



EULYNX Initiative



Europe's Rail Joint Undertaking

Interface specification SDI-P

Contents

1	Introduction	1
1.1	Release information	1
1.2	Impressum	1
1.3	Purpose	2
1.4	Applicable standards and regulations	2
1.5	Applicable documents	3
1.6	Appendices	3
1.7	Terms and abbreviations	3
1.8	Variability management	3
1.9	Definition of object types	3
2	Telegram SDI	3
2.1	Definition of columns	3
2.2	Telegrams SDI-P	5
2.2.1	Enumeration	11
2.2.2	Point class diagram	16

Interface specification SDI-P												
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
Eu.SDI-P.1	Head	1 Introduction										
Eu.SDI-P.2	Head	1.1 Release information										
Eu.SDI-P.3	Info	[Eu.Doc.80] Interface specification SDI-P CENELEC Phase: 5 Version: 4.2 (0.A) Approval date: 29.05.2024										Object Text: [Eu.Doc.80] Interface specification SDI-P CENELEC Phase: 5 Version: 4. 0 <u>2</u> (0.A) Approval date: ±529.0605.2023 <u>2024</u>
Eu.SDI-P.4	Info	Version history										
Eu.SDI-P.187	Info	version number: 3.0 (0.A) date: 16.05.2022 author: Andreas Staudte review: CCB changes: EUP-394										
Eu.SDI-P.188	Info	version number: 3.1 (0.A) date: 08.06.2023 author: SDI task force review: changes: EUP-424, EUP-425, EUP-440, EUP-445, EUP-481										
Eu.SDI-P.314	Info	version number: 4.0 (0.A) date: 27.06.2023 author: SDI task force review: TACS Mirror Group changes: EUP-504, EUP-510, EUP-512										
Eu.SDI-P.317	Info	version number: 4.1 (0.A) date: 30.04.2024 author: SDI task force review: cluster changes: EUP-521, EUP-522, EUP-523, EUP-524, EUP-525, EUP-526, EUP-527, EUP-528, EUP-554, EUP-560, EUP-561, EUP-562, EUP-563										object created after baseline 4.0 (0.A)
Eu.SDI-P.333	Info	version number: 4.2 (0.A) date: 20.06.2024 author: SDI task force review: TACS Mirror Group changes: EUP-559, EUP-574, EUP-575										object created after baseline 4.0 (0.A)
Eu.SDI-P.6	Head	1.2 Impressum										
Eu.SDI-P.7	Info	Publishers: Europe's Rail Joint Undertaking https://rail-research.europa.eu EULYNX Initiative https://eulynx.eu/									EUP-559	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_BL4_R3: EUP-559
Eu.SDI-P.8	Info	Responsible for this document: EU-Rail System Pillar Trackside Assets Control and Supervision domain										
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		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										changing it, provided that you indicate its source and include the European following Union mention Public[EU LicenceRail EUP]trade mark, Versiontitle of the document, year of publication, version of document].² EU Rail makes no representation or laterwarranty 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 a_JIRA_BL4_R3: EUP-559
Eu.SDI-P.10	Head	1.3 Purpose										
Eu.SDI-P.11	Info	This document specifies the application layer of the standardised diagnosis interface for a communication between the Subsystem - Maintenance and Data Management and Subsystem - Point (SDI-P).										
Eu.SDI-P.29	Info	This document contains the Subsystem - Point 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-P.31	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-P.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-P.189	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-P.14	Head	1.4 Applicable standards and regulations										
Eu.SDI-P.15	Info	The applicable standards and regulations used in EULYNX are listed in the EULYNX Reference Document List [Eu.Doc.12].										

Interface specification SDI-P												
ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
Eu.SDI-P.32	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-P.16	Head	1.5 Applicable documents										
Eu.SDI-P.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-P.18	Head	1.6 Appendices										
Eu.SDI-P.19	Info	- <i>intentionally left blank</i> -										
Eu.SDI-P.20	Head	1.7 Terms and abbreviations										
Eu.SDI-P.21	Info	The terms and abbreviations are listed in the EULYNX Glossary [Eu.Doc.9].										
Eu.SDI-P.22	Head	1.8 Variability management										
Eu.SDI-P.23	Info	This document describes harmonised requirements. Variability management is not applicable.										
Eu.SDI-P.24	Head	1.9 Definition of object types										
Eu.SDI-P.25	Info	The following definition for object types is applied in this document:										
Eu.SDI-P.26	Info	<ul style="list-style-type: none">"Req" - This denotes a mandatory requirement.										
Eu.SDI-P.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-P.28	Info	<ul style="list-style-type: none">"Head" - This denotes chapter headings.										
Eu.SDI-P.36	Head	2 Telegram SDI										
Eu.SDI-P.184	Req	All references to [Eu.Doc.94] refer to Interface specification SDI Generic version 4.2 (0.A).								Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-554	Object Text: All references to [Eu.Doc.94] refer to Interface specification SDI Generic version 4. 02 (0.A). a_JIRA_BL4_R3: EUP-554
Eu.SDI-P.37	Info	This chapter defines the diagnostic messages - specifically the data points and values applied in the SDI-P telegrams. The generic data points are defined in [Eu.Doc.94].								Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-554	Object Text: This chapter defines the diagnostic messages - specifically the data points and values applied in the SDI-P telegrams. The generic data points are defined in [Eu.Doc.94] . a_JIRA_BL4_R3: EUP-554
Eu.SDI-P.183	Info	The defined diagnostic messages are mandatory only when the physical interfaces related to the specific diagnostic message are available on the Subsystem – Point.								Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		
Eu.SDI-P.190	Head	2.1 Definition of columns										
Eu.SDI-P.192	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
Eu.SDI-P.193	Info	Data Type: Column that indicates the data type for the diagnostic data points. Enumeration values are defined in the section 'Enumeration'.								Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		
Eu.SDI-P.194	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-575	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 diagnosticsubsystem . 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_BL4_R3: EUP-575
Eu.SDI-P.195	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560 EUP-561 EUP-575	Object Text: 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 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 . a_JIRA_BL4_R3: EUP-560 EUP-561 EUP-575
Eu.SDI-P.331	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		object created after baseline 4.0 (0.A)
Eu.SDI-P.196	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P	EUP-560	Object Text: Optionality:-: Column that indicates whether a diagnostic data point is mandatory inside the model class-(1), or optional-(0..1). The diagnostic data of optional attributes may be required by national specifications. If an equipment

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
										Basic 4-wire multiple P		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. a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.38	Head	2.2 Telegrams SDI-P										
Eu.SDI-P.197	Req	Point	The class represents the Subsystem - Point.	Class						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): The class represents the Subsystem - Point.
Eu.SDI-P.198	Req	aggregateAbleToMoveStatus	Reports the aggregated ability to move status, considering the ability to move of the Subsystem - Point and all the configured Point Machines.	Attribute	aggregateAbleToMoveStatus : PointAbleToMoveStatus	Current value	diagnosis	1000	Optional	Option Able to move	EUP-560 EUP-574	art_Meaning (en) (MD Meaning (en)): reports Reports the aggregated ability to move status, considering the ability to move of the Subsystem - Point and all the configured Point Machines. art_Signature: aggregateAbleToMoveStatus : PointAbleToMoveStatus- {0..1} art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional a_JIRA_BL4_R3: EUP-560 EUP-574
Eu.SDI-P.199	Req	driveCutoffPrinciple	Reports whether the point uses individual drive or common drive as cut-off principle.	Attribute	driveCutoffPrinciple : PointDriveCutOffPrinciple	Current value	configuration	1000	Optional	Option Common Drive		art_Meaning (en) (MD Meaning (en)): reports Reports whether the point uses individual drive or common drive as cut-off principle. art_Signature: driveCutoffPrinciple : PointDriveCutOffPrinciple- {0..1} art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional
Eu.SDI-P.200	Req	isUsingRedrive	True: The Subsystem - Point is using redrive.	Attribute	isUsingRedrive : Boolean	Current value	configuration	1000	Mandatory	Option Redrive	EUP-574	art_Meaning (en) (MD Meaning (en)): True: The Subsystem - Point is using redrive. art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-574
Eu.SDI-P.201	Req	lastCommandedPosition	Reports the last point position commanded at the point by the interlocking.	Attribute	lastCommandedPosition : PointCommandedPosition	Current value	diagnosis	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-	EUP-560	art_Meaning (en) (MD Meaning (en)): reports Reports the last point position commanded at the point by the interlocking. art_Accuracy (Accuracy): Current value

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
										Basic 4-wire multiple P		art_Attribute Type (MD Attribute Type): raw-data diagnosis art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.202	Req	movementStatus	Reports the movement status of the point.	Attribute	movementStatus : PointMovementStatus	Current value	diagnosis	250	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): reports Reports the movement status of the point. art_Accuracy (Accuracy): Current value art_Attribute Type (MD Attribute Type): raw-data diagnosis art_Sampling Rate (Sampling Rate): 250 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.203	Req	pointAbleToMoveStatus	Reports the ability to move status of the internal logic of the Subsystem - Point.	Attribute	pointAbleToMoveStatus : PointAbleToMoveStatus	Current value	diagnosis	1000	Optional	Option Able to move	EUP-574	art_Meaning (en) (MD Meaning (en)): reports Reports the ability to move status of the internal logic of the Subsystem - Point. art_Signature: pointAbleToMoveStatus : PointAbleToMoveStatus- {0..1} art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional a_JIRA_BL4_R3: EUP-574
Eu.SDI-P.204	Req	position	Reports the position of the point.	Attribute	position : PointPosition	Current value	diagnosis	250	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): reports Reports the position of the point. art_Accuracy (Accuracy): Current value art_Attribute Type (MD Attribute Type): raw-data diagnosis art_Sampling Rate (Sampling Rate): 250 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.205	Req	positionDegraded	Reports the degraded point position.	Attribute	positionDegraded : PointPositionDegraded	Current value	diagnosis	250	Mandatory	Basic non-4-wire multiple P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): reports Reports the degraded point position. art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 250 art_Modelling Rule (Modelling Rule): Mandatory
Eu.SDI-P.206	Req	pSamplingInterval	The time between measurements in the PointTurnEvent in [sec].	Attribute	pSamplingInterval : Real	Current value	configuration	250	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P		art_Meaning (en) (MD Meaning (en)): the The time between measurements in the PointTurnEvent in [sec]. art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate):

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
										Basic 4-wire multiple P		250 art_Modelling Rule (Modelling Rule): Mandatory
Eu.SDI-P.207	Req	turnCounter	The number of started point machine movement since the last reset.	Attribute	turnCounter : Long	Current value	counter	1000	Optional	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-521 EUP-526	art_Meaning (en) (MD Meaning (en)): the The number of executed started point machine movement since the first last installation reset . art_Accuracy (Accuracy): Current value art_Attribute Type (MD Attribute Type): raw-data counter art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional a_JIRA_BL4_R3: EUP-521 EUP-526
Eu.SDI-P.315	Req	pointOperationTimer	Timer that defines the maximum time period the Point has to arrive to an End position, starting with the command moving to the point machine.	Attribute	pointOperationTimer : Real	Current value	configuration	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire multiple P	EUP-523 EUP-560	object created after baseline 4.0 (0.A)
Eu.SDI-P.336	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-575	object created after baseline 4.0 (0.A)
Eu.SDI-P.208	Req	PointMachine	Motor of a point.	Class						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): Motor of a point .
Eu.SDI-P.209	Req	ableToMoveStatus	Reports the ability to move status of the point machine.	Attribute	ableToMoveStatus : PointAbleToMoveStatus	Current value	diagnosis	1000	Optional	Option Able to move		art_Meaning (en) (MD Meaning (en)): reports Reports the ability to move status of the point machine. art_Signature: ableToMoveStatus : PointAbleToMoveStatus- {0..1} art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional
Eu.SDI-P.210	Req	index	Index of the point machine.	Attribute	index : String	Current value	configuration	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-	EUP-560	art_Meaning (en) (MD Meaning (en)): this index must be Index different of for the each point Point Motor machine . art_Accuracy (Accuracy): Current value art_Attribute Type (MD Attribute Type): raw-data configuration

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
												art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.211	Req	isCrucial	True: Reaching end position of this PointMachine is a necessary condition for the point as a whole to reach a degraded end position.	Attribute	isCrucial : Boolean	Current value	configuration	1000	Mandatory	Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-574	art_Meaning (en) (MD Meaning (en)): True: Reaching endposition end position of this PointMachine is a necessary condition for the point as a whole to reach a degraded end position. art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory a_Functional_Packages: Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P a_JIRA_BL4_R3: EUP-574
Eu.SDI-P.212	Req	machineType	The type of each point machine.	Attribute	machineType : PointMachineType	Current value	configuration	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): the The type of each point machine. art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory
Eu.SDI-P.213	Req	position	Reports the position of the point machine.	Attribute	position : PointPosition	Current value	diagnosis	250	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): reports Reports the position of the point machine. art_Accuracy (Accuracy): Current value art_Attribute Type (MD Attribute Type): raw-data diagnosis art_Sampling Rate (Sampling Rate): 250 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.214	Req	timeOffsetStartLeft	Delay of this motor starting in [sec] compared to the PointMachine that starts first when moving to the left.	Attribute	timeOffsetStartLeft : Real	Current value	configuration	1000	Optional	Basic non-4-wire multiple P Basic 4-wire multiple P	EUP-575	art_Meaning (en) (MD Meaning (en)): delay Delay of this motor starting in [sec] compared to the PointMachine that starts first when moving to the left. art_Signature: timeOffsetStartLeft : Real [-0..1] art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional a_Functional_Packages: Basic non-4-wire single multiple P Basic non -4-wire multiple P a_JIRA_BL4_R3: EUP-575
Eu.SDI-P.215	Req	timeOffsetStartRight	Delay of this motor starting in [sec] compared to the PointMachine that starts first when moving to the right.	Attribute	timeOffsetStartRight : Real	Current value	configuration	1000	Optional	Basic non-4-wire multiple P Basic 4-	EUP-575	art_Meaning (en) (MD Meaning (en)): delay Delay of this motor starting in [sec] compared to

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
												the PointMachine that starts first when moving to the right. art_Signature: timeOffsetStartRight : Real- {0..1} art_Accuracy (Accuracy): Current value art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional a_Functional_Packages: Basic non-4-wire single multiple P Basic non -4-wire multiple P a_JIRA_BL4_R3: EUP-575
Eu.SDI-P.316	Req	turnCounter	The number of started point machine movement since the last reset.	Attribute	turnCounter : Long	Current value	counter	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P	EUP-521 EUP-526	object created after baseline 4.0 (0.A)
Eu.SDI-P.246	Req	PointTurnEvent	Summarises data for one respective point turn cycle. The data is provided immediately after the completion of the cycle at the interface. The collection of array data of all aggregated MotorTurnData classes starts when the first point machine starts running to a direction and ends when the last point machine either reaches the commanded end position or the last point machine is turned off in timeout or failure of movement.	Class						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560 EUP-563	art_Meaning (en) (MD Meaning (en)): Summarises data for one respective point turn cycle. The data is provided immediately after the completion of the cycle at the interface. The collection of array data of all aggregated MotorTurnData classes starts when the first point machine starts running to a direction and ends when the last point machine either reaches the commanded end position or the last point machine is turned off in timeout or failure of movement. a_JIRA_BL4_R3: EUP-560 EUP-563
Eu.SDI-P.247	Req	commandedPosition	Reports the point position commanded at the point by the interlocking.	Attribute	commandedPosition : PointCommandedPosition	On event	diagnosis	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560 EUP-562	art_Meaning (en) (MD Meaning (en)): reports Reports the commanded point position of commanded at the point by the interlocking. art_Accuracy (Accuracy): On event art_Attribute Type (MD Attribute Type): raw data diagnosis art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-560 EUP-562

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
Eu.SDI-P.248	Req	failureReason	The reason why the point movement failed; None if the point movement was successful.	Attribute	failureReason : PointTurnFailureStatus	On event	diagnosis	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-562	art_Meaning (en) (MD Meaning (en)): the The reason why the point movement failed; None if the point movement was successful. art_Signature: failureReason : PointTurnFailureReason PointTurnFailureStatus art_Accuracy (Accuracy): On event art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-562
Eu.SDI-P.249	Req	humidity	Relative humidity of the air in [%] at turn time.	Attribute	humidity : Real	On event	raw data	1000	Optional	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-522 EUP-562	art_Meaning (en) (MD Meaning (en)): relative Relative humidity of the air in [%] at turn time. art_Signature: humidity : Real {0..1} art_Accuracy (Accuracy): On event art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional a_JIRA_BL4_R3: EUP-522 EUP-562
Eu.SDI-P.250	Req	isEndpositionReached	True: The point turn has reached its commandedPosition.	Attribute	isEndpositionReached : Boolean	On event	diagnosis	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-562	art_Meaning (en) (MD Meaning (en)): True: the The point turn has reached its commandedPosition. art_Accuracy (Accuracy): On event art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-562
Eu.SDI-P.252	Req	temperatureAir	Temperature of the air in [K] at turn time.	Attribute	temperatureAir : Real	On event	raw data	1000	Optional	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-522 EUP-562	art_Meaning (en) (MD Meaning (en)): temperature Temperature of the air -(2m-height) in [K] at turn time. art_Signature: temperatureAir : Real {0..1} art_Accuracy (Accuracy): On event art_Sampling Rate (Sampling Rate): 1000 art_Modelling Rule (Modelling Rule): Optional a_JIRA_BL4_R3: EUP-522 EUP-562
Eu.SDI-P.253	Req	turnTime	The time interval in milliseconds between the first point machine starting running to a direction and the last point machine either reaching the commanded end position or the last point machine being turned off in timeout or failure of movement.	Attribute	turnTime : Real	On event	raw data	1000	Mandatory	Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-562	art_Meaning (en) (MD Meaning (en)): the The time interval in milliseconds between the first point machine starting running to a direction and the last point machine either reaching the commanded end position or the last point machine being turned off in timeout or failure of movement. art_Accuracy (Accuracy): On event art_Sampling Rate (Sampling Rate):

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
												1000 art_Modelling Rule (Modelling Rule): Mandatory a_JIRA_BL4_R3: EUP-562
Eu.SDI-P.327	Req	DetectionCircuitRight	Electrical circuit to determine the point is in the position 'Right'.	Class					Optional	Basic non-4-wire single P Basic non-4-wire multiple P	EUP-527 EUP-560	object created after baseline 4.0 (0.A)
Eu.SDI-P.326	Req	DetectionCircuitLeft	Electrical circuit to determine the point is in the position 'Left'.	Class					Optional	Basic non-4-wire single P Basic non-4-wire multiple P	EUP-527 EUP-560	object created after baseline 4.0 (0.A)
Eu.SDI-P.254	Head	2.2.1 Enumeration										ART Model Element Type: Package
Eu.SDI-P.262	Req	PointAbleToMoveStatus	Enumeration: Status of the point's ability to move	ValueType (Enumeration)						Option Able to move		art_Meaning (en) (MD Meaning (en)): Enumeration: Status of the point's ability to move
Eu.SDI-P.265	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						Option Able to move		art_Meaning (en) (MD Meaning (en)): 0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost
Eu.SDI-P.263	Req	Able	1: Point is able to move	Enumeration Literal						Option Able to move		art_Meaning (en) (MD Meaning (en)): 1: Point is able to move
Eu.SDI-P.264	Req	NotAble	2: Point is unable to move	Enumeration Literal						Option Able to move		art_Meaning (en) (MD Meaning (en)): 2: Point is unable to move
Eu.SDI-P.269	Req	PointCommandedPosition	Enumeration: Commanded position of the Point	ValueType (Enumeration)						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): Enumeration: Commanded position of the Point
Eu.SDI-P.272	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost
Eu.SDI-P.270	Req	Left	1: Point is commanded LEFT	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 1: Point is commanded LEFT
Eu.SDI-P.271	Req	Right	2: Point is commanded RIGHT	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-		art_Meaning (en) (MD Meaning (en)): 2: Point is commanded RIGHT

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
										Basic 4-wire multiple P		
Eu.SDI-P.273	Req	PointDriveCutOffPrinciple	Enumeration: Drive capacity removal of point machine	ValueType (Enumeration)						Option Common Drive		art_Meaning (en) (MD Meaning (en)): Enumeration: Drive capacity removal of point machine
Eu.SDI-P.329	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						Option Common Drive	EUP-560 EUP-574	object created after baseline 4.0 (0.A)
Eu.SDI-P.275	Req	Individual	1: The Subsystem - Point is configured to stop driving Point Machines individually	Enumeration Literal						Option Common Drive	EUP-560	art_Meaning (en) (MD Meaning (en)): 0 1: The Subsystem - Point is configured to stop driving Point Machines individually a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.274	Req	Common	2: The Subsystem - Point is configured to stop driving Point Machines according to common drive.	Enumeration Literal						Option Common Drive	EUP-560	art_Meaning (en) (MD Meaning (en)): 1 2: The Subsystem - Point is configured to stop driving Point Machines according to common drive. a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.276	Req	PointMachineType	Enumeration: Type of point machine	ValueType (Enumeration)						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single p Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): Enumeration: Type of point machine
Eu.SDI-P.330	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single p Basic 4-wire multiple P	EUP-560	object created after baseline 4.0 (0.A)
Eu.SDI-P.279	Req	Drive	1: Point machine that drives the movement of the moveable element of the point	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single p Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): 0 1: Point machine that drives the movement of the moveable element of the point a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.278	Req	Downholder	2: Point machine that holds the position of a moveable element of the point, e.g. the frog	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single p Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): 1 2: Point machine that holds the position of a moveable element of the point, e.g. the frog a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.277	Req	DetectorOnly	3: Point machine that only detects the position of the moveable element of the point	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single	EUP-560	art_Meaning (en) (MD Meaning (en)): 2 3: Point machine that only detects the position of the moveable element of the point a_JIRA_BL4_R3: EUP-560

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
										Basic 4-wire multiple P		
Eu.SDI-P.280	Req	PointMovementStatus	Enumeration: Status of point movement	ValueType (Enumeration)						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): Enumeration: Status of point movement
Eu.SDI-P.284	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost
Eu.SDI-P.281	Req	MovingToLeft	1: Point is moving to the left	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 1: Point is moving to the left
Eu.SDI-P.282	Req	MovingToRight	2: Point is moving to the right	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 2: Point is moving to the right
Eu.SDI-P.283	Req	NotMoving	3: Point is not moving	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 3: Point is not moving
Eu.SDI-P.285	Req	PointPosition	Enumeration: Position of the point	ValueType (Enumeration)						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): Enumeration: Position of the point
Eu.SDI-P.290	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single		art_Meaning (en) (MD Meaning (en)): 0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
										Basic 4-wire multiple P		
Eu.SDI-P.286	Req	Left	1	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		
Eu.SDI-P.288	Req	Right	2	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		
Eu.SDI-P.287	Req	NoEndpostion	3: Point is in no end position	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 3: Point is in no end position
Eu.SDI-P.289	Req	UnintendedPosition	4: Point is in an unintended position	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 4: Point is in an unintended position
Eu.SDI-P.291	Req	PointPositionDegraded	Enumeration: Degraded status of point position	ValueType (Enumeration)						Basic non-4-wire multiple P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): Enumeration: Degraded status of point position
Eu.SDI-P.296	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 non-4-wire multiple P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 0: The status unknown is used when the state is not yet established e.g. if connection to the system is lost
Eu.SDI-P.292	Req	DegradedLeft	1: Point is degraded at left position	Enumeration Literal						Basic non-4-wire multiple P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 1: Point is degraded at left position
Eu.SDI-P.293	Req	DegradedRight	2: Point is degraded at right position	Enumeration Literal						Basic non-4-wire multiple P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 2: Point is degraded at right position
Eu.SDI-P.295	Req	NotDegraded	3: Point is not degraded	Enumeration Literal						Basic non-4-wire multiple P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 3: Point is not degraded

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
Eu.SDI-P.294	Req	NotApplicable	4: Degraded status is not applicable to the point	Enumeration Literal						Basic non-4-wire multiple P Basic 4-wire multiple P		art_Meaning (en) (MD Meaning (en)): 4: Degraded status is not applicable to the point
Eu.SDI-P.297	Req	PointTurnFailureStatus	Enumeration: Status of point movement failure	ValueType (Enumeration)						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		Object Text: PointTurnFailureReasonPointTurnFailureStatus art_Meaning (en) (MD Meaning (en)): Enumeration: Status of point movement failure
Eu.SDI-P.300	Req	None	0: No point movement failure	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560 EUP-574	art_Meaning (en) (MD Meaning (en)): 0: No point movement failure a_JIRA_BL4_R3: EUP-560 EUP-574
Eu.SDI-P.302	Req	Timeout	1: Point movement failed due to timeout of point movement.	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): 1: Point movement failed due to timeout of point movement. a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.303	Req	UnsuccessfulStartOfMovement	2: The start of the point movement was unsuccessful	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): 2: The start of the point movement was unsuccessful a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.298	Req	AllPmStoppedButCommandedPositionNotReached	3: All driven point machines have stopped but commanded point position not reached	Enumeration Literal						Basic non-4-wire multiple P Basic 4-wire multiple P	EUP-560 EUP-575	art_Meaning (en) (MD Meaning (en)): 3: All driven point machines have stopped but commanded point position not reached a_Functional_Packages: Basic non-4-wire single-P Basic non-4-wire-multiple-P Basic 4-wire-single P Basic 4-wire multiple P a_JIRA_BL4_R3: EUP-560 EUP-575
Eu.SDI-P.299	Req	NoDrivePower	4: No power available to drive the point machines	Enumeration Literal						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-560	art_Meaning (en) (MD Meaning (en)): 4: No power available to drive the point machines a_JIRA_BL4_R3: EUP-560
Eu.SDI-P.301	Req	Other	5: Other miscellaneous reason/s for point movement failure	Enumeration Literal						Basic non-4-wire single P		art_Meaning (en) (MD Meaning (en)): 5: Other miscellaneous.

ID	Type	Requirement	Meaning	Model Type	Data Type	Trigger	Attribute Type	Sampling	Optionality	Func. Pkg.	JIRA	V 4.2 (0.A) > V 4.0 (0.A)
										Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P		reason/s for point movement failure
Eu.SDI-P.304	Head	2.2.2 Point class diagram										ART Model Element Type: Package
Eu.SDI-P.328	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 non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-554 EUP-561	object created after baseline 4.0 (0.A)
Eu.SDI-P.305	Info	Point class diagram See Figure 1 on page 17.	The class diagram represents the static structure of the Subsystem - Point from the point of view of diagnostics.	Class Diagram						Basic non-4-wire single P Basic non-4-wire multiple P Basic 4-wire single P Basic 4-wire multiple P	EUP-524 EUP-527 EUP-528	art_Meaning (en) (MD Meaning (en)): The class diagram represents the static structure of the Subsystem - Point from the point of view of diagnostics. a_JIRA_BL4_R3: EUP-524 EUP-527 EUP-528

Interface specification SDI-P
Figure 1: From object 305 on page 16.

