ANSI C12.21-2006 (R2023)

American National Standard for Protocol Specification for Telephone Modem Communication

Secretariat:

National Electrical Manufacturers Association

American National Standards Institute, Inc.

Approved: November 2, 2023

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Foreword (This Foreword is not part of American National Standard C12.21)

The developer of this standard calls the attention of the user to the fact that the technologies and protocols contained herein are of a legacy nature. Implementors should carefully consider state of the art technologies and protocols, especially with regards to cyber security best practices.

This standard provides an open-platform communications protocol for two-way communication with a metering device via a telephone modem. The protocol is written to conform to the OSI seven-layer stack.

Long-time readers of ANSI C12.21 will discover many editing changes to this version of the Standard. The Working Group chose to improve the clarity of the text as an aid to the reader while retaining the normative elements in the manner of previous publications.

The 2006 revision of this standard was considered in the context of the so-called "protocol suite" of ANSI standards: C12.18, C12.19, C12.21 and C12.22 (draft). Changes made were included only after assuring that existing devices implementing C12.21 would continue to remain compatible with the 2006 (R2015) revision.

It is expected that the logoff service will become mandatory in the next revision of this Standard. Implementers are strongly encouraged to support this service to comply with this change.

Suggestions for improvement to this standard are welcome. They should be sent to:

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This standard was processed and approved for submittal to ANSI by Accredited Standards Committee for Electricity Metering C12. At the time the committee approved this standard, the C12 Committee had the following members:

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Working Group 4 of Subcommittee 17 that revised this standard consisted of:

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Kostas	Tolios	Retired
Richard	Tucker	Tucker Engineering

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1 Scope

This standard details the criteria required for communications between a C12.21 Device and a C12.21 Client via a modem connected to the switched telephone network. The C12.21 Client could be a laptop or portable computer, a master station system, or some other electronic communications device.

This standard does not specify the implementation requirements of the telephone switched network to the modem, nor does it include definitions for the establishment of the communication channel.

This document provides details for an implementation of the OSI 7-layer model.

The protocol specified in this standard was designed to transport data in table format. The table definitions are in ANSI C12.19, and Annex D of this document.

This standard specifies the differences between ANSI C12.18-2006 (R2023), Protocol Specification for ANSI Type 2 Optical Port and ANSI C12.19-2021, Utility Industry End Device Data Tables, and those features and services required to describe a protocol specification for Telephone Modem Communications.

2 References

ANSI C12.18	*American National Standard for Protocol Specification for ANSI Type 2 Optical Port*
ANSI C12.19	*American National Standard for Protocol Specification for Interfacing to Data Communication Networks*
ANSI INCITS 92	*Data Encryption Algorithm*
ISO/IEC 7498-1	*Information Technology—Open Systems Interconnection—Basic Reference Model: The Basic Model*
ISO/IEC 8825-1	*Information Technology—ASN.1 Encoding Rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*
ISO/IEC 13239	*Information Technology—Telecommunications and Information Exchange Between Systems—High-Level Data Link Control (HDLC) Procedures*

3 Definitions and Syntax

3.1 Definitions

For the purposes of this standard, the following definitions are made.

3.1.1 C12.21 Client

An electronic communication apparatus that connects to a C12.21 Device via a modem and implements communication according to the protocol specification of this standard. This was implicitly defined in previous versions as “utility host.”