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SPECIFICATION

**IEC
PAS 62453-2**

Pre-Standard

First edition
2006-05

Field Device Tool (FDT) interface specification –

**Part 2:
INTERBUS communication**

Reference number
IEC/PAS 62453-2:2006(E)

Publication numbering

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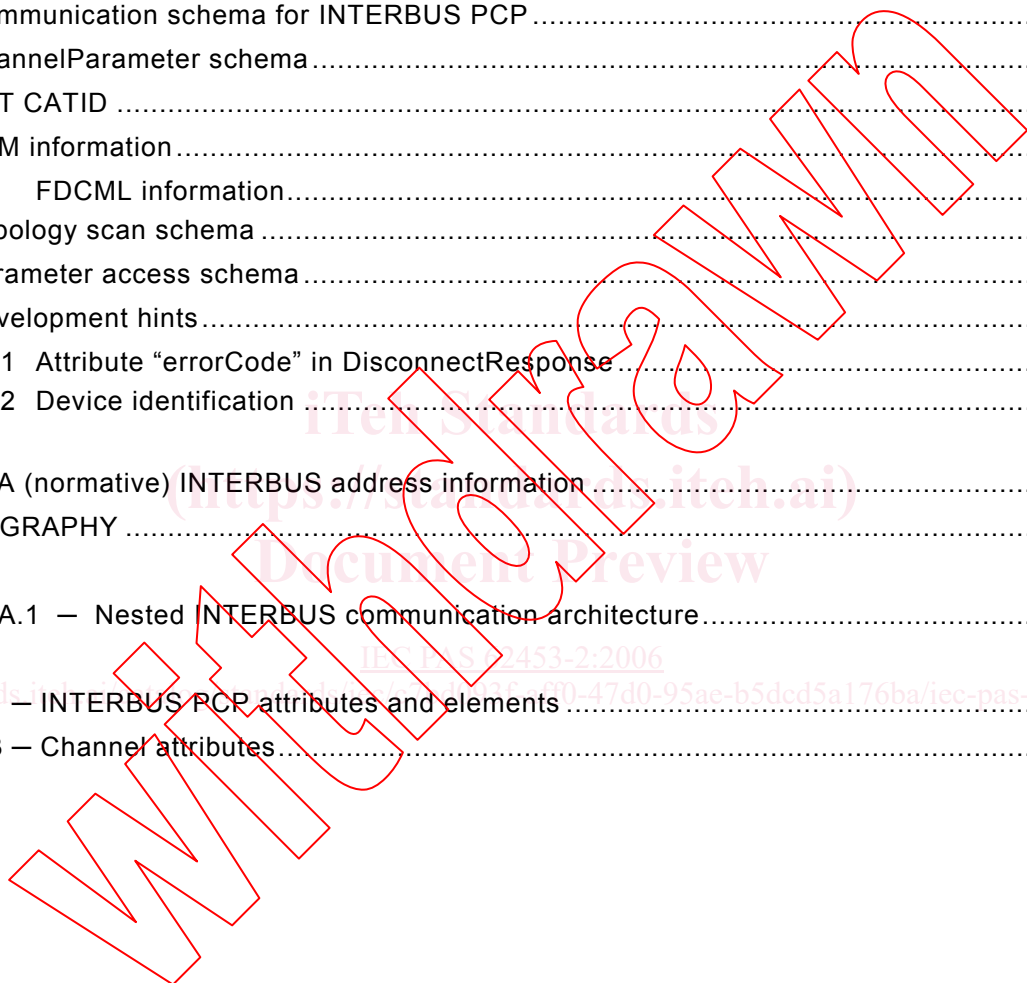
**Part 2:
INTERBUS communication**

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE   **R**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Field Device Tool (FDT) interface specification –

Part 2: INTERBUS communication

FOREWORD

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IEC-PAS 62453-2 has been processed by subcommittee 65C: Digital communications, of IEC technical committee 65: Industrial-process measurement and control.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
65C/398A/NP	65C/411/RVN

Following publication of this PAS, which is a pre-standard, the technical committee or subcommittee concerned will transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of three years starting from 2006-05. The validity may be extended for a single three-year period, following which it shall be revised to become another type of normative document or shall be withdrawn.

IEC 62453 consists of the following parts under the general title *Field Device Tool (FDT) interface specification:*

Part 1: Concepts and detailed description

Part 2: INTERBUS communication

Part 3: PROFIBUS communication

Part 4: HART communication

Part 5: FOUNDATION FIELDBUS communication

INTRODUCTION

This PAS is an interface specification for developers of FDT components for Function Control and Data Access within a Client Server architecture. The specification is a result of an analysis and design process to develop standard interfaces to facilitate the development of servers and clients by multiple vendors that shall inter-operate seamlessly.

With the integration of fieldbusses into control systems, there are a few other tasks which must be performed. This applies to fieldbusses in general. Although there are fieldbus- and device-specific tools, there is no unified way to integrate those tools into higher level system-wide planning or engineering tools. In particular, for use in extensive and heterogeneous control systems, typically in the area of the process industry, the unambiguous definition of engineering interfaces that are easy to use for all those involved, is of great importance.

A device-specific software component, called DTM (Device Type Manager), is supplied by the field device manufacturer with its device. The DTM is integrated into engineering tools via the FDT interfaces defined in this specification. The approach to integration is in general open for all kind of fieldbusses and thus meets the requirements for integrating different kinds of devices into heterogeneous control systems.

Field Device Tool (FDT) interface specification –

Part 2: INTERBUS communication

1   Scope

This part of IEC 62435 provides information for integrating the INTERBUS® protocol into the FDT interface specification (IEC 62453-1).

2   Normative references

The following referenced documents are indispensable for the application of this PAS. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies

IEC 61158:2003 (all parts), *Digital data communications for measurement and control – Fieldbus for use in industrial control systems*

IEC 62453-1, *Field Device Tool (FDT) interface specification – Part 1: Concepts and detailed description*

ISO 15745-3, *Industrial automation systems and integration – Open systems application integration framework – Part 3: Reference description for IEC 61158-based control systems*

3   General

INTERBUS schemas are required to define the structure and semantics of the protocol-specific data transferred via XML documents on the FDT interfaces. The schemas are based on definitions given in the INTERBUS specification. Furthermore, they contain additional information about the device that is needed by systems to configure INTERBUS links and to establish communication between the INTERBUS master and the INTERBUS slave devices.

NOTE   For details of the INTERBUS specification, see the IEC 61158 fieldbus series and the "Reference Manual Peripherals Communication Protocol" available from INTERBUS Club[1] Deutschland e.V.

4   Communication schema for INTERBUS PCP

Used at:

    IFdtCommunication::ConnectRequest()
    IFdtCommunication::TransactionRequest()
    IFdtCommunication::DisconnectRequest()
    IFdtCommunication::Abort()
    IFdtCommunication::SequenceBegin()
    IFdtCommunication::SequenceEnd()
    IFdtCommunication::SequenceStart()
    IFdtCommunicationEvents::OnDisconnectResponse()
    IFdtCommunicationEvents::OnConnectResponse()
    IFdtCommunicationEvents::OnTransactionResponse()

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[1]   "INTERBUS is the trade name of Phoenix Contact GmbH & Co. KG., control of trade name use is given to the non profit organisation INTERBUS Club (http://www.interbusclub.com/). This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this profile does not require use of the trade name INTERBUS. Use of the trade name INTERBUS requirespermission of the INTERBUS Club.

Table 1 provides a description of the attributes and elements defined in the PCPCommunicationSchema.

Table 1 ─ INTERBUS PCP attributes and elements

Attribute	Description
systemNumber	System number of the address information according to the INTERBUS specification (see also Clause A.1 of Annex A)
segmentNumber	Segment number of the address information according to the INTERBUS specification (see also Clause A.1 of Annex A)
positionNumber	Position number of the address information according to the INTERBUS specification (see also Clause A.1 of Annex A)
errorCode	Contains information why a service could not be successfully executed
index	Address information according to the INTERBUS specification
subIndex	Address information according to the INTERBUS specification
communicationReference	Mandatory identifier for a communication link to a device. This identifier is allocated by the communication component during the connect. The address information has to be used for all following communication calls. NOTE This is not the communication reference (CR) of the Peripherals Message Specification (PMS)
invokeId	Job number for parallel services (for details, see the INTERBUS specification)
reasonCode	Cause for a connection abort.
abortDetail	Additional information for a connection abort
password	Password for the communication relationship to access device objects
accessGroup	Manufacturer-specific assignment of the controller board to an access group for which an access authorization for device objects is specified
versionOD	Version number of the object directory
profile	Identification of the device profile
protection	Indicates whether the access rights are checked when accessing device objects
manufacturerName	Manufacturer name of the device
deviceName	The name of the device
revision	The revision number of the device
sequenceTime	Period of time in [ms] for the whole sequence
delayTime	Delay time in [ms] between two communication calls

Tag	Description
ConnectRequest	Describes the communication request to establish a connection to an INTERBUS PCP device (Initiate_Request)
ConnectResponse	Describes the communication response to the ConnectRequest and provides the data of the corresponding Initiate_Confirmation service
DisconnectRequest	Describes the communication request to release a connection to an INTERBUS PCP device (Abort_Request)
DisconnectResponse	Describes the corresponding response to a DisconnectRequest
ReadRequest	Describes the communication request to read device objects (Read_Request)
ReadResponse	Describes the communication response to the ReadRequest and provides the data of the corresponding Read_Confirmation
WriteRequest	Describes the communication request to write device objects (Write_Request).
WriteResponse	Describes the communication response to the WriteRequest and provides the data of the corresponding Write_Confirmation
IdentifyRequest	Describes the communication request to identify the device (Identify_Request)
IdentifyResponse	Describes the communication response to the IdentifyRequest and provides the data of the corresponding Identify_Confirmation
SequenceBegin	Describes the sequence begin
SequenceEnd	Describes the sequence end
SequenceStart	Describes the sequence start
Abort	Describes the abort request (Abort_Request)
FDT	Root tag

```
<Schema name="FDTInterbusPCPCommunicationSchema" xmlns="urn:schemas-microsoft-com:xml-data"
xmlns:dt="urn:schemas-microsoft-com:datatypes" xmlns:fdt="x-schema:FDTDataTypesSchema.xml">
    <!--Definition of Attributes-->
    <AttributeType name="systemNumber" dt:type="ui1"/>
    <AttributeType name="segmentNumber" dt:type="ui1"/>
    <AttributeType name="positionNumber" dt:type="ui1"/>
    <AttributeType name="errorCode" dt:type="bin.hex"/>
    <AttributeType name="index" dt:type="ui2"/>
    <AttributeType name="subIndex" dt:type="ui1"/>
    <AttributeType name="communicationReference" dt:type="uuid"/>
    <AttributeType name="invokeId" dt:type="ui1"/>
    <AttributeType name="reasonCode" dt:type="ui1"/>
    <AttributeType name="abortDetail" dt:type="bin.hex"/>
    <AttributeType name="password" dt:type="ui1"/>
    <AttributeType name="accessGroup" dt:type="ui1"/>
    <AttributeType name="versionOD" dt:type="ui2"/>
    <AttributeType name="profile" dt:type="ui2"/>
    <AttributeType name="protection" dt:type="ui1"/>
    <AttributeType name="manufacturerName" dt:type="string"/>
    <AttributeType name="deviceName" dt:type="string"/>
    <AttributeType name="revision" dt:type="string"/>
    <AttributeType name="sequenceTime" dt:type="ui4"/>
    <AttributeType name="delayTime" dt:type="ui4"/>
    <!--Definition of Elements-->
    <ElementType name="ConnectRequest" content="empty" model="closed">
        <attribute type="fdt:nodeId" required="no"/>
        <attribute type="systemNumber" required="yes"/>
        <attribute type="segmentNumber" required="yes"/>
        <attribute type="positionNumber" required="yes"/>
        <attribute type="password" required="yes"/>
        <attribute type="accessGroup" required="yes"/>
    </ElementType>
    <ElementType name="ConnectResponse" content="empty" model="closed">
        <attribute type="fdt:nodeId" required="no"/>
        <attribute type="systemNumber" required="yes"/>
        <attribute type="segmentNumber" required="yes"/>
        <attribute type="positionNumber" required="yes"/>
        <attribute type="versionOD" required="yes"/>
        <attribute type="profile" required="yes"/>
        <attribute type="protection" required="yes"/>
        <attribute type="communicationReference" required="yes"/>
        <attribute type="errorCode" required="yes"/>
    </ElementType>
    <ElementType name="DisconnectRequest" content="empty" model="closed">
        <attribute type="fdt:nodeId" required="no"/>
        <attribute type="reasonCode" required="yes"/>
        <attribute type="abortDetail" required="yes"/>
        <attribute type="communicationReference" required="yes"/>
    </ElementType>
    <ElementType name="DisconnectResponse" content="empty" model="closed">
        <attribute type="fdt:nodeId" required="no"/>
        <attribute type="communicationReference" required="yes"/>
        <attribute type="errorCode" required="yes"/>
    </ElementType>
    <ElementType name="ReadRequest" content="empty" model="closed">
        <attribute type="fdt:nodeId" required="no"/>
        <attribute type="invokeId" required="yes"/>
        <attribute type="index" required="yes"/>
        <attribute type="subIndex" required="yes"/>
        <attribute type="communicationReference" required="yes"/>
    </ElementType>
    <ElementType name="ReadResponse" content="eltOnly" model="closed">
        <attribute type="fdt:nodeId" required="no"/>
        <attribute type="communicationReference" required="yes"/>
        <attribute type="errorCode" required="yes"/>
        <element type="fdt:CommunicationData" minOccurs="1" maxOccurs="1"/>
    </ElementType>
    <ElementType name="WriteRequest" content="eltOnly" model="closed">
        <attribute type="fdt:nodeId" required="no"/>
        <attribute type="invokeId" required="yes"/>
        <attribute type="index" required="yes"/>
        <attribute type="subIndex" required="yes"/>
        <attribute type="communicationReference" required="yes"/>
```