



ISO 11783-11
Mobile Data Element Dictionary
DDE Request Form



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| DDIdentifier ₍₁₀₎ | DDENAME |
|------------------------------|----------------------------|
| 178 | Element Type Instance |
| 179 | Actual Cultural Practice |
| 471 | Setpoint Cultural Practice |

Version: 20211201

Device Description Data for Single and Multiple Product Implements

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DET structure definition used in this document

| DET = Device | | | |
|--------------|---|---|---|
| A | B | C | D |

A = Value of DDI number

B = Value of DDI property

C = Value of DDI triggerMethods

D = DDI name

Example DET of type device

| DET = Device | | | |
|--------------|---|----|--------------------------|
| 1 | 3 | 9 | Setpoint Volume Rate |
| 2 | 1 | 9 | Actual Volume Rate |
| 116 | 3 | 25 | Total Area |
| 117 | 3 | 25 | Effective Total Distance |
| 119 | 3 | 25 | Effective Total Time |
| 141 | 0 | 8 | Work State |
| 57343 | 0 | 31 | Default DDI Support |
| 67 | | | Actual Working Width |
| 70 | | | Max. Working Width |
| 134 | | | X Offset |
| 135 | | | Y Offset |
| 135 | | | Z Offset |

DDI Property Types:

1 belongs to default set

2 setable

3 belongs to default set and is settable

DDI TriggerMethods:

1 time interval

2 distance interval

3 time interval, distance interval

4 threshold limits

5 time interval, threshold limits

6 distance, threshold limits

7 time interval, distance interval, threshold limit

8 on change

9 time interval, on change

10 on change, distance interval

11 on change, distance interval

12 on change, threshold limits

13 on change, threshold limits, time interval

14 on change, threshold limits, distance interval

15 on change, threshold limits, distance interval, time interval

16 total

Note:

Geometry offsets can be defined as DPT (e.g. predefined / not changeable on runtime) or DPD (e.g. value editable by user). In case of DPD the definition of process data properties and the trigger methods should be well considered to ensure that the Task Controller and implement stay synchronized during runtime.

Geometry offsets defined as DPD could be defined as 'member of default set' to log offset changes frequently for data post-processing and evaluation.

If 'properties' are defined as DPD their values won't be transferred within the object pool, therefore the TC has to request and log these values on runtime.

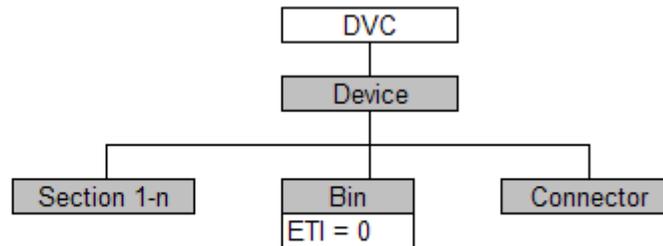
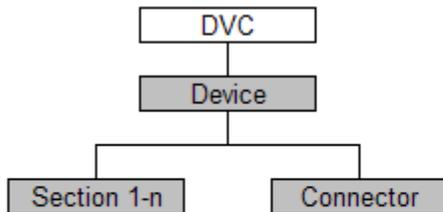
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Single Product Implement

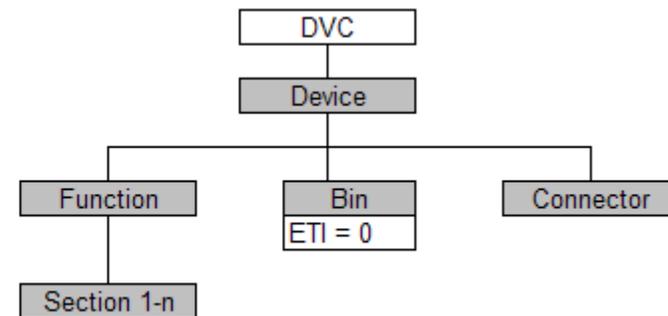
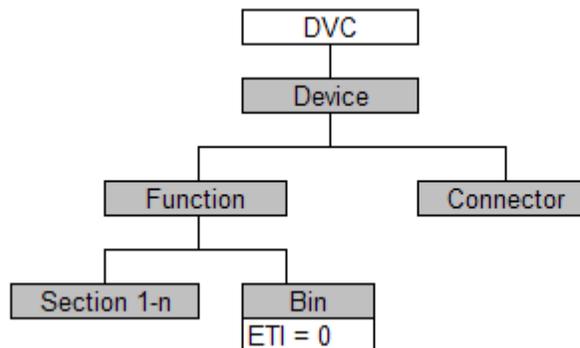
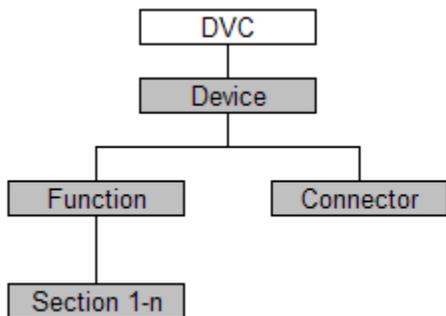
Device Description Data (DDD) for single product implements

Simple single product implement with one product operation: It might represent a Planter/Seeder, Fertilizer or Sprayer device class



ETI = Element Type Instance DDI

DDD including a function to separate the operation from the main device:

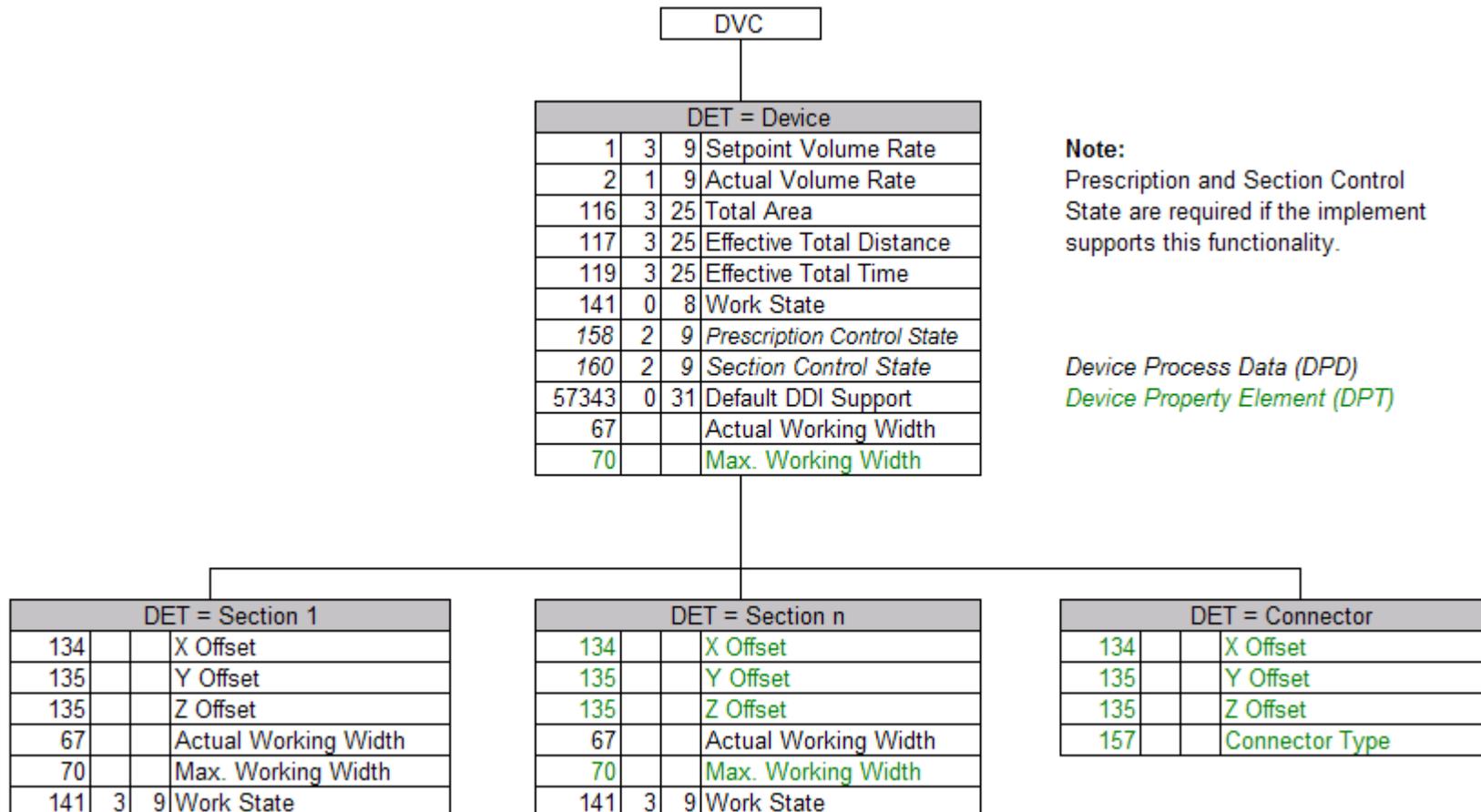


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Example for Detailed Device Description Data (DDD) structure for single product implement

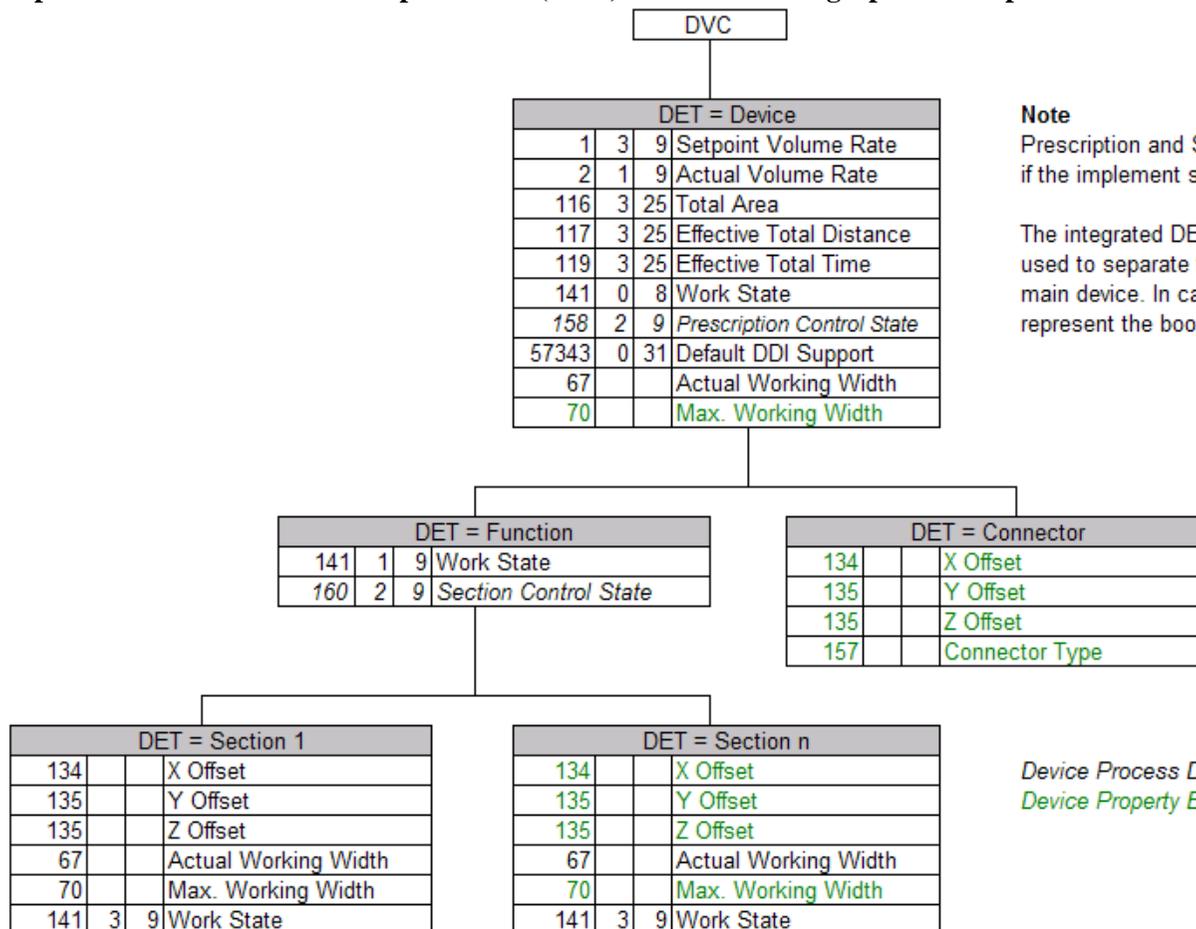
This DDD structure might represent a Planter/Seeder, Fertilizer or a Sprayer device class.



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Example for Detailed Device Description Data (DDD) structure for single product implement including function definition



Note

Prescription and Section Control State are required if the implement supports this functionality.

The integrated DET of type function in this DDD is used to separate the product operation from the main device. In case of a sprayer the function could represent the boom where the sections are located.

Device Process Data (DPD)
Device Property Element (DPT)

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Multiple Product Implements

A mixed/multiple product implement could be for instance a Planter/Seeder applying seeds and fertilizer within one task although its main device class is for instance defined as a Planter/Seeder.

Device description for mixed product implements

With the Actual Cultural Practice (ACP) and Element Type Instance (ETI) DDI it is possible to build a device description of a multiple product implement where the Task Controller is able to distinguish between the different operations as sowing or fertilizing. Observing the implementation of ACP and ETI in combination with Device Elements of type function and bin the Task Controller is then able to assign application rates to the appropriate operations and to document the field work for each operation. In case of an user interface the Task Controller can also display the information like rate and bin for each operation in a clear manner.

ActualCulturalPractice DDI

This DDI is used to define the current cultural practice which is performed by an individual device operation. For instance a planter/seedler could provide a sowing and a fertilizing operation at the same time. The definition of the ACP DDI inside the device object pool provides additional information for the Task Controller in particular to allow an appropriate user interface.

Example: Mixed product implements use this DDI to distinguish between the sowing and fertilizing operation where both setpoint rates could be defined as mass per area. It is also possible to differentiate between dry and liquid fertilizer depending on the unit.

Cultural practice definitions for Actual Cultural Practice (ACP) DDI are:

| | | |
|-------------------------|-----------------------|--|
| 0 = Unknown | 5 = Baling | 10 = Transport |
| 1 = Fertilizing | 6 = Mowing | 11 to 255 = Reserved for future assignment |
| 2 = Sowing and Planting | 7 = Wrapping | |
| 3 = Crop Protection | 8 = Harvesting | |
| 4 = Tillage | 9 = Forage Harvesting | |

Note: The valid list is defined in the ISO11783-11 Data Dictionary online data base.



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ElementTypeInstance DDI

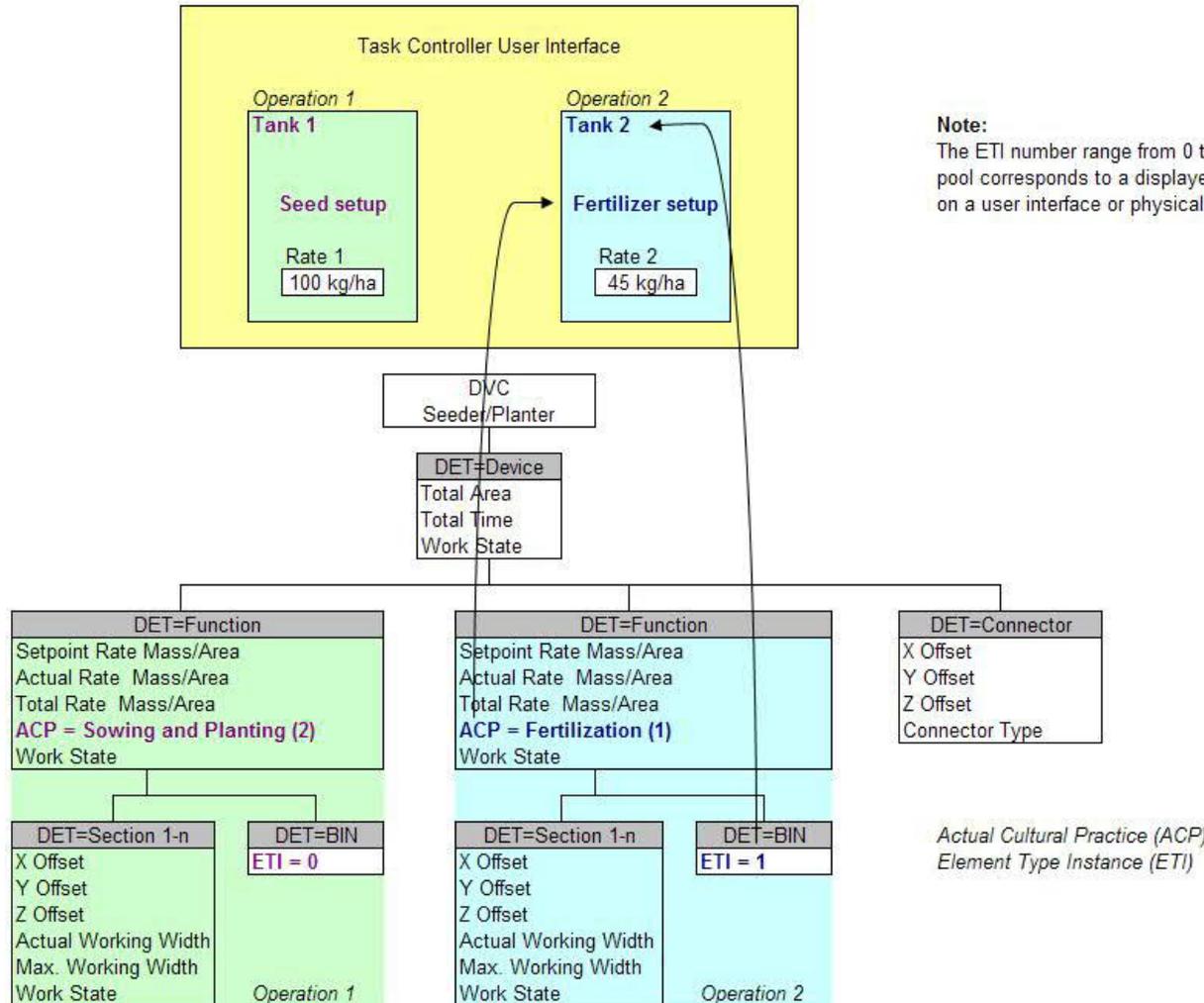
This DDI is used to allow differentiation between multiple device elements (DET) of the same type within one DDD (e.g. multiple bins become a unique number). This number can for instance be displayed to the operator while this number may be printed physically at the bin. This DDI is independent of the DET number or element number assigned to the same object. The combination of Device Element Type and the value of the ElementTypeInstance represents a unique object inside the DDD and therefore shall exist only once per object pool.

Example: By adding the ElementTypeInstance DDI to a DET of type bin it is possible to setup unique tank number information independent of the device element number.

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Relationship between implement DDD structure and Task Controller user interface



Note:
 The ETI number range from 0 to 65533 inside the object pool corresponds to a displayed value from 1 to 65534 on a user interface or physical device.

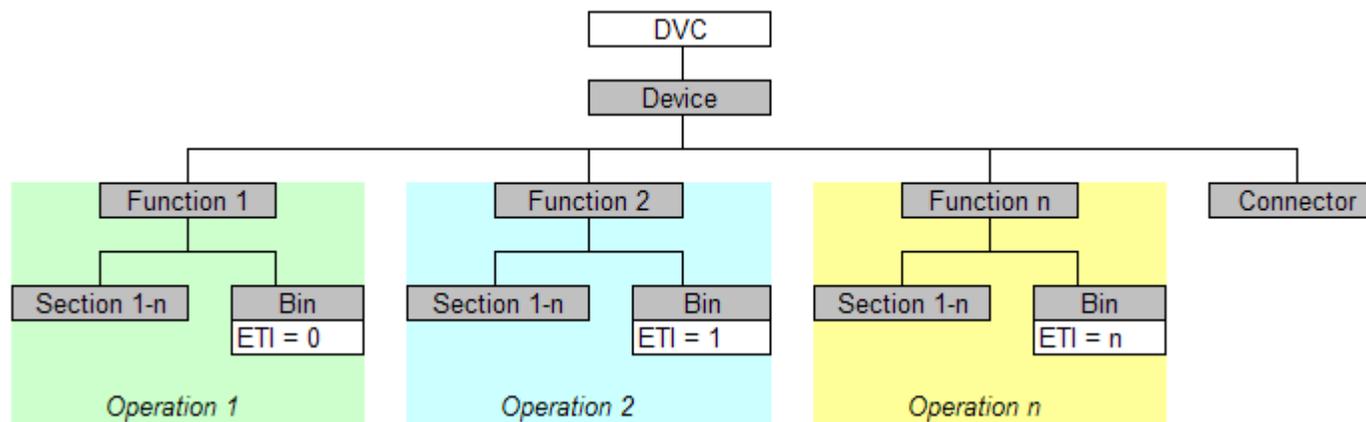
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Device Description Data (DDD) structure for a multiple operation implements

Mixed product implement with more than one product operation and more the one tank.

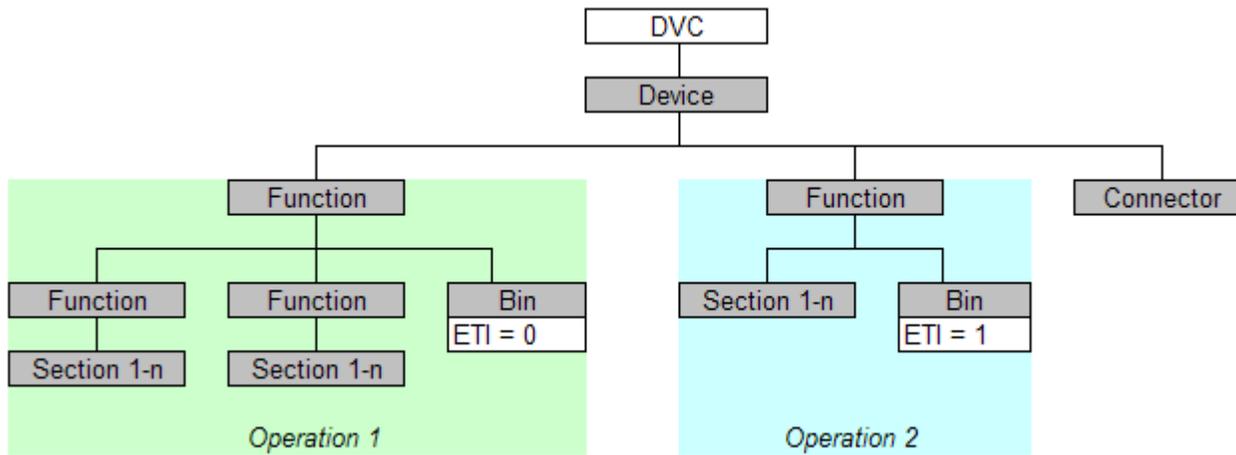


A product operation inside a DDD shall be defined as a DET of type function which has a DET of type bin as child. The ETI DDI shall be added to the bin to allocate a unique number to the bin independent of the DET number.
 The combination of function, bin and value of ETI DDI represents a unique operation inside the DDD and therefore it shall exist only once per object pool.

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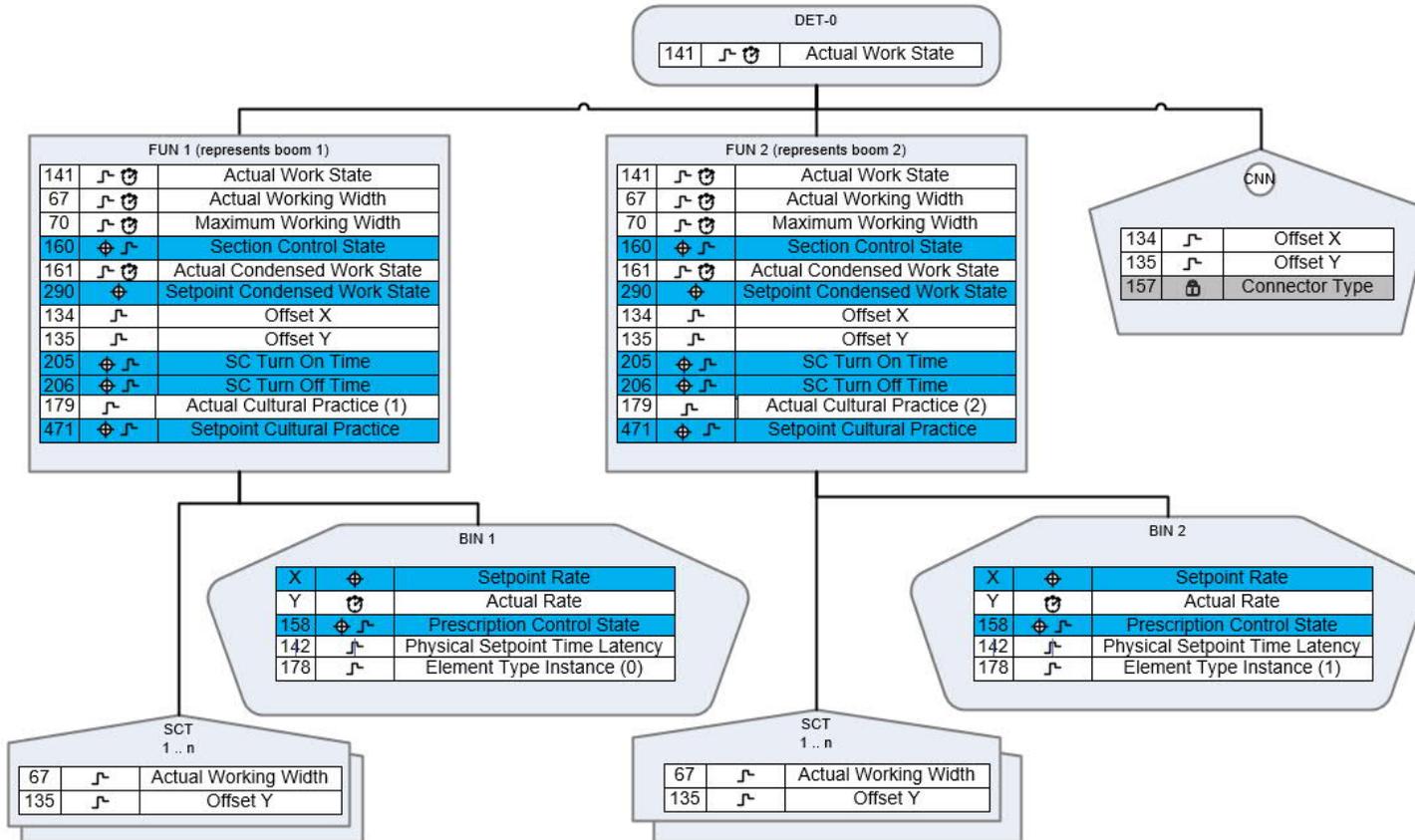
Mixed product implement with more than one function per product operation.



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Example for Detailed Device Description Data (DDD) structure for mixed product implements



Note:

Prescription and Section Control State are mandatory when the implement supports this functionality. If all operations supports prescription the PCS could be defined on the main device if not it should be defined for each operation separately (same for Section Control State).