INTERNATIONAL STANDARD

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Information technology – Implementation and operation of customer premises cabling –

Part 1: Administration

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INFORMATION TECHNOLOGY – IMPLEMENTATION AND OPERATION OF CUSTOMER PREMISES CABLING –

Part 1: Administration

FOREWORD

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialised system for world-wide standardisation. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organisation to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organisations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

International Standard ISO/IEC 14763-1 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

ISO/IEC 14763 consists of the following parts, under the general title Information technology – Implementation and operation of customer permises cabling:

Part 1: Administration

Part 2: Planning and installation

Part 3: Testing of optical fibre cabling.

Annexes A, B, C and D are for information only.

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INTRODUCTION

To utilise the wide variety of modern telecommunications services requires an effective telecommunications infrastructure. Cabling is a component of this infrastructure. It is needed to transport information, in the form of electrical and optical signals, between equipment. An effective cabling system is one that is properly installed, maintained and updated. In order to maintain and update a cabling system, in an efficient manner, an adequate administration system is required (see Figure 1).

An administration system consists of records that document the location of all telecommunications components and the unique identifiers that have been assigned to those components (see 4.4). It details the procedures for assigning identifiers to the components and placing labels on the components. The administration system provides a structure wherein additions, changes and deletions can be easily incorporated into the administration documentation.

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INFORMATION TECHNOLOGY – IMPLEMENTATION AND OPERATION OF CUSTOMER PREMISES CABLING –

Part 1: Administration

1 Scope

This International Standard identifies fundamental principles such that individuals and organisations that own, or are responsible for a telecommunications infrastructure can, by use of this document, develop an administration system that is suitable to their needs. This International Standard does not recommend a specific type of administration system.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 14763. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC 14763 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 11801:1995, *Information technology – Generic Cabling for Customer Premises*

IEC 61082-1:1991, *Preparation of documents used in electrotechnology – Part 1: General requirements*

IEC 61082-2:1993, *Preparation of documents used in electrotechnology – Part 2: Function-oriented diagrams*

IEC 61082-3:1993, *Preparation of documents used in electrotechnology – Part 3: Connection diagrams, tables and lists*

IEC 60617 (series), *Graphical symbols for diagrams*

IEC 61930:1998, *Fibre optic graphical symbology*

IEC 61931:1998, *Fibre optic – Terminology*

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3 Definitions and abbreviations

3.1 Definitions

For the purposes of this standard the definitions of ISO/IEC 11801 apply in addition to the following ones:

3.1.1
identifier (of component in the information technology infrastructure)
a unique item of information that enables a specific component of the information technology infrastructure to be differentiated in the administration records

3.1.2
label
a label is used to clearly mark a specific component of the information technology infrastructure with its identifier and (optionally) other information

3.1.3
pathway
cable route (e.g., conduit, ductwork, tray, or tube) used to accommodate cables between termination points defined by a physical structure

3.1.4
record
collection of information about or related to a specific element of the information technology infrastructure

3.1.5
space
area (e.g., closet, cabinet, manhole, or equipment room) used to house cable terminations or equipment

3.1.6
work order
collection of information which documents the changes requested and the operations to be carried out on the information technology infrastructure

3.2 Abbreviations

CAD	Computer Aided Design
HVAC	Heating, Ventilation, Air conditioning
PABX	Private Automatic Branch Exchange

4 Cabling administration

4.1 General

Cabling administration is a system for managing cabling and connections. The administration system enables the components of the cabling to be identified in terms of their type, location, usage and other criteria.

The administration system may use a data base of records to maintain up-to-date information relating to the cabling. It enables the user to keep control of moves, additions and changes to the cabling and to generate reports on the state of the cabling system. Figure 1 gives an overview of criteria for administration, necessary identifiers, records and examples of linkages. The relevant cabling standards are shown in an informative flow diagram of annex D.

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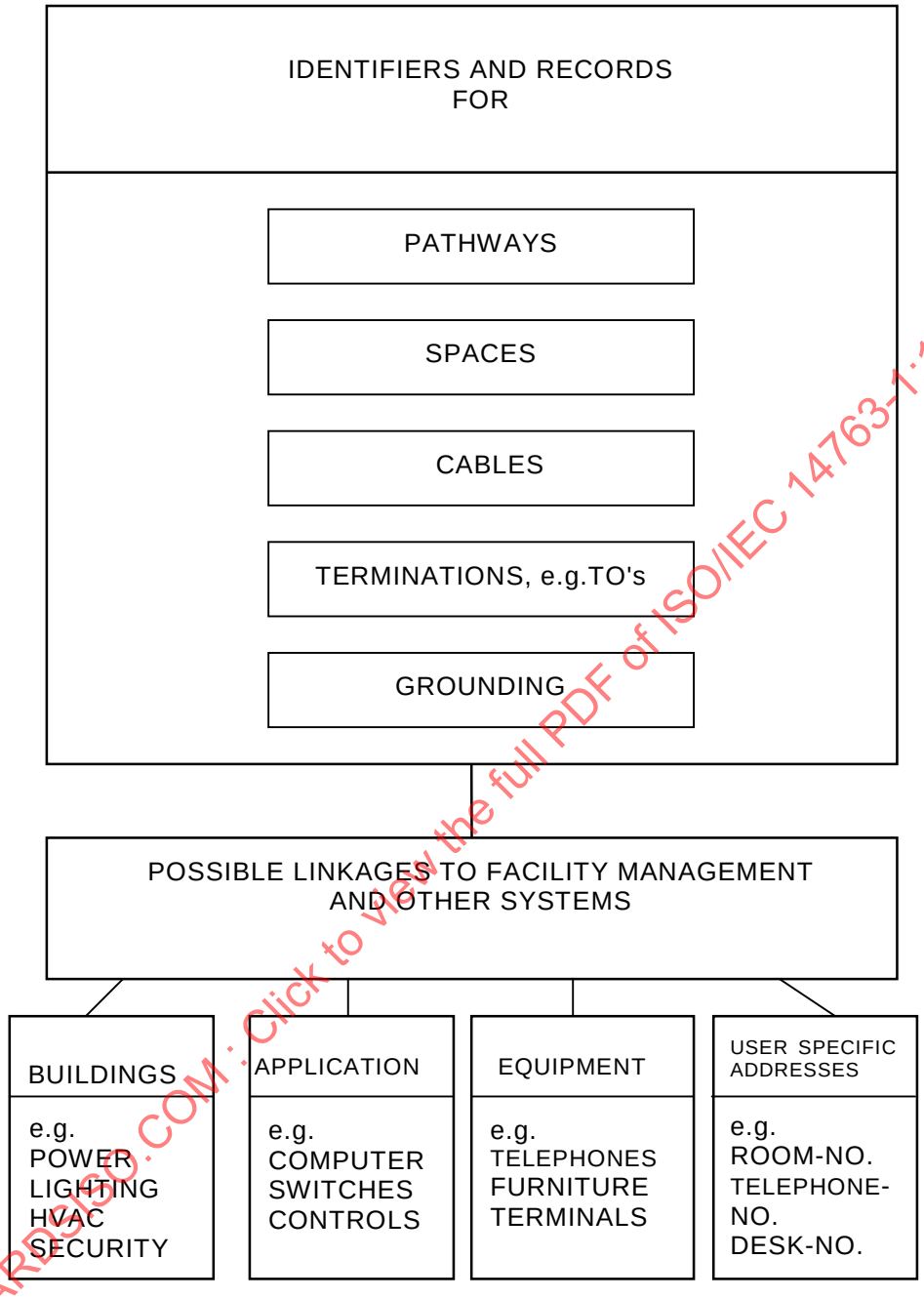

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Figure 1 – Components to be identified and recorded

4.2 Database

It is recommended that the principles of administration outlined in this clause be implemented using a computer based administration system. For smaller, less complex systems, a well designed paper based administration system may be adequate (see figure 2 and annex B). The complexity of the administration system may be related to the size of the telecommunications infrastructure. For a small system, a customised commercial database programme may be adequate. For a large organisation, the cabling administration system may require a sophisticated database, an efficient data retrieval program and additional features. For example, the computer administration package may input drawings directly from CAD programs or may output reports to external packages or e-mail work orders and automatically update records on completion of work and may also serve as a cabling design tool.

The basic administration database information flow is illustrated by figure 2.

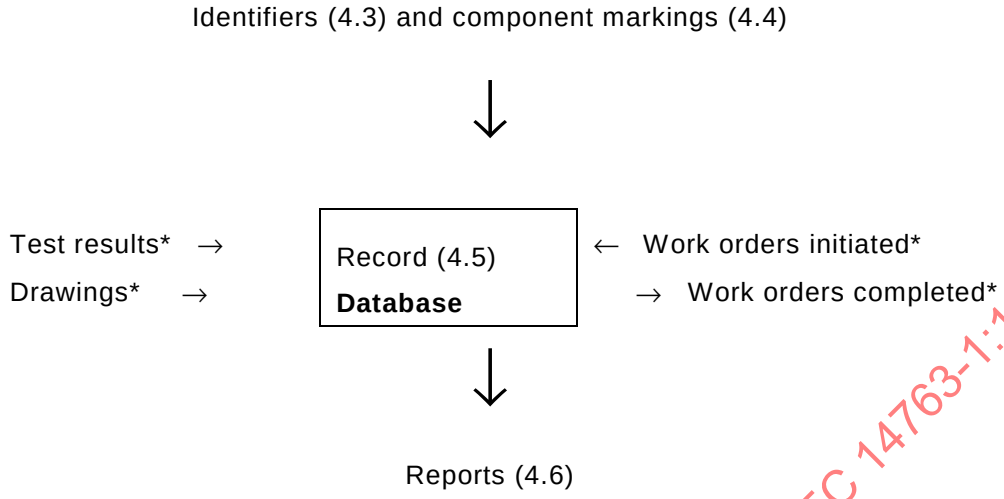

Figure 2 – Basic cabling administration

4.3 Identifiers

Every component related to cabling as well as pathways and spaces should have an identifier. As an example an identifier for a telecommunications outlet (TO) may be a single unique number. Alternatively an identifier may indicate through a code its location, type and other information (see annex A).

4.4 Component markings

Each component shall be clearly marked with its identifier. Marking may be achieved by securely attaching labels to the components or the component may be marked. Markings shall be permanent, accessible and readable.

4.5 Records

4.5.1 General

Records may be produced and maintained using a computer or paper based administration system.

Records regarding components of cabling, pathways and spaces should be linked to each other using their identifiers and may make reference to further premises records on power, heating, air conditioning systems, lighting, etc.

Records should include the date of installation and shall be updated whenever changes are made to cabling infrastructure.

4.5.2 Minimum records

The following minimum records regarding cabling infrastructure shall be provided:

a) for cables: locations of end points, type, number, pairs;

b) for outlets: identifier, type, location;

c) for distributors: identifier, designation, type, location, connections;

d) the floor plan including the locations of the outlets, distributors, pathways.

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4.5.3 Optional records

When changes are made to the cabling infrastructure including pathways and spaces additional records may be necessary.

4.5.3.1 Cable records

- type of optical fibre or copper cable
- typical cable data (e.g. part number, sheath colour)
- sheath and core identification
- manufacturer
- number of unterminated conductors and those with failures
- length
- data such as attenuation and crosstalk
- identification of pin connections at both ends and of splices
- performance classification (if applicable)
- location of earthing
- treatment of screens
- transmission system under operation
- date code
- part number
- identifier
- linkage to identifiers for distributors, outlets, pathways and spaces

4.5.3.2 Telecommunications outlet records

- performance classification (if applicable)
- single-mode or multimode fibre
- shielded or unshielded design
- manufacturer
- number and arrangement of terminated pins if not all pins are terminated
- part number
- identification of ports and cables connected
- linkage to identifiers for distributors, outlets, pathways and spaces

4.5.3.3 Distributor records

- number of available and used cables, fibres or pairs
- manufacturer
- number of conductors
- linkage to identifiers for cables, pathways and spaces
- part number
- front view of the patch cabinet

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4.5.3.4 Pathway records

- type
- metal or non metal design
- dimensions, mechanical data
- branching points
- manufacturer
- identification
- length
- location
- records of cables installed in that pathway
- location of earthing

4.5.3.5 Space records

- locations
- dimensions
- identification
- equipment located in the spaces
- space
- type

4.5.3.6 Drawings and work orders

4.5.3.7 Results of link and channel measurements

4.5.3.8 Active components records

- type of device
- model number
- availability of cables (number of ports)
- identifier
- adaptation of ports
- identification of ports
- location of device
- manufacturer
- name of user, department, telephone extension
- location of telecommunications outlets
- serial number, date of installation

4.5.3.9 Protocol records

Details of protocols may also be recorded.

4.6 Reports

Reports are generated from information in the data base. Reports may take the form of lists, tables, diagram, forms, etc. (see example in annex B). Reports may be used for status determination, trouble shooting and may help for planning purposes.

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5 Symbols and preparation of documents

Documentation of the cabling administration shall be based upon the principles of IEC 61082-1 to IEC 61082-3. Symbols to be used for records shall be in accordance with series IEC 60617. Symbols used in specific documentation shall be compiled (including their description) and shall be provided either on each drawing or on a separate sheet. Symbols used for cabling administration shall be different from those used for the documentation of other building services (such as heating, ventilation and air conditioning). Examples of symbols are given in annex C.

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Annex A
(informative)

Database formats

The following identifier fields are recommended for use in a data base (see table A.1).

Table A.1 – Summary of identifier fields

Field 1	Field 2	Field 3	Field 4	Field 5
General location	Specific location	Component identifier	Port number	Physical data

Examples of identifier fields:

a) Field 1 for defining the building or the location of the building

- HSE 01 defines the building "house 01".
- AB 005 defines the co-ordinates (see figure A.1) of a square on a plan, where "house 03" is located.

In both cases a minimum of 5 alphanumeric digits for the identification is needed.

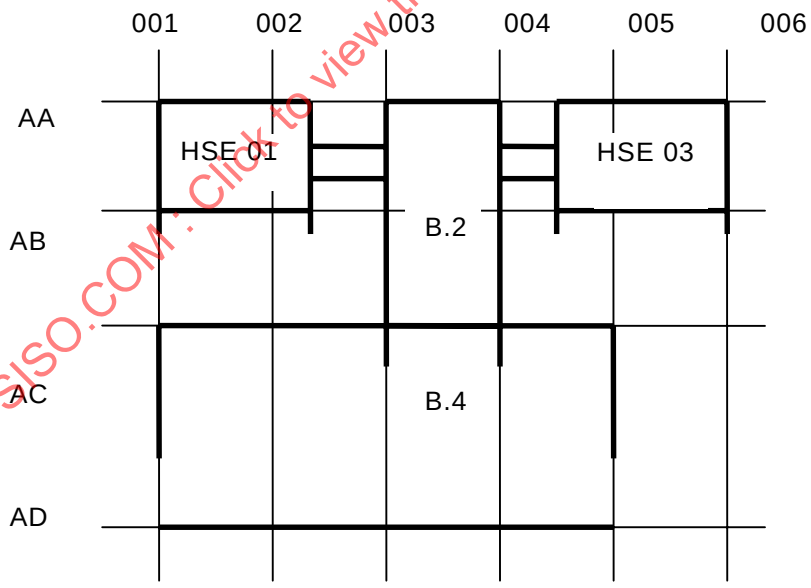

Figure A.1 – Co-ordinate system (example)

b) Field 2 for defining rooms or locations of the rooms within the building.

- -01 R0123 designates room 0123 in floor 01
- -01 AR021 designates the floor 01 and the co-ordinates of a square on the plan where the room 123 is located

In both cases a minimum of 7 alphanumeric digits for the identification is needed.

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c) Field 3 is the identifier for the components of the network.

F001 Identifies fibre 001. The minimum number of digits are 4. One digit for the identifier and 3 digits for the number.

d) Field 4 expresses the number of the ports on an active component.

e) Field 5 defines specific data of components.

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Annex B
(informative)

Form for a cabling record

Table B.1 shows an example of forms used for a telecommunications record. The meaning of the entries is the following:

Entry	Explanation
Location	address of building
Floor	floor of building to which this sheet belongs
Distributor No.	designation of distributor. Can be alphanumeric, e.g. 1A
Appearance	
Panel/Block	panel or block number in a field
Port/Pair	individual circuit pair on a particular **panel or block**
Service Type	voice circuit (V), data circuit (D), combined voice and data circuit (V/D) i.e. ISDN, audio/video (AV), CCCB (C)
Appearance Source	origin of circuit **appearance** (i.e. LAN hub, PABX port number, etc.)
Cross-Connect	
Panel/Block	panel or block to which the **appearance** circuit is cross-connected
Port/Pair	individual outlet or circuit to which the **appearance port** or **pair** is cross connected
Cable Length	length of cable run for this particular **port** or **pair** (expressed in metres)
Cable Type	category of cable used for this circuit, e.g. Category 5
Date of installation	date when the cable run was installed (optional)
Other	for example, any relevant comments regarding this particular circuit, such as transmission test, user name, user area (accounting, sales, etc.)

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Table B.1 – Example of a cabling record

TELECOMMUNICATIONS CABLING RECORD Location ..... Floor ..... Distributor No.									
Appearance		SERVICE TYPE: V, D, V/D AV C	Appearance SOURCE	CROSS-CONNECT TO:		CABLE LENGTH m	CABLE TYPE	DATE	OTHER
PANEL/ BLOCK	PORT/ PAIR			PANEL/ BLOCK	PORT/ PAIR				

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Annex C
(informative)

Examples for symbols for components used in telecommunications and information technology cabling

Tables C.1 to C.5 contain symbols for the various components used in telecommunications and information technology cabling. These symbols have mostly been taken from IEC 60617 series or have been derived applying the methodology established by IEC TC 3 to create compound symbols.

Table C.1 – Symbols for distributors

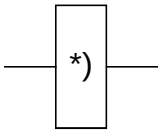
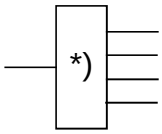
No.	Symbol	Reference	Description
C.1.1		Derived from 11-12-07 of IEC 60617-11:1996	Distributor (in schematic diagrams) *) designates the type of distributor: Floor Distributor (FD), Building Distributor (BD), Campus Distributor (CD)
C.1.2		Derived from 11-12-07 of IEC 60617-11:1996	Distributor (in detailed diagrams, here with 4 cables leaving into the next cabling subsystem)

Table C.2 – Symbols for active telecommunication equipment

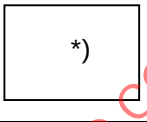
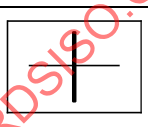
No.	Symbol	Reference	Description
C.2.1		Derived from 02-01-02 of IEC 60617-2:1996	Active telecommunication equipment *) designates the kind of equipment, e.g. HUB, MUX, PABX
C.2.2		09-02-01 of IEC 60617-9:1996	Automatic switching equipment

Table C.3 – Symbols for pathways

No.	Symbol	Reference	Description
C.3.1		Derived from 11-17-01 of IEC 60617-11:1996	Riser Shaft
C.3.2		Derived from 11-17-01 of IEC 60617-11:1996	Horizontal channel

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Table C.4 – Symbols for cables

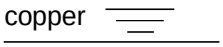
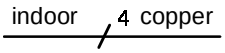
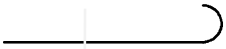
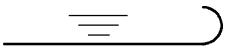
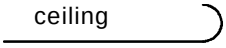
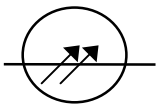
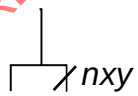
No.	Symbol	Reference	Description
C.4.1		03-01-01 of IEC 60617-3:1996	Connection (e.g. cable, conductor, transmission path) Note: This general symbol is the basis for several specialized symbols, see Section 1 of IEC 60617-3. Some examples are given below. E.g., to indicate the installation environment, add "indoor" or "outdoor" to the symbol as appropriate.
C.4.2		Derived from 11-03-01 of IEC 60617-11:1996	Outdoor underground cable with solid copper conductors
C.4.3		Derived from 03-01-03 of IEC 60617-3:1996	Indoor cable, 4 pair with solid copper conductors
C.4.4		03-01-06 of IEC 60617-3:1996	Patch cable, flexible, stranded conductors
C.4.5		03-01-14 of IEC 60617-3:1996	End of a cable not terminated (or capped), located in wall or conduit
C.4.6		Derived from 03-01-14 of IEC 60617-3:1996 and 11-03-01 of IEC 60617-11:1996	End of a cable not terminated (or capped), located under floor
C.4.7		Derived from 03-01-14 of IEC 60617-3:1996	End of a cable not terminated (or capped), located in ceiling
C.4.8		10-23-01 of IEC 60617-10:1996	Optical fibre cable This general symbol may be amended to give more detailed information: a) concerning the installation environment, add "indoor" or "outdoor" to the symbol as appropriate; b) concerning details such as composite cables or fibre type (singlemode, multimode etc.), the symbols specified in Section 23 of IEC 60617-10:1996 shall be used.
C.4.9		3.32 of IEC 61930:1998	Splice

Table C.5 – Symbol for telecommunications outlets

No.	Symbol	Reference	Description
C.5.1		Derived from 11-13-09 of IEC 60617-11:1996	Telecommunications outlet, where *n* designates the number *x* designates the TO type: C = copper, F = fibre optic *y* designates the TO location: C = ceiling, F = floor, W = wall

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