ISO/IEC 30129:2015-10 (E)

Information technology - Telecommunications bonding networks for buildings and other structures

Contents

Page

FOREWORD 5
INTRODUCTION 6
1 Scope 8
2 Normative references 8
3 Terms, definitions and abbreviations 9
3.1 Terms and definitions 9
3.2 Abbreviations 11
4 Conformance 12
5 Overview of bonding networks 12
6 Selection of the telecommunications bonding network approach 13
6.1 Assessment of the impact of the telecommunications bonding network on the interconnection of telecommunications equipment 13
6.2 Telecommunications bonding networks 14
6.3 Telecommunications bonding network performance 15
6.3.1 General 15
6.3.2 Requirements 16
6.3.3 DC resistance measurements 17
7 Common features 17
7.1 General 17
7.2 Protective bonding networks 18
7.2.1 Protective bonding network conductors (PBNCs) 18
7.2.2 Main earthing terminal (MET) 18
7.3 Telecommunications entrance facility (TEF) 18
7.4 Telecommunications bonding network components 18
7.4.1 Telecommunications bonding network conductors 18
7.4.2 Telecommunications bonding network connections 19
7.5 Cabinets, frames and racks 19
7.5.1 External connections to a bonding network 19
7.5.2 Rack bonding conductors 20
7.5.3 Internal connections 21
7.6 Miscellaneous bonding connections 22
7.6.1 General 22
7.6.2 Bonding conductors for d.c. resistance control 22
7.6.3 Bonding conductors for impedance control 22
7.7 Documentation 23
8 Dedicated telecommunications bonding network 23
8.1 General 23
8.2 Components 24
8.2.1 Primary bonding busbar (PBB) 24
8.2.2 Secondary bonding busbar (SBB) 25
8.2.3 Bonding conductors for d.c. resistance control 25
8.2.4 Bonding conductors for impedance control 26

8.3 Implementation 27
8.3.1 Primary bonding busbar (PBB) 27
8.3.2 Secondary bonding busbar (SBB) 28
8.3.3 Telecommunications bonding conductor (TBC) 28
8.3.4 Telecommunications bonding backbone (TBB) 29
8.3.5 Backbone bonding conductor (BBC) 29
8.3.6 Bonds to continuous conductive pathway systems 29
8.3.7 Bonds to structural metal 29
9 Local telecommunications bonding networks in conjunction with protective bonding networks 30
9.1 Bonding for local distribution 30
9.1.1 Star protective bonding networks 30
9.1.2 Ring protective bonding networks 31
9.2 Telecommunications bonding conductors 32
9.2.1 Bonding conductors for d.c. resistance control 32
9.2.2 Bonding conductors for impedance control 32
9.3 Bonding for areas of telecommunications equipment concentration 33
10 Local telecommunications bonding networks in conjunction with dedicated telecommunications bonding networks 33
10.1 Bonding for areas of telecommunications equipment concentration 33
10.1.1 Requirements 33
10.1.2 Recommendations 33
10.1.3 Cabinets, frames and racks 33
10.2 Telecommunications equipment bonding conductors (TEBC) 33
10.2.1 TEBC for d.c. resistance control 33
10.2.2 TEBC for impedance control 34
10.2.3 Implementation 34
11 Mesh bonded networks 34
11.1 General 34
11.2 Mesh bonding alternatives 35
11.2.1 Local mesh bonding (MESH-IBN) networks 35
11.2.2 MESH-BN 37
11.3 Bonding conductors of a mesh bonding network 38
11.3.1 Requirements 38
11.3.2 Recommendations 38
11.4 Bonding conductors to the mesh bonding network 38
11.5 Supplementary bonding grid (SBG) 39
11.6 System reference potential plane (SRPP) 39
11.6.1 General 39
11.6.2 Access floors 40
11.6.3 Transient suppression plate (TSP) 41
Annex A (normative) Maintenance of telecommunications bonding network performance 42
A.1 General 42
A.2 Periodic activity 42
A.2.1 Schedule 42
A.2.2 Implementation 42
A.3 Causes of performance deterioration 43
A.3.1 Galvanic corrosion 43
A.3.2 Requirements 43
Annex B (normative) Bonding conductor cross-sectional area 44
Annex C (infomative) Alternative terminology 45

Bibliography 46

Figure 1 – Schematic relationship between ISO/IEC 30129 and other relevant standards 7
Figure 2 – Schematic of telecommunications equipment distribution and associated bonding connections 13
Figure 3 – Example of three methods of equipment and rack bonding 20
Figure 4 – Example of a bond connection from a cabinet to the cabinet door 22
Figure 5 – Example of bonding straps 23
Figure 6 – Illustrative example of a large building 24
Figure 7 – Illustrative example of a smaller building 24
Figure 8 – Schematic of PBB 25
Figure 9 – Schematic of SBB 25
Figure 10 – Star protective bonding and supplementary telecommunications bonding 30
Figure 11 – Example of high common impedance and large loop 30
Figure 12 – Example of low common impedance and small loop 31
Figure 13 – Ring protective bonding and supplementary telecommunications bonding 31
Figure 14 – MESH-BN example 32
Figure 15 – Example TEBC to rack bonding conductor connection 34
Figure 16 – Local mesh bonding network 36
Figure 17 – A MESH-IBN having a single point of connection (SPC) 36
Figure 18 – A MESH-BN with equipment cabinets, frames, racks and CBN bonded together 37
Figure 19 – Example of access floor 40
Figure 20 – Example of installation details for an under floor transient suppression plate 41

Table 1 – Sensitivity of cabling media to bonding network performance 14
Table 2 – Telecommunications bonding network requirements 14
Table 3 – DC resistance requirements for protective bonding networks 16
Table 4 – DC resistance requirements for dedicated telecommunications bonding networks 17
Table 5 – TBB conductor sizing 26
Table B.1 – Bonding conductor cross-sectional areas 44
Table C.1 – Alternative terminology 45