



EULYNX Initiative



Europe's Rail Joint Undertaking

Interface specification SDI-TDS

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Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.1	Head	1 Introduction								
Eu.SDI-TDS.2	Head	1.1 Release information								
Eu.SDI-TDS.3	Info	[Eu.Doc.81] Interface specification SDI-TDS CENELEC Phase: 5 Version: 4.2 (0.A) Approval date: 29.05.2024								
Eu.SDI-TDS.4	Info	Version history								
Eu.SDI-TDS.538	Info	version number: 3.0 (0.A) date: 17.05.2022 author: Marie Gehrmann review: CCB changes: EUTDS-403, EUTDS-404, EUTDS-411								
Eu.SDI-TDS.540	Info	version number: 3.1 (0.A) date: 08.06.2023 author: SDI task force review: changes: EUTDS-423, EUTDS-426, EUTDS-435, EUTDS-449								
Eu.SDI-TDS.654	Info	version number: 4.0 (0.A) date: 27.06.2023 author: SDI task force review: TACS Mirror Group changes: EUTDS-460, EUTDS-462, EUTDS-465								
Eu.SDI-TDS.683	Info	version number: 4.1 (0.A) date: 03.05.2024 author: SDI task force review: cluster changes: EUTDS-469, EUTDS-472, EUTDS-473, EUTDS-474,EUTDS-476, EUTDS-478, EUTDS-479, EUTDS-482, EUTDS-510, EUTDS-516, EUTDS-517, EUTDS-518								
Eu.SDI-TDS.831	Info	version number: 4.2 (0.A) date: 20.06.2024 author: SDI task force review: TACS Mirror Group changes: EUTDS-519, EUTDS-520, EUTDS-524, EUTDS-526, EUTDS-527								
Eu.SDI-TDS.6	Head	1.2 Impressum								
Eu.SDI-TDS.7	Info	Publishers: Europe’s Rail Joint Undertaking https://rail-research.europa.eu/ EULYNX Initiative https://eulynx.eu/								
Eu.SDI-TDS.8	Info	Responsible for this document: EU-Rail System Pillar Trackside Assets Control and Supervision domain								
Eu.SDI-TDS.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.								
Eu.SDI-TDS.10	Head	1.3 Purpose								

Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.11	Info	This document specifies the diagnostic messages (data point IDs and values) as parts of the telegram contents of the standardised diagnosis interface for a communication between the Subsystem - Maintenance and Data Management and Subsystem – Train Detection System (SDI-TDS).								
Eu.SDI-TDS.78	Info	This document contains the Subsystem - Train Detection System specific diagnostic messages. The specifications defined in this document shall be complemented by the generic specification defined in Interface specification SDI Generic [Eu.Doc.94].								
Eu.SDI-TDS.80	Info	Some items, referring to "interface-related" functionality of the communication partners, have been added to this specification as information, providing an overview only. In any case these are subject to appropriate systems (national) specification.								
Eu.SDI-TDS.13	Info	This document is intended for the following users: <ul style="list-style-type: none">• safety authorities• infrastructure managers• safety assessors• signalling system suppliers• validators								
Eu.SDI-TDS.541	Info	This document is applicable for both the EU-Rail System Pillar target architecture and the EULYNX architecture. The document is delivered as a single specification fitting both the System Pillar documentation sets and the EULYNX documentation sets. EU-Rail System Pillar is the technical authority for this document.								
Eu.SDI-TDS.14	Head	1.4 Applicable standards and regulations								
Eu.SDI-TDS.15	Info	The applicable standards and regulations used in EULYNX are listed in the EULYNX Reference Document List [Eu.Doc.12].								
Eu.SDI-TDS.81	Info	The references listed in the EULYNX Reference Document List [Eu.Doc.12] shall be considered where they are indicated as being applicable to SDI in the “Applies to” column of the EULYNX Reference Document List [Eu.Doc.12].								
Eu.SDI-TDS.16	Head	1.5 Applicable documents								
Eu.SDI-TDS.17	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-TDS.18	Head	1.6 Appendices								
Eu.SDI-TDS.19	Info	- <i>intentionally left blank</i> -								
Eu.SDI-TDS.20	Head	1.7 Terms and abbreviations								
Eu.SDI-TDS.21	Info	The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].								
Eu.SDI-TDS.22	Head	1.8 Variability management								
Eu.SDI-TDS.23	Info	This document describes harmonised requirements. Variability management is not applicable.								
Eu.SDI-TDS.24	Head	1.9 Definition of object types								
Eu.SDI-TDS.25	Info	The following definition for object types is applied in this document:								
Eu.SDI-TDS.26	Info	<ul style="list-style-type: none">• "Req" - This denotes a mandatory requirement.								
Eu.SDI-TDS.27	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-TDS.28	Info	<ul style="list-style-type: none">• "Head" - This denotes chapter headings.								
Eu.SDI-TDS.30	Head	2 Telegram SDI								
Eu.SDI-TDS.534	Req	All references to [Eu.Doc.94] refer to Interface specification SDI Generic version 4.2 (0.A).								Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.31	Info	This chapter defines the diagnostic messages - specifically the data points and values applied in the SDI-TDS telegrams. The generic data points are defined in [Eu.Doc.94].								Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.536	Info	The defined diagnostic messages are mandatory only when the physical interfaces related to the specific diagnostic message are available on the Subsystem – Train Detection System.								Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.542	Head	2.1 Definition of columns								
Eu.SDI-TDS.543	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 TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.544	Info	Data Type: Column that indicates the data type for the diagnostic data points. Enumeration values are defined in the section 'Enumeration'.								Basic TDS AC Basic TDS TDP Basic TDS TC

Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.545	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 TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.546	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 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.								Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.830	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 TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.547	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 TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.684	Head	2.2 Class diagram legend								
Eu.SDI-TDS.685	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.								
Eu.SDI-TDS.34	Head	2.3 Telegrams SDI-TDS								
Eu.SDI-TDS.548	Req	DetectionDevice	Represents each instance of a physical device for track vacancy proving.	Class						Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.549	Req	isActive	True: the detection of vehicles or vehicle components is active.	Attribute	isActive : Boolean	Current value	diagnosis	1000	Mandatory	Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.550	Req	isInputSignalFailure	True: There is a fault when reading the input signal of the track vacancy proving device.	Attribute	isInputSignalFailure : Boolean	Current value	diagnosis	1000	Mandatory	Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.552	Req	statusTechnical	Indicates the generic technical status of the physical device for track vacancy proving. Note: Enumeration values defined in Interface specification SDI Generic [Eu.Doc.94].	Attribute	statusTechnical : StatusTechnical	Current value	diagnosis	1000	Mandatory	Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.553	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 TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.554	Req	DetectionDevicePunctiformPresenceDetectorLightBarrier		Class						Basic TDS TDP
Eu.SDI-TDS.555	Req	DetectionDeviceLinear		Class						Basic TDS TC
Eu.SDI-TDS.556	Req	isVehicleDetected	True: a currently detected vehicle.	Attribute	isVehicleDetected : Boolean	Current value	diagnosis	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.557	Req	DetectionDeviceLinearLoop	Vehicle sensor (loop)	Class						Basic TDS TC
Eu.SDI-TDS.558	Req	DetectionDeviceLinearTrackCircuit		Class						Basic TDS TC
Eu.SDI-TDS.769	Req	circuitConnectionStatus	Comprises information whether the trackside equipment (sender, receiver, rails) of the track circuit is connected or not.	Attribute	circuitConnectionStatus : CircuitConnectionStatus	Current value	diagnosis	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.770	Req	qualityOfTransmission	Comprises information on the transmission quality between transmitter and receiver.	Attribute	qualityOfTransmission : QualityOfTransmission	Current value	diagnosis	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.771	Req	receiverThreshold	Indicates the threshold value of the receiver of the TVPS, in the unit as defined by unitReceiverThreshold.	Attribute	receiverThreshold : Real	Current value	configuration	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.772	Req	statusReceiver	Comprises information about the current status of the receiver.	Attribute	statusReceiver : StatusReceiver	Current value	diagnosis	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.773	Req	statusTransmitter	Comprises information about the current status of the transmitter.	Attribute	statusTransmitter : StatusTransmitter	Current value	diagnosis	1000	Mandatory	Basic TDS TC

Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.774	Req	unitReceiverThreshold	Indicates the measured unit for receiver threshold.	Attribute	unitReceiverThresho Id : UnitReceiverThresho Id	Current value	configuration	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.559	Req	DetectionDeviceCountingHead	Represents the counting point used in an axle counter system.	Class						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.562	Req	counterAxlesAgainstReferenceDirection	Number of detected axles that have passed the counting point against reference direction since the last reset.	Attribute	counterAxlesAgainst ReferenceDirection : Long	Current value	counter	1000	Mandatory	Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.563	Req	counterAxlesReferenceDirection	Number of detected axles that have passed the counting point in reference direction since the last reset.	Attribute	counterAxlesReferen ceDirection : Long	Current value	counter	1000	Mandatory	Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.564	Req	counterUndefinedPattern	Number of undefined patterns that have been detected at the counting point since the last reset.	Attribute	counterUndefinedPa ttern : Long	Current value	counter	1000	Mandatory	Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.565	Req	DetectionDevicePunctiform	Represents each instance of a physical device for track vacancy proving that has a spot location.	Class						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.566	Req	index	Index of the punctiform detection device.	Attribute	index : Integer	Current value	configuration	1000	Mandatory	Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.567	Req	DetectionDevicePunctiformCountingHeadMagnetic	Represents the counting point implemented with a magnetic field.	Class						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.568	Req	driftStatus	The drift tolerance status of the magnetic counting point.	Attribute	driftStatus : DriftStatus	Current value	diagnosis	1000	Optional	Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.569	Req	isMagneticFieldFailure	True: The magnetic field of the counting head has failed (for any reason).	Attribute	isMagneticFieldFailur e : Boolean	Current value	diagnosis	1000	Mandatory	Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.570	Req	DetectionDevicePunctiformPresenceSensor	Represents the counting point implemented with a wheel sensor.	Class						Basic TDS TDP
Eu.SDI-TDS.571	Req	counterSensorActivation	Indicates the number of time the sensor is activated since the last reset.	Attribute	counterSensorActiva tion : Long	Current value	counter	1000	Mandatory	Basic TDS TDP
Eu.SDI-TDS.572	Req	TrainDetectionPoint	Represents each instance of the detection point that detects the passing of train.	Class						Basic TDS TDP
Eu.SDI-TDS.573	Req	operationalIdentifier	Operational identifier of the TDP (see Eu.SAS.1784 in [Eu.Doc.16]).	Attribute	operationalIdentifier : Byte [20]	Current value	configuration	1000	Mandatory	Basic TDS TDP
Eu.SDI-TDS.778	Req	directionOfPassing	Comprises information about the direction of passing.	Attribute	directionOfPassing : DirectionOfPassing	Current value	diagnosis	250	Mandatory	Basic TDS TDP
Eu.SDI-TDS.779	Req	passingStatus	Comprises information about the state of passing.	Attribute	passingStatus : PassingStatus	Current value	diagnosis	250	Mandatory	Basic TDS TDP
Eu.SDI-TDS.574	Req	TrainDetectionSystem	The class represents the Subsystem - Train Detection System (TDS).	Class						Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.575	Req	TvpSection	Represents each instance of a track vacancy proving section controlled by the Subsystem - TDS.	Class						Basic TDS AC Basic TDS TC
Eu.SDI-TDS.576	Req	isFailureOperational	True: Track Vacancy Proving Section has failed (operational).	Attribute	isFailureOperational : Boolean	Current value	diagnosis	1000	Mandatory	Basic TDS AC Basic TDS TC
Eu.SDI-TDS.577	Req	isFailureTechnical	True: Track Vacancy Proving Section has failed technically.	Attribute	isFailureTechnical : Boolean	Current value	diagnosis	1000	Mandatory	Basic TDS AC Basic TDS TC
Eu.SDI-TDS.578	Req	operationalIdentifier	Operational identifier of the TVPS (see Eu.SAS.1784 in [Eu.Doc.16]).	Attribute	operationalIdentifier : Byte [20]	Current value	configuration	1000	Mandatory	Basic TDS AC Basic TDS TC
Eu.SDI-TDS.580	Req	statusTechnical	Indicates the generic technical status of the track vacancy proving section. Note: Enumeration values defined in Interface specification SDI Generic [Eu.Doc.94].	Attribute	statusTechnical : StatusTechnical	Current value	diagnosis	1000	Mandatory	Basic TDS AC Basic TDS TC
Eu.SDI-TDS.581	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	statusTechnicalManu facturerSpecificMess age : MultiStateDiscreteTy peSupplier	Current value	diagnosis	1000	Optional	Basic TDS AC Basic TDS TC
Eu.SDI-TDS.582	Req	TvpSectionAxleCounter	Represents each instance of a track vacancy proving section that works with axle counters.	Class						Basic TDS AC
Eu.SDI-TDS.583	Req	fillingLevelBeforeDrfcOrFc	Number of axles in the section before the last operation of DRFC or FC. Set to 0 if no DRFC or FC operation occurred since the last reset.	Attribute	fillingLevelBeforeDrf cOrFc : Integer	Current value	diagnosis	1000	Mandatory	Basic TDS AC
Eu.SDI-TDS.584	Req	counterDrfcFc	Sum of the DRFC and FC in the track vacancy proving section since the last reset.	Attribute	counterDrfcFc : Long	Current value	counter	1000	Mandatory	Basic TDS AC
Eu.SDI-TDS.585	Req	fillingLevel	Current number of axles in the section.	Attribute	fillingLevel : Integer	Current value	diagnosis	1000	Mandatory	Basic TDS AC
Eu.SDI-TDS.655	Req	abilitytoFCStatus	Status of the ability to force clear the TVPS.	Attribute	abilitytoFCStatus : AbilityToFCStatus	Current value	diagnosis	250	Mandatory	Basic TDS AC

Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.656	Req	changeTrigger	Trigger to change the TVPS.	Attribute	changeTrigger : ChangeTrigger	Current value	diagnosis	250	Mandatory	Basic TDS AC
Eu.SDI-TDS.658	Req	occupancyStatus	Occupancy status of the TVPS.	Attribute	occupancyStatus : OccupancyStatus	Current value	diagnosis	250	Mandatory	Basic TDS AC
Eu.SDI-TDS.589	Req	TvpSectionTrackCircuit	Represents each instance of a track vacancy proving section that works with track circuits.	Class						Basic TDS TC
Eu.SDI-TDS.590	Req	POMFailureStatus	Status of the power off monitoring.	Attribute	POMFailureStatus : TvpSectionPomStatus	Current value	diagnosis	250	Optional	Basic TDS TC
Eu.SDI-TDS.591	Req	tvpSectionStatusTrackCircuit	Occupancy status of track vacancy proving section.	Attribute	tvpSectionStatusTrackCircuit : TvpSectionStatusTrackCircuit	Current value	diagnosis	250	Mandatory	Basic TDS TC
Eu.SDI-TDS.691	Req	powerSupplyStatus	Power supply status as detected by the POM.	Attribute	powerSupplyStatus : TvpSectionPowerSupplyStatus	Current value	diagnosis	250	Mandatory	Basic TDS TC
Eu.SDI-TDS.780	Req	sweepingTrainRequired	Indicates that a sweeping train is required for the TVPS due to technical reason. Note: A 'sweeping' train can be needed to improve the wheel-rail contact conditions from time to time. This attribute should be used for conditions that can be monitored by the device itself.	Attribute	sweepingTrainRequired : SweepingStatus	Current value	diagnosis	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.647	Req	LogEventTvpSectionAxleCounterCommand	Class for events that represent received commands.	Class						Basic TDS AC
Eu.SDI-TDS.648	Req	commandReceived	Type of command received from the interlocking or maintainer.	Attribute	commandReceived : TvpSectionCommandType	On event	diagnosis	250	Mandatory	Basic TDS AC
Eu.SDI-TDS.649	Req	commandTriggeredByRole	Indicates from which source the command was received.	Attribute	commandTriggeredByRole : CommandTriggeredByRole	On event	diagnosis	250	Mandatory	Basic TDS AC
Eu.SDI-TDS.650	Req	fillingLevel	Number of axles in the section when the command is received.	Attribute	fillingLevel : Integer	On event	diagnosis	250	Mandatory	Basic TDS AC
Eu.SDI-TDS.651	Req	isRejected	True: The received command has been rejected.	Attribute	isRejected : Boolean	On event	diagnosis	250	Mandatory	Basic TDS AC
Eu.SDI-TDS.652	Req	LogEventTvpSectionAxleCounterSweepingFails	Class for events that represent a failure of the sweeping process.	Class						Option FC-P/-A
Eu.SDI-TDS.653	Req	sweepingFailureReason	Indicates the reason why the sweeping process has failed.	Attribute	sweepingFailureReason : SweepingFailureReason	On event	diagnosis	250	Mandatory	Option FC-P/-A
Eu.SDI-TDS.763	Req	LogEventDetectionDeviceLinearTrackCircuitOccupancy		Class						Basic TDS TC
Eu.SDI-TDS.764	Req	measuredReceiverSignal	One-dimensional array of current/voltage values. Start event: Beginning of occupancy. End event: End of occupancy.	Attribute	measuredReceiverSignal : Real [*]	On event	raw data	50	Mandatory	Basic TDS TC
Eu.SDI-TDS.765	Req	measuredTransmitterSignal	One-dimensional array of current/voltage values. Start event: Beginning of occupancy. End event: End of occupancy.	Attribute	measuredTransmitterSignal : Real [*]	On event	raw data	50	Mandatory	Basic TDS TC
Eu.SDI-TDS.766	Req	samplingInterval	Reports the time between two measurement points for values of current through a track relay or received voltage in the receiver of the TVPS in seconds.	Attribute	samplingInterval : Real	On event	configuration	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.767	Req	unitReceiverSignal	Indicates the measured unit for receiver signal of the TVPS.	Attribute	unitReceiverSignal : UnitReceiverSignal	On event	configuration	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.768	Req	unitTransmitterSignal	Indicates the measured unit for transmitter signal of the TVPS.	Attribute	unitTransmitterSignal : UnitTransmitterSignal	On event	configuration	1000	Mandatory	Basic TDS TC
Eu.SDI-TDS.775	Req	DetectionDevicePunctiformPresenceDetectorMagnetic		Class						Basic TDS TDP
Eu.SDI-TDS.776	Req	driftStatus	The drift tolerance status of the magnetic presence detector.	Attribute	driftStatus : DriftStatus	Current value	diagnosis	1000	Mandatory	Basic TDS TDP
Eu.SDI-TDS.777	Req	isMagneticBuildUpFailure	True: The magnetic build up of the presence detector has failed (for any reason).	Attribute	isMagneticBuildUpFailure : Boolean	Current value	diagnosis	1000	Mandatory	Basic TDS TDP
Eu.SDI-TDS.592	Head	2.3.1 Enumeration								
Eu.SDI-TDS.593	Req	CommandTriggeredByRole	Enumeration: Actor that sends the command to Subsystem - TDS	ValueType (Enumeration)						Basic TDS AC
Eu.SDI-TDS.595	Req	Maintainer	1: Command is sent by the maintainer	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.594	Req	Interlocking	2: Command is sent by the interlocking	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.828	Req	Internal	3: Command is sent by an internal trigger	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.596	Req	DriftStatus	Enumeration: Deviation from the tolerance limits (calibration)	ValueType (Enumeration)						Basic TDS AC Basic TDS TDP

Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.601	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 TDS AC Basic TDS TDP
Eu.SDI-TDS.597	Req	NotOutOfTolerance	1: There is no deviation from the tolerance limits	Enumeration Literal						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.599	Req	OutOfToleranceUnspecifiedLimit	2: Deviation from the tolerance limits is unspecified	Enumeration Literal						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.598	Req	OutOfToleranceLowerLimit	3: Deviation from the lower tolerance limit	Enumeration Literal						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.600	Req	OutOfToleranceUpperLimit	4: Deviation from the upper tolerance limit	Enumeration Literal						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.692	Req	Failed	5: Calibration failed to establish tolerance limits	Enumeration Literal						Basic TDS AC Basic TDS TDP
Eu.SDI-TDS.602	Req	SweepingFailureReason	Enumeration: Cause of sweeping failure	ValueType (Enumeration)						Option FC-P/-A
Eu.SDI-TDS.604	Req	IncorrectCountOfSweepingTrain	1: Sweeping failed due to the incorrect count of sweeping train axles	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.608	Req	TimeoutExpired	2: Sweeping failed due to expiry of timeout	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.603	Req	DetectionPointNotPermittedForFC-P-AorFC-P	3: Sweeping failed as the detection point was not permitted for FC-P or FC-P-A	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.605	Req	Intentionally deleted	4: Reason for the failure of sweeping is intentionally deleted	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.606	Req	OutgoingAxleBeforeMinimumTimer	5: Sweeping failed as the last detected outgoing axle was before the minimum timer	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.607	Req	ProcessCancelled	6: Sweeping process was cancelled	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.609	Req	TvpSectionCommandType	Enumeration: Type of the command received by the TVPS	ValueType (Enumeration)						Basic TDS AC
Eu.SDI-TDS.614	Req	FC-UReceived	1	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.611	Req	FC-CReceived	2	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.612	Req	FC-P-AReceived	3	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.613	Req	FC-PReceived	4	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.610	Req	DRFC	5	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.615	Req	UpdateFillingLevel	6	Enumeration Literal						Option Update FL
Eu.SDI-TDS.616	Req	TvpSectionPomStatus	Enumeration: Status of the POM for the TVPS	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.619	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 TDS TC
Eu.SDI-TDS.618	Req	Ok	1: Status of the POM for TVPS is okay	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.617	Req	Nok	2: Status of the POM for TVPS is not okay	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.630	Req	TvpSectionStatusTrackCircuit	Enumeration: Status of the TVPS implemented with track circuit functionality	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.829	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 TDS TC
Eu.SDI-TDS.633	Req	Vacant	1: TVPS is vacant	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.631	Req	Occupied	2: TVPS is occupied	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.632	Req	TechnicallyDisturbed	3: TVPS is technically disturbed	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.659	Req	AbilityToFCStatus	Enumeration: Status of TVPS ability to force clear	ValueType (Enumeration)						Basic TDS AC
Eu.SDI-TDS.661	Req	NotAble	1: Not able to force clear TVPS	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.660	Req	Able	2: Able to force clear TVPS	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.662	Req	ChangeTrigger	Enumeration: Trigger to change TVPS	ValueType (Enumeration)						Basic TDS AC
Eu.SDI-TDS.668	Req	PassingDetected	1: Passing detected on the TVPS	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.663	Req	CommandFromEIL	2: TVPS received a command from the EIL	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.664	Req	CommandFromMaintainer	3: TVPS received a command from the Maintainer	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.669	Req	TechnicalFailure	4: Technical failure of TVPS	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.665	Req	InitialSectionState	5: TVPS is in initial section state	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.666	Req	InternalTrigger	6: Internal trigger in TVPS	Enumeration Literal						Basic TDS AC

Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.667	Req	NotApplicable	7: Change trigger is not applicable to TVPS	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.676	Req	OccupancyStatus	Enumeration: Occupancy status of TVPS	ValueType (Enumeration)						Basic TDS AC
Eu.SDI-TDS.680	Req	Vacant	1: TVPS is vacant	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.678	Req	Occupied	2: TVPS is occupied	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.677	Req	Disturbed	3: TVPS is disturbed	Enumeration Literal						Basic TDS AC
Eu.SDI-TDS.682	Req	WaitingForASweepingTrain	4: TVPS is waiting for a sweeping train	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.681	Req	WaitingForAnAcknowledgement	5: TVPS is waiting for an acknowledgement	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.679	Req	SweepingTrainDetected	6: A sweeping train is detected on the TVPS	Enumeration Literal						Option FC-P/-A
Eu.SDI-TDS.693	Req	TvpSectionPowerSupplyStatus	Enumeration: Status of the power supply for the TVPS	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.696	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 TDS TC
Eu.SDI-TDS.695	Req	Ok	1: Status of the power supply for the TVPS is okay	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.694	Req	Nok	2: Status of the power supply for the TVPS is not okay	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.781	Req	CircuitConnectionStatus	Enumeration: Status of the track circuit connection	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.785	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 TDS TC
Eu.SDI-TDS.784	Req	CircuitConnectionOk	1	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.783	Req	CircuitConnectionNokNoReason	2	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.782	Req	CircuitConnectionNokIsolatedJointBroken	3	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.786	Req	DirectionOfPassing	Enumeration: Indicate direction of passing	ValueType (Enumeration)						Basic TDS TDP
Eu.SDI-TDS.789	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 TDS TDP
Eu.SDI-TDS.788	Req	InReferenceDirection	1	Enumeration Literal						Basic TDS TDP
Eu.SDI-TDS.787	Req	AgainstReferenceDirection	2	Enumeration Literal						Basic TDS TDP
Eu.SDI-TDS.790	Req	WithoutDirection	3	Enumeration Literal						Basic TDS TDP
Eu.SDI-TDS.791	Req	PassingStatus	Enumeration: Status of passing	ValueType (Enumeration)						Basic TDS TDP
Eu.SDI-TDS.795	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 TDS TDP
Eu.SDI-TDS.793	Req	NotPassed	1	Enumeration Literal						Basic TDS TDP
Eu.SDI-TDS.794	Req	Passed	2	Enumeration Literal						Basic TDS TDP
Eu.SDI-TDS.792	Req	Disturbed	3	Enumeration Literal						Basic TDS TDP
Eu.SDI-TDS.796	Req	QualityOfTransmission	Enumeration: Comprises information on the transmission quality between transmitter and receiver.	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.799	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 TDS TC
Eu.SDI-TDS.798	Req	Ok	1: Transmission quality is okay	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.797	Req	Nok	2: Transmission quality is not okay	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.800	Req	StatusReceiver	Enumeration: Status of the receiver	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.803	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 TDS TC
Eu.SDI-TDS.802	Req	Ok	1	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.801	Req	Nok	2	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.804	Req	StatusTransmitter	Enumeration: Status of the transmitter	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.807	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 TDS TC
Eu.SDI-TDS.806	Req	Ok	1	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.805	Req	Nok	2	Enumeration Literal						Basic TDS TC

Interface specification SDI-TDS										
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.
Eu.SDI-TDS.808	Req	SweepingStatus	Enumeration: Sweeping status required state	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.812	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 TDS TC
Eu.SDI-TDS.809	Req	NoSweepingRequired	1	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.811	Req	SweepingRequired	2	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.810	Req	NotApplicable	3	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.814	Req	UnitReceiverSignal	Enumeration: Unit for receiver signal	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.817	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 TDS TC
Eu.SDI-TDS.815	Req	Current	1	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.818	Req	Voltage	2	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.816	Req	Resistance	3	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.819	Req	UnitReceiverThreshold	Enumeration: Unit for the receiver threshold	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.822	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 TDS TC
Eu.SDI-TDS.820	Req	Current	1: Current in [A]	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.823	Req	Voltage	2: Voltage in [V]	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.821	Req	Resistance	3: Resistance in [Ohm]	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.824	Req	UnitTransmitterSignal	Enumeration: Unit for the transmitter signal	ValueType (Enumeration)						Basic TDS TC
Eu.SDI-TDS.826	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 TDS TC
Eu.SDI-TDS.825	Req	Current	1	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.827	Req	Voltage	2	Enumeration Literal						Basic TDS TC
Eu.SDI-TDS.637	Head	2.3.2 TDS class diagram								
Eu.SDI-TDS.697	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 TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.639	Info	Detection Device class diagram See Figure 1 on page 9.	The class diagram represents the static structure of the detection devices of the Subsystem - Train Detection System from the point of view of diagnostics.	Class Diagram						Basic TDS AC Basic TDS TDP Basic TDS TC
Eu.SDI-TDS.638	Info	Logical Entities class diagram See Figure 2 on page 10.	The class diagram represents the static structure of the logical entities of the Subsystem - Train Detection System from the point of view of diagnostics.	Class Diagram						Basic TDS AC Basic TDS TDP Basic TDS TC

Figure 1: From object 639 on page 8.

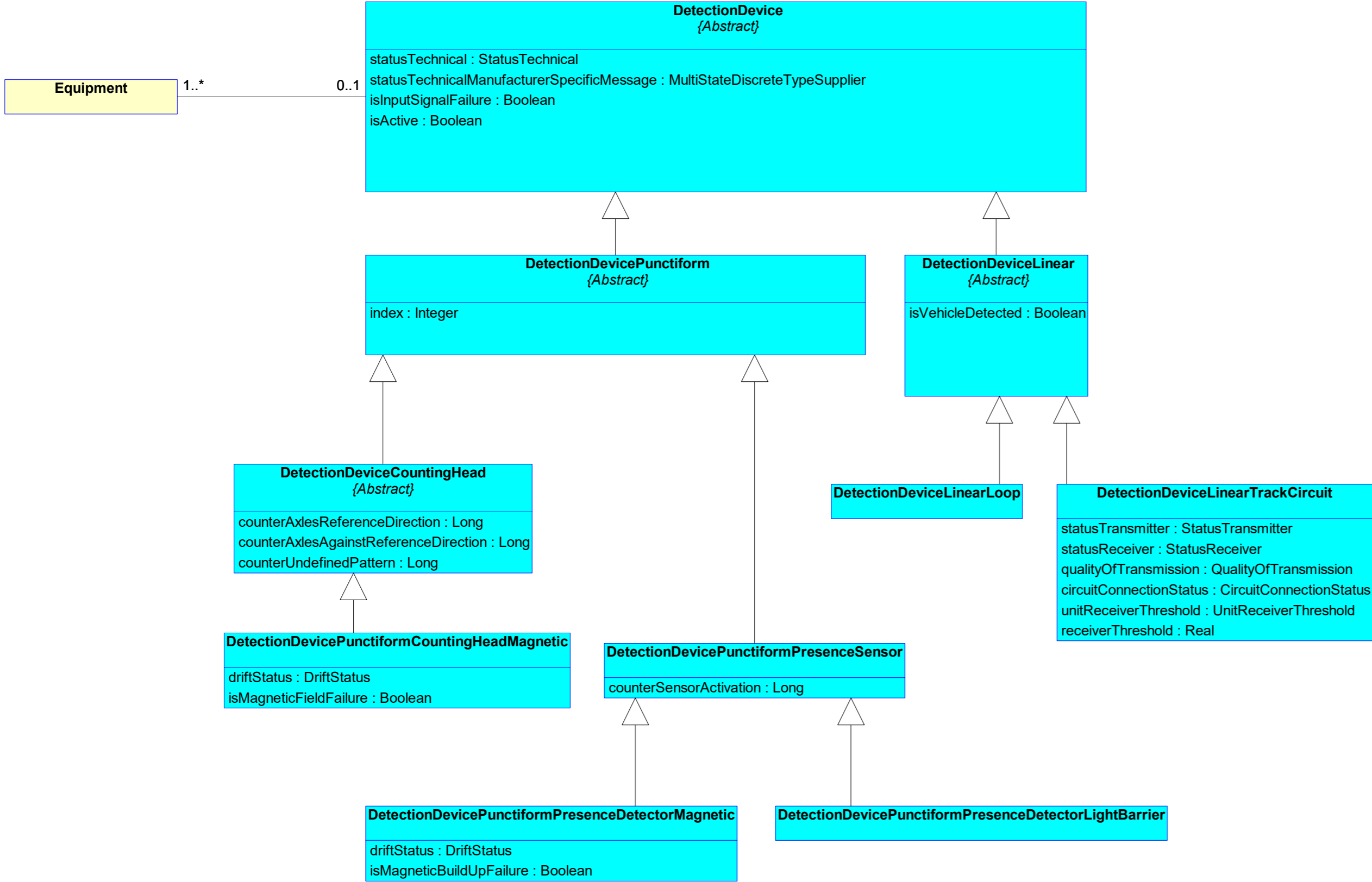


Figure 2: From object 638 on page 8.

