

# DIN EN ISO 19148:2012-06 (E)

## Geographic information - Linear referencing (ISO 19148:2012); English version EN ISO 19148:2012

---

Inhalt	Seite
Foreword .....	5
Introduction.....	6
1 Scope .....	8
2 Conformance .....	8
2.1 Conformance overview .....	8
2.2 Conformance classes .....	8
2.2.1 General .....	8
2.2.2 Data type conformance.....	8
2.2.3 Operation conformance.....	9
3 Normative references .....	9
4 Terms and definitions .....	10
5 Abbreviated terms .....	13
6 Linear referencing .....	13
6.1 Introduction.....	13
6.1.1 Linear referencing concepts .....	13
6.1.2 Linear referencing packages.....	23
6.2 Package: Linear Referencing System .....	24
6.2.1 Semantics.....	24
6.2.2 LR_PositionExpression .....	25
6.2.3 LR_LinearElement.....	26
6.2.4 LR_LinearElementType.....	27
6.2.5 LR_Feature .....	28
6.2.6 LR_Curve.....	29
6.2.7 LR_DirectedEdge.....	29
6.2.8 LR_ILinearElement .....	30
6.2.9 LR_ISpatial .....	31
6.2.10 LR_LinearReferencingMethod .....	33
6.2.11 LR_LRMType.....	34
6.2.12 LR_DistanceExpression .....	34
6.2.13 LR_AlongReferent .....	35
6.2.14 LR_Referent .....	35
6.2.15 LR_ReferentType.....	37
6.3 Package: Linear Referencing Towards Referent .....	38
6.3.1 Semantics.....	38
6.3.2 LRTR_LRMWithTowardsReferent.....	38
6.3.3 LRTR_DualAlongReferent .....	39
6.4 Package: Linear Referencing Offset.....	40
6.4.1 Semantics.....	40
6.4.2 LRO_LRMWithOffset.....	41
6.4.3 LRO_LateralOffsetDirection .....	42
6.4.4 LRO_VerticalOffsetDirection.....	42
6.4.5 LRO_LateralOffsetDistanceExpression .....	42
6.4.6 LRO_LateralOffsetExpression .....	43
6.4.7 LRO_LateralOffsetReferent .....	44
6.4.8 LRO_VerticalOffsetExpression .....	45
6.4.9 LRO_VerticalOffsetReferent.....	46
6.5 Package: Linear Referencing Offset Vector .....	46

6.5.1	Semantics .....	46
6.5.2	LROV_VectorOffsetDistanceExpression.....	47
6.5.3	LROV_VectorOffsetExpression.....	47
6.6	Package: Linearly Located Event.....	48
6.6.1	Semantics .....	48
6.6.2	Linearly located event.....	49
6.6.3	LE_Feature .....	50
6.6.4	LE_Event.....	50
6.6.5	LE_EventLocation.....	52
6.6.6	LE_AtLocation.....	52
6.6.7	LE_FromToLocation.....	53
6.6.8	LE_EventTime .....	53
6.6.9	LE_EventInstant.....	54
6.6.10	LE_EventPeriod .....	54
6.7	Package: Linear Segmentation .....	54
6.7.1	Semantics .....	54
6.7.2	LS_SegmentableFeature.....	56
6.7.3	LS_LinearSegmentSet.....	57
6.7.4	LS_LinearSegment .....	58
Annex A	(normative) Abstract test suite.....	59
A.1	Data types .....	59
A.1.1	Data types for Linear Referencing System .....	59
A.1.2	Data types for Linear Referencing Towards Referent.....	59
A.1.3	Data types for Linear Referencing Offset.....	59
A.1.4	Data types for Linear Referencing Offset Vector .....	60
A.1.5	Data types for Linearly Located Event .....	60
A.1.6	Data types for Linear segmentation.....	60
A.2	Operations .....	61
A.2.1	Operations for Linear Referencing System .....	61
A.2.2	Operations for Linear Referencing Towards Referent.....	61
A.2.3	Operations for Linear Referencing Offset.....	61
A.2.4	Operations for Linear Referencing Offset Vector.....	61
A.2.5	Operations for Linearly Located Event .....	62
A.2.6	Operations for Linear segmentation.....	62
Annex B	(informative) Generalized model for linear referencing.....	63
B.1	Introduction .....	63
B.2	Location expression.....	64
B.3	Linear element.....	64
B.4	Linear referencing method .....	64
B.5	Distance expression .....	65
B.6	Offset expression.....	65
B.7	Translation.....	65
Annex C	(informative) Commonly used linear referencing methods and models .....	66
C.1	Introduction .....	66
C.2	Absolute linear referencing methods .....	66
C.2.1	General.....	66
C.2.2	Milepoint .....	66
C.2.3	True mileage.....	68
C.2.4	Kilometre-point .....	68
C.2.5	Chainage.....	68
C.2.6	Hectometre-point .....	68
C.2.7	Reverse milepoint and kilopoint .....	68
C.2.8	Link offset.....	68
C.2.9	Milepoint with lateral offsets in feet.....	68
C.3	Relative linear referencing methods.....	70
C.3.1	General.....	70
C.3.2	Milepost .....	71
C.3.3	Kilopost.....	72
C.3.4	Kilometre-post.....	73
C.3.5	Reference post.....	73

<b>C.3.6</b>	<b>County milepoint .....</b>	<b>73</b>
<b>C.3.7</b>	<b>Cross street.....</b>	<b>75</b>
<b>C.3.8</b>	<b>Control section .....</b>	<b>77</b>
<b>C.4</b>	<b>Interpolative linear referencing methods.....</b>	<b>79</b>
<b>C.4.1</b>	<b>General .....</b>	<b>79</b>
<b>C.4.2</b>	<b>Percentage .....</b>	<b>79</b>
<b>C.4.3</b>	<b>Normalized .....</b>	<b>81</b>
<b>C.5</b>	<b>Other linear referencing information.....</b>	<b>81</b>
<b>C.5.1</b>	<b>NCHRP 20-27(2) model.....</b>	<b>81</b>
<b>C.5.2</b>	<b>Cross-sectional positioning .....</b>	<b>84</b>
<b>Annex D</b>	<b>(informative) Event and segmentation examples.....</b>	<b>86</b>
<b>D.1</b>	<b>Linearly located feature event example .....</b>	<b>86</b>
<b>D.2</b>	<b>Linearly located attribute event example.....</b>	<b>88</b>
<b>D.3</b>	<b>Linear segmentation example.....</b>	<b>90</b>
<b>Bibliography</b>	<b>.....</b>	<b>93</b>