a sense for **IEE**
innovation

TD*flex*™ M4.0

Flexible access prevention for high security markets

Today's Access Control Systems (ACS) should be designed to control and manage authorized access to security areas by ensuring that every individual has properly presented a valid ID. Preventing tailgating or piggybacking is a challenge ACS do not sufficiently address.

IEE's Tailgate Detector TD*flex*™ as the additional security layer offers the solution to guarantee that only authorized people can enter a restricted area.
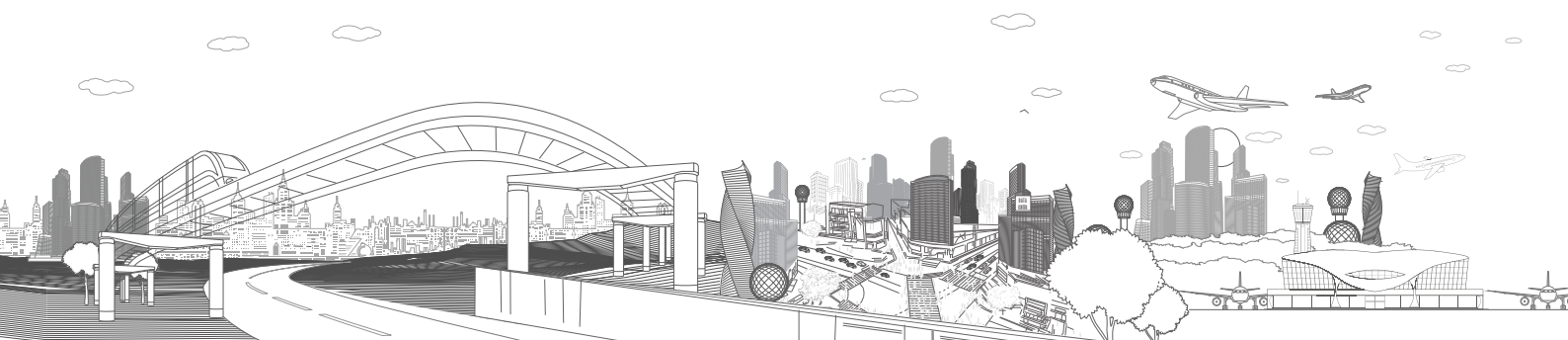
The TD*flex*™ prevents unauthorized access:

- doors
- mantraps
- airlocks
- e-gates
- turnstiles
- access points without doors

Key advantages of the TD*flex*™

- high accuracy
- based on 3D ToF technology
- smooth integration into ACS
- multiple operating modes

How TD*flex*™ works

IEE has developed a 3D sensor that uses MLI (Modulated Light Intensity) technology. This technology is based on the optical Time-of-Flight (ToF) principle, where an active, 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 field of view (FoV) is measured to create a real-time topographic image of the monitored area. The 3D MLI Sensor™ calculates the exact number of people transiting the detection area and triggers an alarm when it detects situations such as tailgating or piggybacking.

Install TD*flex*™
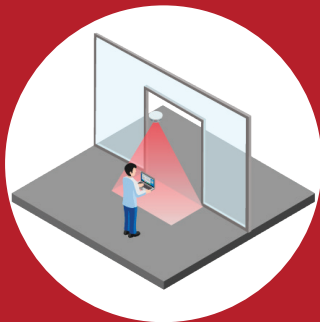
Configure TD*flex*™

Detect unauthorized access

Advantages

High accuracy

Sophisticated AI-based algorithms based on extensive data collection, to ensure reliable detection of people and objects in the detection area. The TD*flex*™ can handle both people carrying objects and detect multiple individuals in close proximity.

Seamless integration into existing ACS

The TD*flex*™ interfaces with any ACS via digital inputs and outputs (I/Os). These signals allow you to control the doors and trigger alerts if there has been a security breach.

In addition to the digital I/Os, the ACS can also communicate directly with the TD*flex*™ via XML-RPC and JSON.

Digital I/O module

The TD*flex*™ comes with an I/O module that features seven digital inputs and eight digital outputs. This module which is powered via the TD*flex*™ should be installed on the secure side, in order to maximize security.

Efficient security staff support

With the TD*flex*™ businesses can optimize the scheduling of their security staff. As the sensor is fully automated, security staff do not need to physically monitor access points – they will be alerted if there is a security breach. The TD*flex*™ reduces the potential for human error.

Easy installation

The TD*flex*™ design housing provides easy and aesthetic integration into existing building architecture. It can be integrated into dropped ceilings ("flush mount"), offering increased flexibility for all kinds of ceiling structures.

The TD*flex*™ is compatible with single or double doors swinging into the FoV and can be installed either on the unsecure (preferred) or the secure side.

Advanced anti-tamper protection

With its optical and electronic functionality the TD*flex*™ offers an improved anti-tamper protection. This prevents that anyone can manipulate the sensor.

Superuser mode

This is a temporary directional bypass, triggered by a person using a specific superuser badge with an access control device. It allows the superuser to:

- escort visitors without credentials
- enter with carts containing very large objects of any shape

Abort entry

If a person who has authenticated himself decides not to enter the secure area, the TD*flex*™ sends an "abort credit" signal to the ACS.

### Audible feedback for confirmation and alerts

The TD*flex*™ has an integrated buzzer which can be used to give individual acoustic feedbacks:

- pre-alert
- tailgate alert
- access allowed/ impeded
- more than one person has entered (real mantrap mode)

People counting

In addition to its access control features, the TD*flex*™ can be used as a people counter:

- forward/ backwards counts
- current number of people in the detection area
- triggering an alert (SMS, e-mail, relay) if occupancy exceeds or falls below the set thresholds
- if there are multiple access points, the occupancy of the entire area can be monitored in IEE's analytics tool
- historic counting data logging, analysis and reporting
- communication protocols: XML-RPC, JSON, MQTT
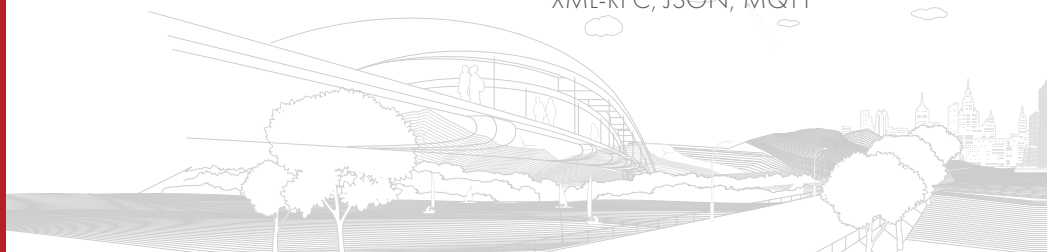
Embedded software

Due to its integrated firmware the sensor does not require any additional computer or server to process the data it captures.

Reliability in changing light conditions

As the sensor emits its own illumination, the performance is not influenced by artificial light. The sensor works in the dark.

Data logging

Historical data and system events:

- tailgate alerts
- abort credits
- bypass on/off
- superuser requests
- system errors

Self-diagnostics

A self-diagnostic routine runs at start-up and is regularly repeated to detect any sensor malfunction.

Semi-automatic calibration

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

Sensor Management Tool (SMT)

The computer-based, multi-lingual Sensor Management Tool enables the management of multiple sensors and offers the following features:

- multi-sensor configuration and backup
- software updates via the ethernet network
- the ability to copy any given configuration to multiple sensors
- multi-sensor status monitoring and advanced diagnostics
- password-protected configuration
- language selection

The TD*flex*™ is a tailgate detector with two main operating modes:

Virtual mantrap mode

In this mode the TD*flex*™ monitors single access points to and from a secure area and is usually installed in front of doors. It is also possible to monitor mechanical or optical turnstiles, or virtual access points, without any physical barrier.

If an unauthorized person attempts to gain access, the TD*flex*™ generates an alert. Depending on the security strategy, the door can be locked as a preventative measure ("high-security strategy"), or an alert can be triggered.

The TD*flex*™ can also monitor people leaving the secury area (anti-passback, forcing people to badge out) to ensure there is no tailgating.

In the virtual mantrap mode the following outputs are provided:

- access recommendation
- pre-alert
- tailgate alert
- status indicators
- abort credit

Real mantrap mode

In the real mantrap mode the TD*flex*™ monitors any space within two or more interlocking doors. The TD*flex*™ does not consider authentication credits (inputs) from the ACS. It continuously provides the occupancy status of the mantrap. Which can be used to safely control the doors.

With the classic strategy of "single person transfer", which enforces the transit of one person at the time, the TD*flex*™ provides the following outputs:

- empty
- only one person
- suspicious (e.g. more than one person or a person behaving abnormally)

Alternatively to "single person transfer", the TD*flex*™ can ensure secure transit of multiple people at a time. This allows for higher throughput without compromising security.

Virtual mantrap mode		Real mantrap mode

No door	One door	Two doors
Entry/exit readers	**High-security strategy**	**Single person transfer**
• generates an alert if a person transits without authentication	• one person at a time • the door is locked if more than one person is detected in the FoV	• outputs "empty", • "one person" or "suspicious"
Passive RFID:	**High throughput:**	**Multiple person transfer:**
• counts the people in the Detection Area (DA) • generates an alert if a person enters the DA without an ID device • no credit allocation	• generates an alert if a person enter or exits without authentication • crowding is allowed	• counts the number of people present in the mantrap. • this number is checked by an external logic against the number of credits

Technical Data

Device properties	TD*flex*96M4.0	TD*flex*64M4.0
Mounting height	2.3m to 3.4m	3.4m to 5.5m
Detection area virtual mantrap	1.6m x 1.0m to 3.8m x 2.2m	2.1m x 1.4m to 4.6m x 2.9m
Detection area real mantrap	2.6m x 1.5m to 4.6m x 2.7m	2.8m x 1.8m to 5.1m x 3.3m
Field of view/illumination	90° x 60°	60° x 40°
Type of illumination	Modulated near infrared light (NIR)	
Weight	0.8kg (core housing) + 0.16kg (design housing)	
Dimensions of the core housing	Ø 138mm x H 60mm	
Dimensions of the design housing	Ø 147mm (integration cutout diameter), Ø 181mm (outside rim diameter), 70mm (height)	
Operational temperature range	–20°C to +50°C	
Core housing ingress protection	IP 30	
Supply voltage	24Vdc ± 15%	
Power consumption	max. 1.0A at 24Vdc	
Housing material	Polymer	
Technology	3D Time-of-Flight (ToF)	
Communication protocol	XML-RPC, JSON, MQTT	
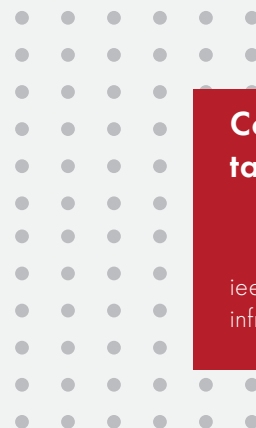
Contact us to discuss your tailgating use cases

iee-sensing.com
infrastructure@iee.lu