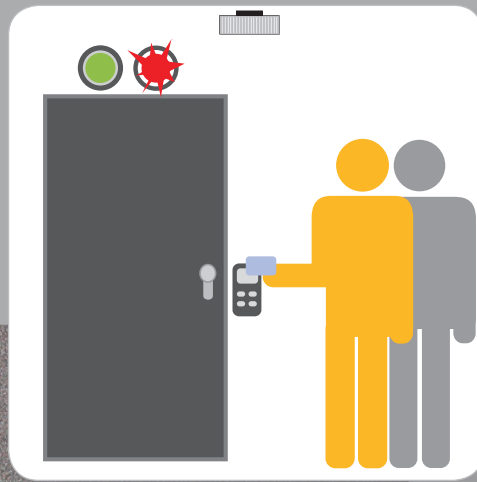


Tailgate Detector **TDflex™**



TDflex™ is an award-winning tailgate detection solution that prevents unauthorized access at:

- Doors
- Turnstiles
- Transfer gates
- Mantraps
- Airlocks

Tailgate Detector - TDflex™

The Essential Security Layer for Your Access Control Systems

Today's access control systems are designed to help control and manage authorized access into secured areas. Ensuring that every individual has properly presented a valid ID or successfully cleared biometric identification is a major challenge faced by security professionals. The prevention of tailgating and piggybacking, in other words, cheating or outsmarting the system, is a problem existing solutions do not sufficiently address.

IEE's Tailgate Detector, TDflex™, offers a solution that ensures only authorized people enter a secure area by adding an additional security layer and allowing for:

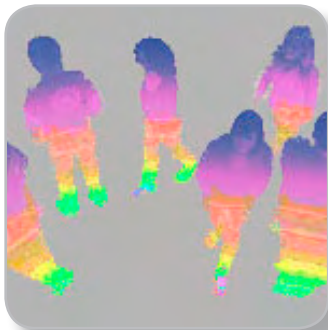
- Enhanced security
- Security staff support and optimization
- Configurable security alert levels



3D MLI Sensor™

How TDflex™ Works

IEE has developed a 3D sensor using MLI (Modulated Light Intensity) technology. MLI technology is based on the optical time of flight (TOF) principle. A non-scanning light source emits modulated near-infrared light. The phase shift between the light emitted by the source and the light reflected by the people and objects in the detection area is measured to create a real-time topographic image of the monitored area. Through sophisticated embedded algorithms, the overhead-located 3D MLI Sensor™ measures and processes topographic 3D data, in order to detect the number of people in a specific area. The sensor accurately recognizes scenarios such as tailgating, piggybacking, credential pass back, u-turn and crossing (bi-directional traffic).



Topographic image



Advantages

Seamless Integration

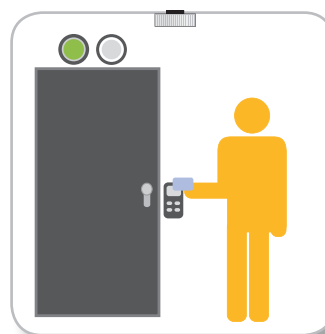
TDflex™ works with security systems by intercepting the signal emitted from the ID reader and determining the status of the access point (i.e. opened/closed door). The sensor then establishes whether or not a single individual is attempting entry and, in the event of dual or unauthorized entry, provides the necessary output by refusing access or triggering an alert, thereby adding a security layer to the existing access control system.

High Accuracy

Sophisticated algorithms and extensive test scenarios ensure reliable detection of people and objects in the detection area. These test scenarios, which consist of people carrying or wheeling luggage, wearing hats or walking closely together, show that TDflex™ can both handle people carrying objects and detect multiple individuals in close proximity.

Reliability in Changing Light Conditions

Since the sensor emits its own illumination, the performance is not influenced by artificial light and the sensor also works in the dark.



Access allowed



Alert

Operating Modes

The IEE TDflex™ is a Tailgate Detector with two main operating modes:

- Virtual mantrap
- Real mantrap



Unauthorized access at turnstiles

Real Mantrap Mode

In the real mantrap mode, TDflex™ monitors the space between two interlocking doors and provides the following outputs:

- Empty
- Only one person
- Suspicious e.g. more than one person or a person with abnormal behavior



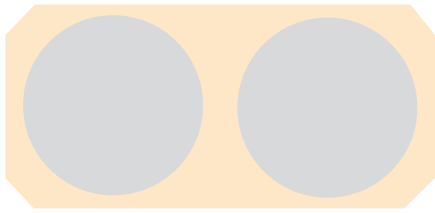
In this mode, TDflex™ does not consider authentication credits; it continuously provides the occupancy state of the mantrap.

Virtual Mantrap Mode

In this mode, TDflex™ monitors access points towards a secure area, which can be a door, a mechanical or optical turnstile, a revolving door or even a line drawn on the floor. The system prevents tailgating, piggybacking and credential passback by generating access recommendations and alerts.

TDflex™ effectively creates a virtual mantrap in front of the access point where it tracks people and only allows access to authorized people in two directions, by taking into account each person's authentication credit.





Additional Functionalities

In addition to its access control functionalities, TDflex™ can offer the following additional functionalities if its People Counting option is enabled:



- An entry and exit counter
- Zone occupancy and zone occupancy threshold alerts without the need for a computer (if installed over the only access to a zone)
- Multi-zone occupancy and threshold alerts, entries, data logging, analysis and reporting, sending alerts per e-mail or SMS (in conjunction with the IEE Occupancy Tool)

TDflex™ Scenarios – Virtual Mantrap Mode

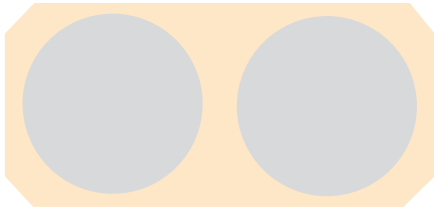
Type of access point	Configurable access strategy	Configurable exit strategy	Output
<ul style="list-style-type: none"> • Standard door • Swinging door • Sliding door • Virtual/no door • Optical turnstile • Mechanical turnstile 	<ul style="list-style-type: none"> • High security: no crowding allowed • High throughput: crowding allowed 	<ul style="list-style-type: none"> • Free exit • Controlled exit 	<ul style="list-style-type: none"> • Access recommendation • Tailgate alert • Pre-alert • Status indicators • Abort credit

TDflex™ Scenarios – Real Mantrap Mode

Type of access point	Configurable access strategy	Configurable exit strategy	Output
<ul style="list-style-type: none"> • Mantraps • Space between two interlocking doors 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Empty • Only one person • Suspicious e.g. more than one person or a person with abnormal behavior

Additional Outputs if the Optional People Counting Functionality is Enabled

- Entry counts
- Exit counts
- Occupancy high alert
- Occupancy low alert
- Current number of people in the detection area - high alert
- Current number of people in the detection area - low alert



Easy Installation

The Tailgate Detector TDflex™ can be seamlessly integrated into existing access control systems and requires only minimal changes to the existing infrastructure.

The decision to allow access can either be made within the sensor or by the existing security system.

Embedded Software

The sensor does not require any additional controllers to process the data it captures.

Semi-Automatic Calibration

After configuring basic data such as detection width, length and mounting height, the sensor calibrates the detection area within a few seconds. During this calibration the sensor surveys the empty detection zone and captures the presence of fixed objects and walls.

Self-Diagnostics

A self-diagnostic routine runs at startup and is regularly repeated to detect any sensor malfunction. The results are provided through a web interface, status LEDs and digital outputs.



Technical Data



Device Properties	TDflex9696M1	TDflex6464M1
Mounting height	2.5 to 3 m	3.0 to 5.0 m
Maximum detection area at virtual gate	2.8 m x 1.6 m to 3.8 m x 2.2 m	2.8 m x 1.5 m to 4.5 m x 2.3 m
Maximum mantrap area	3.6 m x 1.9 m to 4.6 m x 2.5 m	3.8 m x 2.0 m to 4.6 m x 2.75 m
Field of view/illumination	90° x 60°	60° x 40°
Type of illumination	Modulated near infrared light (NIR)	
Dimensions	180 mm x 150 mm x 110 mm	
Weight	2.4 kg (without cables)	
Operational temperature range	-20°C to +50°C	
Enclosure rating (device with fan)	IP 40	
Supply voltage range	24 V DC ± 15%	
Power consumption	max. 2.7 A at 24 V DC	
Housing material	Anodized aluminum	
Technology	3D MLI Sensor™	

Web-Based User Interface and Digital In-/Outputs

- Selection between two main modes: Virtual Mantrap Mode and Real Mantrap Mode
- Fully configurable access control strategy: 'high security' or 'high throughput' to adapt the system behavior to specific requirements, e.g. one person at a time, free exit allowed, u-turn allowed (only applicable in virtual mantrap)
- Selection of digital outputs with configurable polarity
- A real-time interactive graph for input and output testing of electrical installation (entry request, door contact, lock mechanism, alert, error, etc.)
- Password-protected configuration

Network Protocols

- IP address fixed or DHCP
- Configuration/application output: web interface HTTP or XML-RPC (optional)
- Time synchronization via SNTP
- Firmware updates via Ethernet

Data Logging

- Access to current status and history, e.g. number of allowed and denied passages, alerts

Optional External Output Module

- Relay via dataport

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