ANSI C12.18-2006 (R2023)

American National Standard for Protocol Specification for ANSI Type 2 Optical Port

Secretariat:

National Electrical Manufacturers Association

Approved 10/31/2023

American National Standards Institute, Inc.

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Foreword (This foreword is not part of American National Standard C12.18)

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 American National Standard provides an open-platform communications protocol for two-way communication with a metering device through an ANSI Type 2 Optical Port. The protocol is written to conform to the OSI seven-layer stack.

Long-time readers of ANSI C12.18 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 C12.18 would continue to remain compatible with the 2005 revision.

This revision has corrected an error in the original standard: the impossibility of using index-count for table access. Other concepts addressed include compliance, backward and forward compatibility, the use of reserved fields, the identification service, packet size and the toggle bit. Finally, some alignment with the draft C12.22 standard was performed to meet the goal of producing a coherent suite of protocol standards.

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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1 Scope

This standard details the criteria required for communications between a C12.18 Device and a C12.18 Client via an optical port. The C12.18 Client may be a handheld reader, a portable computer, a master station system or some other electronic communications device.

This standard provides details for a complete implementation of an OSI 7-layer model.

The protocol specified in this document was designed to transport data in Table format. The Table definitions are in ANSI C12.19 Utility Industry End Device Data Tables.

2 References

ANSI C12.19	American National Standard for *Utility Industry End Device Data Tables*
ANSI C12.21	*American National Standard for Protocol Specification for Telephone Modem Communication*
ISO/IEC 646 (1991)	*Information Technology—ISO 7-Bit Coded Character Set for Information Interchange*
ISO/IEC 7498-1 (1994)	*Information Technology—Open Systems Interconnection - Basic Reference Model: The Basic Model*
ISO/IEC 8825-1 (2002)	*Information Technology—ASN.1 Encoding Rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*
ISO/IEC 13239 (2002),	*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 C12.18 Client

An electronic communication apparatus that attaches to the ANSI Type 2 Optical Port of a C12.18 Device and implements communication according to the protocol specification of this standard.

3.1.2 C12.18 Device

An electronic communication apparatus that implements an ANSI Type 2 Optical Port for communication according to the protocol specification of this standard.

3.1.3 Point-to-point Communications

Point-to-point communications is defined as communication between two devices through a single optical interface.

3.1.4 Table

Functionally related data elements, grouped together into a single data structure for transport as defined