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Electric vehicle conductive charging system – Part 23: DC electric vehicle supply equipment

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Electric vehicle conductive charging system – Part 23: DC electric vehicle supply equipment

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CONTENTS

FOREWORD 15
1 Scope 18
2 Normative references 19
3 Terms and definitions 22
3.1 Electric supply equipment 22
3.2 Insulation 22
3.3 Functions 26
3.4 Vehicle 30
3.5 Cords, cables and connection means 31
3.6 Service and usage 32
3.7 General terms 33
4 General requirements 40
5 Classification 40
5.101 Characteristics of EV supply equipment 40
5.101.1 Separation type 40
5.101.2 Control system 40
5.101.3 System 40
5.101.4 Thermal management system 40
5.101.5 Power distribution system 41
6 Charging modes and functions 41
6.2 Charging modes 41
6.2.1 Mode 1 41
6.2.2 Mode 2 41
6.2.3 Mode 3 41
6.3 Functions provided in Mode 4 41
6.3.1 Mandatory functions in Mode 4 41
6.3.2 Optional functions for Mode 4 62
7 Communications 63
7.1 Digital communication between the EV supply equipment and the EV 63
7.1.101 Basic communication interface 64
8 Protection against electric shock 64
8.101 General provisions 64
8.101.1 General 64
8.101.2 Intended use and reasonably foreseeable misuse 65
8.101.3 Limitation of touch current or touch voltage 65
8.101.4 Threshold of perception and startle reaction 65
8.102 Basic protection 68
8.102.1 General 68
8.102.2 Protection by means of basic insulation of live parts 68
8.102.3 Protection by means of enclosures or barriers 68
8.102.4 Protection by means of limitation of voltage 68
8.102.5 Protection by means of limitation of steady-state touch current 70
8.103 Fault protection 70
8.103.1 General 70
8.103.2 Protective-equipotential-bonding 70

8.103.3 Effective protective conductor continuity between the enclosure and the external protective circuit 70
8.103.4 Automatic disconnection of supply 71
8.103.5 Supplementary insulation 71
8.103.6 Electrically protective screening 71
8.104 Enhanced protective provision 71
8.104.1 General 71
8.104.2 Double or reinforced insulation 71
8.104.3 Protective separation between circuits 72
8.105 Requirements for separated EV supply equipment 72
8.105.1 General 72
8.105.2 Equipotential bonding on side B 74
8.105.3 Impedance to protective conductor on side B 74
8.105.4 Degrees of protection against access to hazardous-live-parts 75
8.105.5 Insulation barriers 76
8.105.6 Stored energy 77
8.105.7 Disconnection from vehicle 78
8.105.8 Protective (earthing) conductor from the supply network 78
8.105.9 Residual current protective devices 79
8.105.10 Safety requirements for auxiliary circuits between the EV supply equipment and the EV 79
8.105.11 Protective conductor dimension cross-sectional area 79
9 Conductive electrical interface requirements 80
9.1 General 80
9.5 Functional description of the DC interface 80
9.7 Wiring of the neutral conductor 80
9.101 Avoidance of breaking under load 80
10 Requirements for adaptors 81
11 Cable assembly requirements 82
11.1 General 82
11.6 Strain relief 82
11.6.101 Strain relief of the EV supply equipment's side B cable assembly 82
11.6.102 Test of the anchorage of the side B cable assembly 83
11.101 Cable breakaway 85
11.102 Surface temperature of the side B cable assembly 85
12 EV supply equipment constructional requirements and tests 87
12.1 General 87
12.2 Characteristics of mechanical switching devices 87
12.2.5 Relays 87
12.3 Clearances and creepage distances 87
12.4 IP degrees 87
12.4.1 Degrees of protection against solid foreign objects and water for the enclosures 87
12.5 Insulation resistance 88
12.6 Touch current 88
12.6.101 Touch current limit 88
12.6.102 Test 88
12.6.103 Protection measures for the test touch current more than 3,5 mA 89
12.7 Dielectric withstand voltage 90

12.7.2 Impulse dielectric withstand (1,2 µs/50 µs) 90
12.7.101 Suppression of transient overvoltage at side A (insulation coordination) 90
12.7.102 Protection against transient overvoltages of atmospheric origin or due to switching 92
12.8 Temperature rise 94
12.9 Damp heat functional test 94
12.10 Minimum temperature functional test 94
12.11 Mechanical strength 94
12.101 Side A current 95
12.102 Power supply cords 96
12.102.1 General 96
12.102.2 Cross-sectional area 96
12.102.3 Cord anchorages and strain relief for non-detachable power supply cords 97
12.103 Stress relief test 98
12.104 Abnormal operation and simulated fault condition tests 99
12.104.1 General 99
12.104.2 Pass criteria 99
12.104.3 Breakdown of components test 100
12.104.4 Loss of AC supply phase test 100
12.104.5 Inoperative blower/fan motor test 100
12.104.6 Clogged filter test 101
12.105 Protection against electrically caused fire 101
12.105.1 General 101
12.105.2 Fire enclosure 101
12.106 Protection against chemical hazards 101
12.106.1 Type of coolant 101
12.106.2 Flammability 102
12.106.3 Material compatibility 102
12.107 Enclosures 102
12.107.1 General 102
12.107.2 Strength of materials and parts 103
12.107.3 Enclosure integrity tests 103
12.108 Components bridging insulation 103
12.108.1 General 103
12.108.2 Capacitors 104
12.109 Isolating transformers 104
13 Overload and short-circuit protection 104
13.1 General 104
13.2 Overload protection of the cable assembly 104
13.3 Short-circuit protection of the charging cable 104
13.101 Short-circuit protection of the DC connection during energy transfer 105
14 Automatic reclosing of protective devices 106
15 Emergency switching or disconnect (optional) 106
16 Marking and instructions 106
16.1 Installation manual of EV charging stations 106
16.2 User manual for EV supply equipment 107
16.3 Marking of EV supply equipment 108
16.4 Marking of charging cable assemblies case B 108

101 Specific requirements for EV supply equipment 108
101.1 Specific requirements for separated EV supply equipment 108
101.1.1 Operating ranges for voltage, current, and power at side B 108
101.1.2 Voltage and current tolerance at side B 109
101.1.3 Control delay of present current at side B in CCM 111
101.1.4 Descending rate of present current at side B 114
101.1.5 Periodic and random deviation (current ripple at side B during CCM) 114
101.1.6 Periodic and random deviation (voltage ripple at side B during CVM) 115
101.1.7 Load dump 117
101.1.8 Side B inductance 117
101.2 Specific requirement for energy transfer with a thermal management system or thermal sensing only 118
101.2.1 General 118
101.2.2 Temperature limits and self-diagnostics 118
101.2.3 Temperature monitoring 119
101.2.4 Tests for thermal management system performance of the EV supply equipment 120
101.3 Specific requirements for temperature-controlled energy transfer 129
102 Test methods 130
102.1 Technical data 130
102.2 General test conditions 130
102.2.1 Ambient test conditions 130
102.2.2 Measuring instruments 131
102.2.3 Test setups 131
102.2.4 Test load 134
102.2.5 Operating points for tests 136
Annexes 138
Annex AA (normative) EV supply equipment of system A 139
AA.1 General 139
AA.2 Circuit diagram 139
AA.3 Specific safety requirements 142
AA.3.1 Fault protection in side B 142
AA.3.2 De-energization of the power supply to the EV 146
AA.3.3 Voltage measurement of side B live parts (DC+/DC–) for vehicle connector unlatch 147
AA.3.4 Overcurrent protection of side B 147
AA.3.5 Short-circuit protection of side B 147
AA.3.6 Latch monitoring for the vehicle connector 148
AA.3.7 Protection of the EV disconnection device 149
AA.3.8 Fault conditions and criteria for transfer to error and emergency shutdown 149
AA.3.9 Inrush current limitation by the EV supply equipment 154
AA.3.10 Regulation of the present current at side B in CCM 155
AA.3.11 Periodic and random deviation (current ripple at side B during CCM) 156
AA.3.12 Overvoltage protection including load dump 157
AA.3.13 Power supply to the EV for the actuation of EV disconnection device 158
AA.3.14 Impedance of the side B circuit 158
AA.3.15 Assistance of welding detection 158
AA.3.16 Specific requirements for temperature-controlled energy transfer 159

AA.4 FPT process and communication between the EV supply equipment and the EV for energy transfer control 159
AA.4.1 Forward power transfer states 159
AA.4.2 Communication measures 161
AA.4.3 Forward power transfer control process 162
AA.4.4 Measuring current and voltage at side B 168
AA.5 Response to an EV command on charge current 170
AA.6 Bidirectional power transfer (optional) 172
AA.6.1 General 172
AA.6.2 Circuit diagram 172
AA.6.3 Functional requirements 174
AA.6.4 Bidirectional power transfer control process 176
AA.7 Optional functions 181
AA.7.1 General 181
AA.7.2 Compatibility check 181
AA.7.3 Dynamic control 181
AA.7.4 High-current control 182
AA.7.5 High-voltage control 182
AA.8 Compliance test for user-initiated shutdown 182
AA.9 Specific requirement for energy transfer with thermal management system 183
Annex BB (normative) EV supply equipment of system B 184
BB.1 General 184
BB.2 Circuit diagrams 184
BB.2.1 Circuit diagram 184
BB.2.2 Requirements of IMD and discharge circuit 186
BB.3 Parameters of control pilot circuit 186
BB.4 Forward power transfer control process under normal condition 187
BB.4.1 Side B regulation 187
BB.4.2 Measuring current and voltage 187
BB.4.3 Vehicle coupler mating confirmation 189
BB.4.4 Forward power transfer control sequence 189
BB.4.5 Normal shutdown 191
BB.5 Safety requirements under failure mode 191
BB.5.1 Error shutdown and emergency shutdown 191
BB.5.2 Terminate energy transfer due to an EV supply equipment fault 193
BB.5.3 Terminate energy transfer due to an EV fault 194
BB.5.4 Digital communication timeout 194
BB.5.5 Loss of electrical continuity of the control pilot 195
BB.5.6 Overvoltage fault 195
BB.5.7 Load dump 196
BB.5.8 Short-circuit protection of side B 197
BB.5.9 Lock and latch monitoring for vehicle connector 198
BB.5.10 Overcurrent protection of side B 198
BB.5.11 Insulation fault monitoring 198
BB.6 Timing sequence diagram of forward power transfer 199
BB.7 Side B current regulation in CCM 200
BB.8 Insulation resistance check before energy transfer 202
BB.9 Side B voltage regulation in CVM 204
BB.10 Periodic and random deviation (voltage ripple at side B in CVM) 206

BB.11 Energy transfer control mode 206
BB.11.1 Definition 206
BB.11.2 Typical forward power transfer process 207
BB.12 Standby mode 208
BB.13 Smart charging 209
BB.14 Minimum cross-sectional area of the protective conductor 209
Annex CC (normative) EV supply equipment of system C 210
CC.1 General 210
CC.2 Circuit diagrams 210
CC.2.1 General 210
CC.2.2 Circuit diagram for configuration EE 210
CC.2.3 Circuit diagram for configuration FF 213
CC.2.4 Disabled side B 216
CC.3 Process of energy transfer 217
CC.3.1 General 217
CC.3.2 Normal startup 219
CC.3.3 Normal shutdown or pause after energy transfer 225
CC.3.4 Error and emergency handling 229
CC.3.5 Pause by EV supply equipment using ISO 15118-2:2014 241
CC.3.6 Renegotiation initiated by EV or EV supply equipment using ISO 15118-2:2014 251
CC.4 Safety related functions 255
CC.4.1 Safety measures for side B 255
CC.4.2 Vehicle coupler latching function 259
CC.4.3 Loss of electrical continuity of the control pilot conductor 259
CC.4.4 Loss of electrical continuity of the proximity detection conductor 259
CC.4.5 Voltage check at initialization 259
CC.4.6 Minimum cross-sectional area of the protective conductor 259
CC.4.7 Loss of electrical continuity of the protective conductor 259
CC.5 Additional functions 260
CC.5.1 Pre-charge 260
CC.5.2 Sleep mode and communication session restart methods 262
CC.5.3 Configuration EE vehicle connector latch position switch (S_S3) activation 269
CC.5.4 Configuration EE vehicle connector latch position switch (S_S3) verification 269
CC.5.5 Handling of operating ranges 270
CC.5.6 Compatibility check 277
CC.5.7 Considerations for CCM, CVM and CPM (informative) 281
CC.6 Specific requirements 283
CC.6.1 Requirements for load dump 283
CC.6.2 Side B current regulation 283
CC.6.3 Measuring current and voltage at side B 283
CC.6.4 Overcurrent protection of side B 284
CC.7 General test conditions 284
CC.7.1 Operating points – Definitions 284
CC.7.2 Standard test setup 286
CC.7.3 Definition of measured values at side B 286
CC.7.4 Exemplary approach to set a test point in CCM 286

CC.7.5 Test cases 289
CC.7.6 Wake up of EV supply equipment by EV 293
Annex DD (informative) Bidirectional power transfer control 354
DD.1 General 354
DD.2 Forward power transfer (FPT) and reverse power transfer (RPT) 354
Annex EE (normative) Test load impedance verification 355
EE.1 General 355
EE.2 Response curve verification 355
EE.3 Test setup for test load verification (informative) 358
EE.4 Result 359
Annex FF (normative) Multi-side B separated EV supply equipment 360
FF.1 General 360
FF.2 Classification and use case of multi-side B EV supply equipment 360
FF.2.1 System operation 360
FF.2.2 Side B system 360
FF.2.3 Configuration 360
FF.3 Constructional requirements of a side B system 363
FF.3.1 Constructional requirements of a side B system according to Annex AA 363
FF.3.2 Constructional requirements of a side B system according to Annex BB 364
FF.3.3 Constructional requirements of a side B system according to Annex CC 364
FF.4 Side B system performance 364
FF.4.1 General performance requirements 364
FF.4.2 Performance of multi-side B EV supply equipment providing simultaneous operation 364
FF.5 Safety requirements 364
FF.5.1 General safety requirements 364
FF.5.2 Short-circuit protection 365
FF.5.3 Overload protection 365
FF.5.4 Access to live parts through an unmated vehicle connector during energy transfer 365
FF.5.5 Additional safety requirements for multi-side B EV supply equipment providing simultaneous operation 366
FF.5.6 Diagnostic check of mechanical disconnection device in the side B system 366
FF.5.7 Interconnected side B live parts (DC+/DC–) in multi-side B EV supply equipment 366
Annex GG (informative) Communication and energy transfer process between the EV supply equipment and the EV 367
GG.1 General 367
GG.2 System configuration 367
GG.3 Energy transfer control process and state 367
GG.3.1 General 367
GG.3.2 Description of the initialization stage 368
GG.3.3 Description of the energy transfer stage 368
GG.3.4 Description of the shutdown stage 369
Annex HH (informative) Touch current and touch impulse current 370
HH.1 General 370
HH.2 Current through the human body 375
HH.3 Conditional dependent thresholds 376

HH.4 Hazards due to leakage between side B live parts and the protective conductor 376
HH.5 Balanced versus unbalanced voltages at side B live parts (DC+/DC–) 377
HH.6 Insulation monitoring device 378
HH.7 IMD reaction time 379
HH.8 Conclusion 379
Bibliography 380

Figure 101 – Example of a coupling session 27
Figure 102 – Voltage V_T8 to apply to simulate short period overvoltage at side B between DC+ and DC– 52
Figure 103 – Typical voltages between side B live parts (DC+/DC–) and protective conductor under normal operation 55
Figure 104 – IMD connection which results in a voltage more than the maximum voltage limits 56
Figure 105 – Examples of a fault between the secondary circuit and the protective conductor 59
Figure 106 – Measurement of the touch leakage current 67
Figure 107 – Touch time – DC voltage under single fault condition (water wet, fingertip to feet) 69
Figure 108 – Insulation barriers 76
Figure 109 – Construction types of vehicle adapters 81
Figure 110 – Apparatus to test the side B cable assembly anchorage 83
Figure 111 – Test setup the side B cable assembly anchorage 84
Figure 112 – Example of a side B cable assembly equipped with handle and a warning label attached to the cable 86
Figure 113 – Example setup of SPD for the protection of the EV supply equipment against transients 91
Figure 114 – Example of an SPD-assembly having one voltage switching type SPD between side B live conductors (DC+/DC–) and protective conductor 93
Figure 115 – Symbol ISO 7000-0434B:2004-01 107
Figure 116 – Side B voltage tolerances in CVM 110
Figure 117 – Current control delay for an increasing current request 112
Figure 118 – Current control delay for a decreasing current control request 113
Figure 119 – Voltage at side B in CVM operation in steady state with ripple 116
Figure 120 – Setup to measure the maximum side B inductance 117
Figure 121 – Reference device (RD) A_0 121
Figure 122 – Test arrangement A_0 122
Figure 123 – Reference device RD A_1 122
Figure 124 – Test arrangement A_1 123
Figure 125 – Reference device RD C_0 124
Figure 126 – Test arrangement C_0 125
Figure 127 – Reference device RD C_1 125
Figure 128 – Test arrangement C_1 126
Figure 129 – General test setup for system A 132
Figure 130 – General test setup for system B 133

Figure 131 – General test setup for system C 134
Figure 132 – Test load example 135
Figure 133 – Operating points 137
Figure AA.1 – Overall circuit diagram of system A EV supply equipment and EV 140
Figure AA.2 – Failure detection principle by detection of DC leakage current 144
Figure AA.3 – Example of vehicle connector latch monitoring circuit 148
Figure AA.4 – Example of vehicle inlet with the latch holder covered by a metal plate that inhibits latch holding 149
Figure AA.5 – Flow diagram for forward power transfer 162
Figure AA.6 – Sequence diagram for forward power transfer 163
Figure AA.7 – Representation of the delay between the measurement and the digital communication transmission for system A 169
Figure AA.8 – Acceptable range of the measured current at side B (target current of the EV I_{EV_trg} = 50 A) 170
Figure AA.9 – Change in the target current requested by the EV 171
Figure AA.10 – Side B performance of EV supply equipment 172
Figure AA.11 – Circuit diagram of a system A BPT EV supply equipment and EV 173
Figure AA.12 – Flow diagram for bidirectional power transfer 179
Figure AA.13 – Sequence diagram for bidirectional power transfer 180
Figure AA.14 – Transition of applicable maximum current of the EV supply equipment at side B and target current of the EV during dynamic control 181
Figure BB.1 – System B EV supply equipment circuit diagram 185
Figure BB.2 – Representation of delay between the measures current and voltage at side B and the digital communication transmission for system B 187
Figure BB.3 – FPT control sequence for system B 190
Figure BB.4 – Timing sequence diagram of FPT 200
Figure BB.5 – Operating points and test points for side B current regulation in CCM 201
Figure BB.6 – Operating points and test points for side B voltage regulation in CVM 206
Figure BB.7 – Definition of CCM, CVM and CPM 207
Figure BB.8 – Typical FTP process 208
Figure CC.1 – Circuit diagram for a system C EV supply equipment of configuration EE 211
Figure CC.2 – Circuit diagram of a system C EV supply equipment of configuration FF 214
Figure CC.3 – Equivalent disabled side B of the EV supply equipment 216
Figure CC.4 – Example of a sequence diagram 219
Figure CC.5 – Sequence diagram for normal startup 220
Figure CC.6 – Sequence diagram for normal shutdown or pause after energy transfer by EV or EV supply equipment 226
Figure CC.7 – Sequence diagram for EV supply equipment and EV initiated error shutdown 230
Figure CC.8 – Sequence diagram for EV initiated error shutdown based on DIN SPEC 70121 during energy transfer 233
Figure CC.9 – Sequence diagram for an emergency shutdown executed by the EV 236
Figure CC.10 – Sequence diagram for an emergency shutdown executed by the EV supply equipment 239
Figure CC.11 – Sequence diagram for pause before cable-check phase by EV supply equipment using ISO 15118-2:2014 242

Figure CC.12 – Sequence diagram for pause after pre-charge phase and before energy transfer stage by the EV supply equipment using ISO 15118-2:2014 246
Figure CC.13 – Sequence diagram for renegotiation initiated by EV or EV supply equipment using ISO 15118-2:2014 252
Figure CC.14 – Worst case equivalent circuit during pre-charge 260
Figure CC.15 – Restart methods sequence for the EV supply equipment 263
Figure CC.16 – Restart method verification on the EV supply equipment 264
Figure CC.17 – Example of a B1 – B2 transition 265
Figure CC.18 – Example of a B1 – E – B1 – B2 transition 266
Figure CC.19 – Example of a B1 – F – B1 – B2 transition 266
Figure CC.20 – Restart methods sequence for the EV 268
Figure CC.21 – Example of a B – C – B toggle 269
Figure CC.22 – Operating points 285
Figure CC.23 – Approaching a single test point TP in CCM (example 1) 288
Figure CC.24 – Approaching multiple test points TP_n CCM (example 2) 289
Figure CC.25 – Test points TP_n 298
Figure CC.26 – Voltage at the vehicle connector 306
Figure CC.27 – Test points TP_n for the load dump test 309
Figure CC.28 – Test point matrix for side B current regulation in CCM including static deviation and ripple 314
Figure CC.29 – Test point sequence for side B current regulation in CCM 317
Figure CC.30 – Test point matrix for 0 A mode during energy transfer 318
Figure CC.31 – Test point matrix for side B voltage regulation in CVM during pre-charge 321
Figure CC.32 – Test point matrix for control delay of charging current in CCM 327
Figure CC.33 – Test point sequence 329
Figure CC.34 – Test points for voltage measurement during welding detection 344
Figure CC.35 – Test setup for IMD measurement connections 351
Figure EE.1 – Magnitude of the impedance of the test load between DC+ and DC– for system A and system B 356
Figure EE.2 – Magnitude of the impedance of the test load between DC+ and DC– for system A for current ripple measurements 357
Figure EE.3 – Magnitude of the impedance of the test load between DC+ and DC– for system C 357
Figure EE.4 – Test setup for test load verification 358
Figure FF.1 – Example of a multi-side B EV supply equipment with a single PEC 362
Figure FF.2 – Example of a multi-side B EV supply equipment with multiple PECs 363
Figure HH.1 – EV and EV supply equipment equivalent circuit 370
Figure HH.2 – Circuit diagram simplification of the circuit in Figure HH.1 373
Figure HH.3 –Thevenin equivalent circuit diagram of the circuit in Figure HH.1 373
Figure HH.4 – Leakage current and impulse current in relation to limits in IEC 60479 series 374
Figure HH.5 – Examples of circuits with equivalent impulse current and leakage current through a human body 375

Table 101 – Verification criterion 43
Table 102 – Data/message for the compatibility check test 47
Table 103 – Voltage threshold for emergency shutdown reaction for system B and system C 49
Table 104 – EV supply equipment reaction depending on the present voltage at side B condition 49
Table 105 – Compliance tests for protection against overvoltage at side B between DC+ and DC– 50
Table 106 – Test load setup for protection against overvoltage test 50
Table 107 – Data/messages for protection against overvoltage test 51
Table 108 – Overvoltage condition and verification criterion 51
Table 109 – Control circuit supply integrity test 52
Table 110 – Touch voltage under normal operation 69
Table 111 – Touch voltage under single fault conditions 69
Table 112 – Safety provisions for protection against electric shock for EV supply equipment at side B 72
Table 113 – Minimum protective measures 77
Table 114 – Pull force and torque test values for side B cable assembly anchorage 85
Table 115 – Touch current limits 88
Table 116 – Sizes of conductors of power supply cord 96
Table 117 – Cord strain relief pull force 98
Table 118 – Current ripple limit of the EV supply equipment 115
Table 119 – Test parameter values 126
Table 120 – Recommended circuit parameters of the test load 136
Table AA.1 – Definition of symbols of the overall circuit diagram of a system A EV supply equipment 141
Table AA.2 – Parameters and values of the circuit diagram for a system A EV supply equipment 142
Table AA.3 – Principle of fault protection 143
Table AA.4 – Requirements for earth leakage current fault monitoring 145
Table AA.5 – Error shutdown times and criteria 150
Table AA.6 – Action and message parameter for error shutdown triggered by the EV supply equipment 152
Table AA.7 – Action and message parameter for error shutdown triggered by the EV 152
Table AA.8 – Emergency shutdown times and criteria 153
Table AA.9 – Actions and criteria for emergency shutdown 154
Table AA.10 – System A setup of the test load for regulation of the present current at side B in CCM 155
Table AA.11 – System A recommended steps for regulation of the present current at side B in CCM 155
Table AA.12 – Specification of measuring instrument 157
Table AA.13 – Voltage threshold for emergency shutdown 157
Table AA.14 – Maximum boost current for system A EV supply equipment 159
Table AA.15 – FPT states of the FPT EV supply equipment 160
Table AA.16 – FPT control process and states of the FPT EV supply equipment 161
Table AA.17 – Test scenarios 165

Table AA.18 – Normal shutdown times and criteria 166
Table AA.19 – Actions and message parameters for normal shutdown 166
Table AA.20 – Recommended specification of target current of the EV 171
Table AA.21 – Requirements for the side B performance of EV supply equipment 171
Table AA.22 – Setup of test load for protection against under-voltage at the vehicle connector 176
Table AA.23 – BPT states of BPT EV supply equipment 176
Table AA.24 – BPT control process of BPT EV supply equipment 178
Table AA.25 – Selection of protection measures against over-temperature 183
Table AA.26 – Protection measures against over-temperature 183
Table BB.1 – Parameters values of the control circuit for FPT 186
Table BB.2 – Error shutdown times and criteria 192
Table BB.3 – Emergency shutdown times and criteria 192
Table BB.4 – EV simulator voltage ranges emergency shutdown reaction test 196
Table BB.5 – Setup of the test load for side B current regulation in CCM 201
Table BB.6 – Recommended steps for minimum side B current regulation in CCM 202
Table BB.7 – Recommended steps for side B voltage regulation in CVM 204
Table CC.1 – Vehicle couplers for system C 210
Table CC.2 – Component values and tolerances for configuration EE 212
Table CC.3 – Proximity pilot voltages 213
Table CC.4 – Component values and tolerances for configuration FF 215
Table CC.5 – Component limits for the disabled side B of the EV supply equipment 217
Table CC.6 – Message code mapping for sequence diagram 218
Table CC.7 – Example of a sequence description 219
Table CC.8 – Sequence description for normal startup 221
Table CC.9 – Sequence description for normal shutdown or pause after energy transfer by EV or EV supply equipment 227
Table CC.10 – Overview of error and emergency shutdown cases 229
Table CC.11 – Sequence description for EV supply equipment and EV initiated error shutdown 231
Table CC.12 – Sequence description for EV initiated error shutdown based on DIN SPEC 70121 during energy transfer 234
Table CC.13 – Sequence diagram an emergency shutdown executed by the EV 237
Table CC.14 – Sequence diagram an emergency shutdown executed by the EV supply equipment 240
Table CC.15 – Sequence description for pause before cable-check phase by EV supply equipment using ISO 15118-2:2014 243
Table CC.16 – Sequence description for pause after pre-charge phase and before energy transfer stage by the EV supply equipment using ISO 15118-2:2014 247
Table CC.17 – Sequence description for renegotiation initiated by EV or EV supply equipment using ISO 15118-2:2014 253
Table CC.18 – Insulation states and EV supply equipment reaction based on the insulation resistance 258
Table CC.19 – Values to design the EV supply equipment during pre-charge based on Figure CC.14 261

Table CC.20 – Energy transfer control modes at different communication session stage/phase 282
Table CC.21 – EV simulator target current and voltage 301
Table CC.22 – Current ripple limits 301
Table CC.23 – Component valued for the inrush current limit test 311
Table CC.24 – Current ripple limits 318
Table CC.25 – Test setup values to measure side B voltage regulation in CVM during pre-charge 323
Table CC.26 – Current ripple limits 332
Table CC.27 – EV simulator characteristics 342
Table CC.28 – Test cases for the functional check of the IMD 352
Table EE.1 – Test load parameters 356
Table FF.1 – Possible combinations for multi-side B EV supply equipment 361
Table HH.1 – Key(s) and exemplary values for design verification 371

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ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 23: DC electric vehicle supply equipment

FOREWORD

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IEC 61851-23 has been prepared by IEC technical committee 69: Electric power/energy transfer systems for electrically propelled road vehicles and industrial trucks. It is an International Standard.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

a) the structure has been rearranged according to IEC 61851-1:2017;
b) electrical safety requirements in Clause 8 and Clause 12 have been revised based on the requirements in IEC 62477-1 and inspired by the hazard based safety approach of IEC 62368-1;

c) test methods for checking conformity to the stated requirements have been mostly added; general provisions for compliance tests have been specified in Clause 102;

d) specific requirements and/or information for the following functions have been added: energy transfer with thermal management system (101.2), bi-directional power transfer control (Annex DD), multi- side B separated EV supply equipment (Annex FF), and communication and energy transfer process (Annex GG);

e) Annex AA (system A), Annex BB (system B) and Annex CC (system C) have been updated including additions in conjunction with b) and c). This document has been limited to be applicable to system A, system B and system C;

f) the former Annex DD and Annex EE have been deleted. A new Annex EE, with the requirements for the artificial test load, has been added.

g) a new informative annex for the touch current and the touch impulse current (Annex HH) has been added.

The text of this International Standard is based on the following documents:

Draft	Report on voting
69/907/FDIS	69/925/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This document is to be read in conjunction with IEC 61851-1:2017.

The clauses of particular requirements in this document supplement or modify the corresponding clauses in IEC 61851-1:2017. Where the text of subsequent clauses indicates an "addition" to or a "replacement" of the relevant requirement, test specification or explanation of IEC 61851-1:2017, these changes are made to the relevant text of IEC 61851-1:2017, which then becomes part of this document. Where no change is necessary, the words "This clause of IEC 61851-1:2017 is applicable" are used. The new clauses which are not included in IEC 61851-1:2017 have a clause number starting from 101, for example 3.101, 101.1, etc. The annexes of this document are numbered using double-alphabet, for example Annex AA, to avoid confusion with the annexes in IEC 61851-1:2017.

In this document, the following print types are used:

– *test specifications: italic type*.

– notes: smaller roman type.

Figures in this document use L1 and N to represent the connection of the side A of the EV supply equipment to the AC supply network or DC supply network. This is only to simplify the figures and not to impose requirements.

A list of all parts in the IEC 61851 series, published under the general title *Electric vehicle conductive charging system*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document 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.

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 23: DC electric vehicle supply equipment

1 Scope

This part of IEC 61851 applies to the EV supply equipment to provide energy transfer between the supply network and electric vehicles (EVs), with a rated maximum voltage at side A of up to 1 000 V AC or up to 1 500 V DC and a rated maximum voltage at side B up to 1 500 V DC.

This document specifies the EV supply equipment of system A, system B and system C as defined in Annex AA, Annex BB and Annex CC. Other systems are under consideration.

This document provides the requirements for bidirectional power transfer (BPT) EV supply equipment for system A, with a rated maximum voltage at side A up to 1 000 V AC or 1 500 V DC. The requirements for reverse power transfer (RPT) and BPT for system B and system C are under consideration and are not specified in this document.

Annex DD provides information about BPT.

This document does not cover all safety aspects related to maintenance.

Requirements for systems not providing simple separation or protective separation between side A and side B are under consideration.

The requirements for digital communication between EV supply equipment and the EV to control energy transfer are defined in IEC 61851-24.

Requirements for energy transfer with an automated connection device are given in IEC 61851-23-1[1].

Specific requirements for EV supply equipment with multiple vehicle connectors are provided in Annex FF.

General information about energy transfer control, signalling and digital communication is provided in Annex GG.

General information on the touch current and touch impulse current is provided in Annex HH.

Requirements for EV supply equipment without current, voltage and/or power control are under consideration.

EV supply equipment in compliance with this document are not intended to provide energy transfer to a single EV with

– multiple vehicle connectors of the same EV supply equipment, or
– multiple EV supply equipment.

Requirements for such use case are under consideration.

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[1] Under preparation. Stage at the time of publication: IEC AFDIS 61851-23-1:2023.