

# ISO/IEC 11801-3:2017-11 (E)

## Information technology - Generic cabling for customer premises - Part 3: Industrial premises

---

### CONTENTS

- FOREWORD..... 5
- INTRODUCTION..... 7
- 1 Scope..... 10
- 2 Normative references ..... 10
- 3 Terms, definitions, abbreviated terms and symbols..... 11
  - 3.1 Terms and definitions..... 11
  - 3.2 Abbreviated terms..... 12
  - 3.3 Symbols..... 12
- 4 Conformance ..... 12
- 5 Structure of the generic cabling system ..... 13
  - 5.1 General..... 13
  - 5.2 Functional elements..... 13
  - 5.3 Cabling subsystem..... 14
    - 5.3.1 General structure..... 14
    - 5.3.2 Campus and building backbone cabling subsystem..... 15
    - 5.3.3 Floor cabling subsystem ..... 15
    - 5.3.4 Intermediate cabling subsystem..... 15
    - 5.3.5 Centralized cabling architecture..... 16
    - 5.3.6 Design objectives ..... 16
  - 5.4 Interconnection of subsystems ..... 16
  - 5.5 Accommodation of functional elements ..... 18
  - 5.6 Interfaces..... 19
    - 5.6.1 Equipment interfaces and test interfaces ..... 19
    - 5.6.2 Channels and permanent links..... 19
  - 5.7 Dimensioning and configuring ..... 19
    - 5.7.1 General ..... 19
    - 5.7.2 Distributors..... 19
    - 5.7.3 Connecting hardware..... 20
    - 5.7.4 Apparatus attachment and equipment cords ..... 20
    - 5.7.5 Patch cords and jumpers ..... 20
    - 5.7.6 Telecommunications outlet ..... 20
    - 5.7.7 Telecommunications rooms and equipment rooms..... 21
    - 5.7.8 Industrial enclosures..... 21
- 6 Channel performance requirements ..... 21
  - 6.1 General..... 21
  - 6.2 Environmental performance ..... 22
  - 6.3 Transmission performance ..... 22
    - 6.3.1 General ..... 22
    - 6.3.2 Balanced cabling ..... 22
    - 6.3.3 Optical fibre cabling..... 23

7	Link performance requirements .....	23
7.1	General.....	23
7.2	Balanced cabling .....	23
7.3	Optical fibre cabling .....	23
8	Reference implementations .....	23
8.1	General.....	23
8.2	Balanced cabling .....	23
8.2.1	General .....	23
8.2.2	Intermediate cabling subsystem.....	24
8.2.3	Floor cabling subsystem .....	26
8.2.4	Campus and building backbone cabling subsystem.....	28
8.3	Optical fibre cabling .....	28
9	Cable requirements .....	28
9.1	General.....	28
9.2	Balanced cables .....	28
9.3	Optical fibre cables .....	29
10	Connecting hardware requirements .....	29
10.1	General requirements .....	29
10.2	Connecting hardware for balanced cabling.....	29
10.2.1	General requirements .....	29
10.2.2	Electrical, mechanical and environmental performance .....	29
10.3	Connecting hardware for optical fibre cabling.....	30
10.3.1	General requirements .....	30
10.3.2	Optical, mechanical and environmental performance .....	30
11	Cords .....	30
11.1	Jumpers.....	30
11.2	Balanced cords .....	30
11.2.1	General .....	30
11.2.2	Additional requirements for apparatus attachment cords.....	30
11.3	Optical fibre cords.....	30
Annex A (normative)	Industrial cabling system .....	31
A.1	General.....	31
A.2	Industrial intermediate cabling subsystem.....	31
Annex B (normative)	Additional reference implementations .....	33
B.1	General.....	33
B.2	Channel configurations .....	33
B.2.1	General .....	33
B.2.2	Channels with no connections .....	33
B.2.3	Channels with inter-connections .....	34
B.2.4	End-to-end link (E2E link).....	35
B.3	Channels using balanced cabling bulkhead connections .....	36
Annex C (informative)	Other implementations .....	38
C.1	General.....	38
C.2	Channels using balanced cabling bulkhead connections with additional connections .....	38
Bibliography	.....	41

Figure 1 – Relationships between the generic cabling documents produced by ISO/IEC JTC 1/SC 25 .....	7
Figure 2 – Relationships between the ISO/IEC and IEC cabling documents that apply to industrial premises .....	8
Figure 3 – Configuration of apparatus-based functional elements within industrial premises .....	14
Figure 4 – Structure of generic cabling for industrial environment .....	14
Figure 5 – Centralized structure of generic cabling for industrial premises .....	16
Figure 6 – Hierarchical structure of generic cabling for industrial premises .....	17
Figure 7 – Inter-relationship of functional elements in an installation with diversity for protection against failure (CPs optional between IDs and TOs) .....	17
Figure 8 – Accommodation of functional elements (CPs optional between IDs and TOs) .....	18
Figure 9 – Equipment and test interfaces .....	19
Figure 10 – Transmission performance of a channel .....	21
Figure 11 – Example of a system showing the location of cabling interfaces and extent of associated channels .....	22
Figure 12 – Intermediate cabling models .....	25
Figure 13 – Floor cabling model .....	27
Figure A.1 – Industrial cabling system supporting several AIs via an IID .....	31
Figure A.2 – Combined structure of generic and industrial cabling system using an IID .....	32
Figure B.1 – Channel configurations without intermediate connections .....	34
Figure B.2 – Channel configurations with inter-connections .....	35
Figure B.3 – Channel configurations with bulkhead connections .....	36
Figure C.1 – Channel configurations with bulkhead and additional connections .....	39
Table 1 – Maximum channel lengths .....	20
Table 2 – Length assumptions used in the mathematical modelling of balanced intermediate cabling .....	25
Table 3 – Intermediate link length equations .....	26
Table 4 – Floor link length equations .....	28
Table B.1 – Channel length equations for balanced cabling with inter-connections .....	35
Table B.2 – Channel length equations with bulkhead connections .....	37
Table C.1 – Channel equations with bulkhead and additional connections .....	40