

# Keysight Technologies

## Detecting Tailgating Boards on the i3070 Inline In-Circuit Tester

Application Note



## Background

With broad adoption by electronics manufacturers looking to automate their board test strategy, Keysight Technologies, Inc. continues to innovate with its i3070 Inline In-Circuit Test (ICT) solution. New features have been recently introduced to improve customer experiences in terms of safety and productivity. One of the latest features is detection of tailgating boards. This innovative technique can eliminate the risk of printed circuit board assemblies (PCBAs) being damaged if the upstream system should fail to move the PCBA properly due to any sensor malfunction. Another potential error which could arise is if the operator manually loads a PCBA, causing two PCBA boards to pile up back to back.

## The Technique

The tailgate technique used in the i3070 Inline ICT is very simple. An additional sensor (Figure 1) is installed in the buffer zone (zone 1) area to detect any unexpected PCBA tailgating into the tester. The sensor is adjustable along the conveyor rail, and is placed at a position of 10-15 mm off a board length after the board has stopped at the Zone 1 board stopper.

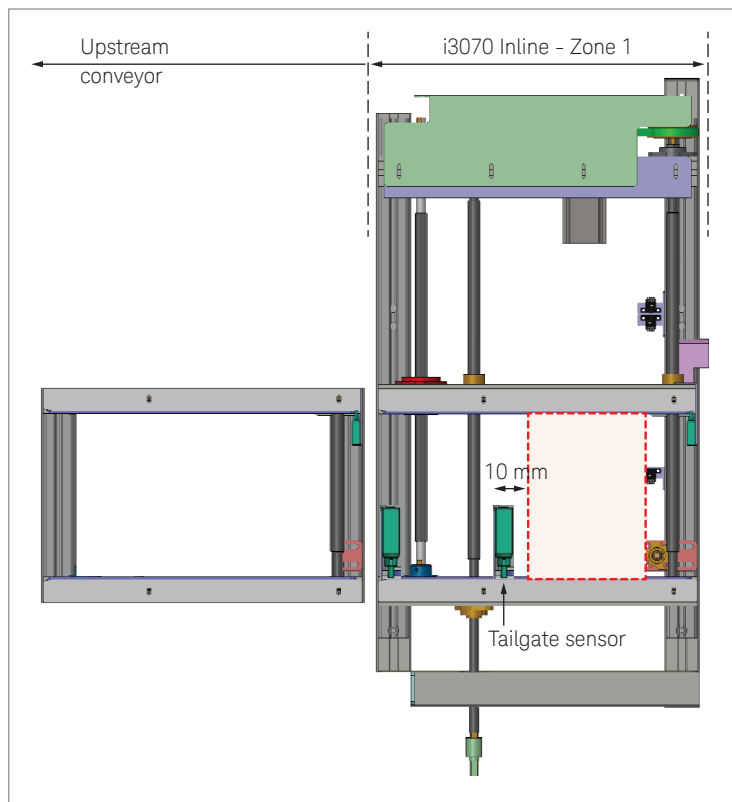


Figure 1. Tailgate sensor (plan view)

1. A normal board flow situation is shown in Figure 2 below. A PCBA from the upstream conveyor enters the ICT system. In this situation, the sensor is not triggered as the tailgating sensor does not detect any tailgating board. Hence, it proceeds to Zone 2 for testing.

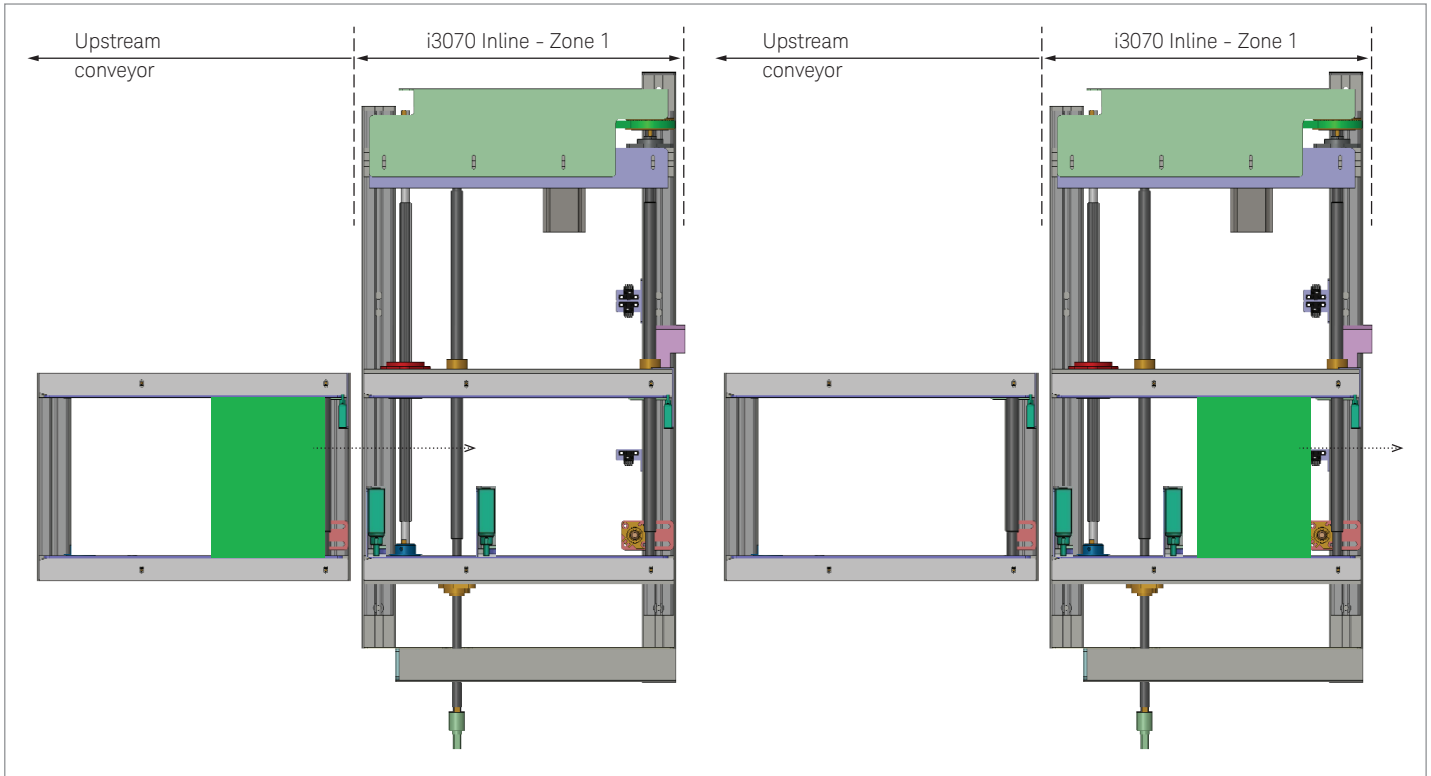


Figure 2. Normal board flow situation (plan view)

2. An abnormal board flow situation is shown in Figure 3 below. Two PCBAs are transferred from the upstream conveyor to the in-circuit tester. When the conveyor belt stops running, the tailgate sensor is triggered as it detects the presence of a PCBA in the sensor area. Hence, the system will trigger an alarm and alert the user.

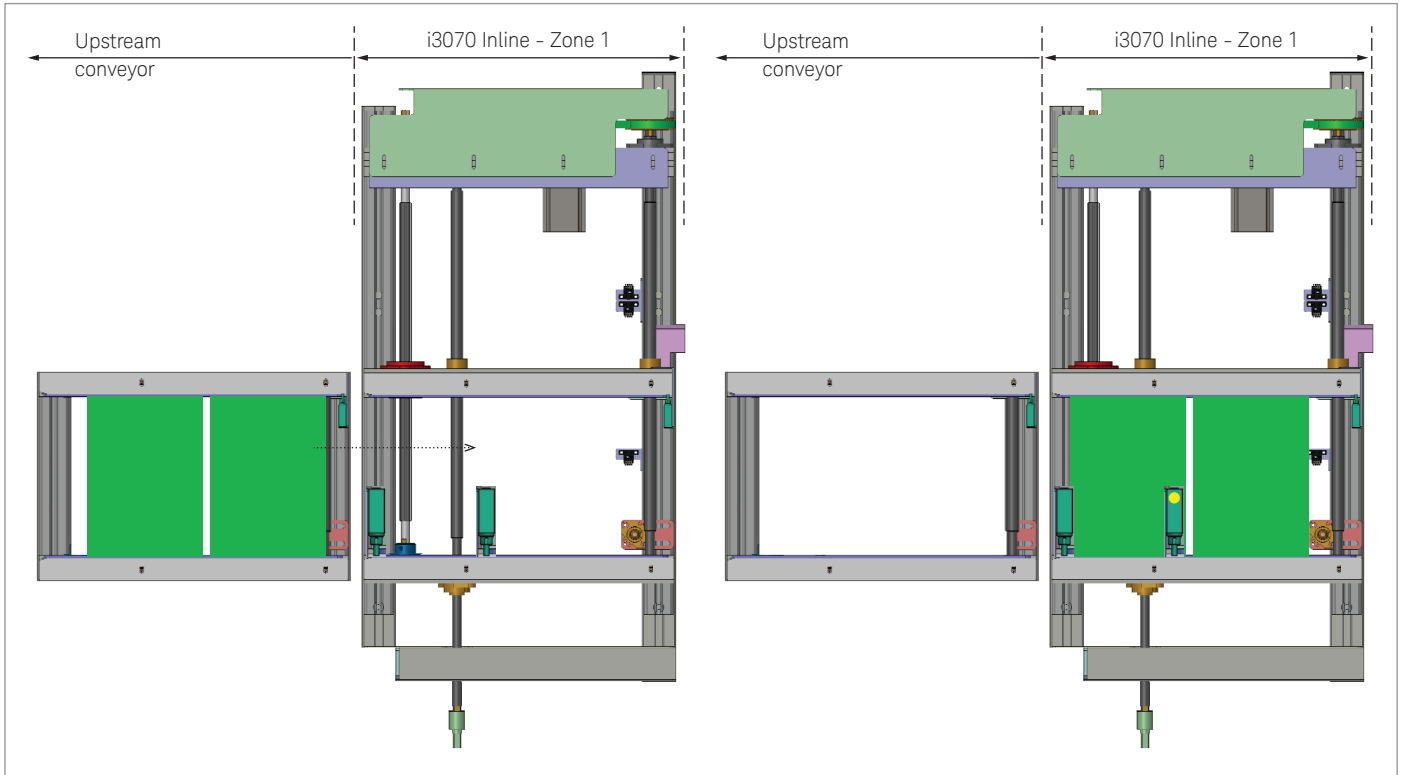


Figure 3. Abnormal board flow situation (plan view)

## Conclusion

The tailgate detection feature is a simple and effective way for preventing PCBAs from being damaged by the system due to errors arising from operator negligence, as well as upstream system sensor signal errors.



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