

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Industrial communication networks – Installation of communication networks
in industrial premises**

**Réseaux de communication industriels – Installation des réseaux de
communication dans les locaux industriels**

IEC 61918:2007

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CONTENTS

FOREWORD.....	10
INTRODUCTION.....	12
1 Scope.....	15
2 Normative references	15
3 Terms, definitions, and abbreviated terms	18
3.1 Terms and definitions	18
3.2 Abbreviated terms	26
3.3 Conventions for installation profiles	27
4 Installation planning	27
4.1 Introduction	27
4.1.1 Objective	27
4.1.2 Cabling in industrial premises	28
4.1.3 The planning process	30
4.1.4 Specific requirements for CPs	31
4.1.5 Specific requirements for generic cabling in accordance with ISO/IEC 24702	31
4.2 Planning requirements.....	31
4.2.1 Safety.....	31
4.2.2 Security.....	32
4.2.3 Environmental considerations and EMC.....	32
4.2.4 Specific requirements for generic cabling in accordance with ISO/IEC 24702	33
4.3 Network capabilities	33
4.3.1 Network topology.....	33
4.3.2 Network characteristics	35
4.4 Selection and use of cabling components	39
4.4.1 Cable selection.....	39
4.4.2 Connecting hardware selection.....	42
4.4.3 Connections within a channel/permanent link	44
4.4.4 Terminators	49
4.4.5 Device location and connection	49
4.4.6 Coding and labelling	50
4.4.7 Earthing and bonding of equipment and devices and shielded cabling	50
4.4.8 Storage and transportation of cables	58
4.4.9 Routing of cables.....	59
4.4.10 Separation of circuits.....	60
4.4.11 Mechanical protection of cabling components	61
4.4.12 Installation in special areas	62
4.5 Cabling planning documentation.....	62
4.5.1 Common description	62
4.5.2 Cabling planning documentation for CPs	62
4.5.3 Network certification documentation	63
4.5.4 Cabling planning documentation for generic cabling in accordance with ISO/IEC 24702	63
4.6 Verification of cabling planning specification	63
5 Installation implementation	63

5.1	General requirements	63
5.1.1	Common description	63
5.1.2	Installation of CPs	63
5.1.3	Installation of generic cabling in industrial premises	63
5.2	Cable installation	63
5.2.1	General requirements for all cabling types	63
5.2.2	Installation and routing	69
5.2.3	Specific requirements for CPs	71
5.2.4	Specific requirements for wireless installation	71
5.2.5	Specific requirements for generic cabling in accordance with ISO/IEC 24702	71
5.3	Connector installation	71
5.3.1	Common description	71
5.3.2	Shielded connectors	71
5.3.3	Unshielded connectors	72
5.3.4	Specific requirements for CPs	72
5.3.5	Specific requirements for wireless installation	72
5.3.6	Specific requirements for generic cabling in accordance with ISO/IEC 24702	72
5.4	Terminator installation	72
5.4.1	Common description	72
5.4.2	Specific requirements for CPs	72
5.5	Device installation	72
5.5.1	Common description	72
5.5.2	Specific requirements for CPs	73
5.6	Coding and labelling	73
5.6.1	Common description	73
5.6.2	Specific requirements for CPs	73
5.7	Earthing and bonding of equipment and devices and shield cabling	73
5.7.1	Common description	73
5.7.2	Bonding and earthing of enclosures and pathways	73
5.7.3	Earthing methods	75
5.7.4	Shield earthing methods	76
5.7.5	Specific requirements for CPs	78
5.7.6	Specific requirements for generic cabling in accordance with ISO/IEC 24702	78
5.8	As-implemented cabling documentation	78
6	Installation verification and installation acceptance test	79
6.1	Introduction	79
6.2	Installation verification	79
6.2.1	General	79
6.2.2	Verification according to cabling planning documentation	79
6.2.3	Verification of earthing and bonding	81
6.2.4	Verification of shield earthing	82
6.2.5	Verification of cabling system	82
6.2.6	Cable selection verification	82
6.2.7	Connector verification	82
6.2.8	Connection verification	83
6.2.9	Terminators verification	84

6.2.10	Coding and labelling verification	85
6.2.11	Verification report	85
6.3	Installation acceptance test	85
6.3.1	General	85
6.3.2	Acceptance test of Ethernet based cabling	87
6.3.3	Acceptance test of non Ethernet based cabling	89
6.3.4	Specific requirements for wireless installation	90
6.3.5	Acceptance test report	90
7	Installation administration	90
7.1	General	90
7.2	Fields covered by the administration	90
7.3	Basic principles for the administration system	91
7.4	Working procedures	91
7.5	Device location labelling	91
7.6	Component cabling labelling	92
7.7	Documentation	92
7.8	Specific requirements for administration	93
8	Installation maintenance and installation troubleshooting	93
8.1	General	93
8.2	Maintenance	94
8.2.1	Scheduled maintenance	94
8.2.2	Condition-based maintenance	95
8.2.3	Corrective maintenance	96
8.3	Troubleshooting	96
8.3.1	General description	96
8.3.2	Evaluation of the problem	96
8.3.3	Typical problems	97
8.3.4	Troubleshooting procedure	99
8.3.5	Simplified troubleshooting procedure	100
8.4	Specific requirements for maintenance and troubleshooting	101
Annex A (informative)	Introduction to generic cabling for industrial premises	102
Annex B (informative)	MICE description methodology	103
B.1	General	103
B.2	Introduction to MICE	103
B.3	Examples of use of the MICE concept	104
B.3.1	Common description	104
B.3.2	Examples of mitigation	105
B.4	Determining E classification	106
B.5	The MICE table	108
Annex C (informative)	Network topologies	111
C.1	Common description	111
C.2	Total cable demand	111
C.3	Maximum cable segment length	111
C.4	Maximum network length	111
C.5	Fault tolerance	111
C.5.1	General	111
C.5.2	Use of redundancy	111

C.5.3 Failure analysis for networks with redundancy	111
C.6 Network access for diagnosis convenience	112
C.7 Maintainability and on-line additions	112
Annex D (informative) Connector table	113
Annex E (informative) Power networks with respect to electromagnetic interference – TN-C and TN-S approaches	118
Annex F (informative) Conversion table mm ² to AWG	120
Annex G (informative) Installed cabling verification checklists	121
G.1 Introduction	121
G.2 Copper cabling verification checklist	121
G.3 Optical fibre cabling verification checklist	124
Annex H (informative) Connector/cable pinning	125
H.1 Introduction	125
H.2 Constructing cord sets	125
H.2.1 Straight through cord sets with M12-4 D-coding connectors	124
H.2.2 Crossover cord sets with M12-4 D-coding connectors	124
H.2.3 Straight through cord sets with 8-way modular connectors	125
H.2.4 Crossover cord sets with 8-way modular connector	126
H.2.5 Straight conversion from one connector family to another	127
H.2.6 Crossover conversion from one connector family to another	128
Annex I (informative) Guidance for terminating cable ends	129
I.1 Introduction	129
I.2 Guidance for terminating shielded twisted pair cable ends for 8-way modular plugs	129
I.3 Guidance for terminating unshielded twisted pair cable ends for 8-way modular plugs	131
I.4 Guidance for M12-4 D-coding connector installation	132
I.5 Guidance for terminating optical fibre cable ends	135
Annex J (informative) Recommendations for bulkhead connection performance and channel performance with more than 4 connections in the channel	136
J.1 Introduction	136
J.2 Recommendations	136
Annex K (informative) Fieldbus data transfer testing	137
K.1 Background	137
K.2 Allowable error rates for control systems	137
K.2.1 Bit errors	137
K.2.2 Burst errors	137
K.3 Testing channel performance	138
K.4 Testing cable parameters	138
K.4.1 General	138
K.4.2 Generic cable testing	138
K.4.3 Fieldbus cable testing	138
K.5 Testing fieldbus data rate performance	139
K.5.1 General	139
K.5.2 Fieldbus test	139
K.5.3 Planning for fieldbus data rate testing	139
K.5.4 Fieldbus data rate test reporting template	140

K.5.5 Values for acceptable fieldbus performance.....	140
Annex L (informative) Communication network installation work responsibility	141
L.1 Introduction	141
L.2 Installation work responsibility	141
L.3 Installation work responsibility table	141
Annex M (informative) Trade names of communication profiles	142
Annex N (informative) Validation measurements	144
N.1 General	144
N.2 DCR measurements	144
N.2.1 Purpose of test	144
N.2.2 Assumptions	144
N.2.3 Measurements	144
N.2.4 Calculations	146
N.2.5 Measurement results	146
Bibliography.....	150
Figure 1 – Industrial network installation life cycle	13
Figure 2 – Standards relationships.....	14
Figure 3 – Structure of generic cabling connected to an automation island	28
Figure 4 – Automation island cabling attached to elements of generic cabling.....	29
Figure 5 – Automation islands.....	29
Figure 6 – Automation island network external connections	30
Figure 7 – How to meet environmental conditions.....	33
Figure 8 – How enhancement, isolation and separation work together	33
Figure 9 – Basic physical topologies for passive networks	34
Figure 10 – Basic physical topologies for active networks	34
Figure 11 – Example of combination of basic topologies	35
Figure 12 – Basic reference implementation model	45
Figure 13 – Enhanced reference implementation model	46
Figure 14 – Selection of the earthing and bonding systems.....	53
Figure 15 – Wiring for bonding and earthing in a mesh equipotential configuration	55
Figure 16 – Wiring of the earths in a star earth configuration	56
Figure 17 – Schematic diagram of a field device with direct earthing.....	57
Figure 18 – Schematic diagram of a field device with parallel RC circuit earthing.....	57
Figure 19 – Insert edge protector	65
Figure 20 – Use an uncoiling device and avoid forming loop	65
Figure 21 – Avoid torsion	66
Figure 22 – Maintain minimum bending radius	66
Figure 23 – Do not pull by the individual wires	67
Figure 24 – Use cable clamps with a large (wide) surface	67
Figure 25 – Cable gland with bending protection.....	67
Figure 26 – Spiral tube	68
Figure 27 – Separate cable pathways	70
Figure 28 – Surface preparation for electromechanical earth and bonding connections.....	74

Figure 29 – Use of flexible bonding straps at movable metallic pathways	74
Figure 30 – Example of isolated bus bar	75
Figure 31 – Example of isolator for mounting DIN rails	75
Figure 32 – Parallel RC shield earthing	76
Figure 33 – Direct shield earthing	77
Figure 34 – Examples for shielding application	77
Figure 35 – First example of derivatives of shield earthing	78
Figure 36 – Second example of derivatives of shield earthing	78
Figure 37 – Installation verification process	80
Figure 38 – Test of earthing connections	81
Figure 39 – Pin and pair grouping assignments for two eight position IEC 60603-7 subparts and four position IEC 60603 series to IEC 61076-2-101 connectors	84
Figure 40 – Two pair 8-way modular connector	84
Figure 41 – Transposed pairs, split pairs and reversed pair	84
Figure 42 – Validation process	86
Figure 43 – Schematic representation of the channel	87
Figure 44 – Schematic representation of the permanent link	87
Figure 45 – Communication network maintenance	95
Figure 46 – Troubleshooting procedure	100
Figure 47 – Fault detection without special tools	101
Figure B.1 – MICE classifications	103
Figure B.2 – Example MICE areas within a facility	104
Figure B.3 – Enhancement, isolation and separation	104
Figure B.4 – Example 1 of mitigation	105
Figure B.5 – Example 2 of mitigation	106
Figure B.6 – Frequency range of electromagnetic disturbance from common industrial devices	106
Figure B.7 – Example of a general guidance for separation versus EFT value	108
Figure E.1 – Four-wire power network (TN-C)	118
Figure E.2 – Five wire power network (TN-S)	119
Figure H.1 – Straight through cord sets with M12-4 D-coding connectors	125
Figure H.2 – Crossover cord sets with M12-4 D-coding connectors	126
Figure H.3 – Straight through cord sets with 8-way modular connectors	126
Figure H.4 – Crossover cord sets with 8-way modular connector	127
Figure H.5 – Conversion from M12-4 to 8-way modular connector	128
Figure H.6 – M12-4 to 8-way modular connector crossover cable	128
Figure I.1 – Stripping the cable jacket	129
Figure I.2 – Example of wire preparation for type A cables	130
Figure I.3 – 8-way modular plug	130
Figure I.4 – Inserting the cable into the connector body	131
Figure I.5 – Crimping the connector	131
Figure I.6 – Example of a cable preparation for type A wiring	132
Figure I.7 – Connector components	133
Figure I.8 – Cable preparation	133

Figure I.9 – Connector wire gland, nut and shell on the cable	133
Figure I.10 – Conductors preparation	133
Figure I.11 – Jacket removal	133
Figure I.12 – Shield preparation	134
Figure I.13 – Conductors preparation	134
Figure I.14 – Installing conductors in connector	134
Figure I.15 – Assembling the body of the connector	134
Figure I.16 – Final assembling	135
Figure N.1 – Loop resistance measurement wire to wire	145
Figure N.2 – Loop resistance measurement wire 1 to shield	145
Figure N.3 – Loop resistance measurement wire 2 to shield	145
Figure N.4 – Resistance measurement for detecting wire shorts	145
Figure N.5 – Resistance measurement between wire 1 and wire 2	146
Figure N.6 – Validation of the cable DCR	147
Figure N.7 – Conclusions for cable open or shorts	148
Figure N.8 – Determination of proper cable terminator value	149
Table 1 – Basic network characteristics for balanced cabling not based on Ethernet	36
Table 2 – Network characteristics for balanced cabling based on Ethernet	37
Table 3 – Network characteristics for optical fibre cabling	38
Table 4 – Information relevant to copper cable: fixed cables	40
Table 5 – Information relevant to copper cable: cords	40
Table 6 – Information relevant to optical fibre cables	41
Table 7 – Connectors for balanced cabling CPs based on Ethernet	43
Table 8 – Connectors for copper cabling CPs not based on Ethernet	43
Table 9 – Optical fibre connecting hardware	44
Table 10 – Basic reference implementation equations	45
Table 11 – Enhanced reference implementation equations	47
Table 12 – Correction factor Z for operating temperature above 20°C	47
Table 13 – Equalisation and earthing conductor sizing and length	52
Table 14 – Bonding straps cross-section	54
Table 15 – Bonding plates surface protection	54
Table 16 – Cable circuit types and minimum distances	61
Table 17 – Parameters for balanced cables	64
Table 18 – Parameters for silica optical fibre cables	64
Table 19 – Parameters for POF optical fibre cables	64
Table 20 – Parameters for hard cladded silica optical fibre cables	64
Table 21 – Typical problems in a network with balanced cabling	97
Table 22 – Typical problems in a network with fibre optic cabling	98
Table B.1 – Example 1 of targeted MICE area	105
Table B.2 – Example 2 of targeted MICE area	105
Table B.3 – Relationship between electromagnetic disturbance generating devices and “E” classification	107
Table B.4 – Coupling mechanism for each of the interfering devices	107

Table B.5 – MICE definition	109
Table D.1 – Conventions for colour code used in the connector table	113
Table D.2 – Connector table	114
Table F.1 – Approximate conversion table for commonly used wire gauge	120
Table G.1 – Copper cabling verification checklist	121
Table G.2 – Earthing and bonding measurements checklist	122
Table G.3 – Signatures for Table G.1 and Table G.2 checklists	122
Table G.4 – Checklist for special checks for non-Ethernet-based CPs	123
Table G.5 – Signatures for Table G.4 checklist	123
Table G.6 – Optical fibre cabling verification checklist	124
Table G.7 – Signatures for Table G.6 checklist	124
Table H.1 – M12-4 D-coding pin/pair assignment	125
Table H.2 – M12 to M12 crossover pin/pair assignment	126
Table H.3 – 8-way modular connector pin/pair assignment	127
Table H.4 – 8-way modular crossover pin/pair assignment	127
Table H.5 – Connectivity pin assignment	128
Table H.6 – M12 to 8-way modular crossover pin/pair assignment	128
Table J.1 – Transmission requirements for more than 4 connections in a channel	136
Table M.1 – Trade names of CPFs and CPs	142

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INDUSTRIAL COMMUNICATION NETWORKS –

Installation of communication networks in industrial premises

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This standard is to be used in conjunction with the IEC 61784-5 series with regard to the installation of communication profiles (CPs). This standard is to be used in conjunction with ISO/IEC 14763-2 with regard to the installation of generic cabling in accordance with ISO/IEC 24702.

NOTE For further information, see the Introduction.

This standard was developed in cooperation with ISO/IEC JTC1/SC25 which is responsible for ISO/IEC 24702.

The text of this standard is based on the following documents:

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Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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INTRODUCTION

Process and factory automation are increasingly relying on communication networks and fieldbuses that are inherently designed to cope with the specific environmental conditions of the industrial premises. The networks and fieldbuses provide for an effective integration of applications among the several functional units of the plant/factory. As a result the integration of field generated data with higher-level management systems can produce reduction in production costs while maintaining or increasing quantity and quality of production. A correct network installation is an important prerequisite for communications availability and performance. This requires proper consideration of important aspects of industrial automation sites such as topologies, climatic conditions, vibrations, chemical pollution, EMC, functional safety.

The specifications of these communication networks are provided in the following standards.

ISO/IEC 24702 specifies design of generic telecommunications infrastructures within industrial premises and provides the foundations for some of the transmission performance specifications of this standard. ISO/IEC 24702 specifies only the raw bandwidth capability of a channel; it does not specify useful data transfer rate for a specific network using that channel or expected errors after taking account of interference during the communication process.

IEC 61158 fieldbus standard and its companion standard IEC 61784 (including parts 1, 2, 3, 4 and relevant subparts) jointly specify several CPs suitable for industrial automation. These CPs specify a raw bandwidth capability and in addition, they specify bit modulation and encoding rules for their fieldbus. Some profiles also specify target levels for useful data transfer rate, and maximum values for errors caused by interference during the communication process.

This standard provides a consistent set of installation rules for both the generic cabling (of the telecommunication infrastructures) and the fieldbuses in industrial premises. One of the problems it seeks to solve is the situation created when different parts of a large automation site are provided by suppliers that use non-homogeneous installation guidelines having different structures and contents. This creates a risk that communication system may not work properly.

This standard was developed by harmonising the approaches of several user groups and industrial consortia.

This standard provides a common point of reference for the installation of the media of most used industrial communication networks for most industrial sites. The standard covers the life cycle of an installation in the following clauses (see the map of the standard in Figure 1):

- Clause 4: Installation planning;
- Clause 5: Installation implementation;
- Clause 6: Installation verification and acceptance test;
- Clause 7: Installation administration;
- Clause 8: Installation maintenance and troubleshooting.

The methods described in these clauses are written in such a way as to provide installation guidance for a wide range of technician skills.