



EULYNX Initiative



Europe's Rail Joint Undertaking

Interface specification SDI-LC

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ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 3.2 (0.A) > V 3.0 (0.A)
Eu.SDI-LC.1	Head	1 Introduction										
Eu.SDI-LC.2	Head	1.1 Release information										
Eu.SDI-LC.3	Info	[Eu.Doc.110] Interface specification SDI-LC CENELEC Phase: 5 Version: 3.2 (0.A) Approval date: 29.05.2024										Object Text: [Eu.Doc.110] Interface specification SDI-LC CENELEC Phase: 5 Version: 3.02 (0.A) Approval date: 1529.0605.2023-2024
Eu.SDI-LC.4	Info	Version history										
Eu.SDI-LC.195	Info	version number: 2.0 (0.A) date: 16.05.2022 author: Philipp Wolber review: CCB changes: -										
Eu.SDI-LC.196	Info	version number: 2.1 (0.A) date: 08.06.2023 author: SDI task force review: changes: EULX-534, EULX-550, EULX-559										
Eu.SDI-LC.206	Info	version number: 3.0 (0.A) date: 27.06.2023 author: SDI task force review: TACS Mirror Group changes: EULX-560, EULX-563, EULX-564										
Eu.SDI-LC.343	Info	version number: 3.1 (0.A) date: 30.04.2024 author: SDI task force review: cluster changes: EULX-583, EULX-611, EULX-621, EULX-622, EULX-624, EULX-625										object created after baseline 3.0 (0.A)
Eu.SDI-LC.360	Info	version number: 3.2 (0.A) date: 20.06.2024 author: SDI task force review: TACS Mirror Group changes: EULX-619, EULX-639, EULX-640										object created after baseline 3.0 (0.A)
Eu.SDI-LC.6	Head	1.2 Impressum										
Eu.SDI-LC.7	Info	Publishers: Europe's Rail Joint Undertaking https://rail-research.europa.eu EULYNX Initiative https://eulynx.eu/									EULX-619	Object Text: Publishers: Europe's Rail Joint Undertaking https://rail-research.europa.eu EULYNX Initiative A full list of the EULYNX Partners can be found on www.https://eulynx.eu/index.php/members a_JIRA_Ticket_BL4_R3: EULX-619
Eu.SDI-LC.8	Info	Responsible for this document: EU-Rail System Pillar Trackside Assets Control and Supervision domain										
Eu.SDI-LC.9	Info	This document is drafted by and belongs to EU Rail. EU Rail encourages the distribution and re-use of this document, the technical specifications and the information it contains. EU Rail holds several intellectual property rights, such as copyright and trade mark rights, which need to be considered when this document is used. EU Rail authorizes you to re-publish, re-use, copy and store this document without changing it, provided that you indicate its source and include the following mention [EU Rail trade mark, title of the document, year of publication, version of document]. EU Rail makes no representation or warranty as to the accuracy or completeness of the information contained within these documents. EU Rail shall have no liability to any party as a result of the use of the information contained herein. EU Rail will have no liability whatsoever for any indirect or consequential loss or damage, and any such liability is expressly excluded. You may study, research, implement, adapt, improve and otherwise use the information, the content and the models in this document for your own purposes. If you decide to publish or disclose any adapted, modified or improved version of this document, any amended implementation or derivative work, then you must indicate that you have modified this document, with a reference to the document name and the terms of use of this document. You may not use EU Rail's trade marks or name in any way that may state or suggest, directly or indirectly, that EU Rail is the author of your adaptations. EU Rail cannot be held responsible for your product, even if you have used this document and its content. It is your responsibility to verify the quality, completeness and the accuracy of the information you use, for your own purposes.									EULX-619 Object Text: Copyright <u>This EULYNX document Partners is drafted by and belongs to EU Rail.</u> All <u>EU Rail encourages the distribution and re-use of this document, the technical specifications and the information included it or contains, disclosed</u> <u>EU in Rail holds several intellectual property rights, such as copyright and trade mark rights, which need to be considered when this document is licensed used.</u> <u>EU under</u> <u>Rail authorizes you to re-publish, re-use, copy and store this document without changing it, provided that you indicate its source and include the European following Union mention Public</u> <u>EU</u>	

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Eu.SDI-LC.19	Info	The current versions of documents used as input or related to this document are listed in the EULYNX Documentation Plan [Eu.Doc.11]. The relationships between the documents are displayed in the Appendix A1 Documentation plan and structure [Eu.Doc.11_A1].										
Eu.SDI-LC.20	Head	1.6 Appendices										
Eu.SDI-LC.21	Info	- <i>intentionally left blank</i> -										
Eu.SDI-LC.22	Head	1.7 Terms and abbreviations										
Eu.SDI-LC.23	Info	The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].										
Eu.SDI-LC.24	Head	1.8 Variability management										
Eu.SDI-LC.25	Info	This document describes harmonised requirements. Variability management is not applicable.										
Eu.SDI-LC.26	Head	1.9 Definition of object types										
Eu.SDI-LC.27	Info	The following definition for object types is applied in this document:										
Eu.SDI-LC.28	Info	<ul style="list-style-type: none">"Req" - This denotes a mandatory requirement.										
Eu.SDI-LC.29	Info	<ul style="list-style-type: none">"Info" - This denotes additional information to help understand the specification. These objects do not specify any additional requirements.										
Eu.SDI-LC.30	Info	<ul style="list-style-type: none">"Head" - This denotes chapter headings.										
Eu.SDI-LC.31	Head	2 Telegram SDI										
Eu.SDI-LC.194	Req	All references to [Eu.Doc.94] refer to Interface specification SDI Generic version 4.2 (0.A).								Basic LC	EULX-611	Object Text: All references to [Eu.Doc.94] refer to Interface specification SDI Generic version 4. 0 2 (0.A). a_JIRA_Ticket_BL4_R3: EULX-611
Eu.SDI-LC.32	Info	This chapter defines the diagnostic messages - specifically the data points and values applied in the SDI-LC telegrams. The generic data points are defined in [Eu.Doc.94].								Basic LC	EULX-611	Object Text: This chapter defines the diagnostic messages - specifically the data points and values applied in the SDI-LC telegrams. The generic data points are defined in [Eu.Doc.94] . a_JIRA_Ticket_BL4_R3: EULX-611
Eu.SDI-LC.190	Info	The defined diagnostic messages are mandatory only when the physical interfaces related to the specific diagnostic message are available on the Subsystem – Level Crossing.								Basic LC		
Eu.SDI-LC.198	Head	2.1 Definition of columns										
Eu.SDI-LC.199	Info	Model Type: Column that marks whether an entry is a model class (Class), a diagnostic data point (Attribute), an enumeration header (ValueType (Enumeration)) or an enumeration value (Enumeration Literal).								Basic LC		
Eu.SDI-LC.200	Info	Data Type: Column that indicates the data type for the diagnostic data points. Enumeration values are defined in the section 'Enumeration'.								Basic LC		
Eu.SDI-LC.201	Info	Trigger: Column that indicates the precision of data that shall be provided by the back-end to the OPC UA server on a subsystem. It represents the minimum level of change of the measures or reported value that shall trigger an update of the data point on the OPC UA server. For discrete data types (Boolean, enumeration, string), any change shall trigger an update on the OPC UA server. This is expressed as 'current value' in the column. For data that is part of an event class, the value 'on event' is used.								Basic LC	EULX-639	Object Text: Event/Timepoint Trigger: Column that indicates the trigger precision events of data that shall be provided by the back-end to send the OPC UA server on a diagnostics subsystem. It represents the minimum level of change of the measures or reported value that shall trigger an update of the data point on the OPC UA server. For discrete data types (Boolean, enumeration, string), any change shall trigger an update on the OPC UA server. This is expressed as 'current value' in the column. For data that is part of an event class, the value 'on event' is used. a_JIRA_Ticket_BL4_R3: EULX-639
Eu.SDI-LC.202	Info	Attribute Type: Column that indicates the type of diagnostic information contained in the data point. Values are: raw data: uninterpreted data that is measured. diagnosis: an attribute with discrete values (enumeration or Boolean) that interprets the								Basic LC	EULX-639	Object Text: Attribute Type: Column that indicates the type of diagnostic information contained in the

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 3.2 (0.A) > V 3.0 (0.A)
		status of a system. There must be a table that directly links diagnostic enumeration values to statusTechnical values of that system. configuration: data that is not measured but often set by the manufacturer or operator; it describes characteristics of the system. counter: diagnostic information that counts occurrences of a specific data measurement or event.										data point. <u>Values are:</u> raw data: uninterpreted data that is measured. diagnosis: an attribute with discrete values (enumeration or boolean Boolean) that interprets the status of a system. There must be a table that directly links diagnostic enumeration values to statusTechnical values of that system. configuration: data that is not measured but often set by the manufacturer or operator; it describes characteristics of the system. <u>counter: diagnostic information that counts occurrences of a specific data measurement or event.</u> a_JIRA_Ticket_BL4_R3: EULX-639
Eu.SDI-LC.359	Info	Sampling: Column that indicates the required sampling interval of the data point, that is how often the OPC UA Server determines the values for an attribute, provided by the back-end. Value in milliseconds.								Basic LC		object created after baseline 3.0 (0.A)
Eu.SDI-LC.203	Info	Optionality: Column that indicates whether a diagnostic data point is mandatory inside the model class, or optional. The diagnostic data of optional attributes may be required by national specifications. If an equipment or subsystem has the capability to collect and report the related diagnostic data, it must be reported in this data point. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.								Basic LC		Object Text: Optionality-: Column that indicates whether a diagnostic data point is is mandatory inside the model class- (+) , or optional- (0..1) . The diagnostic data of optional attributes may be required by national specifications. If an equipment or subsystem has the capability to collect and report the related diagnostic data, it must be reported in this data point. Note: In future phases of the System Pillar, national specifications will be replaced by harmonised specifications.
Eu.SDI-LC.344	Head	2.2 Class diagram legend										object created after baseline 3.0 (0.A)
Eu.SDI-LC.345	Info	In the class diagram, classes presented in yellow indicate classes from the generic SDI model and are covered in [Eu.Doc.94]. Classes presented in blue are specific classes and covered in corresponding SDI subsystem documents.								Basic LC	EULX-622	object created after baseline 3.0 (0.A)
Eu.SDI-LC.204	Head	2.3 Telegrams SDI-LC										
Eu.SDI-LC.207	Req	Barrier	A movable obstacle which is placed across the road to deter road traffic and pedestrians from using the level crossing.	Class						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.208	Req	barrierBoomLightStatus	Current status of boom barrier lights.	Attribute	barrierBoomLightStatus : BarrierBoomLightsStatus	Current value	diagnosis	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.210	Req	barrierStatus	Current status of the barrier.	Attribute	barrierStatus : BarrierStatus	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.211	Req	expectedPosition	Current expected position of the barrier.	Attribute	expectedPosition : BarrierExpectedPosition	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.212	Req	isUnexpectedPosition	Check if barrier is in an unexpected position.	Attribute	isUnexpectedPosition : Boolean	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.213	Req	label	It is assigned to all classes representing physically identifiable entities. This string, corresponding to a physically identifiable label, facilitates consistent reference between the physical entities in the field and their digital representations within the model.	Attribute	label : String	Current value	configuration	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.214	Req	turnCounter	Total number of times the barrier has moved up or down since the last reset.	Attribute	turnCounter : Long	Current value	counter	1000	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.215	Req	BarrierTurnEvent	Occurrence of barrier movement.	Class						Basic LC	EULX-583 EULX-639	object created after baseline 3.0 (0.A)
Eu.SDI-LC.216	Req	barrierTurnFailureReason	Information of barrier turn failure.	Attribute	barrierTurnFailureReason : BarrierTurnFailureReason	On event	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)

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Eu.SDI-LC.217	Req	expectedPosition	Expected position of the barrier at the end of the ongoing turn event.	Attribute	expectedPosition : BarrierExpectedPosition	On event	diagnosis	1000	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.218	Req	humidity	Relative humidity of the air in [%] at barrier turn time.	Attribute	humidity : Real	On event	raw data	1000	Optional	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.219	Req	isEndpositionReached	Check if barrier turn event has resulted in an end position.	Attribute	isEndpositionReached : Boolean	On event	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.220	Req	temperatureAir	Temperature of the air in [K] at barrier turn time.	Attribute	temperatureAir : Real	On event	raw data	1000	Optional	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.221	Req	turnTime	Time taken in seconds to turn barrier.	Attribute	turnTime : Real	On event	raw data	1000	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.222	Req	DetectionElement	The Detection element at the Level Crossing protection area is used to detect the passage of trains.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.223	Req	label	It is assigned to all classes representing physically identifiable entities. This string, corresponding to a physically identifiable label, facilitates consistent reference between the physical entities in the field and their digital representations within the model.	Attribute	label : String	Current value	configuration	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.225	Req	statusDetectionElement	Current status of the detection element.	Attribute	statusDetectionElement : StatusDetectionElement	Current value	diagnosis	250	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.226	Req	LevelCrossing	The class represents the Subsystem - Level Crossing.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.227	Req	functionalStatus	Current functional status of the Subsystem - Level Crossing.	Attribute	functionalStatus : FunctionalStatus	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.228	Req	label	It is assigned to all classes representing physically identifiable entities. This string, corresponding to a physically identifiable label, facilitates consistent reference between the physical entities in the field and their digital representations within the model.	Attribute	label : String	Current value	configuration	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.229	Req	statusTechnical	Indicates the generic technical status of the logical channel. Note: Enumeration values defined in Interface specification SDI Generic [Eu.Doc.94].	Attribute	statusTechnical : StatusTechnical	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.230	Req	statusTechnicalManufacturerSpecificMessage	Must be used by the supplier to describe the reasons for a StatusTechnical != OK, that cannot be explained by existing datapoints (NOT including IM and manufacturer specific diagnostic messages). This Information MUST be provided from the supplier. This should provide flexibility for future uses. Multiple states can be indicated at the same time if multiple diagnosis have not been included in the model during the design phase. The supplier specific reason may not overlap with reasons already covered in other attributes.	Attribute	statusTechnicalManufacturerSpecificMessage : MultiStateDiscreteTypeSupplier	Current value	diagnosis	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.231	Req	isClosureTimerOverrun	Indicates whether the cluster time has exceeded during the activation of the level crossing.	Attribute	isClosureTimerOverrun : Boolean	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583 EULX-625	object created after baseline 3.0 (0.A)
Eu.SDI-LC.363	Req	operationalIdentifier	Operational identifier of the connected subsystem (see Eu.SAS.1784 in [Eu.Doc.16]).	Attribute	operationalIdentifier : Byte [20]	Current value	configuration	1000	Mandatory	Basic LC	EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.232	Req	LevelCrossingProtectionFacility	All equipment at a Level Crossing protecting vehicles and persons crossing the tracks.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.233	Req	activationCounter	Total number of activations of the LCPF since installation.	Attribute	activationCounter : Long	Current value	raw data	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.234	Req	label	It is assigned to all classes representing physically identifiable entities. This string, corresponding to a physically identifiable label, facilitates consistent reference between the physical entities in the field and their digital representations within the model.	Attribute	label : String	Current value	configuration	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.235	Req	protectionfacilityStatus	Current status of the level crossing protection facility.	Attribute	protectionfacilityStatus : ProtectionFacilityStatus	Current value	raw data	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.243	Req	LogEventLocalHandover		Class						Option LOH	EULX-583 EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.244	Req	handoverCommandStatus	Logging status of the handover command.	Attribute	handoverCommandStatus : HandoverCommandStatus	Current value	diagnosis	250	Mandatory	Option LOH	EULX-583 EULX-640	object created after baseline 3.0 (0.A)

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Eu.SDI-LC.245	Req	handoverReactionStatus	Logging status of the handover reaction.	Attribute	handoverReactionStatus : HandoverReactionStatus	Current value	diagnosis	250	Mandatory	Option LOH	EULX-583 EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.246	Req	requestIndex	Index of the local request, as defined in Eu.LC.1339.	Attribute	requestIndex : Integer	Current value	configuration	1000	Mandatory	Option LOH	EULX-583 EULX-621 EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.247	Req	LogEventLocalRequest		Class						Option LOH	EULX-583 EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.248	Req	isRequestToActivate	Indicates whether the local request is a request to activate the level crossing.	Attribute	isRequestToActivate : Boolean	Current value	diagnosis	250	Mandatory	Option LOH	EULX-583 EULX-621 EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.249	Req	isRequestToDeactivate	Indicates whether the local request is a request to deactivate the level crossing.	Attribute	isRequestToDeactivate : Boolean	Current value	diagnosis	250	Mandatory	Option LOH	EULX-583 EULX-621 EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.250	Req	handoverIndex	Index of the local handover, as defined in Eu.LC.1337.	Attribute	handoverIndex : Integer	Current value	configuration	1000	Mandatory	Option LOH	EULX-583 EULX-621 EULX-640	object created after baseline 3.0 (0.A)
Eu.SDI-LC.251	Req	ObstacleDetector	The Obstacle detector informs whether the Level Crossing protection area is clear of obstacles when the Barriers are closed.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.252	Req	label	It is assigned to all classes representing physically identifiable entities. This string, corresponding to a physically identifiable label, facilitates consistent reference between the physical entities in the field and their digital representations within the model.	Attribute	label : String	Current value	configuration	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.253	Req	obstacleDetectionStatus	Current detection status of the obstacle detector.	Attribute	obstacleDetectionStatus : ObstacleDetectorStatus	Current value	diagnosis	250	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.254	Req	statusTechnical	Indicates the generic technical status of the logical channel. Note: Enumeration values defined in in Interface specification SDI Generic [Eu.Doc.94].	Attribute	statusTechnical : StatusTechnical	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.255	Req	statusTechnicalManufacturerSpecificMessage	Must be used by the supplier to describe the reasons for a StatusTechnical != OK, that cannot be explained by existing datapoints (NOT including IM and manufacturer specific diagnostic messages). This Information MUST be provided from the supplier. This should provide flexibility for future uses. Multiple states can be indicated at the same time if multiple diagnosis have not been included in the model during the design phase. The supplier specific reason may not overlap with reasons already covered in other attributes.	Attribute	statusTechnicalManufacturerSpecificMessage : MultiStateDiscreteTypeSupplier	Current value	diagnosis	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.256	Req	ObstacleDetectorOther	The obstacle detection system is of an other type (not radar).	Class						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.257	Req	ObstacleDetectorRadar	The obstacle detection system is a radar.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.258	Req	isHeatingFailure	Check if the heating of the radar obstacle detector has failed.	Attribute	isHeatingFailure : Boolean	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.259	Req	isMotorFailure	Check if the motor of the radar obstacle detector has failed.	Attribute	isMotorFailure : Boolean	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.260	Req	isOccupancyDetectionFailure	Check if the occupancy detection of the radar obstacle detector has failed.	Attribute	isOccupancyDetectionFailure : Boolean	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.261	Req	isScannerBasicPosition	Indicates whether the radar obstacle detector is in its basic position.	Attribute	isScannerBasicPosition : Boolean	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.262	Req	isScannerFailure	Check if the scanner of the radar obstacle detector has failed.	Attribute	isScannerFailure : Boolean	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.263	Req	RoadSignals	The road signal is a signal providing warning to the road users crossing the tracks.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.264	Req	label	It is assigned to all classes representing physically identifiable entities. This string, corresponding to a physically identifiable label, facilitates consistent reference between the physical entities in the field and their digital representations within the model.	Attribute	label : String	Current value	configuration	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.265	Req	WarningBell	A warning bell provides aural alerts.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)

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Eu.SDI-LC.267	Req	warningBellStatus	Current status of the warning bell.	Attribute	warningBellStatus	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.268	Req	WarningLamp	A warning lamp provides visual alerts.	Class						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.269	Req	label	It is assigned to all classes representing physically identifiable entities. This string, corresponding to a physically identifiable label, facilitates consistent reference between the physical entities in the field and their digital representations within the model.	Attribute	label : String	Current value	configuration	1000	Optional	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.270	Req	warningLampStatus	Current status of the warning lamp.	Attribute	warningLampStatus	Current value	diagnosis	1000	Mandatory	Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.271	Head	2.3.1 Enumeration								Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.272	Req	BarrierBoomLightsStatus	Enumeration: Status of the lights of the boom barrier	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.275	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.273	Req	Lit	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.274	Req	Not lit	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.276	Req	BarrierExpectedPosition	Enumeration: Expected position of the barrier	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.278	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.279	Req	Up	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.277	Req	Down	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.280	Req	BarrierStatus	Enumeration: The status of a determined Barrier	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.287	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.282	Req	BarrierDown	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.285	Req	BarrierMovingUp	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.284	Req	BarrierUp	3	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.283	Req	BarrierMovingDown	4	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.281	Req	BarrierBoomBroken	5	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.286	Req	BarrierMovementBlockedByPhysicalObstruction	6	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.288	Req	BarrierTurnFailureReason	Enumeration: Reason for barrier failure	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.290	Req	None	0	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.289	Req	NoDrivePower	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.291	Req	Other	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.299	Req	FunctionalStatus	Enumeration: Functional status of the level crossing	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 3.2 (0.A) > V 3.0 (0.A)
Eu.SDI-LC.305	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.302	Req	DeactivatingAndUnprotected	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.301	Req	ActivatedAndUnprotected	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.300	Req	ActivatedAndProtected	3	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.304	Req	PreActivated	4	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.303	Req	IsolatedLC	5	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.358	Req	DeactivatedAndIdle	6	Enumeration Literal						Basic LC	EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.306	Req	HandoverCommandStatus	Enumeration: Status of the handover command	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.310	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.309	Req	No handover	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.308	Req	Handover initiated	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.307	Req	Handover established	3	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.311	Req	HandoverReactionStatus	Enumeration: Status of the handover reaction	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.314	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.312	Req	AllowHandover	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.313	Req	ReturnHandover	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.320	Req	ObstacleDetectorStatus	Enumeration: The detection of an Obstacle of a determined Obstacle detector	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.323	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.321	Req	No obstacle	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.322	Req	Obstacle in conflict area	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.324	Req	ProtectionFacilityStatus	Enumeration: Status of the level crossing protection facility	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.327	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.326	Req	Protected	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.328	Req	Unprotected	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.325	Req	Idle	3	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.329	Req	StatusDetectionElement	Enumeration: The current status of the Level Crossing	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.331	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.332	Req	Vacant	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.330	Req	Occupied	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 3.2 (0.A) > V 3.0 (0.A)
Eu.SDI-LC.333	Req	TimeoutStatus	Enumeration: The Status of a Timeout for a moving Barrier Machine Motor	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.336	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.334	Req	NoTimeout	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.335	Req	Timeout	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.337	Req	WarningBellStatus	Enumeration	ValueType (Enumeration)						Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.340	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.338	Req	Signal1	1	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.339	Req	Signal2	2	Enumeration Literal						Basic LC	EULX-583 EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.352	Req	Off	3	Enumeration Literal						Basic LC	EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.353	Req	WarningLampStatus	Enumeration	ValueType (Enumeration)						Basic LC	EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.357	Req	Unknown	0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost	Enumeration Literal						Basic LC	EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.356	Req	On	1	Enumeration Literal						Basic LC	EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.354	Req	Flashing	2	Enumeration Literal						Basic LC	EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.355	Req	Off	3	Enumeration Literal						Basic LC	EULX-621	object created after baseline 3.0 (0.A)
Eu.SDI-LC.341	Head	2.3.2 LC Class Diagram								Basic LC	EULX-583	object created after baseline 3.0 (0.A)
Eu.SDI-LC.351	Info	In the class diagram, classes presented in yellow indicate classes from the generic SDI model and are covered in [Eu.Doc.94]. Classes presented in blue are specific classes and covered in this document.								Basic LC	EULX-611 EULX-639	object created after baseline 3.0 (0.A)
Eu.SDI-LC.342	Info	LC class diagram See Figure 1 on page 10.		Class Diagram						Basic LC	EULX-583 EULX-621 EULX-622 EULX-624	object created after baseline 3.0 (0.A)

Figure 1: From object 342 on page 9.

