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**NATIONAL STANDARD OF THE
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**Engineering data exchange format for use in industrial
automation systems engineering - Automation markup
language - Part 1: Architecture and general requirements**

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Foreword

GB/T 39003 "Engineering Data Exchange Format Automation Markup Language for Industrial Automation System Engineering" is divided into the following 4 parts.

---Part 1.Architecture and general requirements;

---Part 2.Role Class Library;

---Part 3.Geometry and Kinematics;

---Part 4.Logic.

This part is Part 1 of GB/T 39003.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this part is equivalent to the IEC 62714-1.2018 "Engineering Data Exchange Format Automatic for Industrial Automation System Engineering"

Markup Language Part 1.Architecture and General Requirements.

This section has made the following editorial changes.

---In order to increase the readability, this section has added Appendix NA "Chinese-English Contrast of the Common Words Used in This Section";

---Delete references IEC 62714-2, IEC 62714-3, IEC 62714-4, because they are duplicated with normative references.

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This part was proposed by China Machinery Industry Federation.

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Introduction

IEC 62714 is a data exchange solution for the field of automation engineering.

The data exchange format (Automation Markup Language, AML) defined in IEC 62714 is an extensible markup language (XML) framework

It is used to support data exchange between heterogeneous engineering tools.

AML aims to establish the connection between engineering tools in different fields, such as mechanical equipment engineering, electrical design, process engineering, process control engineering,

Human-machine interface development, PLC programming and robot programming, etc.

AML follows an object-oriented method to store engineering information, and allows the use of data objects that encapsulate different aspects of the factory

The physical and logical components are modeled. An object can contain other sub-objects, and can also belong to a larger group or aggregation. work

The information contained in a typical object in a factory automation project includes topology, geometry, kinematics and logic, and logic covers sequence, behavior

And control. Therefore, object-oriented data structure, geometry, kinematics and logic have become an important focus of data exchange in the engineering field.

AML integrates existing industrial data formats used to store and exchange engineering

signals in different fields. These data formats are

The specification is implemented independently and does not belong to the branch of AML.

The core of AML is the top-level data format CAEX that connects different data formats.

Therefore, AML has its inherent distributed document architecture.

Figure 1 describes the basic architecture of AML and the distribution of topology, geometry, kinematics and logic information.

Figure 1 Overview of the engineering data exchange format AML

Since AML contains different aspects, IEC 62714 consists of several parts for different aspects.

---Part 1.Architecture and general requirements. This part specifies the AML architecture, engineering data modeling, classes, instances, relationships, references,

Hierarchical structure, AML base library and extended AML concepts. It is the foundation of all other parts of the present and future, and is

Referencing other subformats provides a mechanism.

---Part 2.Role class library, this part will provide additional AML library.

---Part 3.Geometry and Kinematics, this part will describe the modeling of geometry and motion information.

---Part 4.Logic, this part will describe the modeling of information related to logic, sequence, behavior and control.

In order to link more data standards with AML, more parts may be added in the future.

Since there are no more sections describing the integration of more standards, the focus should be on a limited set of sub-data formats. Otherwise any

The data format will be used, resulting in the inability to exchange data.

Appendix A gives informative information, use cases and examples of AML.

Appendix B gives an example of XML expression of the AML basic library defined in this section.

Engineering data exchange format for industrial automation system engineering

Automation markup language

Part 1.Architecture and general requirements

1 Scope

This part of GB/T 39003 regulates the architecture and general requirements of the