



TCCS SD1 - Data Model_20_Equipment

SPT2TS-127630 - Disclaimer: The data model defined here is a DRAFT version, which has not been fully integrated and approved in System Pillar but is an import of already aligned and approved EULYNX import. Therefore, it is already mature and qualifies to be part of published data model collection. This model be extended by remaining EULYNX content, on request of the other domains / use cases. [ Open]

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2 Package "Equipment"

SPT2TS-127629 - The Equipment Model is a modular system that enables manufacturers to represent the specific architecture of their equipment in a way that operators can easily understand. By using parent-child relationships to detail subcomponents, the model should be developed down to the smallest exchangeable part. This structure provides operators with an organized source of diagnostic information, highlighting redundancies that help prevent lower-level failures from escalating to top-level issues. Additionally, it functions as an online inventory that includes serial numbers, allowing maintenance personnel to quickly access the correct part needed for repairs. [ Open]

2.1 Header

SPT2TS-127634 - {
 "\$schema": "ERJU meta-model.json",
 "isDefinedBy": "http://ERJU/datamodel/0.1/equipment",
 "name": "equipment",
 "containerStruct": "equipment",
 "prefix": "equipment",
 "intId": 6,

```
"version": "1.0",
"info": "Static equipment data"
} [  Open ]
```

SPT2TS-127633 - Equipment

```
{
  "enums": [
    {
      "name": "StatusTechnical",
      "info": "Technical Status of the system, that represents the aggregated status of all hierarchical lower systems. This allows to have a top level information on the status of the system which can be drilled down if the system is in any other state than Ok.",
      "enumLiterals": [
        { "intId": 0, "name": "Unknown" },
        { "intId": 1, "name": "OK" },
        { "intId": 2, "name": "Warning" },
        { "intId": 3, "name": "FailureNonCritical" },
        { "intId": 4, "name": "FailureCritical" }
      ]
    },
    {
      "name": "EquipmentReplaceabilityStatus",
      "info": "Indicates when the equipment requests a replacement. The decision to act on this indication is up to the operator, in accordance with the equipment manual.",
      "enumLiterals": [
        { "intId": 0, "name": "Unknown" },
        { "intId": 1, "name": "ReplacementNotNeeded" },
        { "intId": 2, "name": "ReplaceableAtOperation" },
        { "intId": 3, "name": "ReplaceableMaintenance" },
        { "intId": 4, "name": "ReplaceableRevalidation" }
      ]
    },
    {
      "name": "ControllerOperationStatus",
      "info": "Indicates the general operation status of the controller",
      "enumLiterals": [
        { "intId": 0, "name": "Unknown" },
        { "intId": 1, "name": "Booting" },
        { "intId": 2, "name": "Fallback" }
      ]
    },
    {

```

```
"name": "CoolingFanStatus",
"info": "Indicates the current status of the cooling fan",
"enumLiterals": [
  { "intId": 0, "name": "Unknown" },
  { "intId": 1, "name": "Normal" },
  { "intId": 2, "name": "Failure" }
]
},
{
  "name": "TemperatureStatus",
  "info": "Indicates the temperature status of the CPU",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "Normal" },
    { "intId": 2, "name": "TooHigh" }
  ]
},
{
  "name": "CpuHealthStatus",
  "info": "Indicates the health status of the CPU",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "Normal" },
    { "intId": 2, "name": "Degraded" },
    { "intId": 3, "name": "Failure" }
  ]
},
{
  "name": "CpuLoadStatus",
  "info": "Indicates the load status of the CPU",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "Normal" },
    { "intId": 2, "name": "High" },
    { "intId": 3, "name": "Critical" }
  ]
},
{
  "name": "RamHealthStatus",
  "info": "can be replaced?",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
```

```
    { "intId": 1, "name": "Normal" },
    { "intId": 2, "name": "Degraded" },
    { "intId": 3, "name": "Failure" }
  ]
},
{
  "name": "BootingLastReason",
  "info": "Indicates the type of the latest reset (The reason for the reset).",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "OnSite" },
    { "intId": 2, "name": "RemoteMdm" },
    { "intId": 3, "name": "InternalMaintenanceOk" },
    { "intId": 4, "name": "InternalMaintenanceFailure" },
    { "intId": 5, "name": "InternalFailure" }
  ]
},
{
  "name": "WearStatus",
  "info": "can be replaced?",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "Ok" },
    { "intId": 2, "name": "Warning" },
    { "intId": 3, "name": "Nok" }
  ]
},
{
  "name": "PhysicalNetworkInterfaceOperationalStatus",
  "info": "can be replaced?",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "NotAvialableNotConnected" },
    { "intId": 2, "name": "AvailableNotConnected" },
    { "intId": 3, "name": "Connected" },
    { "intId": 4, "name": "NotConnectedDisturbed" }
  ]
},
{
  "name": "VoltageStatus",
  "info": "voltage status",
  "enumLiterals": [
```

```
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "NotUsed" },
    { "intId": 2, "name": "Undervoltage" },
    { "intId": 3, "name": "Nominal" },
    { "intId": 4, "name": "Overvoltage" }
  ]
},
{
  "name": "HighLow",
  "info": "can be replaced?",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "High" },
    { "intId": 2, "name": "Low" }
  ]
},
{
  "name": "OutputValue",
  "info": "can be replaced?",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "On" },
    { "intId": 2, "name": "Off" }
  ]
},
{
  "name": "InputValue",
  "info": "can be replaced?",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "On" },
    { "intId": 2, "name": "Off" }
  ]
},
{
  "name": "InputSwitchPosition",
  "info": "can be replaced?",
  "enumLiterals": [
    { "intId": 0, "name": "Unknown" },
    { "intId": 1, "name": "Position1" },
    { "intId": 2, "name": "Position2" },
    { "intId": 3, "name": "Position3" }
```

```

    ]
  }
],
"structs":
[
  {
    "name": "Equipment",
    "belongsToSubPackage": "equipment",
    "info": "May be used to define responsibilities for diagnostic information.",
    "attrs": [
      { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
      { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
      { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "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."},
      { "intId": 4, "name": "manufacturer", "dataType": "string"},
      { "intId": 5, "name": "manufacturerModel", "dataType": "string"},
      { "intId": 6, "name": "serialNumber", "dataType": "string"},
      { "intId": 7, "name": "hardwareRevision", "dataType": "string"},
      { "intId": 8, "name": "softwareRevision", "dataType": "string"},
      { "intId": 9, "name": "replaceabilityIndication", "enumType":
"EquipmentReplaceabilityStatus"},
      { "intId": 10, "name": "manufacturingDateTime", "dataType": "timestamp"},
      { "intId": 11, "name": "label", "dataType": "string"},
      { "intId": 12, "name": "isTimeSynchronised", "dataType": "boolean"},
      { "intId": 13, "name": "subEquipments", "composition": "Equipment", "multiplicity": "0..*",
"sortedByKey": true},
      { "intId": 14, "name": "controllers", "composition": "Controller", "multiplicity": "0..*",
"sortedByKey": true},
      { "intId": 15, "name": "physicalNetworkInterfaces", "composition":
"PhysicalNetworkInterface", "multiplicity": "0..*", "sortedByKey": true},
      { "intId": 16, "name": "storageMediaFlash", "composition": "StorageMediumFlash",
"multiplicity": "0..*", "sortedByKey": true},
      { "intId": 17, "name": "powerSupplies", "composition": "PowerSupply", "multiplicity":
"0..*", "sortedByKey": true},
      { "intId": 18, "name": "physicalDigitalOutputs", "composition": "PhysicalDigitalOutput",
"multiplicity": "0..*", "sortedByKey": true},

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    { "intId": 19, "name": "physicalAnalogOutputs", "composition": "PhysicalAnalogOutput",
      "multiplicity": "0..*", "sortedByKey": true},
    { "intId": 20, "name": "physicalSeparatedOutputs", "composition":
      "PhysicalSeparatedOutput", "multiplicity": "0..*", "sortedByKey": true},
    { "intId": 21, "name": "physicalDigitalInputs", "composition": "PhysicalDigitalInput",
      "multiplicity": "0..*", "sortedByKey": true},
    { "intId": 22, "name": "physicalAnalogInputs", "composition": "PhysicalAnalogInput",
      "multiplicity": "0..*", "sortedByKey": true},
    { "intId": 23, "name": "physicalSeparatedInputs", "composition":
      "PhysicalSeparatedInput", "multiplicity": "0..*", "sortedByKey": true},
    { "intId": 24, "name": "inputSwitches", "composition": "InputSwitch", "multiplicity": "0..*",
      "sortedByKey": true},
    { "intId": 25, "name": "inputButtons", "composition": "InputButton", "multiplicity": "0..*",
      "sortedByKey": true}
  ]
},
{
  "name": "Controller",
  "belongsToSubPackage": "equipment",
  "info": "Controller",
  "attrs": [
    { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
    { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
    { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
      "multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
    { "intId": 4, "name": "systemDescription", "dataType": "string"},
    { "intId": 5, "name": "operatingSystem", "dataType": "string"},
    { "intId": 6, "name": "operationStatus", "enumType": "ControllerOperationStatus"},
    { "intId": 7, "name": "coolingFanStatus", "enumType": "CoolingFanStatus"},
    { "intId": 8, "name": "temperatureStatus", "enumType": "TemperatureStatus"},
    { "intId": 9, "name": "cpuHealthStatus", "enumType": "CpuHealthStatus"},
    { "intId": 10, "name": "cpuLoadStatus", "enumType": "CpuLoadStatus"},
    { "intId": 11, "name": "ramSize", "dataType": "uint32"},
    { "intId": 12, "name": "ramHealthStatus", "enumType": "RamHealthStatus"},
    { "intId": 13, "name": "bootingLastDateTime", "dataType": "timestamp"},
    { "intId": 14, "name": "bootingLastReason", "enumType": "BootingLastReason"},
    { "intId": 16, "name": "label", "dataType": "string"}
  ]
},
{
  "name": "PhysicalNetworkInterface",

```

```

    "belongsToSubPackage": "equipment",
    "info": "PhysicalNetworkInterface",
    "attrs": [
      { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
      { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
      { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
      { "intId": 4, "name": "macAddress", "dataType": "string"},
      { "intId": 5, "name": "operationStatus", "enumType":
"PhysicalNetworkInterfaceOperationalStatus"},
      { "intId": 6, "name": "nominalBandwidth", "dataType": "uint32"},
      { "intId": 7, "name": "label", "dataType": "string"}
    ]
  },
  {
    "name": "StorageMediumFlash",
    "belongsToSubPackage": "equipment",
    "info": "StorageMediumFlash",
    "attrs": [
      { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
      { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
      { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
      { "intId": 4, "name": "memorySize", "dataType": "uint32"},
      { "intId": 5, "name": "temperatureStatus", "enumType": "TemperatureStatus"},
      { "intId": 6, "name": "label", "dataType": "string"},
      { "intId": 7, "name": "wearStatus", "enumType": "WearStatus"}
    ]
  },
  {
    "name": "PowerSupply",
    "belongsToSubPackage": "equipment",
    "info": "PowerSupply",
    "attrs": [
      { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
      { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
      { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
      { "intId": 4, "name": "inputVoltageStatus", "enumType": "VoltageStatus"},

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    { "intId": 5, "name": "outputVoltageStatus", "enumType": "VoltageStatus"},
    { "intId": 6, "name": "outputPower", "dataType": "uint32"},
    { "intId": 7, "name": "outputPowerLimit", "dataType": "uint32"},
    { "intId": 8, "name": "temperatureStatus", "enumType": "TemperatureStatus"},
    { "intId": 9, "name": "label", "dataType": "string"},
    { "intId": 10, "name": "inputVoltage", "dataType": "float"},
    { "intId": 11, "name": "inputCurrent", "dataType": "float"}
  ]
},
{
  "name": "PhysicalDigitalOutput",
  "belongsToSubPackage": "equipment",
  "info": "PhysicalDigitalOutput",
  "attrs": [
    { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
    { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
    { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
    { "intId": 4, "name": "label", "dataType": "string"},
    { "intId": 5, "name": "physicalOutputValue", "enumType": "HighLow"},
    { "intId": 6, "name": "outputVoltage", "dataType": "float"},
    { "intId": 7, "name": "outputCurrent", "dataType": "float"}
  ]
},
{
  "name": "PhysicalAnalogOutput",
  "belongsToSubPackage": "equipment",
  "info": "PhysicalAnalogOutput",
  "attrs": [
    { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
    { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
    { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
    { "intId": 4, "name": "label", "dataType": "string"},
    { "intId": 5, "name": "voltage", "dataType": "float"},
    { "intId": 6, "name": "current", "dataType": "float"}
  ]
},
{
  "name": "PhysicalSeparatedOutput",

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```

    "belongsToSubPackage": "equipment",
    "info": "PhysicalSeparatedOutput",
    "attrs": [
      { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
      { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
      { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
      { "intId": 4, "name": "label", "dataType": "string"},
      { "intId": 6, "name": "outputValue", "enumType": "OutputValue"}
    ]
  },
  {
    "name": "PhysicalDigitalInput",
    "belongsToSubPackage": "equipment",
    "info": "PhysicalDigitalInput",
    "attrs": [
      { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
      { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
      { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
      { "intId": 4, "name": "label", "dataType": "string"},
      { "intId": 5, "name": "physicalInputValue", "enumType": "HighLow"},
      { "intId": 6, "name": "inputVoltage", "dataType": "float"},
      { "intId": 7, "name": "inputCurrent", "dataType": "float"}
    ]
  },
  {
    "name": "PhysicalAnalogInput",
    "belongsToSubPackage": "equipment",
    "info": "PhysicalAnalogInput",
    "attrs": [
      { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
      { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
      { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
      { "intId": 4, "name": "label", "dataType": "string"},
      { "intId": 5, "name": "voltage", "dataType": "float"},
      { "intId": 6, "name": "current", "dataType": "float"}
    ]
  }

```

```

},
{
  "name": "PhysicalSeparatedInput",
  "belongsToSubPackage": "equipment",
  "info": "PhysicalSeparatedInput",
  "attrs": [
    { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
    { "intId": 2, "name": "statusTechnical", "enumType": "StatusTechnical", "info": "General
technical status of the equipment."},
    { "intId": 3, "name": "statusTechnicalManufacturerSpecificValue", "dataType": "string",
"multiplicity": "*", "info": "Array of manufacturer-specific status codes."},
    { "intId": 4, "name": "label", "dataType": "string"},
    { "intId": 5, "name": "inputValue", "enumType": "InputValue"}
  ]
},
{
  "name": "AuxiliarySwitch",
  "belongsToSubPackage": "equipment",
  "info": "AuxiliarySwitch",
  "attrs": [
    { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
    { "intId": 2, "name": "label", "dataType": "string"}
  ]
},
{
  "name": "InputSwitch",
  "belongsToSubPackage": "equipment",
  "info": "InputSwitch",
  "attrs": [
    { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
    { "intId": 2, "name": "label", "dataType": "string"},
    { "intId": 3, "name": "inputSwitchPosition", "enumType": "InputSwitchPosition"},
    { "intId": 4, "name": "auxiliarySwitch", "composition": "AuxiliarySwitch"}
  ]
},
{
  "name": "InputButton",
  "belongsToSubPackage": "equipment",
  "info": "InputButton",
  "attrs": [
    { "intId": 1, "name": "id", "dataType": "string", "key": "global"},
    { "intId": 2, "name": "label", "dataType": "string"},

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```
    { "intId": 3, "name": "isPressed", "dataType": "boolean"},  
    { "intId": 4, "name": "auxiliarySwitch", "composition": "AuxiliarySwitch"}  
  ]  
}  
]  
}
```