1.2 and above.

Two-way authentication is used. Additionally, the certificate uses the OID extension, which allows device manufacturers to specify the client's role and permissions.

Limitations exist to achieve user identification and role-based control required for industrial information security. With the advancement of the Modbus TCP security protocol standard...

This provides a simple and direct upgrade path for the large number of devices that currently use Modbus.

This document, based on GB/T 41868-2022, specifies the requirements and compliance levels for Modbus security protocol conformance testing.

Regulation.

Modbus Test Specification Part 3.

TCP Security Protocol Consistency Testing Specifications

1 Scope

This document specifies the requirements for Modbus TCP security protocol feature testing and application protocol consistency testing, and describes the procedures for performing MOD-Methods for testing the consistency of the BUSTCP security protocol.

This document is intended as a basis for relevant testing institutions to conduct conformance testing of the Modbus TCP product security protocol, and also for product manufacturers.

This provides a reference for businesses developing related products and for users choosing products.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 19582.1-2008 Industrial Automation Network Specification Based on Modbus Protocol Part 1: Modbus Application Protocol GB/T 19582.3-2008 Industrial Automation Network Specification Based on Modbus Protocol Part 3: Modbus Protocol in Implementation Guide on TCP/IP IETF RFC 4492 Elliptic Curve Cryptography (ECC) cipher suites for Transport Layer Security (TLS) [ElipticCurveCrypto-Version 1.2]

3 Terms and Definitions

The terms and definitions defined in GB/T 19582.1-2008 and GB/T 19582.3-2008, as well as the following terms and definitions, apply to this document.

consistency

The degree to which the entity or system implementing the protocol conforms to the protocol standard.

[Source. GB/T 25919.1-2010, 3.1] 3.2 conformance test to detect the degree of conformity between the entity or system implementing the protocol and the protocol standard.