The Hermes Standard
for "M-to-M" in SMT Assembly

The Hermes Standard Change Proposal

Add Top and Bottom clearance height attribute to Board Available message

Voting meeting:
13th of November (Productronica / Munich)

Requesting company:
Nutek Europe B.V.

Service description tag:

- (Revision of V1.0)

Description:

For machines which buffer PCB's in a magazine or fixed buffers, they need to know the top and bottom clearance of component to avoid any board crash. Generally the machine setting have the buffer first slot, last slot and pitch details for taking care of the top and bottom clearance.

Use cases:

During PCB assembly process components with different heights are mounted on the top and bottom of the PCB. So the machines which buffers PCB vertically in a magazine or fixed buffer need to know the clearance (top/bottom) between each PCB.

Functionality / communication sequences:

The respective information need to be conveyed along the line with the PCB.

New / changed XML messages:

Append BoardAvailable message with the following two attributes:
- TopClearanceHeight
  (type: float, range: positive numbers, optional: yes, description: The clearance height for the top side of the PCB in millimeter.)
- BottomClearanceHeight
  (type: float, range: positive numbers, optional: yes, description: The clearance height for the bottom side of the PCB in millimeter.)

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Proposed changes to standard:

3 Message definition

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3.6 BoardAvailable

The BoardAvailable message is sent to the downstream machine to indicate the readiness of the upstream machine to handover a PCB. When an optional attribute is received from an upstream machine, then it must be passed on (possibly altered) to the next downstream machine.

BoardAvailable	Type	Range	Optional	Description
◆ BoardId	string	GUID	no	Indicating the ID of the available board
◆ BoardIdCreatedBy	string	non-empty string	no	MachineId of the machine which created the BoardId (the first machine in a consecutive row of machines implementing this protocol). The MachineId is part of the Hermes configuration.
◆ FailedBoard	int	0 .. 2	no	A value of the list below
◆ ProductTypeId	string	any string	yes	Identifies a collection of PCBs sharing common properties
◆ FlippedBoard	int	0 .. 2	no	A value of the list below
◆ TopBarcode	string	any string	yes	The barcode of the top side of the PCB
◆ BottomBarcode	string	any string	yes	The barcode of the bottom side of the PCB
◆ Length	float	positive numbers	yes	The length of the PCB in millimeter.
◆ Width	float	positive numbers	yes	The width of the PCB in millimeter.
◆ Thickness	float	positive numbers	yes	The thickness of the PCB in millimeter.
◆ ConveyorSpeed	float	positive numbers	yes	The conveyor speed preferred by the upstream machine in millimeter per second
◆ TopClearanceHeight	float	positive numbers	yes	The clearance height for the top side of the PCB in millimeter.
◆ BottomClearanceHeight	float	positive numbers	yes	The clearance height for the bottom side of the PCB in millimeter.

FailedBoard may be one of the following values:

    0   Board of unknown quality available

    1   Good board available

    2   Failed board available

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FlippedBoard may be one of the following values:

 0   Side up is unknown

 1   Board top side is up

 2   Board bottom side is up

If FlippedBoard is 2 (Board bottom side is up) then TopBarcode is facing downwards and BottomBarcode is facing upwards.

The definition of board bottom and board top side is outside of the scope of The Hermes Standard and left to the customer.

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