**Notes on structure of Standard Panel Cell, circa 2019.**

Main Task Program Schedule: Periodic at 10.0 ms, Priority 10, Watchdog at 500 ms

Festo Equipment refer to: Commissioning of E2M\_EthernetIP.pdf

1. MD01\_ManualWorkCell

MainRoutine

DM00\_Mapping

EP00\_MachineState

EP01\_Initialize

EP02\_Run

EP03\_Terminate

EP04\_ClearFaults

EP05\_Manual

2. MD02\_Elevator

MainRoutine

DM00\_Mapping

EP00\_MachineState

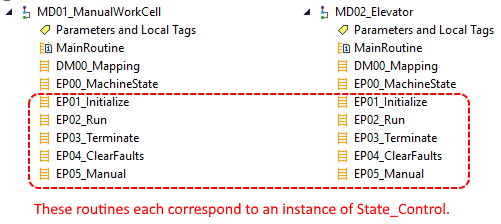
EP01\_Initialize

EP02\_Run

EP03\_Terminate

EP04\_ClearFaults

EP05\_Manual



**MD01\_ManualWorkCell - DM00\_Mapping**

**StartRequest**

In EP00\_MachineState: Not Initialized, Not Stopped, Not Faulted.

Stopped: ModuleState.Stopped is only asserted in one place, EP03\_Terminate. It is asserted when Terminate.CMD is asserted.

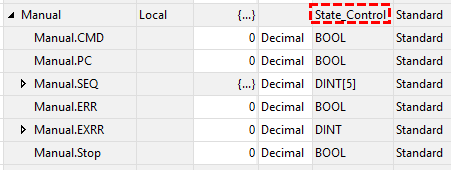
Terminate.CMD is asserted in EP00\_MachineState on rung 2 when ModuleState StopReq OR StopButton OR SafetyRelay1.

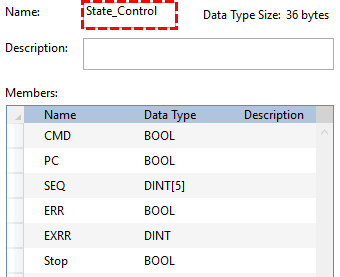
**ManualWorkCell**

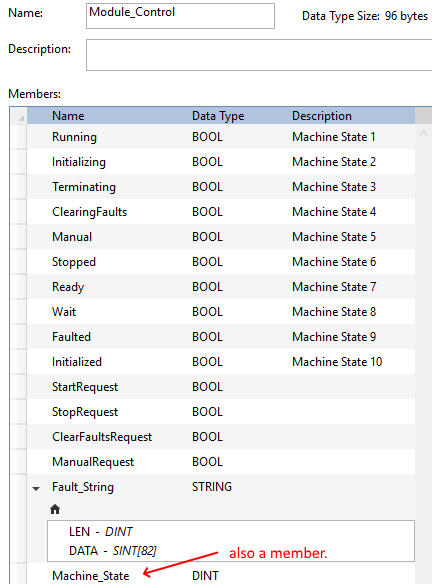
ManualWorkCell is an instance of the UDT Module\_Control in the Controller Tags group (global).

**Manual**

Manual is an instance of the UDT StateControl.





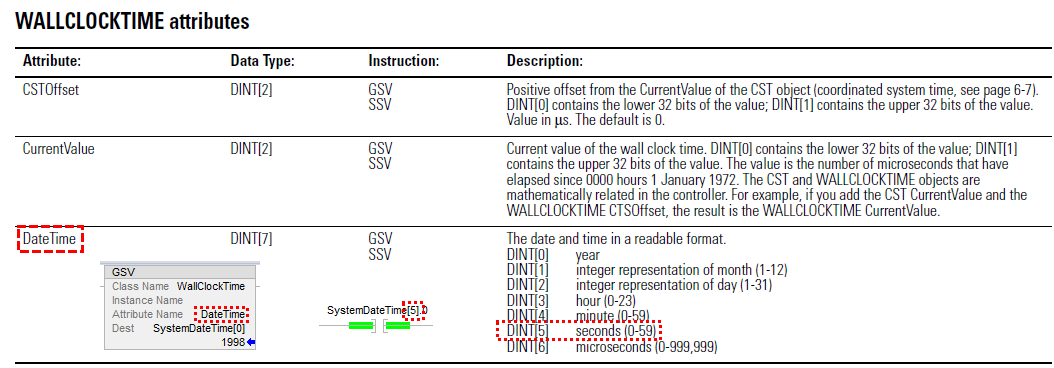


**ModuleState**

**ModuleState** is an instance of the UDT Module\_Control.

**ModuleState.Running** active when cell is initialized, not stopped, and not faulted.

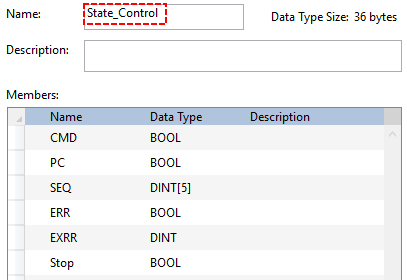
Most state transitions occur in EP00\_MachineState.

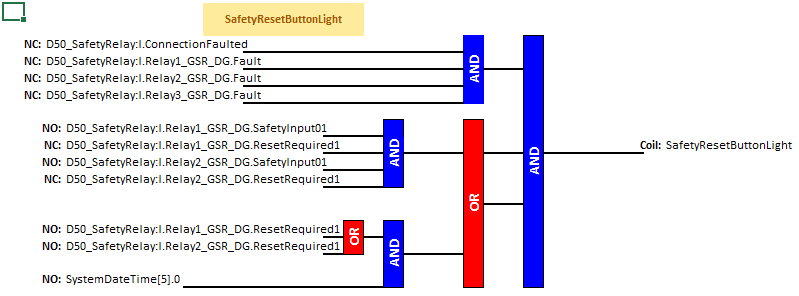


It appears that the purpose of the SystemDateTime[5].0 is to allow the start button lamp to flash off for one second (each minute?) when there are no faults and the machine is not running.

**State Control**

Same instances occur in both ManualWorkCell and Elevator





|  |  |  |
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**Initialize.CMD**: energize and latch start pb.

When Initialize.CMD is not set Initialize.SEQ[0] is set to 0.

When Initialize.CMD is set and Initialize.SEQ[0] = 0 Initialize.SEQ[0] is set to 20.

**Initialize.SEQ[0]**: is set to 0 on the first scan.

It is held at 0 whenever Initialize.CMD is not set.

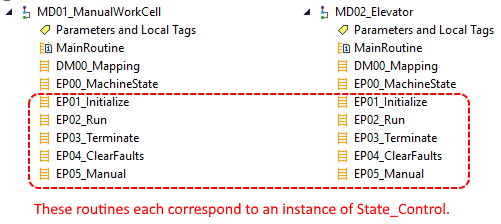
The first scan that Initialize.CMD is trueand Initialize.SEQ[0] = 0 Initialize.SEQ[0] is set to 20.

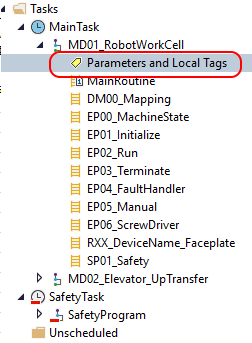
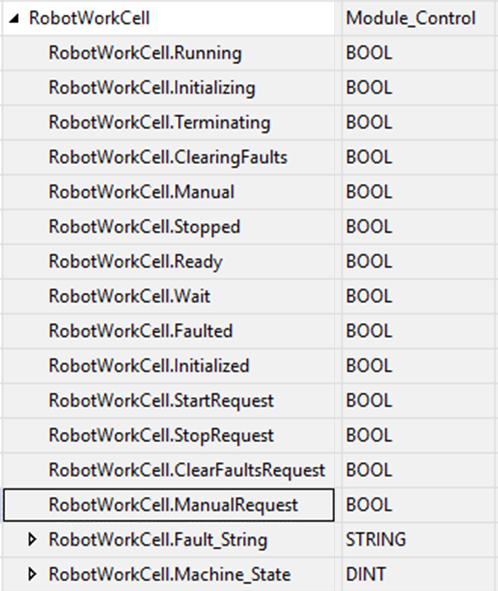
When Initialize.SEQ[0] = 20 and the palm switch is closed Initialize.SEQ[0] is set to 30.

When Initialize.SEQ[0] = 30 ModuleState.Initialized is set.

The purpose of Initialize.SEQ[0] = 30 seems tp be to set ModuleState.Initialized = True.

ModuleState.Initialized latches itself until ModuleState.Stopped = True.



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