



Association for Standardisation of
Automation and Measuring Systems

ASAM CERP / CPX

OTX Calibration Expert System Rule and
Product model format / OTX Calibration
Process Exchange Format

Calib Extension Interface Definition

Version 1.0.0

Date: 2016-02-22

Base Standard

Disclaimer

This document is the copyrighted property of ASAM e.V.
Any use is limited to the scope described in the license terms. The license terms can be viewed at www.asam.net/license

Table of Contents

Foreword	13
1 Introduction	14
1.1 Overview	14
1.1.1 Extension overview	14
1.1.2 Separation between database and runtime	15
1.1.3 Exception handling	15
1.1.4 Enumeration handling	16
1.1.5 OTX data types	16
1.1.6 Index access of characteristic types	16
1.2 Scope	16
1.3 Dependencies	17
2 Relations to Other Standards	20
2.1 References to Other Standards	20
3 otxIFD_CalibDataBrowsing	21
3.1 Introduction	21
3.2 Terms	21
3.2.1 Overview	21
3.2.2 Semantics	22
3.2.2.1 GetCharacteristicType	22
3.2.2.2 GetCharacteristicUnit	23
3.2.2.3 GetDimensionSize	24
3.2.2.4 GetECUDataType	25
3.2.2.5 GetEPK	26
3.2.2.6 GetPhysicalDataType	26
3.2.2.7 GetSystemConstantValue	27
4 otxIFD_CalibExpertDataBrowsing	28
4.1 Introduction	28
4.2 Datatypes	28
4.2.1 Overview	28
4.2.2 Semantics	28
4.2.2.1 DbAxisDescription	28
4.2.2.2 DbCharacteristic	28
4.2.2.3 DbFunction	29
4.2.2.4 DbObject	29
4.2.2.5 DbSystemConstant	29
4.3 Variable access	29
4.3.1 Overview	29
4.3.2 Semantics	29
4.4 Terms	29
4.4.1 Overview	29

4.4.2	Semantics for DbAsciiCharacteristic	30
4.4.2.1	DbAsciiCharacteristicGetMaximumNumberOfCharacters ..	30
4.4.3	Semantics for DbAxisDescription	30
4.4.3.1	DbAxisDescriptionGetAxisType	30
4.4.3.2	DbAxisDescriptionGetECUDataType	31
4.4.3.3	DbAxisDescriptionGetExtLowerLimit.....	31
4.4.3.4	DbAxisDescriptionGetExtUpperLimit.....	32
4.4.3.5	DbAxisDescriptionGetLowerLimit.....	32
4.4.3.6	DbAxisDescriptionGetMaxAxisPoints.....	33
4.4.3.7	DbAxisDescriptionGetMontony	34
4.4.3.8	DbAxisDescriptionGetPhysicalDataType	35
4.4.3.9	DbAxisDescriptionGetUnit.....	35
4.4.3.10	DbAxisDescriptionGetUpperLimit.....	36
4.4.3.11	DbAxisDescriptionTerm	36
4.4.3.12	DbAxisDescriptionValue.....	37
4.4.4	Semantics for DbCharacteristic	38
4.4.4.1	DbCharacteristicGetECUDataType	38
4.4.4.2	DbCharacteristicGetExtLowerLimit	38
4.4.4.3	DbCharacteristicGetExtUpperLimit	39
4.4.4.4	DbCharacteristicGetLowerLimit.....	39
4.4.4.5	DbCharacteristicGetPhysicalDataType	40
4.4.4.6	DbCharacteristicGetUnit	40
4.4.4.7	DbCharacteristicGetUpperLimit.....	41
4.4.4.8	DbCharacteristicTerm	41
4.4.4.9	DbCharacteristicValue	42
4.4.4.10	DbGetCharacteristicType.....	43
4.4.4.11	GetDbCharacteristicIdentifier	44
4.4.5	Semantics for DbCube3DCharacteristic	45
4.4.5.1	DbCube3DCharacteristicGetAxisDescription	45
4.4.6	Semantics for DbCube4DCharacteristic	46
4.4.6.1	DbCube4DCharacteristicGetAxisDescription	46
4.4.7	Semantics for DbCube5DCharacteristic	47
4.4.7.1	DbCube5DCharacteristicGetAxisDescription	47
4.4.8	Semantics for DbCurveCharacteristic.....	48
4.4.8.1	DbCurveCharacteristicGetAxisDescription	48
4.4.9	Semantics for DbFunction	49
4.4.9.1	DbFunctionGetDefDbCharactetristics	49
4.4.9.2	DbFunctionGetFunctionVersion	49
4.4.9.3	DbFunctionGetName	50
4.4.9.4	DbFunctionGetRefDbCharacteristics	50
4.4.9.5	DbFunctionGetSubFunctionByName	51
4.4.9.6	DbFunctionGetSubFunctions	51
4.4.9.7	DbFunctionTerm	52
4.4.9.8	DbFunctionValue	52
4.4.10	Semantics for DbMapCharacteristic	53
4.4.10.1	DbMapCharacteristicGetAxisDescription	53
4.4.11	Semantics for DbObject	54
4.4.11.1	DbObjectTerm	54
4.4.11.2	DbObjectValue.....	54
4.4.12	Semantics for DbValueBlockCharacteristic	55
4.4.12.1	DbValueBlockCharacteristicGetDimensionSize	55
4.4.13	Semantics for Root.....	55
4.4.13.1	GetDbAxisDescriptionByDbIdentifier.....	55
4.4.13.2	GetDbAxisDescriptions	56

4.4.13.3	GetDbCharacteristicByDbIdentifier	56
4.4.13.4	GetDbCharacteristics	57
4.4.13.5	GetDbEPK	57
4.4.13.6	GetDbFunctionByDbIdentifier	58
4.4.13.7	GetDbFunctions	58
4.4.13.8	GetDbSystemConstantByDbIdentifier	59
4.4.13.9	GetDbSystemConstants	59
4.4.14	Semantics for SystemConstant	60
4.4.14.1	DbSystemConstantGetShortName	60
4.4.14.2	DbSystemConstantGetValue	60
4.4.14.3	DbSystemConstantTerm	61
4.4.14.4	DbSystemConstantValue	61
5	otxIFD_RuntimeCharacteristicShared	62
5.1	Introduction	62
5.2	Terms	62
5.2.1	Overview	62
5.2.2	Semantics for Root	62
5.2.2.1	GetCharacteristicByIdentifier	62
5.2.2.2	GetCharacteristicIdentifier	63
5.2.2.3	GetCharacteristics	63
5.2.2.4	GetCharacteristicType	64
6	otxIFD_CalibRead	65
6.1	Introduction	65
6.2	Terms	65
6.2.1	Overview	65
6.2.2	Semantics for ComfortFunctions	65
6.2.2.1	ReadCharacteristicECUFloatValue	65
6.2.2.2	ReadCharacteristicECUFloatValues	67
6.2.2.3	ReadCharacteristicECUIntValue	69
6.2.2.4	ReadCharacteristicECUIntValues	71
6.2.2.5	ReadCharacteristicPhysicalFloatValue	73
6.2.2.6	ReadCharacteristicPhysicalFloatValues	75
6.2.2.7	ReadCharacteristicPhysicalStringValue	77
6.2.2.8	ReadCharacteristicPhysicalStringValue	79
7	otxIFD_CalibExpertRead	81
7.1	Introduction	81
7.2	Terms	81
7.2.1	Overview	81
7.2.2	Semantics for AsciiCharacteristic	81
7.2.2.1	ReadAsciiECUCellValues	81
7.2.2.2	ReadAsciiPhysicalCellValues	82
7.2.3	Semantics for AxisCharacteristic	82
7.2.3.1	GetAxisValueUnit	82
7.2.3.2	ReadAxisECUValues	83
7.2.3.3	ReadAxisPhysicalValues	84
7.2.4	Semantics for Cube3D characteristic	85
7.2.4.1	GetCube3DAxisUnit	85

7.2.4.2	GetCube3DCellValueUnit	85
7.2.4.3	ReadCube3DECUAxisValues	86
7.2.4.4	ReadCube3DECUCellValueByAxisValue.....	87
7.2.4.5	ReadCube3DECUCellValuesByAxisIndex	88
7.2.4.6	ReadCube3DPhysicalAxisValues	90
7.2.4.7	ReadCube3DPhysicalCellValueByAxisValue	91
7.2.4.8	ReadCube3DPhysicalCellValuesByAxisIndex.....	92
7.2.5	Semantics for Cube4DCharacteristic.....	93
7.2.5.1	GetCube4DAxisUnit.....	93
7.2.5.2	GetCube4DCellValueUnit	94
7.2.5.3	ReadCube4DECUAxisValues	94
7.2.5.4	ReadCube4DECUCellValueByAxisValue.....	95
7.2.5.5	ReadCube4DECUCellValuesByAxisIndex	96
7.2.5.6	ReadCube4DPhysicalAxisValues	97
7.2.5.7	ReadCube4DPhysicalCellValueByAxisValue	98
7.2.5.8	ReadCube4DPhysicalCellValuesByAxisIndex.....	99
7.2.6	Semantics for Cube5DCharacteristic.....	100
7.2.6.1	GetCube5DAxisUnit.....	100
7.2.6.2	GetCube5DCellValueUnit	101
7.2.6.3	ReadCube5DECUAxisValues	101
7.2.6.4	ReadCube5DECUCellValueByAxisValue.....	102
7.2.6.5	ReadCube5DECUCellValuesByAxisIndex	103
7.2.6.6	ReadCube5DPhysicalAxisValues	105
7.2.6.7	ReadCube5DPhysicalCellValueByAxisValue	106
7.2.6.8	ReadCube5DPhysicalCellValuesByAxisIndex.....	107
7.2.7	Semantics for CurveCharacteristic	109
7.2.7.1	GetCurveAxisUnit	109
7.2.7.2	GetCurveCellValueUnit.....	109
7.2.7.3	ReadCurveECUAxisValues.....	110
7.2.7.4	ReadCurveECUCellValueByAxisValue	110
7.2.7.5	ReadCurveECUCellValuesByAxisIndex.....	111
7.2.7.6	ReadCurvePhysicalAxisValues	112
7.2.7.7	ReadCurvePhysicalCellValueByAxisValue.....	112
7.2.7.8	ReadCurvePhysicalCellValuesByAxisIndex	113
7.2.8	Semantics for ECUValue.....	114
7.2.8.1	GetECUValueAsFloat	114
7.2.8.2	GetECUValueAsInteger	114
7.2.8.3	GetECUValueDataType	115
7.2.9	Semantics for ECUValues.....	115
7.2.9.1	GetECUValuesAsListOfFloat	115
7.2.9.2	GetECUValuesAsListOfInteger	116
7.2.10	Semantics for MapCharacteristic.....	117
7.2.10.1	GetMapAxisUnit.....	117
7.2.10.2	GetMapCellValueUnit	117
7.2.10.3	ReadMapECUAxisValues	118
7.2.10.4	ReadMapECUCellValueByAxisValue.....	119
7.2.10.5	ReadMapECUCellValuesByAxisIndex	120
7.2.10.6	ReadMapPhysicalAxisValues.....	121
7.2.10.7	ReadMapPhysicalCellValueByAxisValue	122
7.2.10.8	ReadMapPhysicalCellValuesByAxisIndex.....	123
7.2.11	Semantics for PhysicalValue	124
7.2.11.1	GetPhysicalValueAsFloat.....	124
7.2.11.2	GetPhysicalValueAsString	124
7.2.11.3	GetPhysicalValueDataType	125

7.2.12	Semantics for PhysicalValues	125
7.2.12.1	GetPhysicalValuesAsListOfFloat.....	125
7.2.12.2	GetPhysicalValuesAsListOfString	126
7.2.13	Semantics for ScalarCharacteristic	126
7.2.13.1	GetScalarCellValueUnit	126
7.2.13.2	ReadScalarECUCellValue	127
7.2.13.3	ReadScalarPhysicalCellValue.....	127
7.2.14	Semantics for ValueBlockCharacteristic.....	128
7.2.14.1	GetValueBlockCellUnit.....	128
7.2.14.2	ReadValueBlockECUCellValues	129
7.2.14.3	ReadValueBlockPhysicalCellValues	130
8	otxIFD_CalibWrite	131
8.1	Introduction	131
8.2	Actions	131
8.2.1	Overview.....	131
8.2.2	Semantics for Comfort Set Functions.....	131
8.2.2.1	WriteCharacteristicECUFloatValue	131
8.2.2.2	WriteCharacteristicECUFloatValues.....	133
8.2.2.3	WriteCharacteristicECUIntValue	136
8.2.2.4	WriteCharacteristicECUIntValues	138
8.2.2.5	WriteCharacteristicPhysicalFloatValue.....	141
8.2.2.6	WriteCharacteristicPhysicalFloatValues.....	143
8.2.2.7	WriteCharacteristicPhysicalStringValue	146
8.2.2.8	WriteCharacteristicPhysicalStringValue	148
9	otxIFD_CalibExpertWrite	151
9.1	Introduction	151
9.2	Actions	151
9.2.1	Overview.....	151
9.2.2	Semantics for AsciiCharacteristic	151
9.2.2.1	WriteAsciiECUCellValues	151
9.2.2.2	WriteAsciiPhysicalCellValue	152
9.2.3	Semantics for AxisCharacteristic.....	152
9.2.3.1	WriteAxisECUValues	152
9.2.3.2	WriteAxisPhysicalValues.....	154
9.2.4	Semantics for Cube3DCharacteristic.....	155
9.2.4.1	WriteCube3DECUAxisValues	155
9.2.4.2	WriteCube3DECUCellValueByAxisValue	156
9.2.4.3	WriteCube3DECUCellValuesByAxisIndex	157
9.2.4.4	WriteCube3DPhysicalAxisValues.....	159
9.2.4.5	WriteCube3DPhysicalCellValueByAxisValue	160
9.2.4.6	WriteCube3DPhysicalCellValuesByAxisIndex	161
9.2.5	Semantics for Cube4DCharacteristic.....	163
9.2.5.1	WriteCube4DECUAxisValues	163
9.2.5.2	WriteCube4DECUCellValueByAxisValue	164
9.2.5.3	WriteCube4DECUCellValuesByAxisIndex	165
9.2.5.4	WriteCube4DPhysicalAxisValues.....	167
9.2.5.5	WriteCube4DPhysicalCellValueByAxisValue	168
9.2.5.6	WriteCube4DPhysicalCellValuesByAxisIndex	169
9.2.6	Semantics for Cube5DCharacteristic.....	171

9.2.6.1	WriteCube5DECUAxisValues	171
9.2.6.2	WriteCube5DECUCellValueByAxisValue	172
9.2.6.3	WriteCube5DECUCellValuesByAxisIndex	173
9.2.6.4	WriteCube5DPhysicalAxisValues	176
9.2.6.5	WriteCube5DPhysicalCellValueByAxisValue	177
9.2.6.6	WriteCube5DPhysicalCellValuesByAxisIndex	178
9.2.7	Semantics for CurveCharacteristic	181
9.2.7.1	WriteCurveECUAxisValues	181
9.2.7.2	WriteCurveECUCellValueByAxisValue	182
9.2.7.3	WriteCurveECUCellValuesByAxisIndex	183
9.2.7.4	WriteCurvePhysicalAxisValues	184
9.2.7.5	WriteCurvePhysicalCellValueByAxisValue	185
9.2.7.6	WriteCurvePhysicalCellValuesByAxisIndex	186
9.2.8	Semantics for ECUValue	187
9.2.8.1	SetECUValueAsFloat	187
9.2.8.2	SetECUValueAsInteger	187
9.2.9	Semantics for ECUValues	188
9.2.9.1	SetECUValuesAsListOfFloat	188
9.2.9.2	SetECUValuesAsListOfInteger	189
9.2.10	Semantics for MapCharacteristic	190
9.2.10.1	WriteMapECUAxisValues	190
9.2.10.2	WriteMapECUCellValueByAxisValue	191
9.2.10.3	WriteMapECUCellValuesByAxisIndex	192
9.2.10.4	WriteMapPhysicalAxisValues	194
9.2.10.5	WriteMapPhysicalCellValueByAxisValue	195
9.2.10.6	WriteMapPhysicalCellValuesByAxisIndex	196
9.2.11	Semantics for PhysicalValue	198
9.2.11.1	SetPhysicalValueAsFloat	198
9.2.11.2	SetPhysicalValueAsString	198
9.2.12	Semantics for PhysicalValues	199
9.2.12.1	SetPhysicalValuesAsListOfFloat	199
9.2.12.2	SetPhysicalValuesAsListOfString	200
9.2.13	Semantics for ScalarCharacteristic	201
9.2.13.1	WriteScalarECUCellValue	201
9.2.13.2	WriteScalarPhysicalCellValue	202
9.2.14	Semantics for ValueBlockCharacteristic	203
9.2.14.1	WriteValueBlockECUCellValues	203
9.2.14.2	WriteValueBlockPhysicalCellValues	205
10	otxIFD_MCShared	207
10.1	Introduction	207
10.2	Datatypes	207
10.2.1	Overview	207
10.2.2	Semantics	207
10.2.2.1	AxisDescriptionAttribute	207
10.2.2.2	AxisSelector	207
10.2.2.3	Characteristic	207
10.2.2.4	CharacteristicType	208
10.2.2.5	Dimension	208
10.2.2.6	ECUDataType	208
10.2.2.7	ECUValue	208
10.2.2.8	ErrorCodes	208

10.2.2.9	CharacteristicIdentifier	209
10.2.2.10	DbCharacteristicIdentifier	209
10.2.2.11	MeasurementIdentifier	209
10.2.2.12	Monotony	209
10.2.2.13	PhysicalDataType	209
10.2.2.14	PhysicalValue	210
10.2.2.15	ValueType.....	210
10.3	Enumerations	210
10.3.1	Overview	210
10.3.2	Semantics	210
10.3.2.1	AxisDescriptionAttributeEnum	210
10.3.2.2	AxisSelectorEnum	211
10.3.2.3	CharacteristicTypeEnum	211
10.3.2.4	ECUDataTypeEnum	211
10.3.2.5	ErrorCodesEnum	212
10.3.2.6	MonotonyEnum	213
10.3.2.7	PhysicalDataTypeEnum	213
10.3.2.8	ValueTypeEnum	213
10.3.2.9	DimensionEnum	214
10.4	Exceptions	214
10.4.1	Overview	214
10.4.2	Semantics	214
10.4.2.1	ParameterizationException	214
10.4.2.2	ProgramViolationException	214
10.5	Variable access	214
10.5.1	Overview	214
10.5.2	Semantics	214
10.6	Terms	215
10.6.1	Overview	215
10.6.2	Semantics for Enumeration Terms	215
10.6.2.1	AxisDescriptionAttributeLiteral	215
10.6.2.2	AxisDescriptionAttributeTerm	215
10.6.2.3	AxisDescriptionAttributeValue	216
10.6.2.4	AxisSelectorLiteral	216
10.6.2.5	AxisSelectorTerm	217
10.6.2.6	AxisSelectorValue	217
10.6.2.7	CharacteristicTypeLiteral	218
10.6.2.8	CharacteristicTypeTerm	218
10.6.2.9	CharacteristicTypeValue	219
10.6.2.10	DimensionLiteral	219
10.6.2.11	DimensionTerm	220
10.6.2.12	DimensionValue	220
10.6.2.13	ECUDataTypeLiteral	221
10.6.2.14	ECUDataTypeTerm	221
10.6.2.15	ECUDataTypeValue	222
10.6.2.16	ErrorCodesLiteral	222
10.6.2.17	ErrorCodesTerm	223
10.6.2.18	ErrorCodesValue	223
10.6.2.19	GetExceptionErrorCode	224
10.6.2.20	MonotonyLiteral	224
10.6.2.21	MonotonyTerm	224
10.6.2.22	MonotonyValue	225

10.6.2.23	PhysicalDataTypeLiteral	225
10.6.2.24	PhysicalDataTypeTerm	226
10.6.2.25	PhysicalDataTypeValue	226
10.6.2.26	ValueTypeLiteral	227
10.6.2.27	ValueTypeTerm	227
10.6.2.28	ValueTypeValue	228
10.6.3	Semantics for ObjectFactory	229
10.6.3.1	CreateAsciiCharacteristic	229
10.6.3.2	CreateAxisCharacteristic	229
10.6.3.3	CreateCharacteristicIdentifier	230
10.6.3.4	CreateCube3DCharacteristic	231
10.6.3.5	CreateCube4DCharacteristic	232
10.6.3.6	CreateCube5DCharacteristic	234
10.6.3.7	CreateCurveCharacteristic	236
10.6.3.8	CreateDbCharacteristicIdentifier	237
10.6.3.9	CreateECUValueByFloat	237
10.6.3.10	CreateECUValueByInteger	238
10.6.3.11	CreateECUValuesByFloat	238
10.6.3.12	CreateECUValuesByInteger	239
10.6.3.13	CreateMapCharacteristic	240
10.6.3.14	CreateMeasurementIdentifier	241
10.6.3.15	CreatePhysicalValueByFloat	241
10.6.3.16	CreatePhysicalValueByString	242
10.6.3.17	CreatePhysicalValuesByFloat	242
10.6.3.18	CreatePhysicalValuesByString	243
10.6.3.19	CreateScalarCharacteristic	243
10.6.3.20	CreateValueBlockCharacteristic	244
10.6.4	Semantics for Shared Datatypes	245
10.6.4.1	CharacteristicIdentifierLiteral	245
10.6.4.2	CharacteristicIdentifierTerm	246
10.6.4.3	CharacteristicIdentifierValue	246
10.6.4.4	CharacteristicTerm	247
10.6.4.5	CharacteristicValue	247
10.6.4.6	DbCharacteristicIdentifierLiteral	248
10.6.4.7	DbCharacteristicIdentifierTerm	248
10.6.4.8	DbCharacteristicIdentifierValue	249
10.6.4.9	ECUValueTerm	249
10.6.4.10	ECUValueValue	250
10.6.4.11	MeasurementIdentifierLiteral	251
10.6.4.12	MeasurementIdentifierTerm	251
10.6.4.13	MeasurementIdentifierValue	252
10.6.4.14	PhysicalValueTerm	252
10.6.4.15	PhysicalValueValue	253
11	otxIFD_CalibCheck	254
11.1	Introduction	254
11.2	Datatypes	254
11.2.1	Overview	254
11.2.2	Semantics	254
11.2.2.1	CompareRelation	254
11.2.2.2	UnitCompare	255
11.3	Enumerations	255

11.3.1 Overview.....	255
11.3.2 Semantics.....	255
11.3.2.1 CompareRelationEnum.....	255
11.3.2.2 UnitCompareEnum	255
11.4 Variable access	255
11.4.1 Overview.....	255
11.4.2 Semantics.....	256
11.5 Terms	256
11.5.1 Overview.....	256
11.5.2 Semantics for CalibCheck.....	257
11.5.2.1 CheckCharacteristicECUValue	257
11.5.2.2 CheckCharacteristicPhysicalValue.....	259
11.5.2.3 CheckECUValues	261
11.5.2.4 CheckFloatValues.....	262
11.5.2.5 CheckPhysicalValues	263
11.5.2.6 CompareCharacteristicECUValue	264
11.5.2.7 CompareCharacteristicPhysicalValue	265
11.5.2.8 CompareECUValues.....	266
11.5.2.9 ComparePhysicalValues	267
11.5.2.10 IsCharacteristicECUValueInRange	268
11.5.2.11 IsCharacteristicPhysicalValueInRange.....	270
11.5.2.12 IsEqualPhysicalCharacteristic	272
11.5.2.13 IsEqualPhysicalCharacteristicWithInterpolation	274
11.5.2.14 IsEqualString	276
11.5.3 Semantics for Enumeration Terms	277
11.5.3.1 CompareRelationLiteral	277
11.5.3.2 CompareRelationValue	277
11.5.3.3 UnitCompareLiteral	278
11.5.3.4 UnitCompareTerm	278
11.5.3.5 UnitCompareValue.....	279
11.5.4 Semantics.....	279
11.5.4.1 CompareRelationTerm.....	279
12 Terms and Definitions	280
13 Bibliography	281
Appendix: A. Reading and Writing of Characteristics	282
A.1. Example data	282
A.2. Value Access in case of CalibReadTerms and CalibWriteActions.....	282
A.2.1. Single Value.....	282
A.2.2. Multiple Values.....	283
A.3. Value Access in case of CalibExpertReadTerms and CalibExpertWriteActions (example Map)	283
A.4. Value Order	284
Appendix: B. CalibCheck Handling	287
B.1. Interpolation Legend explanation	287
B.2. Example Curve	287

B.2.1. Start values:.....	287
B.2.2. Interpolated values:.....	287
B.2.3. Algorithm description:.....	288
B.3. Example map	288
B.3.1. Start values:.....	288
B.3.2. Interpolated values:.....	288
B.3.3. Algorithm explanation:.....	289
B.4. CalibCheck Operation Overview	290
Figure Directory	295
Table Directory	296

Foreword

The standard describes common extensions, which are used in the domain of

- CPX (Calibration process exchange format) and
- CERP (Calibration expert system rule and product model format)

ASAM MCD-2 CERP defines an exchange format to formalize calibration expert knowledge. This expert knowledge is used to automate calibration tasks and quality assurance. The data format is standardized and exchangeable to support various tool chains in collaborating companies.

ASAM MCD-2 CPX defines a vendor independent exchange format of calibration process descriptions. These descriptions are used for state machine & flow chart workflows and calibration & measurement activities.

For each of these standards an independent reference guide is available. This document is also a reference guide. This reference guide describes such extensions in detail. The content is equivalent to the UML model and the xsd file for each extension. As base of the contained extensions OTX is used ([1], [2]). OTX itself uses a functional extension concept.

OTX (Open test sequence exchange format) is a DSL (Domain Specific Language) to describe test and automation sequences which can be exchanged as standardized XML format between different suppliers. This ensures long time availability, independent from runtime system and platform. OTX is extensible with libraries in a standardized way for different areas. Besides the XML exchange format for the formal description of test logic and automation sequences, other representations like textual or graphical representations can be used.

OTX is targeted primarily at the automotive industry, although the core features of the standard are applicable in any industry. Such test sequences are used in development, production and after sales and can be exchanged between vehicle manufacturers, Tier 1 suppliers and tool providers.