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**Information technology – Home Electronic System (HES) architecture –
Part 4-301: Application protocols for home air conditioners and controllers**

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INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 4-301: Application protocols for home air conditioners and controllers

FOREWORD

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International Standard ISO/IEC 14543-4-301 has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

The list of all currently available parts of the ISO/IEC 14543 series, under the general title *Information technology – Home Electronic System (HES) architecture*, can be found on the IEC and ISO websites.

The text of this document is based on the following documents:

CDV	Report on voting
JTC1-SC25/2929/CDV	JTC1-SC25/2952/RVC

Full information on the voting for the approval of this document can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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INTRODUCTION

This document specifies the message structure, sequences and protocol of the application layer for networked enhanced control devices used in the Home Electronic System. Some services are targeted for communications between devices. Other services are exclusively reserved for management purposes. Some services can be used for both management and run-time communications. This document is applicable for energy management services, mobile access, remote appliance maintenance services, home healthcare services, home security services and comfort control.

This document specifies the detailed procedures and behaviours of both home air conditioners and controllers at the application level communication based on ISO/IEC 14543-4-3.

Figure 1 shows the relationship between IEC 62394, ISO/IEC 14543-4-3 and ISO/IEC 14543-4-301. The existing ISO/IEC 14543-4-3 specifies the message structure, sequences and protocol for a general-purpose communication for use in network enhanced control devices of the Home Electronic System (HES) Class 1. ISO/IEC 14543-4-3 provides the common interfaces for the use-level process and the services such as energy management, remote maintenance, and other services for easily building a system consisting of multi-vendor devices and equipment. The existing IEC 62394 specifies the detailed lists of control commands on NECD objects. Annex A shows terms and NECD frame format on ISO/IEC 14543-4-3 and IEC 62394.

Since ISO/IEC 14543-4-3 is a general-purpose communication specification that applies to a variety of devices, it does not focus on the detailed procedures and behaviours for each device such as a home air conditioner.

In order to enhance interoperability, it is necessary to specify how to implement ISO/IEC 14543-4-3 for each device or controller at the application level: command sequences, timeout requirements, required combinations of acceptable commands, etc.

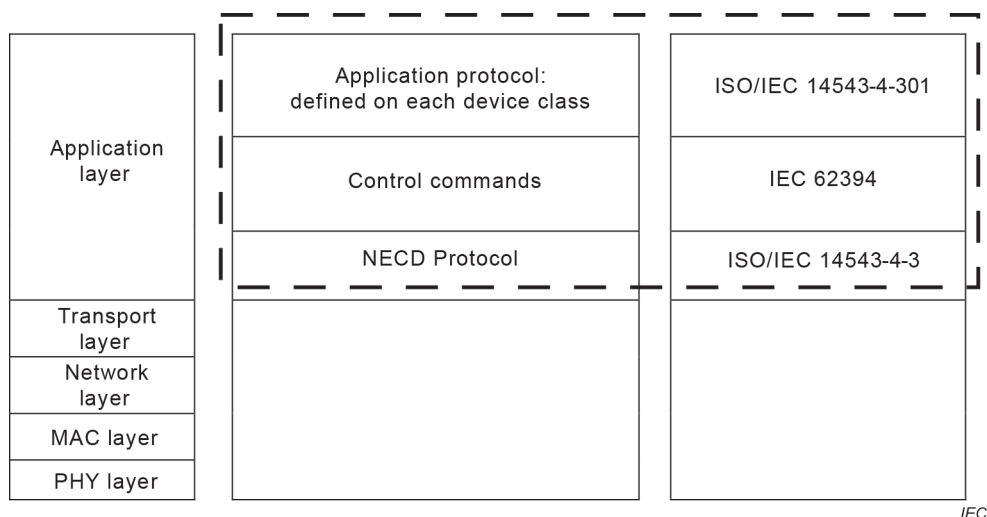


Figure 1 – Relationship between IEC 62394, ISO/IEC 14543-4-3 and ISO/IEC 14543-4-301

INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 4-301: Application protocols for home air conditioners and controllers

1 Scope

This part of ISO/IEC 14543 specifies an application-layer protocol necessary for ensuring interoperability among the products of various manufacturers regarding communications between home air conditioners and controllers, using a protocol called network enhanced communications device (NECD) as specified in ISO/IEC 14543-4-3. This protocol is based on user datagram protocol (UDP) using IPv4 or IPv6 (TCP is optional).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 14543-2-1, *Information technology – Home Electronic System (HES) architecture – Part 2-1: Introduction and device modularity*

ISO/IEC 14543-4-3, *Information technology – Home Electronic System (HES) architecture – Part 4-3: Application layer interface to lower communications layers for network enhanced control devices of HES Class 1*

IEC 62394, *Service diagnostic interface for consumer electronics products and networks – Implementation for ECHONET*