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Uniform Language for Accessing Power Plants – Human-Machine Language

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Uniform Language for Accessing Power Plants – Human-Machine Language

Secretariat

Alliance for Telecommunications Industry Solutions

Approved December 14, 1993

American National Standards Institute, Inc.

Abstract

A standard for a command language that permits a uniform method of communicating with power systems in a telecommunications environment. This standard specifically addresses command language elements necessary for human-to-machine communication with systems that monitor and control power equipment. This standard is applicable to the design of power system monitoring and control systems.

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Foreword (This foreword is not part of American National Standard T1.317-1993.)

The project to develop a standard for a command language for telecommunications power systems monitors and controllers was established under Committee T1 Telecommunications, T1E1 Technical Subcommittee, T1E1.6 Working Group.

Changes in the telecommunications industry have created a need for more detailed monitoring and controlling power systems. Fewer trained personnel are expected to be available to oversee an increasing number of telecommunications power systems. However, at the time this standards project was initiated, the general perception was that users were confronted with too many specific languages and procedures for communicating with power systems monitors and controllers. This resulted in excessive effort for software development, higher training costs, and increased possibility of errors in mechanized data acquisition, control, and monitoring of power systems. This proposed standard addressed the need for a uniform command language structure that may be employed throughout the industry by both users and manufacturers of equipment.

No single standard exists that specifically addresses communications between machines, humans, and telecommunications power plants. This standard will build on the variety of language and protocol structures in existence.

Many years of experience and a large body of technical knowledge exists concerning the manual operation and limited alarm capabilities of present-generation telecommunications power systems. However, subject matter experts appropriate to this standards project needed a knowledge base covering not only power systems but also data acquisition systems, control systems, operation support systems, and the data communications technology to tie it all together. Therefore, in addition to establishing a Working Group under T1E1, a formal liaison was established with the T1M1 Technical Subcommittee.

There are two annexes in this standard. Both annexes are informative and are not considered a part of this standard.

Suggestions for the improvement of this standard are welcome. They may be addressed to the Alliance for Telecommunications Industry Solutions, 1200 G Street, NW, Suite 500, Washington, DC 20005.

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American National Standard
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Uniform Language for Accessing Power Plants – Human-Machine Language

1 Scope, purpose, and application

1.1 Scope

This document is intended to be part of a series of standards that formalizes the access interfaces of Power System Monitors/Controllers (PSMC). The PSMC is an intelligent, user-configured, hardware/software system. This system incorporates one or more functional capabilities to detect analog and binary input signals, process and store acquired data, report information, and control power systems, including power plants and power plant support systems.

This standard specifies requirements for the human-machine user access language of power systems monitors/controllers. The standard defines language elements that support management functions that include, but are not limited to, Operations, Administration, Maintenance, and Provisioning (OAM&P) functions as defined in other American National Standards such as *American National Standard for Telecommunications – Operations, Administration, Maintenance, and Provisioning (OAM&P) – Principles of Functions, Architectures, and Protocols for Telecommunications Management Network (TMN) Interfaces*, ANSI T1.210-1993. The present issue of this standard addresses only the commands and responses that are required for human-machine interaction, that is:

– human-initiated commands that are capable of being recognized by a PSMC;

– human-interpretable responses from the PSMC resulting from recognizable human-initiated commands; and

– human-interpretable responses from the PSMC resulting from nonrecognized human-initiated inputs, e.g., improperly formed commands or typing errors.

Future standards will address:

– interfaces between PSMCs and Operations System (OS)-like systems that perform systems management functions but are not located within a Telecommunications Management Network (TMN) environment;

– interfaces between power systems-oriented network elements and OSs that are located within a TMN environment.

1.2 Limitation of scope

This standard does not define either the algorithms or means of calculations. Such items as resolution, number of decimal places, and means of deriving averages are not within the scope of this standard.

It is not the intent of this standard that all aspects of this type of system be specified and standardized.

This standard is intended to meet the needs of those who engineer, install, operate, maintain, and provision power systems. At this time it may not fully comply with TMN standards in their present state of development. Future revisions are expected to further integrate standardization of TMN requirements with power systems access.

This standard does not inhibit innovation and the provision of functions, commands, and response structures which are in addition to those defined by this standard. This standard

also provides flexibility for individual designers and users to adapt those portions of the standard that are needed for particular applications.

1.3 Purpose

Changes in the telecommunications industry have increased the need for detailed monitoring of power systems. However, no single standard exists that specifically addresses communications between machines, humans, and telecommunications power plants. The purpose of this document is to provide a user access language, i.e., a set of commands and responses, for the support of power systems management functions. The telecommunications industry, including both product developers and users of these products, stands to benefit from these standards in a number of ways:

– reduced development costs;

– reduced training costs;

– increased interoperability among a broad range of power systems monitoring and control equipment.

1.4 Application

This standard defines language elements that support management functions concerning the monitoring and controlling of telecommunications power systems. Specifically, this standard defines the command/response interactions between human users and PSMCs.

1.5 Compliance

To address the disparate capabilities of terminals and workstations, there are two categories of compliance with this standard. Compliance with this standard may be accomplished under either or both categories.

Category A compliance allows all requirements of this standard to be met using an ASCII text terminal which implements the character set found in table 18 of this standard. To comply within this category, the user must be able to select menu items by entering the standard alphanumeric characters found in table 18 of this standard.

Category B compliance allows all requirements of this standard to be met using intelligent workstations employing diverse means of menu item selection; including cursor control or mouse movement, or both, and clicking. No restrictions are placed on means to make menu item selection under category B.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI T1.210-1993, *Telecommunications – Operations, administration, maintenance, and provisioning (OAM&P) – Principles of functions, architectures, and protocols for telecommunications management network (TMN) interfaces*

CCITT, Blue Book, Volume X – Fascicle X.7, *MAN-MACHINE Language (MML)*, Recommendations Z.301–302, Z.311–312, and Z.314–317[1)]

3 Definitions

3.1 alarm attributes: Those characteristics that make up the alarm. This includes threshold settings.

3.2 attribute: Information concerning a managed object used to describe (either in part or in whole) that managed object. This information consists of an attribute type and its corresponding attribute value (for “single-valued” attributes) or values (for “multi-valued” attributes).

3.3 configuration management: A set of functions to exercise control over, identify, collect data from and provide data to the PSMC.

3.4 date and time: The present date and time residing in the PSMC.

3.5 entity: A managed object that has a separate and distinct existence, contrasted with its attributes.

1) Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036.