

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Devices and integration in enterprise systems – Function blocks (FB) for
process control and electronic device description language (EDDL) –
Part 3: EDDL syntax and semantics**

**Les dispositifs et leur intégration dans les systèmes de l'entreprise – Blocs
fonctionnels (FB) pour les procédés industriels et le langage de description
électronique de produit (EDDL) –
Partie 3: Sémantique et syntaxe EDDL**



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CONTENTS

FOREWORD.....	21
INTRODUCTION.....	24
1 Scope.....	25
2 Normative references	25
3 Terms, definitions, abbreviated terms and acronyms	26
3.1 Terms and definitions.....	26
3.2 Abbreviated terms and acronyms	28
4 Conformance statement.....	29
5 EDD and EDDL model	29
5.1 Overview of EDD and EDDL.....	29
5.2 EDD architecture	29
5.3 Concepts of EDD	29
5.4 Principles of the EDD development process	30
5.4.1 General	30
5.4.2 EDD source generation.....	30
5.4.3 EDD preprocessing.....	31
5.4.4 EDD compilation.....	31
5.5 Interrelations between the lexical structure and formal definitions	31
5.6 Builtins.....	31
5.7 Profiles	31
6 Conventions	31
6.1 General.....	31
6.2 Conventions for basic construct description	32
6.3 Conventions for lexical structure	32
7 Overview	33
7.1 EDDL features	33
7.2 Syntax representation	34
7.3 EDD language elements	34
7.4 Basic construction elements.....	34
7.4.1 General	34
7.4.2 AXIS.....	34
7.4.3 BLOB.....	34
7.4.4 BLOCK_A.....	35
7.4.5 BLOCK_B.....	35
7.4.6 CHART	35
7.4.7 COLLECTION	35
7.4.8 COMMAND	36
7.4.9 COMPONENT.....	36
7.4.10 COMPONENT_FOLDER.....	37
7.4.11 COMPONENT_REFERENCE.....	37
7.4.12 COMPONENT_RELATION.....	37
7.4.13 EDIT_DISPLAY	38
7.4.14 FILE	38
7.4.15 GRAPH.....	38
7.4.16 GRID	39
7.4.17 IMAGE.....	39

7.4.18	IMPORT	39
7.4.19	INTERFACE	39
7.4.20	LIKE	39
7.4.21	LIST	40
7.4.22	MENU	40
7.4.23	METHOD	41
7.4.24	PLUGIN	41
7.4.25	RECORD	41
7.4.26	REFERENCE_ARRAY	42
7.4.27	Relations	42
7.4.28	RESPONSE_CODES	43
7.4.29	SOURCE	43
7.4.30	TEMPLATE	44
7.4.31	VALUE_ARRAY	44
7.4.32	VARIABLE	44
7.4.33	VARIABLE_LIST	45
7.4.34	WAVEFORM	45
7.5	Common attributes	46
7.6	Special elements	46
7.7	Rules for instances	46
7.8	Rules for a list of VARIABLES	46
8	EDD identification information	47
8.1	General structure	47
8.2	DD_REVISION	48
8.3	DEVICE_REVISION	48
8.4	DEVICE_TYPE	49
8.5	EDD_PROFILE	49
8.6	EDD_VERSION	50
8.7	LAYOUT_TYPE	50
8.8	MANUFACTURER	50
8.9	MANUFACTURER_EXT	51
9	Data modelling	51
9.1	VARIABLE	51
9.1.1	General structure	51
9.1.2	CLASS	53
9.1.3	CONSTANT_UNIT	56
9.1.4	DEFAULT_VALUE	57
9.1.5	INITIAL_VALUE	57
9.1.6	POST_EDIT_ACTIONS	58
9.1.7	POST_READ_ACTIONS	58
9.1.8	POST_RQSTUPDATE_ACTIONS	59
9.1.9	POST_USERCHANGE_ACTIONS	59
9.1.10	POST_WRITE_ACTIONS	60
9.1.11	PRE_EDIT_ACTIONS	60
9.1.12	PRE_READ_ACTIONS	60
9.1.13	PRE_WRITE_ACTIONS	61
9.1.14	REFRESH_ACTIONS	61
9.1.15	TYPE	62
9.2	REFERENCE_ARRAY	81

9.2.1	General structure.....	81
9.2.2	ELEMENTS	84
9.2.3	item-type	84
9.3	VALUE_ARRAY	84
9.3.1	General structure.....	84
9.3.2	NUMBER_OF_ELEMENTS	85
9.3.3	TYPE	86
9.4	LIST	87
9.4.1	General structure.....	87
9.4.2	CAPACITY	88
9.4.3	COUNT	88
9.4.4	TYPE	89
9.5	COLLECTION	90
9.5.1	General structure.....	90
9.5.2	item-type	91
9.6	FILE	92
9.6.1	General structure.....	92
9.6.2	IDENTITY	93
9.6.3	ON_UPDATE_ACTIONS	94
9.6.4	SHARED	94
9.7	Relations	95
9.7.1	REFRESH	95
9.7.2	SEMANTIC_MAP	96
9.7.3	UNIT	98
9.7.4	WRITE_AS_ONE	99
9.8	BLOB	100
9.8.1	General structure.....	100
9.8.2	IDENTITY	101
10	Communication	102
10.1	COMMAND	102
10.1.1	General structure.....	102
10.1.2	Command addressing	103
10.1.3	API	104
10.1.4	BLOCK_B	104
10.1.5	HEADER	105
10.1.6	INDEX	105
10.1.7	NUMBER	105
10.1.8	OPERATION	106
10.1.9	SLOT	107
10.1.10	SUB_SLOT	107
10.1.11	TRANSACTION	108
10.2	RECORD	114
10.3	RESPONSE_CODES	115
10.4	VARIABLE_LIST	116
11	User interface	117
11.1	MENU	117
11.1.1	General structure.....	117
11.1.2	ACCESS	118
11.1.3	EXIT_ACTIONS	119

11.1.4	INIT_ACTIONS	119
11.1.5	ITEMS	119
11.1.6	POST_EDIT_ACTIONS	121
11.1.7	POST_READ_ACTIONS	122
11.1.8	POST_WRITE_ACTIONS	122
11.1.9	PRE_EDIT_ACTIONS	123
11.1.10	PRE_READ_ACTIONS	123
11.1.11	PRE_WRITE_ACTIONS	123
11.1.12	STYLE	124
11.1.13	Sequence diagrams for actions	125
11.2	EDIT_DISPLAY	127
11.2.1	General structure	127
11.2.2	EDIT_ITEMS	127
11.2.3	DISPLAY_ITEMS	128
11.2.4	POST_EDIT_ACTIONS	128
11.2.5	PRE_EDIT_ACTIONS	129
11.3	IMAGE	129
11.3.1	General structure	129
11.3.2	LINK	131
11.3.3	PATH	131
11.4	GRID	132
11.4.1	General structure	132
11.4.2	ORIENTATION	134
11.4.3	VECTORS	135
11.5	CHART	136
11.5.1	General structure	136
11.5.2	CYCLE_TIME	143
11.5.3	LENGTH	144
11.5.4	TYPE	144
11.5.5	Sequence diagram for actions	146
11.5.6	CHART legend/help rules	147
11.6	SOURCE	149
11.6.1	General structure	149
11.6.2	EXIT_ACTIONS	150
11.6.3	INIT_ACTIONS	151
11.6.4	REFRESH_ACTIONS	151
11.6.5	Y_AXIS	152
11.7	AXIS	152
11.7.1	General structure	152
11.7.2	MIN_VALUE, MAX_VALUE	153
11.7.3	SCALING	154
11.7.4	CONSTANT_UNIT	154
11.8	GRAPH	155
11.8.1	General structure	155
11.8.2	CYCLE_TIME	163
11.8.3	X_AXIS	164
11.8.4	Sequence diagram for actions	164
11.9	WAVEFORM	165
11.9.1	General structure	165

11.9.2	EXIT_ACTIONS	167
11.9.3	INIT_ACTIONS	167
11.9.4	KEY_POINTS	168
11.9.5	REFRESH_ACTIONS	169
11.9.6	TYPE	169
11.9.7	Y_AXIS	172
11.10	PLUGIN	173
11.10.1	General structure	173
11.10.2	UUID	173
12	METHODs	174
12.1	General structure	174
12.2	ACCESS	175
12.3	CLASS	176
12.4	TYPE	177
13	Device modelling	178
13.1	BLOCK_A	178
13.1.1	General structure	178
13.1.2	AXIS_ITEMS	180
13.1.3	CHARACTERISTICS	181
13.1.4	CHARTS	181
13.1.5	CHART_ITEMS	182
13.1.6	COLLECTION_ITEMS	182
13.1.7	EDIT_DISPLAY_ITEMS	182
13.1.8	FILES	183
13.1.9	FILE_ITEMS	183
13.1.10	GRAPHS	183
13.1.11	GRAPH_ITEMS	184
13.1.12	GRIDS	184
13.1.13	GRID_ITEMS	184
13.1.14	IMAGE_ITEMS	185
13.1.15	ITEM_ARRAY_ITEMS	185
13.1.16	LISTS	185
13.1.17	LIST_ITEMS	186
13.1.18	LOCAL_PARAMETERS	186
13.1.19	MENUS	186
13.1.20	MENU_ITEMS	187
13.1.21	METHODS	187
13.1.22	METHOD_ITEMS	188
13.1.23	PARAMETERS	188
13.1.24	PARAMETER_LISTS	188
13.1.25	PLUGINS	189
13.1.26	PLUGIN_ITEMS	189
13.1.27	REFRESH_ITEMS	190
13.1.28	SEMANTIC_MAP_ITEMS	190
13.1.29	SOURCE_ITEMS	190
13.1.30	UNIT_ITEMS	191
13.1.31	WAVEFORM_ITEMS	191
13.1.32	WRITE_AS_ONE_ITEMS	191
13.2	BLOCK_B	192

13.2.1	General structure	192
13.2.2	NUMBER	192
13.2.3	TYPE	193
13.3	LIKE	193
13.4	IMPORT	194
13.5	TEMPLATE	197
13.5.1	General structure	197
13.5.2	DEFAULT_VALUES	198
13.6	COMPONENT	199
13.6.1	General structure	199
13.6.2	BYTE_ORDER	200
13.6.3	CAN_DELETE	201
13.6.4	CHECK_CONFIGURATION	201
13.6.5	COMPONENT_RELATIONS	201
13.6.6	CONNECTION_POINT	202
13.6.7	DETECT	202
13.6.8	EDD	202
13.6.9	INITIAL_VALUES	203
13.6.10	REDUNDANCY	203
13.6.11	SCAN	204
13.6.12	SCAN_LIST	204
13.6.13	PRODUCT_URI	204
13.7	COMPONENT_FOLDER	205
13.8	COMPONENT_REFERENCE	205
13.9	COMPONENT_RELATION	206
13.9.1	General structure	206
13.9.2	COMPONENTS	207
13.9.3	RELATION_TYPE	208
13.9.4	ADDRESSING	209
13.9.5	MAXIMUM_NUMBER	210
13.9.6	MINIMUM_NUMBER	210
13.9.7	REQUIRED_INTERFACE	210
13.10	INTERFACE	211
13.10.1	General structure	211
13.10.2	DECLARATION	211
14	Common attributes	212
14.1	CLASSIFICATION	212
14.2	COMPONENT_PARENT	214
14.3	COMPONENT_PATH	214
14.4	DEFINITION	214
14.5	EMPHASIS	215
14.6	HANDLING	216
14.7	HEIGHT	216
14.8	HELP	217
14.9	LABEL	218
14.10	LINE_COLOR	218
14.11	LINE_TYPE	219
14.12	MEMBERS	220
14.13	PRIVATE	221

14.14	PROTOCOL	221
14.15	RESPONSE_CODES	222
14.16	SUPPLIED_INTERFACE	223
14.17	VALIDITY	223
14.18	VISIBILITY	223
14.19	WIDTH	224
14.20	WRITE_MODE	224
15	Redefinitions	225
15.1	Overview	225
15.2	AXIS	227
15.3	BLOB	228
15.4	BLOCK_A	228
15.5	BLOCK_B	230
15.6	CHART	230
15.7	COLLECTION	230
15.8	COMMAND	231
15.9	COMPONENT	231
15.10	COMPONENT_FOLDER	232
15.11	COMPONENT_REFERENCE	233
15.12	COMPONENT_RELATION	233
15.13	EDIT_DISPLAY	234
15.14	FILE	234
15.15	GRAPH	235
15.16	GRID	235
15.17	IMAGE	236
15.18	INTERFACE	236
15.19	LIST	237
15.20	MENU	237
15.21	METHOD	238
15.22	PLUGIN	239
15.23	RECORD	239
15.24	REFERENCE_ARRAY	239
15.25	RESPONSE_CODES	240
15.26	SOURCE	240
15.27	TEMPLATE	241
15.28	VALUE_ARRAY	241
15.29	VARIABLE	242
15.30	VARIABLE_LIST	243
15.31	WAVEFORM	244
16	Referencing	245
16.1	Referencing an EDD instance	245
16.2	Referencing AXIS of a GRAPH, SOURCE, WAVEFORM	245
16.3	Referencing bits of a BIT_ENUMERATED VARIABLE	245
16.4	Referencing members of a CHART	246
16.5	Referencing members of a COLLECTION	246
16.6	Referencing COMPONENT instances	246
16.7	Referencing COMPONENT types	247
16.8	Referencing members of a FILE	247
16.9	Referencing members of a GRAPH	248

16.10	Referencing elements of a LIST	248
16.11	Referencing members of a RECORD	248
16.12	Referencing elements of a REFERENCE_ARRAY	249
16.13	Referencing members of a SOURCE	249
16.14	Referencing elements of a VALUE_ARRAY	249
16.15	Referencing members of a VARIABLE_LISTS	250
16.16	Referencing BLOCK_A CHARACTERISTICS	250
16.17	Referencing elements of BLOCK_A LOCAL_PARAMETERS	250
16.18	Referencing elements of BLOCK_A PARAMETERS	251
16.19	Referencing elements of BLOCK_A PARAMETER_LISTS	251
16.20	Referencing CHARACTERISTICS of specific BLOCK_A instance	251
16.21	Referencing CHARTS of specific BLOCK_A instance	252
16.22	Referencing FILES of specific BLOCK_A instance	252
16.23	Referencing GRAPHS of specific BLOCK_A instance	253
16.24	Referencing GRIDS of specific BLOCK_A instance	253
16.25	Referencing LISTS of specific BLOCK_A instance	253
16.26	Referencing LOCAL_PARAMETERS of specific BLOCK_A instance	254
16.27	Referencing MENUS of specific BLOCK_A instance	254
16.28	Referencing METHODS of specific BLOCK_A instance	255
16.29	Referencing PARAMETERS of specific BLOCK_A instance	255
16.30	Referencing PLUGINS of specific BLOCK_A instance	256
17	Strings	256
17.1	Specifying a string as a string literal	256
17.2	Specifying a string as a string variable	257
17.3	Specifying a string as an enumeration value	257
17.4	Specifying a string as a dictionary reference	257
17.5	Referencing HELP and LABEL attributes of EDD instances	258
17.6	String operations	258
18	Conditional expression	259
18.1	General structure	259
18.2	IF conditional	259
18.3	SELECT conditional	260
19	Expression	260
19.1	General structure	260
19.2	Primary expressions	261
19.3	Unary expressions	263
19.4	Binary expressions	264
19.4.1	General structure	264
19.4.2	Multiplicative operators	264
19.4.3	Additive operators	264
19.4.4	Shift operators	265
19.4.5	Relational operators	265
19.4.6	Equality operators	265
19.4.7	Bitwise AND operator (&)	265
19.4.8	Bitwise XOR operator (^)	266
19.4.9	Bitwise OR operator ()	266
19.4.10	Logical AND operator (&&)	266
19.4.11	Logical OR operator ()	266
19.4.12	Conditional evaluation	266

20	Text dictionary	266
Annex A (normative)	EDDL formal definition	268
A.1	EDDL preprocessor	268
A.1.1	General structure	268
A.1.2	Directives	268
A.1.3	Predefined macros	271
A.1.4	NEWLINE characters	272
A.1.5	Comments	272
A.2	Conventions	272
A.2.1	Integer constants	272
A.2.2	Floating-point constants	272
A.2.3	String literals	273
A.2.4	Using language and country codes in string literals	273
A.3	Operators	274
A.4	Keywords	278
A.5	Symbols and symbol scope	282
A.6	Terminals	282
A.7	Formal EDDL syntax	283
A.7.1	General	283
A.7.2	EDD identification information	283
A.7.3	AXIS	285
A.7.4	BLOCK_A and BLOCK_B	286
A.7.5	CHART	290
A.7.6	COLLECTION	291
A.7.7	COMMAND	292
A.7.8	COMPONENT	295
A.7.9	COMPONENT_FOLDER	298
A.7.10	COMPONENT_REFERENCE	298
A.7.11	COMPONENT_RELATION	299
A.7.12	EDIT_DISPLAY	300
A.7.13	FILE	302
A.7.14	GRAPH	302
A.7.15	GRID	302
A.7.16	IMAGE	303
A.7.17	INTERFACE	304
A.7.18	LIST	304
A.7.19	IMPORT	305
A.7.20	LIKE	307
A.7.21	MENU	309
A.7.22	METHOD	310
A.7.23	RECORD	312
A.7.24	REFERENCE_ARRAY	312
A.7.25	Relations	313
A.7.26	RESPONSE_CODES	315
A.7.27	SOURCE	316
A.7.28	TEMPLATE	316
A.7.29	VALUE_ARRAY	316
A.7.30	VARIABLE	317
A.7.31	VARIABLE_LIST	328

A.7.32	WAVEFORM.....	328
A.7.33	Common attributes	330
A.7.34	Expression	334
A.7.35	C-Grammar.....	336
A.7.36	Redefinition	340
A.7.37	References	365
A.7.38	PLUGIN	367
A.7.39	BLOB.....	368
A.7.40	SEMANTIC_MAP.....	368
A.8	Formal dictionary syntax	369
Annex B (normative)	Data types.....	370
B.1	METHOD DEFINITION data types.....	370
B.2	VARIABLE TYPE data types	370
B.2.1	General	370
B.2.2	Coding of data DATE	372
B.2.3	Coding of data DATE_AND_TIME.....	373
B.2.4	Coding of data DURATION	373
B.2.5	Coding of data TIME	374
B.2.6	Coding of data TIME_VALUE.....	374
B.2.7	Coding of PACKED_ASCII (6-BIT ASCII) DATA FORMAT.....	375
B.2.8	Coding of BOOLEAN	376
B.2.9	Coding of BIT_ENUMERATED.....	376
Annex C (informative)	EDD example	378
C.1	EDD example of a temperature transmitter.....	378
C.2	EDD example.....	379
Bibliography		392
Figure 1	– Position of IEC 61804 in relation to other standards and products.....	24
Figure 2	– EDD generation process	30
Figure 3	– BLOCK_A	35
Figure 4	– CHART	35
Figure 5	– COLLECTION	36
Figure 6	– COMMAND	36
Figure 7	– COMPONENT	37
Figure 8	– COMPONENT_FOLDER	37
Figure 9	– COMPONENT_REFERENCE	37
Figure 10	– COMPONENT_RELATION	38
Figure 11	– EDIT_DISPLAY	38
Figure 12	– FILE.....	38
Figure 13	– GRAPH	39
Figure 14	– GRID.....	39
Figure 15	– IMAGE	39
Figure 16	– LIKE.....	40
Figure 17	– LIST.....	40
Figure 18	– MENU	41
Figure 19	– RECORD.....	41

Figure 20 – REFERENCE_ARRAY	42
Figure 21 – REFRESH	42
Figure 22 – SEMANTIC_MAP	43
Figure 23 – UNIT	43
Figure 24 – WRITE_AS_ONE.....	43
Figure 25 – SOURCE.....	44
Figure 26 – VALUE_ARRAY	44
Figure 27 – VARIABLE	45
Figure 28 – VARIABLE_LIST	45
Figure 29 – WAVEFORM	45
Figure 30 – REFERENCE_ARRAY example.....	83
Figure 31 – Abstract COMMAND definition example	83
Figure 32 – EDD examples of SEMANTIC_MAP	98
Figure 33 – Example of an item mask	111
Figure 34 – Example of a single item mask	111
Figure 35 – Mapping example with a single item mask	112
Figure 36 – Example of multiple item masks	112
Figure 37 – Mapping example with a multiple item mask	112
Figure 38 – INFO qualifier.....	113
Figure 39 – INDEX qualifier	113
Figure 40 – INFO and INDEX qualifier	114
Figure 41 – Examples of MENU STYLES.....	125
Figure 42 – MENU activation	126
Figure 43 – EDD example of an IMAGE	130
Figure 44 – EDD example of an IMAGE with the LINK attribute.....	130
Figure 45 – EDD example of a GRID.....	134
Figure 46 – Result of the EDD example	134
Figure 47 – Example of a chart with one curve in a dialog.....	138
Figure 48 – Example of a chart with two SOURCES	139
Figure 49 – Displaying example of a chart with two SOURCES.....	140
Figure 50 – Example of a chart with three horizontal bars	141
Figure 51 – Displaying example of a chart with three horizontal bars	141
Figure 52 – Example of a chart in a dialog	143
Figure 53 – Trend CHART types examples	146
Figure 54 – Meter CHART types examples.....	146
Figure 55 – CHART activation.....	147
Figure 56 – Legend/help for SOURCES with single and multiple VARIABLES – Y_AXIS not defined.....	148
Figure 57 – Legend/help for SOURCES arrangement of multiple SOURCES with shared Y_AXIS.....	149
Figure 58 – A graph and the visual elements	156
Figure 59 – Example of a graph	159
Figure 60 – Multiple used axes	160
Figure 61 – EDD with device-supported zooming and scrolling	163

Figure 62 – GRAPH activation	165
Figure 63 – EDDL import mechanisms	195
Figure 64 – Example of TEMPLATE usage	198
Figure 65 – REQUIRED_RANGES usage.....	208
Figure 66 – NEXT_COMPONENT usage.....	209
Figure C.1 – Example of an operator screen using EDD.....	378
Table 1 – Format for the basic construct table	32
Table 2 – Contents of the basic construct table.....	32
Table 3 – Attribute usage descriptions	32
Table 4 – Rules for lexical convention.....	33
Table 5 – EDD sources.....	33
Table 6 – EDD identification information attributes.....	47
Table 7 – DD_REVISION attribute	48
Table 8 – DEVICE_REVISION attribute.....	48
Table 9 – DEVICE_TYPE attribute	49
Table 10 – EDD_PROFILE attribute	49
Table 11 – EDD_VERSION attribute	50
Table 12 – LAYOUT_TYPE attribute	50
Table 13 – MANUFACTURER attribute	51
Table 14 – MANUFACTURER_EXT attribute.....	51
Table 15 – VARIABLE attributes	52
Table 16 – CLASS attributes.....	53
Table 17 – CONSTANT_UNIT attribute	56
Table 18 – POST_EDIT_ACTIONS, PRE_EDIT_ACTIONS, POST_READ_ACTIONS, PRE_READ_ACTIONS, POST_WRITE_ACTIONS, PRE_WRITE_ACTIONS, REFRESH_ACTIONS attributes	58
Table 19 – POST_USERCHANGE_ACTIONS, POST_RQSTUPDATE_ACTIONS attributes	59
Table 20 – TYPE overview.....	62
Table 21 – MIN_VALUE, MAX_VALUE attribute	63
Table 22 – TYPE attributes for DOUBLE, FLOAT, INTEGER, UNSIGNED_INTEGER.....	65
Table 23 – Default display format conversion type	65
Table 24 – Default width/precision based on VARIABLE and format conversion type	66
Table 25 – TYPE attributes for DATE, DATE_AND_TIME, DURATION, TIME, TIME_VALUE.....	69
Table 26 – TYPE attributes for BIT_ENUMERATED	71
Table 27 – size attribute	72
Table 28 – status–class attributes.....	72
Table 29 – ALL, AO, DV, TV attributes	74
Table 30 – TYPE attributes for ENUMERATED	75
Table 31 – TYPE attributes for INDEX	76
Table 32 – TYPE attributes for ASCII, EUC, PACKED_ASCII, PASSWORD, VISIBLE	78
Table 33 – String handling	78

Table 34 – TYPE attributes for OCTET	79
Table 35 – TYPE attributes for BITSTRING.....	81
Table 36 – REFERENCE_ARRAY attributes	82
Table 37 – ELEMENTS attribute	84
Table 38 – VALUE_ARRAY attributes	85
Table 39 – NUMBER_OF_ELEMENTS attribute	86
Table 40 – TYPE attribute.....	86
Table 41 – LIST attributes.....	87
Table 42 – CAPACITY attribute.....	88
Table 43 – COUNT attribute.....	89
Table 44 – TYPE attribute.....	90
Table 45 – COLLECTION attributes	91
Table 46 – item-type	91
Table 47 – FILE attributes.....	93
Table 48 – IDENTITY attribute	94
Table 49 – ON_UPDATE_ACTIONS attribute.....	94
Table 50 – SHARED attribute	94
Table 51 – REFRESH overview	95
Table 52 – REFRESH attributes.....	96
Table 53 – SEMANTIC_MAP overview	97
Table 54 – SEMANTIC_MAP attributes	97
Table 55 – UNIT overview.....	99
Table 56 – UNIT attributes	99
Table 57 – WRITE_AS_ONE overview	100
Table 58 – WRITE_AS_ONE attribute	100
Table 59 – BLOB attributes	101
Table 60 – IDENTITY attribute	101
Table 61 – COMMAND attributes	103
Table 62 – API attribute	104
Table 63 – BLOCK_B attribute	105
Table 64 – HEADER attribute	105
Table 65 – INDEX attribute	105
Table 66 – NUMBER attribute	106
Table 67 – OPERATION attribute.....	106
Table 68 – PROFIBUS and PROFINET communication mapping.....	107
Table 69 – SLOT attribute.....	107
Table 70 – SUB_SLOT attribute.....	107
Table 71 – TRANSACTION attributes.....	108
Table 72 – REPLY and REQUEST attributes.....	109
Table 73 – POST_RQSTRECEIVE_ACTIONS attributes	114
Table 74 – RECORD attributes	115
Table 75 – RESPONSE_CODES overview	116
Table 76 – RESPONSE_CODES attributes	116

Table 77 – VARIABLE_LIST attributes	117
Table 78 – MENU attributes	118
Table 79 – ACCESS attribute	118
Table 80 – MENU ITEMS	120
Table 81 – MENU ITEMS qualifiers	121
Table 82 – EXIT_ACTIONS, INIT_ACTIONS, POST_EDIT_ACTIONS, PRE_EDIT_ACTIONS, POST_READ_ACTIONS, PRE_READ_ACTIONS, POST_WRITE_ACTIONS, PRE_WRITE_ACTIONS attributes	122
Table 83 – STYLE attribute	124
Table 84 – EDIT_DISPLAY attributes	127
Table 85 – EDIT_ITEMS attribute	128
Table 86 – DISPLAY_ITEM attributes	128
Table 87 – POST_EDIT_ACTIONS, PRE_EDIT_ACTIONS attribute	129
Table 88 – IMAGE attributes	130
Table 89 – LINK attribute	131
Table 90 – PATH attribute	131
Table 91 – Image formats	132
Table 92 – GRID attributes	132
Table 93 – ORIENTATION attribute	135
Table 94 – VECTORS attribute	135
Table 95 – CHART attributes	137
Table 96 – CYCLE_TIME attribute	144
Table 97 – LENGTH attribute	144
Table 98 – TYPE attribute	145
Table 99 – SOURCE attributes	150
Table 100 – Y_AXIS attribute	152
Table 101 – AXIS attributes	153
Table 102 – MIN_VALUE, MAX_VALUE attribute	154
Table 103 – SCALING attribute	154
Table 104 – GRAPH attributes	157
Table 105 – CYCLE_TIME attribute	164
Table 106 – X_AXIS attribute	164
Table 107 – WAVEFORM attributes	166
Table 108 – EXIT_ACTIONS, INIT_ACTIONS, REFRESH_ACTIONS attribute	167
Table 109 – KEY_POINTS attribute	168
Table 110 – X_VALUES, Y_VALUES attribute	169
Table 111 – TYPE attribute	170
Table 112 – XY attribute	170
Table 113 – YT attribute	171
Table 114 – HORIZONTAL attribute	172
Table 115 – VERTICAL attribute	172
Table 116 – Y_AXIS attribute	173
Table 117 – PLUGIN attributes	173
Table 118 – UUID attribute	174

Table 119 – METHOD attributes	175
Table 120 – Parameter types	175
Table 121 – ACCESS attributes	176
Table 122 – CLASS attributes	176
Table 123 – TYPE attributes	178
Table 124 – BLOCK_A attributes	180
Table 125 – AXIS_ITEMS attribute	181
Table 126 – CHARACTERISTICS attribute	181
Table 127 – CHARTS attribute	181
Table 128 – CHART_ITEMS attribute	182
Table 129 – COLLECTION_ITEMS attribute	182
Table 130 – EDIT_DISPLAY_ITEMS attribute	182
Table 131 – FILES attribute	183
Table 132 – FILE_ITEMS attribute	183
Table 133 – GRAPHS attribute	184
Table 134 – GRAPH_ITEMS attribute	184
Table 135 – GRIDS attribute	184
Table 136 – GRID_ITEMS attribute	185
Table 137 – IMAGE_ITEMS attribute	185
Table 138 – ITEM_ARRAY_ITEMS attribute	185
Table 139 – LISTS attribute	186
Table 140 – LIST_ITEMS attribute	186
Table 141 – MENUS attribute	187
Table 142 – MENU_ITEMS attribute	187
Table 143 – METHODS attribute	187
Table 144 – METHOD_ITEMS attribute	188
Table 145 – PARAMETERS attributes	188
Table 146 – PARAMETER_LISTS attributes	189
Table 147 – PLUGINS attribute	189
Table 148 – PLUGIN_ITEMS attribute	189
Table 149 – REFRESH_ITEMS attribute	190
Table 150 – SEMANTIC_MAP_ITEMS attribute	190
Table 151 – SOURCE_ITEMS attribute	190
Table 152 – UNIT_ITEMS attribute	191
Table 153 – WAVEFORM_ITEMS attribute	191
Table 154 – WRITE_AS_ONE_ITEMS attribute	191
Table 155 – BLOCK_B attributes	192
Table 156 – NUMBER attributes	193
Table 157 – TYPE attributes	193
Table 158 – LIKE overview	194
Table 159 – LIKE attributes	194
Table 160 – IMPORT overview	196
Table 161 – Importing device description	196

Table 162 – TEMPLATE attributes	198
Table 163 – DEFAULT_VALUES attribute	198
Table 164 – COMPONENT attributes	200
Table 165 – BYTE_ORDER attribute	200
Table 166 – CAN_DELETE attribute	201
Table 167 – CHECK_CONFIGURATION attribute	201
Table 168 – COMPONENT_RELATIONS attribute	202
Table 169 – CONNECTION_POINT attribute	202
Table 170 – DETECT attribute	202
Table 171 – EDD attribute	203
Table 172 – INITIAL_VALUES attribute	203
Table 173 – REDUNDANCY attribute	203
Table 174 – SCAN attribute	204
Table 175 – SCAN_LIST attribute	204
Table 176 – PRODUCT_URI attribute	204
Table 177 – COMPONENT_FOLDER attributes	205
Table 178 – COMPONENT_REFERENCE attributes	206
Table 179 – COMPONENT_RELATION attributes	207
Table 180 – COMPONENTS attribute	208
Table 181 – RELATION_TYPE attribute	209
Table 182 – ADDRESSING attribute	209
Table 183 – MAXIMUM_NUMBER attribute	210
Table 184 – MINIMUM_NUMBER attribute	210
Table 185 – REQUIRED_INTERFACE attribute	210
Table 186 – INTERFACE attributes	211
Table 187 – DECLARATION attribute	212
Table 188 – CLASSIFICATION attributes	212
Table 189 – COMPONENT_PARENT attribute	214
Table 190 – COMPONENT_PATH attribute	214
Table 191 – DEFINITION attribute	215
Table 192 – EMPHASIS attribute	216
Table 193 – HANDLING attribute	216
Table 194 – HEIGHT/WIDTH attribute	217
Table 195 – HELP attribute	218
Table 196 – LABEL attribute	218
Table 197 – LINE_COLOR attribute	219
Table 198 – Standard RGB color values	219
Table 199 – LINE_TYPE attribute	220
Table 200 – MEMBERS attributes	221
Table 201 – PRIVATE attributes	221
Table 202 – PROTOCOL attribute	222
Table 203 – RESPONSE_CODES attribute	222
Table 204 – SUPPLIED_INTERFACE attribute	223

Table 205 – VALIDITY attributes	223
Table 206 – VISIBILITY attributes	224
Table 207 – WRITE_MODE attributes	225
Table 208 – Redefinition attributes	227
Table 209 – Redefinition rules for AXIS attributes	228
Table 210 – Redefinition rules for BLOB attributes	228
Table 211 – Redefinition rules for BLOCK_A attributes	229
Table 212 – Redefinition rules for BLOCK_B attributes	230
Table 213 – Redefinition rules for CHART attributes	230
Table 214 – Redefinition rules for COLLECTION attributes	231
Table 215 – Redefinition rules for COMMAND attributes	231
Table 216 – Redefinition rules for COMPONENT attributes	232
Table 217 – Redefinition rules for COMPONENT_FOLDER attributes	232
Table 218 – Redefinition rules for COMPONENT_REFERENCE attributes	233
Table 219 – Redefinition rules for COMPONENT_RELATION attributes	234
Table 220 – Redefinition rules for EDIT_DISPLAY attributes	234
Table 221 – Redefinition rules for FILE attributes	235
Table 222 – Redefinition rules for GRAPH attributes	235
Table 223 – Redefinition rules for GRID attributes	236
Table 224 – Redefinition rules for IMAGE attributes	236
Table 225 – Redefinition rules for INTERFACE attributes	236
Table 226 – Redefinition rules for LIST attributes	237
Table 227 – Redefinition rules for MENU attributes	238
Table 228 – Redefinition rules for METHOD attributes	238
Table 229 – Redefinition rules for PLUGIN attributes	239
Table 230 – Redefinition rules for RECORD attributes	239
Table 231 – Redefinition rules for REFERENCE_ARRAY attributes	240
Table 232 – Redefinition rules for RESPONSE_CODES attributes	240
Table 233 – Redefinition rules for SOURCE attributes	241
Table 234 – Redefinition rules for TEMPLATE attributes	241
Table 235 – Redefinition rules for VALUE_ARRAY attributes	242
Table 236 – Redefinition rules for VARIABLE attributes	243
Table 237 – Redefinition rules for VARIABLE_LIST attributes	244
Table 238 – Redefinition rules for WAVEFORM attributes	244
Table 239 – Referencing an EDD instance	245
Table 240 – Referencing AXIS of a GRAPH. SOURCE, WAVEFORM	245
Table 241 – Referencing elements of VARIABLE	246
Table 242 – Referencing members of CHART	246
Table 243 – Referencing members of COLLECTION	246
Table 244 – Referencing a COMPONENT instance	247
Table 245 – Referencing a COMPONENT type	247
Table 246 – Referencing members of FILE	247
Table 247 – Referencing members of GRAPH	248

Table 248 – Referencing elements of LIST	248
Table 249 – Referencing elements of RECORD	249
Table 250 – Referencing members of REFERENCE_ARRAY	249
Table 251 – Referencing members of SOURCE	249
Table 252 – Referencing elements of VALUE_ARRAY	250
Table 253 – Referencing members of VARIABLE_LISTS	250
Table 254 – Referencing BLOCK_A CHARACTERISTICS	250
Table 255 – Referencing members of BLOCK_A LOCAL_PARAMETER.....	251
Table 256 – Referencing members of a BLOCK_A PARAMETERS.....	251
Table 257 – Referencing members of BLOCK_A PARAMETER_LISTS	251
Table 258 – Referencing CHARACTERISTICS of specific BLOCK_A instance	252
Table 259 – Referencing CHARTS of specific BLOCK_A instance	252
Table 260 – Referencing FILES of specific BLOCK_A instance	252
Table 261 – Referencing GRAPHS of specific BLOCK_A instance	253
Table 262 – Referencing GRIDS of specific BLOCK_A instance.....	253
Table 263 – Referencing LISTS of specific BLOCK_A instance	254
Table 264 – Referencing LOCAL_PARAMETERS of specific BLOCK_A instance	254
Table 265 – Referencing MENUS of specific BLOCK_A instance	255
Table 266 – Referencing METHODS of specific BLOCK_A instance	255
Table 267 – Referencing PARAMETERS of specific BLOCK_A instance	256
Table 268 – Referencing PLUGINS of specific BLOCK_A instance	256
Table 269 – String as a string literal.....	256
Table 270 – String as a string variable.....	257
Table 271 – String as an enumeration value	257
Table 272 – String as a dictionary reference	258
Table 273 – Referencing HELP and LABEL attributes of EDD instances	258
Table 274 – String operation.....	258
Table 275 – IF conditional.....	259
Table 276 – SELECT conditional	260
Table 277 – Primary expressions	261
Table 278 – Attribute values of VARIABLES.....	262
Table 279 – AXIS attribute values	263
Table 280 – BLOB attribute values.....	263
Table 281 – LIST attribute values	263
Table 282 – ARRAY attribute values	263
Table 283 – Unary expressions.....	264
Table 284 – Multiplicative operators.....	264
Table 285 – Additive operators	265
Table 286 – Shift operators.....	265
Table 287 – Relational operators	265
Table 288 – Equality operators	265
Table 289 – Text dictionary attributes	267
Table A.1 – Conventions for integer constants	272

Table A.2 – Using escape sequences in string literals.....	273
Table A.3 – Language code examples for string literals	274
Table A.4 – Precedence and associativity for EDDL operators	275
Table A.5 – Operations for VARIABLES or METHOD local variables	276
Table A.6 – EDDL keywords	278
Table B.1 – METHOD DEFINITION data types.....	370
Table B.2 – VARIABLE TYPES.....	371
Table B.3 – DATE coding.....	373
Table B.4 – DATE_AND_TIME coding.....	373
Table B.5 – DURATION coding	373
Table B.6 – DURATION coding for ISA100.....	374
Table B.7 – TIME coding.....	374
Table B.8 – TIME coding for ISA100	374
Table B.9 – TIME_VALUE coding (four octets).....	375
Table B.10 – TIME_VALUE coding (eight octets)	375
Table B.11 – PACKED_ASCII coding	376
Table B.12 – BOOLEAN coding	376
Table B.13 – BIT_ENUMERATED coding.....	377
Table B.14 – BIT_ENUMERATED coding for FF.....	377

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS –
FUNCTION BLOCKS (FB) FOR PROCESS CONTROL AND
ELECTRONIC DEVICE DESCRIPTION LANGUAGE (EDDL) –****Part 3: EDDL syntax and semantics****FOREWORD**

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International Standard IEC 61804-3 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This fourth edition cancels and replaces the third edition published in 2015. This edition constitutes a technical revision.

This edition was developed by merging material from multiple variants of existing EDDL specifications including those from FieldComm Group (FOUNDATION™ Fieldbus¹, HART®²), PROFIBUS™³ Nutzerorganisation e.V. (PNO), and ISA100_Wireless™⁴ Compliance Institute (ISA100 WCI). Any places where there may be a profile deviation are now indicated in the context where the related deviation is found. As a result, the formatting and numbering of this edition may be different from any of the individual specifications from which this edition was derived.

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

- Communication profiles ISA100 and GPE were added.
- EDD Identification Information has a new LAYOUT_TYPE attribute.
- New construct SEMANTIC_MAP was added.
- CLASS attribute values LOCAL_A and LOCAL_B were added.
- Extended LIST functionality to support device managed lists.

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

CDV	Report on voting
65E/631/CDV	65E/689/RVC

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.

Headings ending with '(void)' are used to retain the numbering of previous editions.

A list of all parts in IEC 61804 series, published under the general title *Devices and integration in enterprise systems – Function blocks (FB) for process control and electronic device description language (EDDL)*, can be found on the IEC website.

Future parts of IEC 61804 will carry the new general title as cited above. Titles of existing parts will be updated at the time of the next edition.

¹ FOUNDATION™ Fieldbus is the trademark of FieldComm Group. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on 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.

INTRODUCTION

The EDDL fills the gap between the conceptual function block specification of IEC 61804-2 and a product implementation. It allows the manufacturers to use the same description method for devices based on different technologies and platforms. Figure 1 shows these aspects.

IEC 61804 has the general title "Devices and integration in enterprise systems – Function blocks (FB) for process control and electronic device description language (EDDL)" and consists of the following parts:

Part 2: Specification of FB concept

Part 3: EDDL syntax and semantics

Part 4: EDD interpretation

Part 5: EDDL builtin library

Part 6: Meeting the requirements for integrating fieldbus devices in engineering tools for field devices

The EDDL may also be used for the description of product properties in other domains such as industrial automation. Industrial automation may include devices such as generic digital and analog input/output modules, motion controllers, human-machine interfaces, sensors, closed-loop controllers, encoders, hydraulic valves, and programmable controllers.

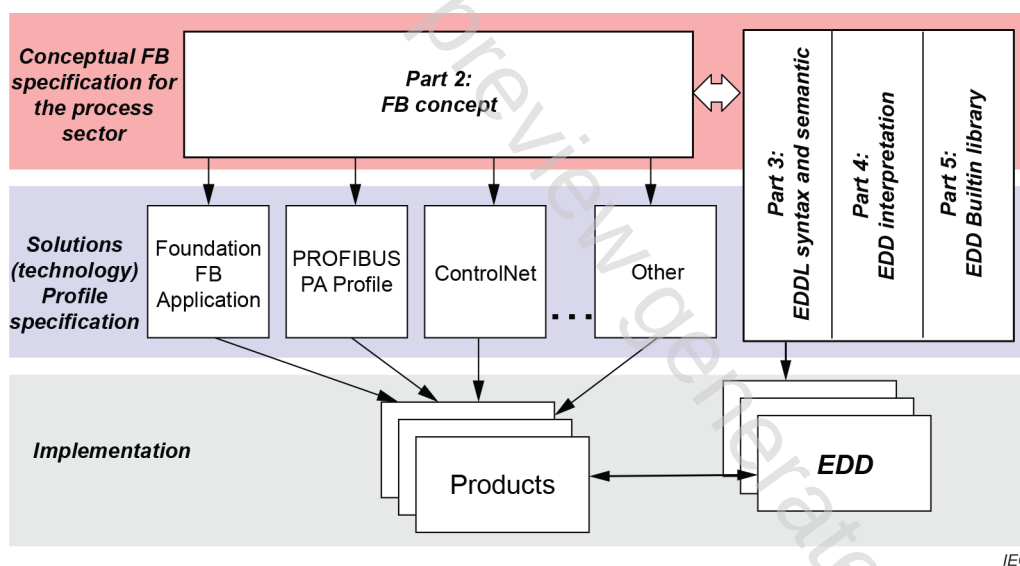


Figure 1 – Position of IEC 61804 in relation to other standards and products

DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS – FUNCTION BLOCKS (FB) FOR PROCESS CONTROL AND ELECTRONIC DEVICE DESCRIPTION LANGUAGE (EDDL) –

Part 3: EDDL syntax and semantics

1 Scope

This part of IEC 61804 specifies the electronic device description language (EDDL) technology, which enables the integration of real product details using the tools of the engineering life cycle.

This document specifies EDDL as a generic language for describing the properties of automation system components. EDDL is capable of describing

- device parameters and their dependencies;
- device functions, for example, simulation mode, calibration;
- graphical representations, for example, menus;
- interactions with control devices;
- graphical representations:
 - enhanced user interface,
 - graphing system;
- persistent data store.

EDDL is used to create electronic device description (EDD) for e.g. concrete devices, common usable profiles or libraries. This EDD is used with appropriate tools to generate an interpretative code to support parameter handling, operation, and monitoring of automation system components such as remote I/Os, controllers, sensors, and programmable controllers. Tool implementation is outside the scope of this document.

This document specifies the semantic and lexical structure in a syntax-independent manner. A specific syntax is defined in Annex A, but it is possible to use the semantic model also with different syntaxes.

IEC 61804-4 specifies EDD interpretation for EDD applications and EDDs to support EDD interoperability.

IEC 61804-5 specifies the EDDL builtin library and provides the profiles of the various fieldbuses.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-351, *International Electrotechnical Vocabulary (IEV) – Part 351: Control technology*

IEC 61804-2, *Function blocks (FB) for process control – Part 2: Specification of FB concept*

IEC 61804-4, *Function blocks (FB) for process control and electronic device description language (EDDL) – Part 4: EDD interpretation*

IEC 61804-5, *Function blocks (FB) for process control and electronic device description language (EDDL) – Part 5: EDDL builtin library*

IEC 62541-4, *OPC Unified Architecture – Part 4: Services*

ISO/IEC 7498-1, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*

ISO/IEC 8859-1, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

ISO/IEC 9834-8, *Information technology – Procedures for the operation of object identifier registration authorities – Part 8: Generation of universally unique identifiers (UUIDs) and their use in object identifiers*

ISO/IEC 9899:1999, *Programming languages – C*

ISO/IEC 10646, *Information technology – Universal Coded Character Set (UCS)*

ISO/IEC 10918-1, *Information technology – Digital compression and coding of continuous-tone still images: Requirements and guidelines*

ISO/IEC 15948, *Information technology – Computer graphics and image processing – Portable Network Graphics (PNG): Functional specification*

ISO 639 (all parts), *Codes for the representation of names of languages*

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

ISO/TS 29002-5, *Industrial automation systems and integration – Exchange of characteristic data – Part 5: Identification scheme*

IEEE 754, *IEEE Standard for Floating-Point Arithmetic*

RFC 3629, *User Datagram Protocol*, available at <http://www.ietf.org/rfc/rfc0768.txt> [viewed 2018-12-21]

W3C Recommendation, *Cascading Style Sheets Level 2 Specification*, available at <http://www.w3.org/TR/CSS2> [viewed 2018-12-21]

3 Terms, definitions, abbreviated terms and acronyms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-351, IEC 61804-2 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>