https://verifone.cloud/docs/sca-functional-specification/features/overlay_detector_fod
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Overlay Detector (FOD) Support

The payment terminals feature built-in overlay detection using a recessed infrared (IR) proximity sensor, known as the **Foreign Object Detector (FOD)** or **P-sensor**, that continuously monitors for unauthorized hardware such as skimmer overlays. The payment application integrates with the FOD library to automate detection and provide real-time visibility of tamper status at the POS level.

Applicable Devices

- M425 Plus -A
- M450 Plus -A

Background

Card-present devices are vulnerable to overlay attacks, where malicious hardware is fitted over the keypad or bezel to capture cardholder input. Traditional safeguards rely on manual inspections by store associates — a process that is both time-consuming and prone to human error. The overlay detection system replaces this with automated, continuous validation, significantly reducing the likelihood of undetected tampering.

Rather than relying on basic surface-level sensing, which can be defeated by exposing the sensor, the **recessed IR field design** analyses subtle changes in reflected light, surface properties, and proximity signals. Even if an attacker attempts a precise cutout, the system can still identify anomalies caused by the overlay's presence within the sensor's wider field of view, making circumvention far more difficult.

How It Works

Detection occurs in two modes:

- **Boot-up** — checked automatically on device startup.
- **Runtime (scheduled)** — periodic background monitoring at the interval defined by the `FODCHECKINTERVAL` parameter.

The overlay check is confirmed after the consecutive probe results (number of retry attempts), set using the `FODPROBESCOUNT` parameter, before a final determination is made, preventing false positives.

When an overlay is detected, the terminal:

1. Halts all payment flows immediately

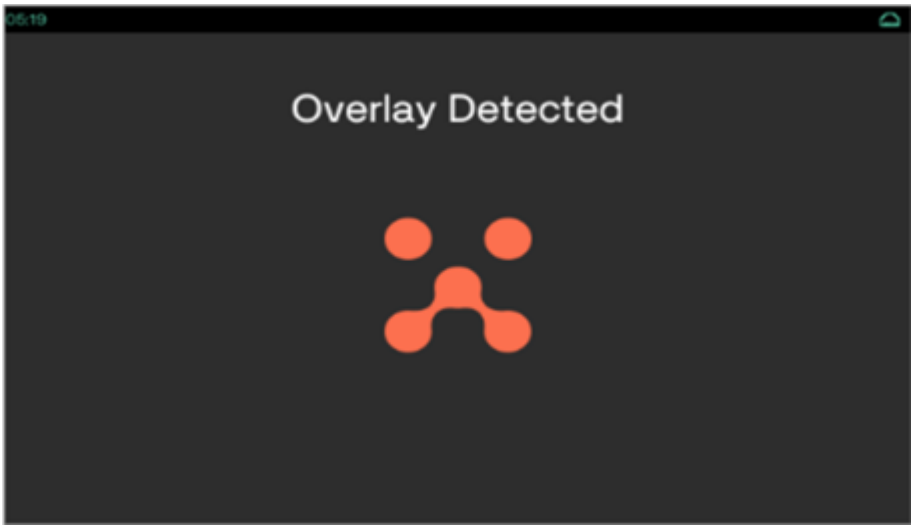
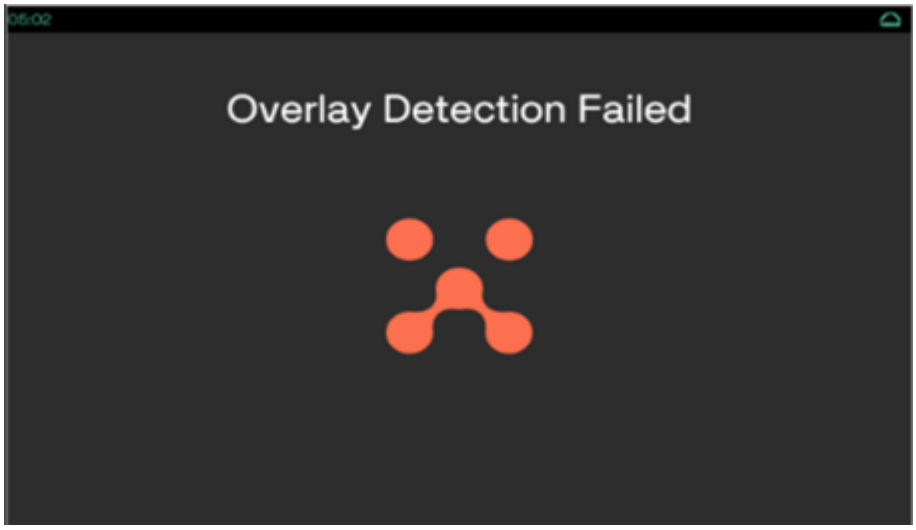
2. Displays a dedicated error screen on the device
3. Returns a dedicated response code to the POS (Primary Port)
4. Upon Reboot, if no overlay is present, the terminal resumes normal payment operation, and the next check is scheduled after the next `FODCHECKINTERVAL` interval.

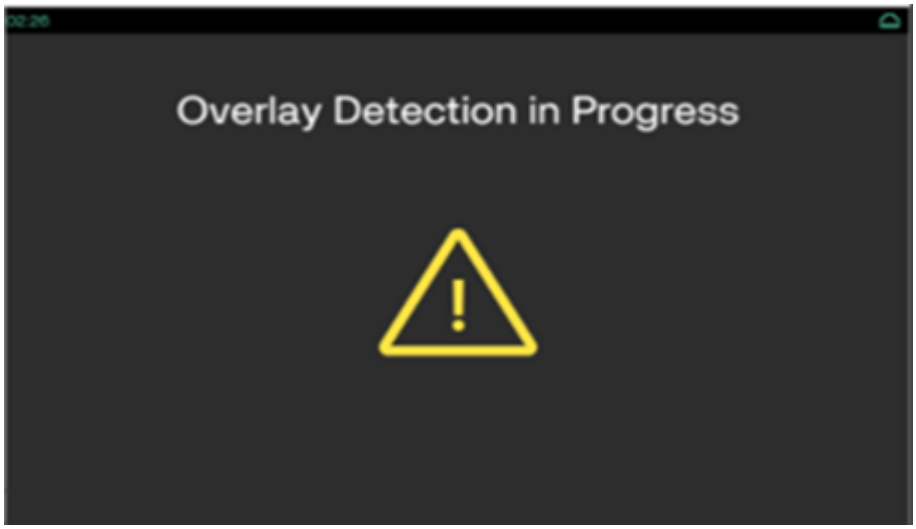
Note

Refer to Application Parameters table for more details on `FODPROBESCOUNT` and `FODCHECKINTERVAL` parameters.

Response Code

Refer to Result/Error Codes for more details.

Response Code	Response Text	Displays
59084	Overlay Detected	
59085	Overlay Detection Failed	

Response Code	Response Text	Displays
59086	Overlay Detect In Progress	

Secondary Port

Refer to Secondary Data Values and Detailed Status Values section for more details.

Condition	Secondary Data	Detailed Status
Overlay Detected	62	195
Overlay Detection Failed	62	196
Overlay Detection In Progress	62	197