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**Information technology – Home electronic system (HES) architecture –
Part 4-2: Communication layers – Transport, network and general parts of
data link layer for network enhanced control devices of HES Class 1**

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INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 4-2: Communication layers – Transport, network and general parts of data link layer for network enhanced control devices of HES Class 1

FOREWORD

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International Standard ISO/IEC 14543-4-2 was 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 web site.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

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

INTRODUCTION

This part of ISO/IEC 14543 specifies the media independent requirements for the data link layer and the requirements for the network layer and the transport layer for Home Electronic System. This standard stipulates the communication stack for providing the services specified in ISO/IEC 14543-4-1. It can be used as the communication stack on the physical layers as specified in ECHONET¹ Specifications. This part of ISO/IEC 14543 is based on ECHONET¹ specifications.

ISO/IEC 14543 *Information technology – Home Electronic System (HES) architecture*, currently consists of 13 parts:

- Part 2-1: *Introduction and device modularity*
- Part 3-1: *Communication layers – Application layer for network based control of HES Class 1*
- Part 3-2: *Communication layers – Transport, network and general parts of data link layer for network based control of HES Class 1*
- Part 3-3: *User process for network based control of HES Class 1*
- Part 3-4: *System management – Management procedures for network based control of HES Class 1*
- Part 3-5: *Media and media dependent layers – Power line for network based control of HES Class 1*
- Part 3-6: *Media and media dependent layers – Twisted pair for network based control of HES Class 1*
- Part 3-7: *Media and media dependent layers – Radio frequency for network based control of HES Class 1*
- Part 4: *Home and building automation in a mixed-use building (technical report)*
- Part 4-1: *Communication layers – Application layer for network enhanced control devices of HES Class 1*
- Part 4-2: *Communication layers – Transport, network and general parts of data link layer for network enhanced control devices of HES Class 1 (this standard)*
- Part 5-1: *Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Core protocol (under consideration)*
- Part 5-2: *Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Device certification (under consideration)*

Additional parts are under preparation.

¹ Echonet™ is the trade name of a product supplied by ECHONET Consortium. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC or ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 4-2: Communication layers – Transport, network and general parts of data link layer for network enhanced control devices of HES Class 1

1 Scope

This part of ISO/IEC 14543 specifies the services and protocol in a manner independent of the physical layer for the data link layer and for the network layer and the transport layer for usage in network enhanced home electronic systems Class 1.

ISO/IEC 14543-4 is designed to enable the use of power line and wireless protocols as transmission media. Slow transmission speeds discourage large data transfers, and it is desirable to reduce the mounting load on simple devices. In light of this situation, this part of ISO/IEC 14543 specifies the frame format for the communications middleware block to minimize message size while fulfilling the requirements of the communications layer structure.

This part of ISO/IEC 14543 specifies the protocol difference absorption processing block and a part of the communications processing block. Figure 1 shows the relationship between the protocol of ISO/IEC 14543-4 and HES reference model based on ISO/IEC 7498.

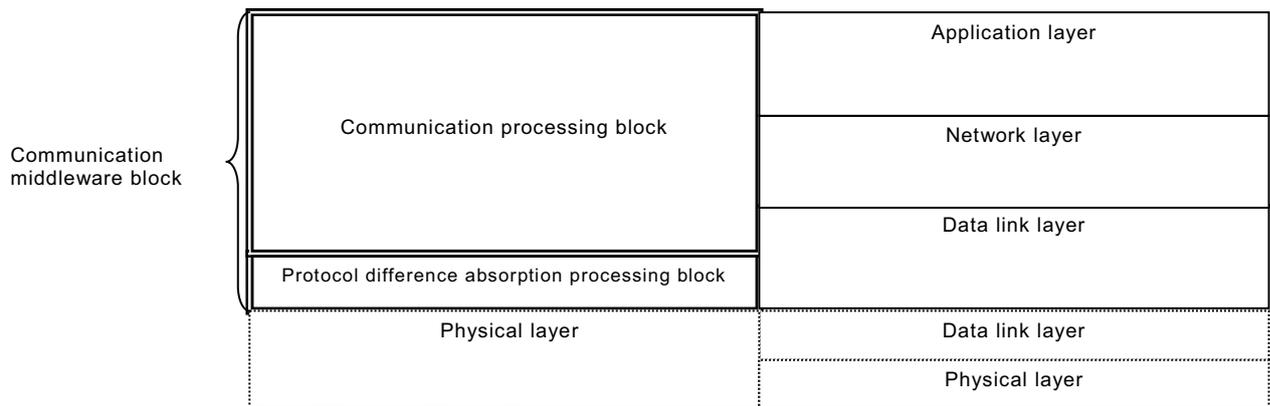


Figure 1 – Relationship between the protocol of ISO/IEC 14543-4 and OSI reference model

2 Normative references

The following referenced documents are indispensable for the application 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 7498 (all parts), *Information technology – Open systems interconnection – Basic reference model*

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

ISO/IEC 24767-2, *Information technology – Home network security – Part 2: Internal security services (under consideration)*