

DDE Supplement / Attachment

DDE Number	DDENAME
158	Prescription Control State (PCS)

The Prescription Control State (PCS) is meant to improve the synchronization between Prescription Control Masters and Clients. Today variable rate Systems utilizing the Task Controller (TC) communication may get out of synch on their operation state, when one or the other side can't perform variable rate control. With this they may don't inform the operator about the overall system state what may leads to masters sending and displaying rates which the implement perhaps doesn't perform!

The presents of the PCS DDI (Data Dictionary Identifier number 158) inside the Device Description Data object pool of the implement indicates to Prescription Control Master being part of the TC that the device supports variable rate control.

The TC uses this DDI to inform the implement whether he is ready to control the rate or not. The DDI shall support the On Change trigger so that the TC is able to get informed when the value gets changed by the Working Set Master. The TC shall active this trigger when using the DDI.

Two modes are available:

Auto means the TC is ready to control the rate;

Manual means the TC won't control the rate and the implement is to be manually controlled by the operator

For the implement it's requested to respond to an auto request of the TC immediately. As long as the TC has not requested for 'auto mode' the PCS shall always be in 'manual mode'. The implement shall not switch from 'manual' to 'auto mode' by itself. But implements may automatically change their status from 'auto' to 'manual' when internal settings require doing so.

Note:

The example in figure 1 on page 2 refer to sprayers, but planters, seeders or any other rate/row based implement may follow the same object hierarchy and layout.

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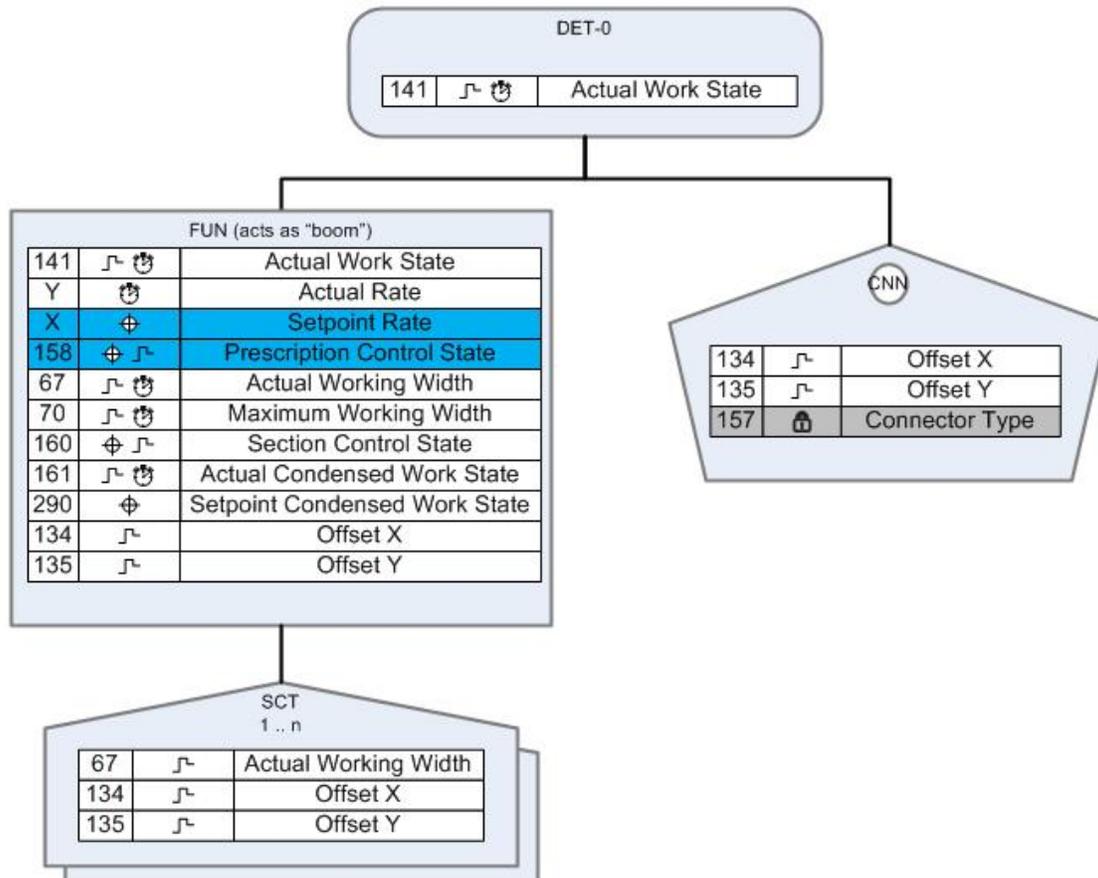


Figure 1: “Simple sprayer structure”

DET-0 = DET of type “device”
 FUN = DET of type “function”
 CNN = DET of type “connector”
 SCT = DET of type “section”

Prescription Control State (DDI 158)

In variable rate control systems the master and clients need to be synchronized in terms of their general state or activation by the operator (System activated/deactivated in individual setups). This DDE allows the clients to announce the support and preset state of prescription control in their Device Configuration Data. The Prescription Control Master can send its state as prescription value while it is recommended for the client to respond with its state immediately. The property flag “setable” and the trigger method “on change” should be set to 1 for this DDI in the Device Description Data object pool.

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The state 'manual/off' (00) means that the implement is in manual state and will ignore all control commands for prescription. In 'auto state' (01) the client accepts the control commands for prescription as far as its overall process state allows.

The Prescription State DDI should be attached to any DeviceElementObject objects representing a setpoint rate. The property flag "setable" of the rate DDI should be set to 1 in the Device Description Data object pool. If the Prescription State is only added to Device ElementObject with device element number zero means it is valid for all setpoint rate DDI's inside the object pool.

Use Cases

Start up operation

1. During a start up the implement shall set the PCS to 'manual mode'.

Auto request from TC

1. The implement receives an 'auto' request from TC.
2. The implement shall check whether all conditions are fulfilled to allow rate control.
3. If this check is ok: The implement may respond with 'auto mode' and set its internal PCS client to 'auto mode'.
4. If this check not ok: The implement shall respond with 'manual mode'. The internal state is still in manual mode. The TC may inform the operator accordingly.

Manual request from TC

1. The implement receives a manual request from TC.
2. If the implement is still in 'auto mode' the implement shall set its internal PCS client to 'manual mode'.

Loss of requirements for auto mode

1. The implement internal conditions don't allow for automatic section control anymore.
2. The implement shall set the internal PCS client to 'manual mode'.
3. The implement shall send the PCS to inform the TC accordingly. On reception of this 'manual mode' the TC/Prescription Control Master may inform the operator accordingly.