

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Industrial networks – Wireless communication network and communication profiles – WIA-PA**

**Réseaux industriels – Réseau de communications sans fil et profils de communication – WIA-PA**



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## CONTENTS

FOREWORD.....	13
1 Scope.....	15
2 Normative references .....	15
3 Terms, definitions and abbreviations .....	15
3.1 Terms and definitions.....	15
3.2 Abbreviations.....	19
4 Definition of data types.....	21
5 WIA-PA overview.....	22
5.1 Device types .....	22
5.2 Network topology .....	22
5.3 Protocol architecture.....	24
5.4 Interconnection .....	25
6 System management .....	26
6.1 General.....	26
6.2 Framework of system management.....	27
6.3 Joining process.....	28
6.3.1 Provisioning process .....	28
6.3.2 Joining process of routing device.....	29
6.3.3 Joining process of field device.....	30
6.3.4 Addressing and address assignment .....	31
6.4 Virtual Communication Relationship (VCR) .....	32
6.4.1 Definition .....	32
6.4.2 Protocol support for VCR .....	33
6.4.3 VCR establishment .....	33
6.4.4 VCR release .....	34
6.5 Routing configuration and communication resource allocation.....	34
6.5.1 Routing configuration.....	34
6.5.2 Framework of communication resource allocation.....	34
6.5.3 DLPDU priority and scheduling rules .....	35
6.5.4 Communication resource allocation to routing device.....	35
6.5.5 Communication resource allocation to field device.....	37
6.6 Aggregation and disaggregation.....	39
6.6.1 Aggregation .....	39
6.6.2 Disaggregation .....	41
6.6.3 An example of the two level aggregation process .....	41
6.6.4 Management of aggregation and disaggregation objects.....	43
6.7 Performance monitoring .....	45
6.7.1 Path failure report.....	45
6.7.2 Device status report.....	45
6.7.3 Channel condition report.....	46
6.8 Leaving process.....	46
6.8.1 General .....	46
6.8.2 Leaving process of routing device.....	46
6.8.3 Leaving process of field device.....	48
6.9 Management information base and services.....	49
6.9.1 Management information base.....	49

6.9.2	MIB services .....	63
7	Physical layer .....	65
7.1	General.....	65
7.2	General requirements based on IEEE STD 802.15.4-2011 .....	66
7.3	Additional requirements .....	67
7.3.1	General .....	67
7.3.2	Frequency allocations.....	67
7.3.3	Channel numbers and frequency assignments .....	67
7.3.4	Radio transceivers.....	67
7.3.5	Unspecified or improved required radio performance .....	67
7.3.6	Transmit power.....	68
7.3.7	Output power control .....	68
7.3.8	Receiver sensitivity.....	68
7.3.9	PHY PIB attributes.....	68
8	Data link layer .....	69
8.1	General.....	69
8.2	Protocol stack.....	69
8.3	MAC overview and function extension.....	70
8.3.1	MAC overview .....	70
8.3.2	General requirements based on IEEE STD 802.15.4-2011 .....	70
8.3.3	MAC function extension .....	73
8.4	DLSL function description .....	74
8.4.1	General .....	74
8.4.2	Coexistence.....	75
8.4.3	Timeslot communication .....	75
8.4.4	WIA-PA superframe .....	76
8.4.5	Frequency hopping .....	76
8.4.6	Transmission of long cycle data.....	78
8.4.7	Retry strategy.....	79
8.4.8	Management service.....	79
8.4.9	Radio link quality and channel condition measurement .....	79
8.4.10	Security.....	80
8.4.11	Country code.....	80
8.4.12	DLSL state machine .....	80
8.5	Data link sub-layer data services .....	86
8.5.1	General .....	86
8.5.2	DLDE-DATA.request.....	86
8.5.3	DLDE-DATA.confirm .....	87
8.5.4	DLDE-DATA.indication .....	88
8.5.5	Time sequence of DLSL data service.....	89
8.6	Data link sub-layer management services .....	90
8.6.1	General .....	90
8.6.2	Network discovery services .....	90
8.6.3	Device joining services .....	92
8.6.4	Device leaving services .....	94
8.6.5	DLME-CHANNEL-CONDITION.indication.....	96
8.6.6	DLME-NEIGHBOUR-INFO.indication .....	96
8.6.7	DLME-COMM-STATUS.indication .....	97
8.6.8	Keep-alive services .....	97

8.6.9	Time synchronization services .....	98
8.7	DLSL frame formats .....	99
8.7.1	General frame format .....	99
8.7.2	Date frame format .....	100
8.7.3	Command frame format .....	100
9	Network layer .....	102
9.1	General .....	102
9.2	Protocol stack .....	102
9.3	Function description .....	103
9.3.1	General .....	103
9.3.2	Addressing .....	103
9.3.3	Routing .....	104
9.3.4	Packet lifecycle management .....	104
9.3.5	Joining and leaving network of device .....	104
9.3.6	End-to-end network performance monitoring .....	105
9.3.7	Fragmentation and reassembly .....	105
9.3.8	Network layer state machine .....	105
9.4	Network layer data services .....	110
9.4.1	General .....	110
9.4.2	NLDE-DATA.request .....	110
9.4.3	NLDE-DATA.confirm .....	111
9.4.4	NLDE-DATA.indication .....	111
9.4.5	Time sequence of NL data services .....	112
9.5	Network layer management services .....	112
9.5.1	General .....	112
9.5.2	Network communication status report services .....	112
9.5.3	Network joining services .....	115
9.5.4	Network leaving services .....	120
9.5.5	Cluster member report services .....	124
9.5.6	Neighbour information report services .....	126
9.5.7	Route allocation services .....	128
9.5.8	Communication resource allocation services .....	134
9.5.9	Aggregation and disaggregation services .....	150
9.5.10	Device status report services .....	151
9.5.11	Channel condition report services .....	153
9.5.12	Failure path report services .....	155
9.5.13	Network attribute getting services .....	156
9.5.14	Network attribute setting services .....	160
9.6	Network layer packet formats .....	163
9.6.1	Common packet format .....	163
9.6.2	Data packet format .....	164
9.6.3	Aggregated packet format .....	165
9.6.4	Command packet format .....	165
10	Application layer .....	182
10.1	Overview .....	182
10.1.1	General .....	182
10.1.2	AL structure .....	182
10.1.3	Functions of UAP .....	182
10.1.4	Functions of ASL .....	183

10.2	UAP.....	183
10.2.1	General .....	183
10.2.2	UAO .....	183
10.2.3	Method definition .....	184
10.3	Application sub-layer .....	188
10.3.1	General .....	188
10.3.2	Application sub-layer data entity .....	188
10.4	Application sub-layer packet formats.....	193
10.4.1	General .....	193
10.4.2	ASL general packet format .....	193
10.4.3	Packet formats .....	195
11	Security.....	196
11.1	General.....	196
11.2	Security management framework .....	197
11.3	Secure communication protocol stack .....	198
11.3.1	General .....	198
11.3.2	Data link sub-layer security.....	199
11.3.3	Application sub-layer security .....	200
11.4	Key management.....	201
11.4.1	Key type .....	201
11.4.2	Key distribution.....	202
11.4.3	Key update .....	202
11.4.4	Key status .....	202
11.5	Secure joining process.....	203
11.5.1	Secure joining process of a new WIA-PA device .....	203
11.5.2	Device security material getting services .....	204
11.6	Secure transportation.....	211
11.6.1	Process of secure transportation from field device to host configuration computer .....	211
11.6.2	Process of secure transportation from host configuration computer to field device .....	212
Annex A (informative)	Security strategy for WIA-PA network.....	213
A.1	Risk analysis for WIA-PA network .....	213
A.2	Security principles for WIA-PA network .....	213
A.3	Security objectives for WIA-PA network .....	213
A.4	Graded and layered security system .....	213
Annex B (informative)	Format description .....	215
B.1	Time sequence diagram .....	215
B.2	Packet or frame format .....	215
Annex C (informative)	Example of UAO .....	217
C.1	General.....	217
C.2	Analog input object .....	217
C.2.1	Overview .....	217
C.2.2	Class attribute of AIO .....	217
C.2.3	Instance attribute of AIO .....	217
Annex D (informative)	Country-specific and region-specific provisions .....	219
Annex E (informative)	Regional modification for compliance with ETSI standards .....	220
E.1	General.....	220
E.2	Compliance with EN 300 440-2 V1.4.1 .....	220

E.3 Compliance with EN 300 328 V1.8.1 .....	220
Bibliography.....	222
Figure 1 – Example of WIA-PA physical topology (combination of star and mesh).....	23
Figure 2 – Example of WIA-PA physical topology (star-only) .....	23
Figure 3 – OSI basic reference model mapped to WIA-PA .....	24
Figure 4 – The architecture of WIA-PA gateway .....	25
Figure 5 – DMAP in system management.....	26
Figure 6 – Hybrid centralized and distributed system management scheme .....	28
Figure 7 – Joining process of routing device through the gateway device.....	29
Figure 8 – Joining process of routing device through an online routing device .....	30
Figure 9 – Joining process of field device through a gateway device.....	31
Figure 10 – Joining process of field device through a routing device .....	31
Figure 11 – Long address structure of device.....	31
Figure 12 – Short address structure of routing device .....	32
Figure 13 – Short address structure of field device .....	32
Figure 14 – An example of resource allocation.....	35
Figure 15 – Allocation process of routing device’s communication resources .....	36
Figure 16 – Allocation process of field device’s communication resources .....	38
Figure 17 – Example of aggregation and disaggregation .....	42
Figure 18 – Process of path failure report .....	45
Figure 19 – Device status report process of field device .....	45
Figure 20 – Device status report process of routing device .....	46
Figure 21 – Process of channel condition report .....	46
Figure 22 – Active leaving process of routing device.....	47
Figure 23 – Passive leaving process of routing device .....	47
Figure 24 – Active leaving process of field device (leaving from gateway device).....	48
Figure 25 – Active leaving process of field device (leaving from routing device).....	48
Figure 26 – Passive leaving process of field device (leaving from gateway device) .....	49
Figure 27 – Passive leaving process of field device (leaving from routing device) .....	49
Figure 28 – WIA-PA DLSL protocol stack .....	69
Figure 29 – WIA-PA DLSL reference model .....	75
Figure 30 – WIA-PA superframe .....	76
Figure 31 – R1, R2 and R3 superframe structures .....	78
Figure 32 – An example of long cycle data transmission .....	79
Figure 33 – DLSL state machine for device joining.....	81
Figure 34 – DLSL state machine for in-network running .....	83
Figure 35 – Time sequence of data service .....	89
Figure 36 – Time sequence of network discovery.....	92
Figure 37 – General frame format .....	99
Figure 38 – WIA-PA network layer protocol stack.....	102
Figure 39 – WIA-PA network layer reference model .....	103
Figure 40 – Network layer state machine .....	105

Figure 41 – Time sequence of NL data services.....	112
Figure 42 – Time sequence for field device joining through routing device .....	118
Figure 43 – One-hop joining process for routing device.....	119
Figure 44 – Multi-hop join process of routing device .....	119
Figure 45 – Active leaving process of field device (leaving routing device).....	122
Figure 46 – Passive leaving of field device .....	122
Figure 47 – Active leaving process of routing device.....	123
Figure 48 – Passive leaving process of routing device .....	123
Figure 49 – Cluster member reporting process.....	126
Figure 50 – Neighbour information reporting process .....	127
Figure 51 – Time sequence for route adding .....	130
Figure 52 – Time sequence for route updating .....	132
Figure 53 – Time sequence for route deleting .....	134
Figure 54 – Adding a link originating from gateway device to routing device.....	137
Figure 55 – Adding a link originating from routing device to field device.....	137
Figure 56 – Updating a link originating by gateway device to routing device.....	139
Figure 57 – Updating a link originating from routing device to field device.....	140
Figure 58 – Releasing a link originating from gateway device to routing device.....	142
Figure 59 – Releasing a link originating from routing device to field device .....	142
Figure 60 – Adding a superframe originating from gateway device to routing device .....	144
Figure 61 – Adding a superframe originating from routing device to field device.....	144
Figure 62 – Updating a superframe originating from gateway device to routing device .....	146
Figure 63 – Updating a superframe originating from routing device to field device .....	147
Figure 64 – Releasing a superframe originating from gateway device to routing device.....	149
Figure 65 – Releasing a superframe originating from routing device to field device .....	149
Figure 66 – Device status reporting process from field device to routing device .....	152
Figure 67 – Device status reporting process from routing device to gateway device.....	153
Figure 68 – Channel condition reporting process from field device to routing device .....	154
Figure 69 – Channel condition reporting process from routing device to gateway device.....	155
Figure 70 – Failure path reporting process.....	156
Figure 71 – AL structure .....	182
Figure 72 – User application process .....	183
Figure 73 – C/S communication process .....	191
Figure 74 – P/S communication process (disable aggregation function) .....	192
Figure 75 – P/S communication process (enable aggregation function).....	192
Figure 76 – R/S communication process .....	193
Figure 77 – Security management framework of WIA-PA network .....	197
Figure 78 – Security communication protocol stack.....	199
Figure 79 – Key lifecycle.....	202
Figure 80 – Secure joining process of WIA-PA device.....	203
Figure 81 – Time sequence for field device joining (field device to routing device) .....	207
Figure 82 – Time sequence for field device joining (routing device to gateway device).....	208
Figure 83 – One-hop joining process for routing device.....	209

Figure 84 – Multi-hop join process of routing device (new routing device to routing device)..... 210

Figure 85 – Multi-hop join process of routing device (routing device to gateway device) .....211

Figure B.1 – Time sequence diagram..... 215

Table 1 – Definition of data types..... 22

Table 2 – Protocol support for VCR..... 33

Table 3 – Relations between VCR and aggregation function ..... 39

Table 4 – Format of aggregated data followed by field device's DAGO..... 41

Table 5 – Format of aggregated packet followed by routing device's PAGO ..... 41

Table 6 – DAGO class attributes ..... 43

Table 7 – DAGO instance attributes ..... 43

Table 8 – MEM\_STRUCT structure ..... 44

Table 9 – PAGO class attributes ..... 44

Table 10 – PAGO instance attributes ..... 44

Table 11 – DGO class attributes ..... 44

Table 12 – DGO instance attributes ..... 45

Table 13 – Unstructured attributes (1 of 5)..... 50

Table 14 – Structured attributes ..... 55

Table 15 – NLRoute\_Struct structure ..... 56

Table 16 – Superframe\_Struct structure..... 56

Table 17 – Link\_Struct structure ..... 57

Table 18 – Neighbour\_Struct structure..... 58

Table 19 – ChanCon\_Struct structure ..... 58

Table 20 – Device\_struct structure (1 of 3) ..... 59

Table 21 – VCR\_Struct structure..... 61

Table 22 – DevConRep\_Struct structure ..... 62

Table 23 – Key\_Struct structure ..... 62

Table 24 – ObjList\_Struct structure..... 62

Table 25 – DMAP-MIB-SET.request parameters ..... 63

Table 26 – DMAP-MIB-SET.confirm parameters ..... 64

Table 27 – DMAP-MIB-SET.request parameters ..... 64

Table 28 – DMAP-MIB-SET.confirm parameters..... 65

Table 29 – PHY protocol selection ..... 66

Table 30 – Frequency band and data rate ..... 67

Table 31 – Frequency assignments..... 67

Table 32 – PHY PIB attributes (1 of 2) ..... 68

Table 33 – MAC protocol selection (1 of 2) ..... 71

Table 34 – MAC PIB attributes..... 73

Table 35 – MAC extended PIB attributes..... 73

Table 36 – Beacon payload..... 74

Table 37 – Format of Capability Information field ..... 74

Table 38 – Hopping mechanisms ..... 77

Table 39 – DLSL state transitions for device joining .....	82
Table 40 – DLSL state transitions for in-network running (1 of 3) .....	83
Table 41 – DLDE-DATA.request parameters .....	87
Table 42 – DLDE-DATA.confirm parameters .....	88
Table 43 – Status table .....	88
Table 44 – DLDE-DATA.indication parameters .....	89
Table 45 – DLME-DISCOVERY.request parameters .....	90
Table 46 – DLME- DISCOVERY.confirm parameters .....	91
Table 47 – Network descriptor list .....	91
Table 48 – DLME-JOIN.request parameters .....	93
Table 49 – DLME-JOIN.indication parameters .....	93
Table 50 – DLME-JOIN.response parameters .....	94
Table 51 – DLME-JOIN.confirm parameters .....	94
Table 52 – DLME-LEAVE.request parameters .....	95
Table 53 – DLME-LEAVE.indication parameters .....	95
Table 54 – DLME-LEAVE.confirm parameters .....	95
Table 55 – DLME-CHANNEL-CONDITION.indication parameters .....	96
Table 56 – DLME-NEIGHBOUR-INFO.indication parameters .....	96
Table 57 – DLME-COMM-STATUS.indication parameters .....	97
Table 58 – DLME -KEEP-LIVE.confirm parameters .....	98
Table 59 – DLME -KEEP-LIVE.indication parameters .....	98
Table 60 – DLME-TIME-SYN.request parameters .....	98
Table 61 – DLME -TIME-SYN.confirm parameters .....	99
Table 62 – DLME-TIME-SYN.indication parameters .....	99
Table 63 – DLSL frame control field .....	100
Table 64 – Date frame format .....	100
Table 65 – General command frame format .....	100
Table 66 – DLSL command frame .....	101
Table 67 – Format of keep-alive command frame .....	101
Table 68 – Format of time synchronization command frame .....	102
Table 69 – Example of a routing table .....	104
Table 70 – NL state transitions (1 of 4) .....	106
Table 71 – NLDE-DATA.request parameters .....	111
Table 72 – NLDE-DATA.confirm parameters .....	111
Table 73 – NLDE-DATA.indication parameters .....	112
Table 74 – NLME-COMM-STATUS.request parameters .....	113
Table 75 – NLME-COMM-STATUS.indication parameters .....	114
Table 76 – NLME-COMM-STATUS.confirm parameters .....	114
Table 77 – NLME-JOIN.request parameters .....	115
Table 78 – NLME-JOIN.indication parameters .....	116
Table 79 – NLME-JOIN.response parameters .....	116
Table 80 – NLME-JOIN.confirm parameters .....	117
Table 81 – NLME-LEAVE.request parameters .....	120

Table 82 – NLME-LEAVE.indication parameters .....	120
Table 83 – NLME-LEAVE.response parameters .....	121
Table 84 – NLME-LEAVE.confirm parameters .....	121
Table 85 – NLME-RPT-CLRMEM.request parameters .....	124
Table 86 – NLME-RPT-CLRMEM.confirm parameter .....	124
Table 87 – NLME-RPT-CLRMEM.response parameters .....	125
Table 88 – NLME-NEIGHBOUR-INFO.request parameters .....	126
Table 89 – NLME-NEIGHBOUR-INFO.confirm parameter .....	127
Table 90 – NLME-ADD_ROUTE.request parameters .....	128
Table 91 – NLME-ADD_ROUTE.confirm parameters .....	129
Table 92 – NLME-UPDATE_ROUTE.request parameters .....	130
Table 93 – NLME-UPDATE_ROUTE.confirm parameter .....	131
Table 94 – NLME-UPDATE_ROUTE.request parameters .....	132
Table 95 – NLME-DELETE_ROUTE.confirm parameters .....	133
Table 96 – NLME-ADD-LINK.request parameters .....	135
Table 97 – NLME-ADD-LINK.confirm parameters .....	136
Table 98 – NLME-UPDATE-LINK.request parameters .....	138
Table 99 – NLME-UPDATE-LINK.confirm parameters .....	138
Table 100 – NLME-RELEASE-LINK.request parameters .....	140
Table 101 – NLME-RELEASE-LINK.confirm parameters .....	141
Table 102 – NLME-ADD-SFR.request parameters .....	143
Table 103 – NLME-ADD-SFR.confirm parameters .....	143
Table 104 – NLME-UPDATA-SFR.request parameters .....	145
Table 105 – NLME-UPDATE-SFR.confirm parameters .....	145
Table 106 – NLME-RELEASE-SFR.request parameters .....	147
Table 107 – NLME-RELEASE-SFR.confirm parameters .....	148
Table 108 – NLME-AGG.indication parameters .....	150
Table 109 – NLME-AGO-SEND.request parameters .....	150
Table 110 – NLME-DAG.indication parameter .....	151
Table 111 – NLME-DEVICE -STATUS.request parameters .....	151
Table 112 – NLME-DEVICE -STATUS.indication parameters .....	152
Table 113 – NLME-DEVICE -STATUS.confirm parameter .....	152
Table 114 – NLME-CHANNEL-CONDITION.request parameters .....	153
Table 115 – NLME-CHANNEL-CONDITION.indication parameters .....	154
Table 116 – NLME-CHANNEL-CONDITION.confirm parameter .....	154
Table 117 – NLME-PATH_FAILURE.request parameters .....	155
Table 118 – NLME-PATH_FAILURE.indication parameters .....	156
Table 119 – NLME-PATH_FAILURE.confirm parameters .....	156
Table 120 – NLME-INFO_GET.request parameters .....	157
Table 121 – NLME-INFO_GET.indication parameters .....	158
Table 122 – NLME-INFO_GET.response parameters .....	159
Table 123 – NLME-INFO_GET.confirm parameters .....	160
Table 124 – NLME-INFO_SET.request parameters .....	161

Table 125 – NLME-INFO_SET.indication parameters .....	161
Table 126 – NLME-SET.response parameters .....	162
Table 127 – NLME-SET.confirm parameters .....	163
Table 128 – Network layer common packet format .....	163
Table 129 – Control field format.....	163
Table 130 – Network layer data packet format .....	164
Table 131 – Aggregated packet format.....	165
Table 132 – Format of NL command packet .....	166
Table 133 – Network layer command packet .....	166
Table 134 – Execution results of commands .....	167
Table 135 – Format of joining request packet.....	167
Table 136 – Format of joining response packet .....	168
Table 137 – Format of communication status report request packet .....	168
Table 138 – Format of leaving request packet.....	169
Table 139 – Value of Leaving reason .....	169
Table 140 – Format of leaving response packet .....	169
Table 141 – Format of cluster member report request packet.....	169
Table 142 – Format of cluster member report response packet .....	170
Table 143 – Format of neighbour information report request packet .....	170
Table 144 – Format of route adding request packet .....	171
Table 145 – Format of route adding response packet.....	171
Table 146 – Format of route update request packet .....	171
Table 147 – Format of route update response packet.....	172
Table 148 – Format of route deleting request packet.....	172
Table 149 – Format of route deleting response packet .....	172
Table 150 – Format of link adding request packet .....	173
Table 151 – Format of link adding response packet .....	173
Table 152 – Format of link update request packet.....	174
Table 153 – Format of link update response packet .....	174
Table 154 – Format of link release request packet .....	175
Table 155 – Format of link release response packet .....	175
Table 156 – Format of superframe adding request packet.....	175
Table 157 – Format of superframe adding response packet .....	176
Table 158 – Format of superframe update request packet.....	176
Table 159 – Format of superframe update response packet .....	177
Table 160 – Format of superframe release request packet.....	177
Table 161 – Format of superframe release response packet .....	177
Table 162 – Format of device condition report request packet.....	178
Table 163 – Format of device condition information field.....	178
Table 164 – Format of channel condition report request packet .....	179
Table 165 – Format of channel quality information field .....	179
Table 166 – Format of path failure report request packet .....	179
Table 167 – Format of attribute getting request packet .....	180

Table 168 – Format of attribute getting response packet.....	180
Table 169 – Format of attribute setting request packet.....	181
Table 170 – Format of attribute setting response packet .....	181
Table 171 – UAO method definition.....	185
Table 172 – Request format of READ method.....	185
Table 173 – Response format of READ method .....	185
Table 174 – Request format of WRITE method .....	186
Table 175 – Response format of WRITE method.....	186
Table 176 – Format of PUBLISH method .....	187
Table 177 – Format of REPORT method .....	187
Table 178 – Format of REPORT ACK method .....	187
Table 179 – ASLDE-DATA.request parameters .....	189
Table 180 – ASLDE-DATA.confirm parameters .....	189
Table 181 – ASLDE-DATA.indication parameters.....	190
Table 182 – ASLDE-AGG.request parameters .....	190
Table 183 – ASLDE-DAG.indication parameters .....	191
Table 184 – Application sub-layer general packet format .....	193
Table 185 – Packet control field format .....	194
Table 186 – Packet type subfield value .....	194
Table 187 – ASL data packet format .....	195
Table 188 – ASL acknowledgement packet format .....	196
Table 189 – Format of security DLPDU .....	199
Table 190 – Format of DLSL security header .....	200
Table 191 – Structure of security control field in DLSL security header.....	200
Table 192 – Structure of security material control field in DLSL security header.....	200
Table 193 – Security APDU structure.....	201
Table 194 – Structure of ASL security header field .....	201
Table 195 – DLME-SEC.request parameters.....	204
Table 196 – DLME-SEC.indication parameters.....	204
Table 197 – DLME-SEC.response parameters .....	205
Table 198 – DLME-SEC.confirm parameters .....	206
Table A.1 – Graded and layered security measures for WIA-PA network.....	214
Table A.2 – Security levels of data packets.....	214
Table B.1 – Packet or frame format in octet(s) .....	215
Table B.2 – Subfield format in bit(s).....	216
Table C.1 – AIO class attribute .....	217
Table C.2 – AIO instance attributes .....	218
Table E.1 – Applicable EN 300 440-2 requirements list.....	220
Table E.2 – Applicable EN 300 328 requirements list .....	220
Table E.3 – Timeslot timing definitions and calculations.....	221

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**INDUSTRIAL NETWORKS –  
WIRELESS COMMUNICATION NETWORK  
AND COMMUNICATION PROFILES –  
WIA-PA****FOREWORD**

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International Standard IEC 62601 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial process measurement, control and automation.

This second edition cancels and replaces the first edition published in 2011. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- changed IEEE STD 802.15.4-2006 to IEEE STD 802.15.4-2011 and added common modification for IEEE STD 802.15.4-2011 MAC profile, PHY profile and IEEE STD 802.15.4-2011 related references;
- added common modifications for regional adoption and added Annex D and Annex E;

- deleted extended MAC management services and added two DLSL management services;
- added specific state machines for DLSL and NL;
- unified representation of frame format and packet format;
- changed format of definition of data types;
- added detailed description of technologies for clearer understanding;
- provided support for CCA modes 1, 2, and 3.

The reader's attention is drawn to the fact that Annex E lists all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this standard.

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

FDIS	Report on voting
65C/821/FDIS	65C/833/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# INDUSTRIAL NETWORKS – WIRELESS COMMUNICATION NETWORK AND COMMUNICATION PROFILES – WIA-PA

## 1 Scope

This International Standard specifies the system architecture and the communication protocol of Wireless networks for Industrial Automation – Process Automation (WIA-PA) that is built on IEEE STD 802.15.4-2011.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 9899, *Information technology – Programming languages – C*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes*

IEEE STD 802.15.4-2011, *IEEE Standard for Local and metropolitan area networks – Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)*

## 3 Terms, definitions and abbreviations

### 3.1 Terms and definitions

#### 3.1.1

##### **absolute timeslot number**

number of timeslots from the start of the network, generally denoting the current timeslot

#### 3.1.2

##### **active leaving**

process by which an online field device is allowed to leave the network through applying to its routing device or by which an online routing device is allowed to leave the network through applying to the gateway device

#### 3.1.3

##### **adaptive frequency hopping**

change of communication channels according to actual condition of channels in every timeslot during the intra-cluster period of WIA-PA superframe

#### 3.1.4

##### **adaptive frequency switch**

change of communication channels according to the actual condition of channels during the beacon frame and active period in a superframe cycle, and using different channels in different superframe cycles