

## საქართველოს სტანდარტი

---

საინფორმაციო ტექნოლოგიები - კაბელების ინსტალაცია - ნაწილი 2:  
შენიშვნებს შიგნით ინსტალაციის დაგეგმვა და პრაქტიკული განხორციელება

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

საქართველოს სტანდარტებისა და მეტროლოგიის  
ეროვნული სააგენტო  
თბილისი

საინფორმაციო მონაცემები

1 შემუშავებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს სტანდარტების დეპარტამენტის მიერ

2 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს 2019 წლის 9 ოქტომბრის № 73 განკარგულებით

3 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 50174-2:2018 “საინფორმაციო ტექნოლოგიები - კაბელების ინსტალაცია - ნაწილი 2: შენობებს შიგნით ინსტალაციის დაგეგმვა და პრაქტიკული განხორციელება“

4 პირველად

5 რეგისტრირებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2019 წლის 9 ოქტომბერი №268-1.3-015316

დაუშვებელია წინამდებარე სტანდარტის სრული ან ნაწილობრივი კვლავწარმოება, ტირაჟირება და გავრცელება სსიპ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს ნებართვის გარეშე

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

English Version

## Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings

Technologies de l'information - Installation de câblages -  
Partie 2 : Planification et pratiques d'installation à l'intérieur  
des bâtiments

Informationstechnik - Installation von  
Kommunikationsverkabelung - Teil 2: Installationsplanung  
und Installationspraktiken in Gebäuden

This European Standard was approved by CENELEC on 2018-05-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
<b>European foreword</b> .....	<b>9</b>
<b>Introduction</b> .....	<b>10</b>
<b>1 Scope and conformance</b> .....	<b>13</b>
1.1 Scope.....	13
1.2 Conformance .....	13
<b>2 Normative references</b> .....	<b>14</b>
<b>3 Terms, definitions and abbreviations</b> .....	<b>16</b>
3.1 Terms and definitions .....	16
3.2 Abbreviations .....	19
<b>4 Requirements for planning installations of information technology cabling</b> .....	<b>20</b>
4.1 Safety.....	20
4.1.1 Personnel.....	20
4.1.2 Low voltage power supply cabling.....	20
4.1.3 Optical fibre cabling .....	20
4.1.4 Transmission and terminal equipment.....	20
4.1.5 Closures.....	21
4.1.6 Cables.....	21
4.1.7 Termination points .....	22
4.2 Documentation.....	22
4.2.1 Requirements .....	22
4.2.2 Recommendations.....	22
4.3 Pathways .....	22
4.3.1 Requirements .....	22
4.3.2 Recommendations.....	23
4.4 Pathway systems.....	24
4.4.1 Requirements .....	24
4.4.2 Recommendations.....	26
4.5 Cable management systems .....	27
4.5.1 General .....	27
4.5.2 Overhead cable management systems.....	29
4.5.3 Under-floor cable management systems.....	30
4.5.4 Conduit.....	31
4.6 Closures.....	32
4.7 Cabling.....	32
4.7.1 Requirements .....	32

4.8	Filtering and electrical isolation components and surge protective devices .....	33
4.9	Spaces .....	33
4.9.1	Requirements .....	33
4.9.2	Recommendations .....	34
4.10	Planning for repair .....	36
4.11	Planning and assessment of cabling in support of remote powering objectives .....	37
4.11.1	General .....	37
4.11.2	Balanced cabling in accordance with EN 50173 series .....	37
<b>5</b>	<b>Requirements for the installation of information technology cabling .....</b>	<b>42</b>
5.1	Safety .....	42
5.1.1	General .....	42
5.1.2	Pathways .....	42
5.1.3	Closures .....	43
5.1.4	Cables .....	43
5.2	Documentation .....	43
5.3	Installation practice .....	43
5.3.1	Storage of cabling components and equipment .....	43
5.3.2	Pathways .....	43
5.3.3	Pathway systems .....	44
5.3.4	Closures .....	47
5.3.5	Cable installation .....	47
5.3.6	Jointing and termination of cables .....	49
5.3.7	Cords and jumpers .....	50
5.4	Surge protective devices .....	51
5.5	Labelling .....	51
5.6	Testing .....	51
5.7	Contractual acceptance .....	51
5.8	Operation .....	51
5.8.1	Requirements .....	51
5.8.2	Recommendations .....	51
<b>6</b>	<b>Segregation of metallic information technology cabling and power supply cabling .....</b>	<b>52</b>
6.1	General .....	52
6.2	Requirements .....	52
6.2.1	General segregation requirements .....	52
6.2.2	Conditional relaxation of requirement .....	59
6.3	Recommendations .....	59
6.4	Separation of cable bundles to reduce thermal impact of remote powering .....	60

<b>7</b>	<b>Electricity distribution systems and lightning protection .....</b>	<b>60</b>
7.1	Electricity distribution systems .....	60
7.1.1	General .....	60
7.1.2	Availability of supply .....	61
7.1.3	Earthing of the AC distribution system .....	61
7.2	Protection against lightning and induced overvoltages .....	62
7.2.1	General .....	62
7.2.2	Design .....	62
7.2.3	Installation .....	63
<b>8</b>	<b>Office (commercial) spaces.....</b>	<b>63</b>
8.1	General .....	63
8.2	Office (commercial) spaces cabling design overview .....	63
8.3	Requirements for planning installations of information technology cabling .....	63
8.3.1	Safety .....	63
8.3.2	Documentation .....	63
8.3.3	Pathways .....	63
8.3.4	Pathway systems .....	64
8.3.5	Cable management systems .....	64
8.3.6	Closures .....	64
8.3.7	Cabling .....	64
8.3.8	Spaces .....	64
8.4	Requirements for installers of information technology cabling .....	67
8.5	Segregation of metallic information technology cabling and power supply cabling .....	67
<b>9</b>	<b>Industrial spaces .....</b>	<b>67</b>
9.1	General .....	67
9.2	Industrial premises cabling design overview .....	67
9.3	Requirements for planning installations of information technology cabling .....	68
9.3.1	Safety .....	68
9.3.2	Documentation .....	69
9.3.3	Pathways .....	69
9.3.4	Pathway systems .....	69
9.3.5	Cable management systems .....	69
9.3.6	Closures .....	69
9.3.7	Cabling .....	69
9.3.8	Spaces .....	70
9.4	Requirements for installers of information technology cabling .....	70
9.4.1	General .....	70

9.4.2	Cable pair count.....	70
9.4.3	Mix of cable and connector types .....	70
9.4.4	Termination of unused pairs .....	70
9.4.5	High flexibility cables .....	70
9.4.6	Rolling “C” tracks .....	70
9.5	Segregation of metallic information technology cabling and power supply cabling .....	70
<b>10</b>	<b>Homes.....</b>	<b>70</b>
10.1	General.....	70
10.2	Home cabling design overview .....	71
10.2.1	General .....	71
10.2.2	Generic cabling.....	74
10.2.3	Cabling in accordance with EN 50491-6-1 .....	74
10.3	Requirements for planning installations of information technology cabling .....	75
10.3.1	Safety.....	75
10.3.2	Documentation.....	75
10.3.3	Pathways .....	75
10.3.4	Pathway systems.....	76
10.3.5	Cable management systems .....	76
10.3.6	Closures.....	76
10.3.7	Cabling.....	76
10.3.8	Spaces.....	77
10.4	Requirements for installers of information technology cabling .....	81
10.4.1	Requirements .....	81
10.4.2	Recommendations.....	81
10.5	Segregation of metallic information technology cabling and power supply cabling.....	81
<b>11</b>	<b>Data centre spaces.....</b>	<b>81</b>
11.1	General.....	81
11.2	Data centre cabling design and planning overview .....	82
11.2.1	General .....	82
11.2.2	Requirements .....	82
11.2.3	Recommendations.....	82
11.3	Requirements for planning installations of information technology cabling .....	82
11.3.1	Safety.....	82
11.3.2	Documentation.....	82
11.3.3	Pathways .....	83
11.3.4	Pathway systems.....	84
11.3.5	Cable management systems .....	84

11.3.6	Closures.....	84
11.3.7	Cabling.....	84
11.3.8	Spaces.....	84
11.3.9	Operation.....	87
11.4	Requirements for installers of information technology cabling.....	87
11.5	Segregation of metallic information technology cabling and power supply cabling.....	87
11.5.1	Requirements.....	87
11.5.2	Recommendations.....	87
<b>12</b>	<b>Cabling for distributed services within buildings.....</b>	<b>87</b>
12.1	General.....	87
12.2	Requirements for planning installations of information technology cabling.....	87
12.2.1	Safety.....	87
12.2.2	Documentation.....	87
12.2.3	Pathways.....	88
12.2.4	Pathway systems.....	88
12.2.5	Cable management systems.....	88
12.2.6	Closures.....	88
12.2.7	Cabling.....	89
12.2.8	Spaces.....	89
12.2.9	Operation.....	89
12.3	Requirements for installers of information technology cabling.....	90
12.4	Segregation of metallic information technology cabling and power supply cabling.....	90
<b>13</b>	<b>Common infrastructures within multi-tenant buildings.....</b>	<b>90</b>
13.1	General.....	90
13.2	Pathways and spaces in common areas.....	91
13.2.1	Pathways in common areas.....	91
13.2.2	Spaces in common areas.....	92
13.3	Requirements for planning installations of information technology cabling.....	92
13.3.1	Safety.....	92
13.3.2	Documentation.....	92
13.3.3	Pathways.....	92
13.3.4	Pathway systems.....	93
13.3.5	Cable management systems.....	93
13.3.6	Closures.....	93
13.3.7	Cabling.....	93
13.3.8	Spaces.....	94
13.4	Requirements for the installers of information technology cabling.....	95



13.5 Segregation of metallic information technology cabling and power supply cabling .....	95
<b>Annex A (informative) Application of responsibilities .....</b>	<b>96</b>
<b>Annex B (informative) Installation conditions.....</b>	<b>100</b>
<b>Annex C (normative) Additional information for remote powering installations.....</b>	<b>101</b>
C.1 General .....	101
C.2 Calculation of $T_{global}$ .....	101
C.3 Remote powering installation of Category RP2.....	101
<b>Annex D (informative) Equipment accommodation environments.....</b>	<b>104</b>
<b>Bibliography.....</b>	<b>105</b>

## Figures

<b>Figure 1 — Schematic relationship between the EN 50174 series and other relevant standards .....</b>	<b>11</b>
<b>Figure 2 — Examples of non-conformant and conformant bend limiting techniques .....</b>	<b>25</b>
<b>Figure 3 — Cable arrangement in a metallic section.....</b>	<b>29</b>
<b>Figure 4 — Example of layered cable trays with smaller width upper trays .....</b>	<b>30</b>
<b>Figure 5 — Example of accessible row of floor tiles to provide access to lower tray .....</b>	<b>31</b>
<b>Figure 6 — Continuity of metallic cable management systems .....</b>	<b>46</b>
<b>Figure 7 — Interruption of metallic cable management systems at fire barriers .....</b>	<b>46</b>
<b>Figure 8 — Flowchart for cable separation calculation.....</b>	<b>56</b>
<b>Figure 9 — Minimum separation of power supply and information technology cables .....</b>	<b>57</b>
<b>Figure 10 — Separation of power supply and information technology cables without dividers.....</b>	<b>57</b>
<b>Figure 11 — Separation of power supply and information technology cables with dividers .....</b>	<b>58</b>
<b>Figure 12 — Separation of cable bundles to minimize heating.....</b>	<b>60</b>
<b>Figure 13 — Minimum dimensions for rooms housing cabling components only .....</b>	<b>65</b>
<b>Figure 14 — Minimum dimensions for rooms housing active equipment in addition to cabling components .....</b>	<b>66</b>
<b>Figure 15 — Structure of generic cabling in industrial premises .....</b>	<b>68</b>
<b>Figure 16 — Pathways within homes .....</b>	<b>72</b>
<b>Figure 17 — Example of primary distribution space .....</b>	<b>73</b>
<b>Figure 18 — Example of local distribution spaces and junction boxes .....</b>	<b>74</b>
<b>Figure 19 — Example of infrastructure supporting star cabling topology.....</b>	<b>74</b>
<b>Figure 20 — Example of common pathways and spaces in a multi-tenant building .....</b>	<b>91</b>
<b>Figure B.1 — Illustration of installation environments.....</b>	<b>100</b>

Tables

Table 1 — Contextual relationship between EN 50174 series and other standards relevant for information technology cabling systems .....	12
Table 2 — Stacking height for typical distances /.....	26
Table 3 — Typical elements of information exchange .....	34
Table 4 — Technology-independent channel length vs. temperature .....	38
Table 5 — Temperature changes for various cable bundle sizes (Category RP3) .....	39
Table 6 — Reduction factors for rectangular cable groups.....	40
Table 7 — Classification of information technology cables .....	54
Table 8 — Minimum separation S .....	54
Table 9 — Power cabling factor .....	55
Table 10 — Separation requirements between metallic cabling and specific EMI sources .....	59
Table 11 — Minimum requirements for dimensions of primary distribution spaces .....	79
Table 12 — Requirements for dimensions of secondary distribution spaces .....	79
Table 13 — Minimum dimensions of spaces allocated to junction boxes .....	80
Table A.1 — Responsibilities template .....	96
Table A.2 — Example of completed responsibilities .....	98
Table C.1 — Temperature changes for remote power installations of Category RP2 .....	102
Table D.1 — Equipment environmental specifications .....	104

## European foreword

This document (EN 50174-2:2018) has been prepared by Technical Committee CLC/TC 215, "Electrotechnical aspects of telecommunication equipment".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-05-21
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2021-05-21

This document supersedes EN 50174-2:2009, EN 50174-2:2009/A1:2011 and EN 50174-2:2009/A2:2014.

EN 50174 comprises three parts. All three parts support the specification, implementation and operation of information technology cabling. There are specific requirements for cabling systems that are in accordance with the design requirements of the EN 50173 series. However, the three parts also apply to cabling systems of any design including those in accordance with standards such as EN 50700.

This part, EN 50174-2, is concerned with the planning and installation of information technology cabling using metallic cabling and optical fibre cabling inside buildings. It provides guidance as to the responsibilities of those involved and is intended to be referenced in relevant contracts.

It does not cover those aspects of installation associated with the transmission of signals in free space between transmitters, receivers or their associated antenna systems (e.g. wireless, radio, microwave or satellite).

This edition of EN 50174-2:

- a) revises requirements of Clause 4 and Clause 5, respectively, regarding closures, cables, the stacking height of pathway systems, surge protective devices;
- b) introduces a new subclause 4.11 and Annex C on planning and assessment of cabling in support of remote powering objectives;
- c) amends requirements in Clause 6 on segregation;
- d) modifies Clause 7 on electricity distribution systems and lightning protection;
- e) introduces minor changes to Clauses 8, 9, 10, 11;
- f) removes the previous Annex A;
- g) introduces Clause 12 on cabling for distributed services cabling within buildings, Clause 13 on common infrastructures within multi-tenant buildings, Annex B installation conditions and Annex D on equipment accommodation environments.