

# ISO/IEC 14543-4-2:2008-05 (E)

## 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

---

### CONTENTS

- FOREWORD ..... 4
- INTRODUCTION ..... 5
- 1 Scope ..... 6
- 2 Normative references ..... 6
- 3 Terms, definitions and abbreviations ..... 7
  - 3.1 Terms and definitions ..... 7
  - 3.2 Abbreviations ..... 9
- 4 Conformance ..... 9
- 5 Frame format of communication layers ..... 10
- 6 Requirements for the physical layer and independent data link layer ..... 10
  - 6.1 Requirements for the physical layer ..... 10
  - 6.2 Functions of the data link layer ..... 11
  - 6.3 Possible media and their impact on layer-2 ..... 11
  - 6.4 Data link layer services ..... 11
    - 6.4.1 Data link header ..... 11
    - 6.4.2 Data link address ..... 12
    - 6.4.3 Application data counter ..... 15
    - 6.4.4 Data link split frames ..... 15
    - 6.4.5 Data link data counter ..... 16
  - 6.5 Protocol difference absorption processing block ..... 16
    - 6.5.1 Overview ..... 16
    - 6.5.2 Message receipt/assembly processing ..... 17
    - 6.5.3 Message splitting/transmission processing ..... 17
    - 6.5.4 Address conversion processing ..... 17
    - 6.5.5 Communications type conversion processing ..... 18
    - 6.5.6 Common lower-layer communications interface processing ..... 18
- 7 Requirements for the network layer ..... 19
  - 7.1 Overview ..... 19
  - 7.2 Received message determination processing ..... 19
    - 7.2.1 Overview ..... 19
    - 7.2.2 Received message identification processing specifications for nodes without the data link router function ..... 19
    - 7.2.3 Specifications for the received message identification processing for data link routers ..... 20
  - 7.3 Routing processing ..... 21
    - 7.3.1 Overview ..... 21
    - 7.3.2 Routing processing for nodes without the data link router function ..... 21
    - 7.3.3 Routing processing for data link routers ..... 21
  - 7.4 Send message creation/management processing ..... 24
- 8 Requirements for the transport layer ..... 24
- Annex A (informative) API functions ..... 25
  - A.1 API function for application layer ..... 25
  - A.2 API functions for individual lower-layer communications interface ..... 25
    - A.2.1 General ..... 25

|   |    |
|---|----|
| A.2.2 List of individual low-layer communication interface functions .....                    | 25 |
| A.2.3 Individual lower-layer communication interface detail specifications .....              | 26 |
| A.2.4 Initial Setting Information Specifications .....  | 49 |
| Bibliography.....   | 52 |
| Figure 1 – Relationship between the protocol of ISO/IEC 14543-4 and OSI reference model ..... | 6  |
| Figure 2 – Data link frame format of communication layers .....                               | 10 |
| Figure 3 – Configuration of DHD .....   | 11 |
| Figure 4 – Configuration of SDLA and DDLA for individual address.....                         | 12 |
| Figure 5 – DDLA (broadcast-stipulated) address configuration.....                             | 13 |
| Figure 6 – Broadcast target requirement code .....  | 14 |
| Figure 7 – Node group requirement bit specifications.....                                     | 15 |
| Figure 8 – Format for protocol difference absorption processing section .....                 | 15 |
| Figure 9 – Relationship with upper-layer messages .....                                       | 16 |
| Figure 10 – Configuration of DDC .....  | 16 |
| Figure 11 – Subnet connections.....   | 22 |
| Table 1 – Number of hop counts .....  | 12 |
| Table 2 – NetID codes .....   | 13 |
| Table 3 – DDLA (broadcast-stipulated) address configuration.....                              | 14 |
| Table A.1 – List of individual low-layer communication interface functions .....              | 25 |
| Table A.2 – Node address description map.....   | 47 |