

# INTERNATIONAL STANDARD

# IEC 62394

First edition  
2006-06

---

---

## Service diagnostic interface for consumer electronics products and networks Implementation for ECHONET

© IEC 2006 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland  
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: [inmail@iec.ch](mailto:inmail@iec.ch) Web: [www.iec.ch](http://www.iec.ch)



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

PRICE CODE

**XA**

*For price, see current catalogue*

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms, definitions and abbreviations .....	8
3.1 Terms and definitions .....	8
3.2 Abbreviations .....	8
4 Different types of service diagnostics .....	8
4.1 Stand-alone products .....	8
4.2 Facilities or household appliances network.....	8
4.3 Remote diagnosis.....	9
5 SDI requirements .....	9
5.1 Hardware .....	9
5.2 Software.....	9
6 Tester software requirements .....	10
6.1 Reading the property diagnostic unit .....	10
7 Control protocol.....	11
7.1 Message structure (frame format).....	11
8 ECHONET objects: detailed specifications .....	40
8.1 Basic concept.....	40
8.2 ECHONET properties: basic specifications .....	41
8.3 Device object super class specifications.....	43
9 Supplementary information.....	49
9.1 Property map description format.....	49
9.2 All router data description format.....	50
9.3 Instance list description format.....	50
9.4 Class list description format .....	50
Figure 1 – ECHONET frame for plain data format .....	12
Figure 2 – EHD detailed specifications.....	13
Figure 3 – Configuration of SEA and DEA when an individual address is specified .....	14
Figure 4 – DEA (broadcast-stipulated) address configuration .....	14
Figure 5 – Broadcast target stipulation code .....	15
Figure 6 – Node group stipulation bit specifications .....	15
Figure 7 – OHD detailed specifications .....	16
Figure 8 – EOJ detailed specifications .....	16
Figure 9 – EPC detailed specifications.....	18
Figure 10 – ESV detailed specifications .....	18
Figure 10 – EpESV configuration .....	32
Figure 12 – Relationship between write request (requiring no response) and write "process-not-possible" response.....	35
Figure 13 – Relationship among write request (requiring a response), write "accepted" response, and write "process-not-possible" response .....	36

Figure 14 – Relationship among read request (requiring a response), read "accepted" response, and read "process not possible" response .....	38
Figure 15 – Relationship between notification request and notification response.....	38
Figure 16 – Relationship between property value notification (requiring a response) and property value notification response .....	39
Figure 17 – Processing target property counter for three requests .....	39
Figure 18 – Property data counter.....	40
Table 1 – List of class group codes.....	17
Table 2 – List of ESV codes for requests .....	20
Table 3 – List of ESV codes for response/notification.....	21
Table 4 – List of ESV codes for "response-not-possible" responses .....	21
Table 5 – List of CpESV codes for request/notification.....	34
Table 6 – List of CpESV codes for "accepted" response .....	34
Table 7 – List of CpESV codes for "process-not-possible" response .....	34
Table 8 – Data types, data sizes, and overflow/underflow codes.....	42
Table 9 – List of device object super class configuration properties .....	44
Table 10 – Relationship between the space name of the installation location and the assigned bit.....	46
Table 11 – Fault content property value assignments.....	47

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SERVICE DIAGNOSTIC INTERFACE FOR CONSUMER  
ELECTRONICS PRODUCTS AND NETWORKS –  
IMPLEMENTATION FOR ECHONET**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative References cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62394 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

FDIS	Report on voting
100/1077/FDIS	100/1102/RVD

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

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

Currently in preview, click buy full version

## INTRODUCTION

Consumer products are often repaired by service workshops, which service a wide range of products developed by different manufacturers.

For highly complex products, fault diagnosis becomes increasingly difficult and time-consuming. To make diagnosis possible, manufacturers often develop built-in diagnostic software, which can be used for fault-finding together with an external diagnostic unit through a service diagnostic interface (SDI).

To avoid the need for a service workshop to purchase several different diagnostic units from different manufacturers for different products, a standardized SDI is proposed for use by all manufacturers and in all products in which such diagnostic interfaces are required. The result will be that only one SDI is needed in the service workshops.

The SDI should also be suitable for diagnosis in a network (facilities or household appliances network) in which different products from different manufacturers are connected together. The interface should also allow for future development.

The standard SDI which has to be specified, should

- be usable in future products;
- be easily connectable to a product or a network;
- be cheap;
- not limit product design.

## SERVICE DIAGNOSTIC INTERFACE FOR CONSUMER ELECTRONICS PRODUCTS AND NETWORKS – IMPLEMENTATION FOR ECHONET

### 1 Scope

This International Standard specifies requirements for service diagnostic software to be implemented in products that incorporate a digital interface. It does not specify requirements for carrying out remote diagnosis or for manufacturer-dependent software.

The SDI requires the use of a controller (exclusive controller or general-purpose controller/PC) into which service diagnostic software can be loaded. Part of this controller software should be standardized while another part of this controller software is manufacturer-/product-related.

To reach a common approach in servicing all products from all manufacturers, it is necessary to standardize specific items in the products (device under test (DUT)) as well as in the diagnostic software on the controller.

The SDI is based upon the ECHONET specification because this interface will be used in most future products. The use of this connection and existing communication protocols enable implementation in products at low cost and gives maximum flexibility and efficiency.

The SDI consists of

- the specific hardware and software requirements of the DUT;
- the specific requirements of the controller:
  - the service software;
  - an ECHONET interface (to be built in if not already present);
- the connection between the controller and the DUT.

This specification is the minimal specification necessary to be able to carry out computerized diagnosis and covers the standardized software of the controller as well as the standardized software and provisions in the DUT.

### 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.

ECHONET Specification:2002, Version 2.11