

ISO 10303-23:2000-12 (E)

Industrial automation systems and integration - Product data representation and exchange - Part 23: Implementation methods: C++ language binding to the standard data access interface

Contents

	Page
1 Scope	1
2 Normative references	1
3 Definitions and abbreviations	2
3.1 Definitions	2
3.1.1 Terms defined in ISO 10303-1	2
3.1.2 Terms defined in ISO 10303-11	3
3.1.3 Terms defined in ISO 10303-22	3
3.1.4 Terms defined in The Annotated C++ Reference Manual	4
3.1.5 Term defined in IEEE standard	5
3.1.6 Other definitions	5
3.2 Abbreviations	6
3.3 Typographical conventions	6
4 Overall requirements	6
4.1 Characteristics of the binding functions	6
4.2 Language specific features	8
4.2.1 Names of types and operations	8
4.2.2 Memory management	8
4.3 Binding styles	8
5 Constants and data type definitions and global functions	9
5.1 SDAI namespace	9
5.2 EXPRESS built-in constants	9
5.3 EXPRESS attribute data types	10
5.3.1 Primitive data types	10
5.3.2 Aggregate and iterator data types	18
5.3.3 Enumeration data type	20
5.3.4 Select data type	22
5.3.5 Number data type	28
5.3.6 Handles	28
5.3.7 TYPE data type	29
5.3.8 ENTITY data type	30
5.3.9 Entity instance	32
5.3.10 Persistent data and persistent object identifiers	35
5.3.11 Domain equivalence for early binding	42
5.3.12 Application instance	43
5.3.13 Binding-specific data types	52
5.4 EXISTS functions	60

6	Error handling	61
6.1	Event	63
6.2	Error event	63
7	C++ binding of the SDAI operations	64
7.1	Session classes	64
7.1.1	Session_instance	64
7.1.2	Session	69
7.1.3	Implementation	75
7.1.4	Transaction	75
7.2	Schema_instance	76
7.2.1	Rename schema instance	77
7.2.2	Add SDAI-model	77
7.2.3	Remove SDAI-model	77
7.2.4	Validate global rule	77
7.2.5	Validate uniqueness rule	78
7.2.6	Validate instance reference domain	78
7.2.7	Validate schema instance	79
7.2.8	Is validation current	79
7.2.9	SDAI query	79
7.3	Schema-specific schema_instance (early binding)	80
7.4	Repository classes	80
7.4.1	Repository_contents	80
7.4.2	Repository	81
7.5	Model classes	84
7.5.1	Model	84
7.5.2	Model_contents_instances	87
7.5.3	Model_contents	87
7.5.4	Entity extent	90
7.5.5	Model contents by schema	91
7.5.6	Scope	92
7.6	Aggregate and iterator classes	93
7.6.1	Aggregate instance	93
7.6.2	Array	94
7.6.3	List	100
7.6.4	Set	105
7.6.5	Bag	108
7.6.6	Iterator	112
7.7	Dictionary Classes	116
7.7.1	Named_type	116
7.7.2	Dictionary_instance	117
7.7.3	Schema_definition	117
7.7.4	Defined_type	119
7.7.5	Entity_definition	120

7.7.6	Attribute	121
7.7.7	Derived_attribute	122
7.7.8	Explicit_attribute	122
7.7.9	Inverse_attribute	123
7.7.10	Uniqueness_rule	124
7.7.11	Where_rule	124
7.7.12	Enumeration_type	125
7.7.13	Select_type	125
7.7.14	Global_rule	126
7.7.15	Simple_type	126
7.7.16	Number_type	127
7.7.17	Integer_type	127
7.7.18	Real_type	128
7.7.19	String_type	128
7.7.20	Binary_type	129
7.7.21	Logical_type	129
7.7.22	Boolean_type	130
7.7.23	Bound	130
7.7.24	Population_dependent_bound	131
7.7.25	Integer_bound	131
7.7.26	Aggregation_type	132
7.7.27	Variable_size_aggregation_type	132
7.7.28	Set_type	133
7.7.29	Bag_type	133
7.7.30	List_type	134
7.7.31	Array_type	134
7.7.32	Underlying_type	135
7.7.33	Base_type	136
7.7.34	Constructed_type	137
7.7.35	Interface_specification	138
7.7.36	Interfaced_item	138
7.7.37	Explicit_item_id	139
7.7.38	Used_item	139
7.7.39	Referenced_item	140
7.7.40	Implicit_item_id	140
7.7.41	External_schema	141
7.7.42	Domain_equivalent_type	141
7.7.43	Type_or_rule	142
7.7.44	Explicit_or_derived	143
8	Conformance levels	144
8.1	Conformance level features	144
8.2	Header files	144
8.3	Indexing of aggregates	145

Annex A (normative) Information object registration	146
Annex B (informative) Concept of operations	147
B.1 Background	147
B.2 Influence of IDL on this part of ISO 10303	148
B.3 IDL-C++ concepts	149
B.4 Influence of POS on this part of ISO 10303	150
B.4.1 Object	150
B.4.2 SessionInstance and DObject	150
B.4.3 SessionInstance	151
B.4.4 ModelContents	151
B.4.5 PID and PID_SDAI	151
B.4.6 DObject and DObject_SDAI	152
B.4.7 Application_instance and application_instance factory	152
B.4.8 PID_DA	152
B.5 Scenarios	152
Bibliography	154
Index	155
 Figures	
Figure B.1 - Inheritance hierarchy	151
 Tables	
Table 1 - Arguments and return values	7
Table 2 - EXPRESS built-in constants	10
Table 3 - Mapping of EXPRESS types to TypeCode values	54