FAT - Automated High-Bay warehouse

Test items:

When in resetting State

1 all equipment modules are resetted, the state Idle is activated when all equipments are succesfully initialized

When in execute State

Two options:

2 *Get a piece from magazine (xGetPiece == TRUE)*

If an (empty) container is still present on the conveyer, this container is first placed into the warehouse

2.a

2.b A piece with a correct color is extracted from the warhouse and placed on the belt

3 *Save a piece into the magazine (xGetPiece != TRUE)*

If no container is present on the conveyer an empty container is first extracted from the warehouse and

3.a placed on the belt

After a piece has been placed (xPlaced = TRUE) the container is saved into the warehouse with the correct

3.b color

ParamCheck

4 If the current state is idle and the CntrCmd == **START**, the next state is not activated if the params aren't OK

Errors

5 The horizontal CNT value hasn't changed while the motor is busy

6 The vertical CNT value hasn't changed while the motor is busy

7 The conveyer has been activated for too long (is piece stuck?)

8 The cantilever has been activated for too long

Test #1 *all equipment modules are resetted, the state Idle is activated when all equipments are succesfully initialized*

Pre-conditions

1. The current active step is resetting

Test steps

1. None

Expected result

All the Equipment modules are resetted. When:
EM_xyTransport
is succesfully initialized the next state (idle) is activated.

Test #2 *Get a piece from magazine (xGetPiece == TRUE)*

Pre-conditions

1. The current active step is Idle
2. xGetPiece = TRUE
3. eProduct != None or Empty
4. The selected eProduct type is present in the magazine

Test steps

1. Set CntrlCmd to **START**

Expected result

When a container is still present on the conveyer (only works if this container has been placed by the unit itself!) the unit will first remove this container and place it in the warehouse.
When the conveyer is empty, a container with the same eProduct type is removed from the warehouse and placed onto the belt. After the container has been placed, the belt moves the container to the pick/place position.
Finally the next state (completing) is activated.

Test #3 *Save a piece into the magazine (xGetPiece != TRUE)*

Pre-conditions

1. The current active step is Idle
2. xGetPiece = FALSE
3. eProduct != None or Empty
4. An empty container is present

Test steps

1. Set CntrlCmd to **START**
2. After an empty container is present, place a piece in the container and set xPiecePlaced to TRUE

Expected result

When a container is not yet present on the conveyer the unit will first get an empty container from the warehouse and places it onto the belt. After the container is placed on the belt, the belt moves the container to pick/place position.
When a container is present the conveyer a piece may be placed and the xPiecePlaced command must be set to TRUE. the unit will remove the container from the belt and place it in the warehouse. after which the next state (completing) is activated.

Test #4 *If the current state is idle and the CntrCmd == START, the next state is not activated if the params aren't OK*

Pre-conditions

1. The current active step is Idle

Test steps

1. Set CntrlCmd to START

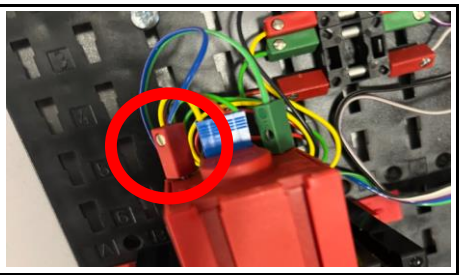
Expected result

The unit should only start when:
When we want to get a piece, the piece is actually present in the system
When we want to save a piece an empty space is present in the system
The selected product type is not Empty
The selected product type is not None

Test #6 *The horizontal CNT value hasn't changed while the motor is busy*

Pre-conditions

1. The current active step is Execute
2. Power is removed from horizonal motor:



Test steps

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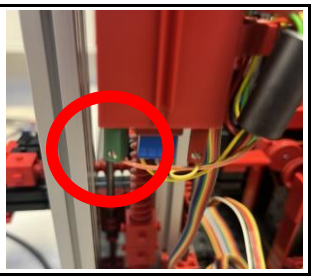
Expected result

The horizontal motor won't move, and thus the CNT value cannot change, causing an error.

Test #7 *The vertical CNT value hasn't changed while the motor is busy*

Pre-conditions

1. The current active step is Execute
2. Power is removed from vertical motor:



Test steps

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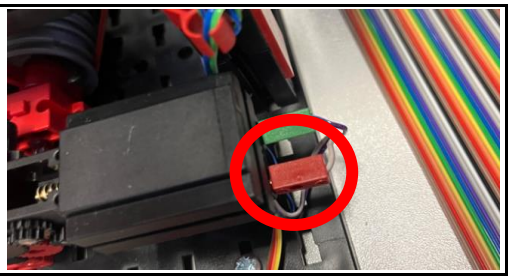
Expected result

The vertical motor won't move, and thus the CNT value cannot change, causing an error.

Test #8 *The conveyer has been activated for too long (is piece stuck?)*

Pre-conditions

1. The current active step is Execute
3. Power is removed from conveyer motor:



Test steps

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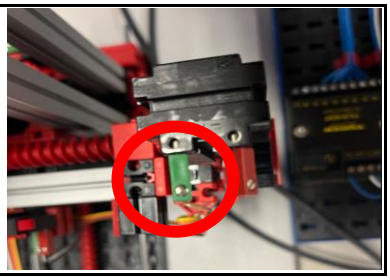
Expected result

The container cannot be moved by the conveyer. After X seconds an error should have generated.

Test #8 *The cantilever has been activated for too long*

Pre-conditions

1. The current active step is Execute
3. Power is removed from cantilever motor:



Test steps

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Expected result

The cantilever cannot retract or extend. Causing an error after X seconds.