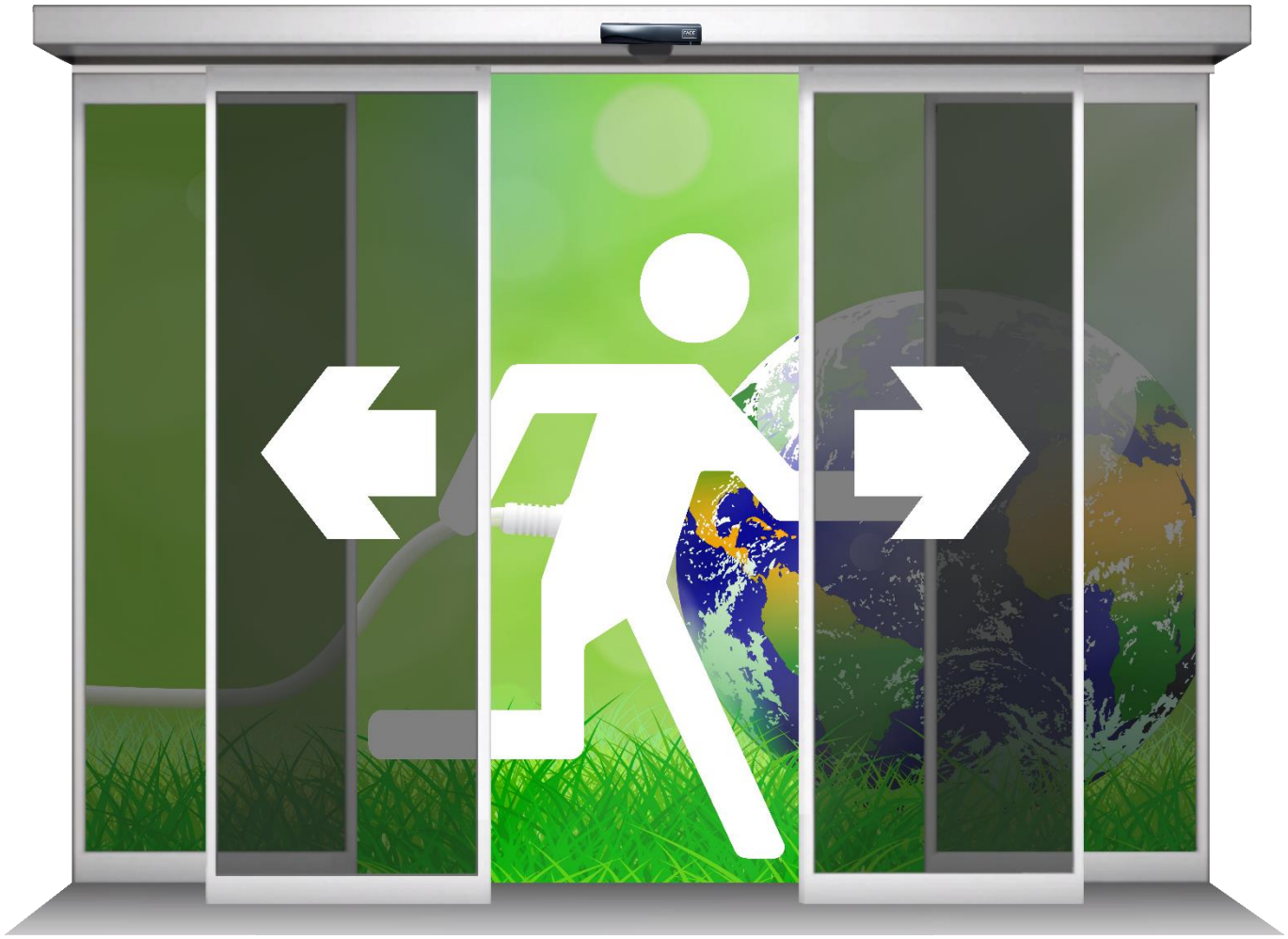
# THE NEW GREEN GENERATION OF PEDESTRIAN DOOR AUTOMATIONS FOR ESCAPE ROUTES AND EMERGENCY EXIT



## Certified automations in compliance with the European standard EN 16005

The European Standard 16005 specifies the design requirements and test methods for motorized pedestrian doors used in both internal and external doorways and in escape routes. At the point 4.7.2 it provides additional requirements for motorized pedestrian door sited in escape routes and emergency exits. These requirements are in their entirety observed by FACE.
The application of the standard by the manufacturer grants the legal compliance presumption to the essential requirements of security provided in the Machinery Directive, therefore any national regulation in contrast with it has to be considered abrogate.

The main advantage arising from this regulation is the possibility to install approved automations with standard sliding leaves in escape routes and emergency exit, in place of traditional sliding doors with break-out system in correspondence to the emergency exit direction.

This condition allows to obtain a series of important benefits:
**1)** They can be used in full glass leaves in addition to any type of sliding door. This prevents the inadvertent collapsing of the leaves caused by people during the transit out of the room (shopping carts in supermarkets and mall, luggage in airports, stretcher and wheelchair in hospital, etc.) which involves the stop of the automation and requires a subsequent action for reinstatement / resetting of the system.

**2)** It avoids dangerous situations caused by people trying to break through the doors that are moving transverse to the thrust direction; doors opened in such a way might hit other people or things in the outer area.

**3)** It is facilitated the emergency exit for people with disabilities by avoiding the direct contact with the leaves as they are already open.

**4)** Great decrease in time and implementation costs of the mechanical break-out system on sliding doors leaves and fixed side walls to break them as a swing door.

**5)** In case of single or double leaves automation without side screen, it is now not necessary to install the automation outside the building.

**6)** Comparing the costs:
- A complete installation of Advanced automation (standard) + security accessories + break-out sliding leaves in the emergency exit direction.
- To a complete Emergency automation installation for escape routes and emergency exit + security accessories + standard sliding leaves.
Installing an Emergency automation guarantees an average saving of 25%.

# TECHNICAL DESCRIPTIVE SECTION OF SECURITY FEATURES

## 1 INTRODUCTION

### 1.1 General description.

The SL4, SL5 and SLT (telescopic) series of pedestrian sliding doors are intended for use in normal and in escape routes passages. The doors can be one or two leaves and are equipped with a brushless d.c. electromechanical drive. A control board manages the sensors, determines the functions depending on the selected mode of operation and drives the motor by a PWM solid state circuit. The position and the speed of the leaf is determined using an angular encoder based on magnetic field sensing. The door will operate in different ways:

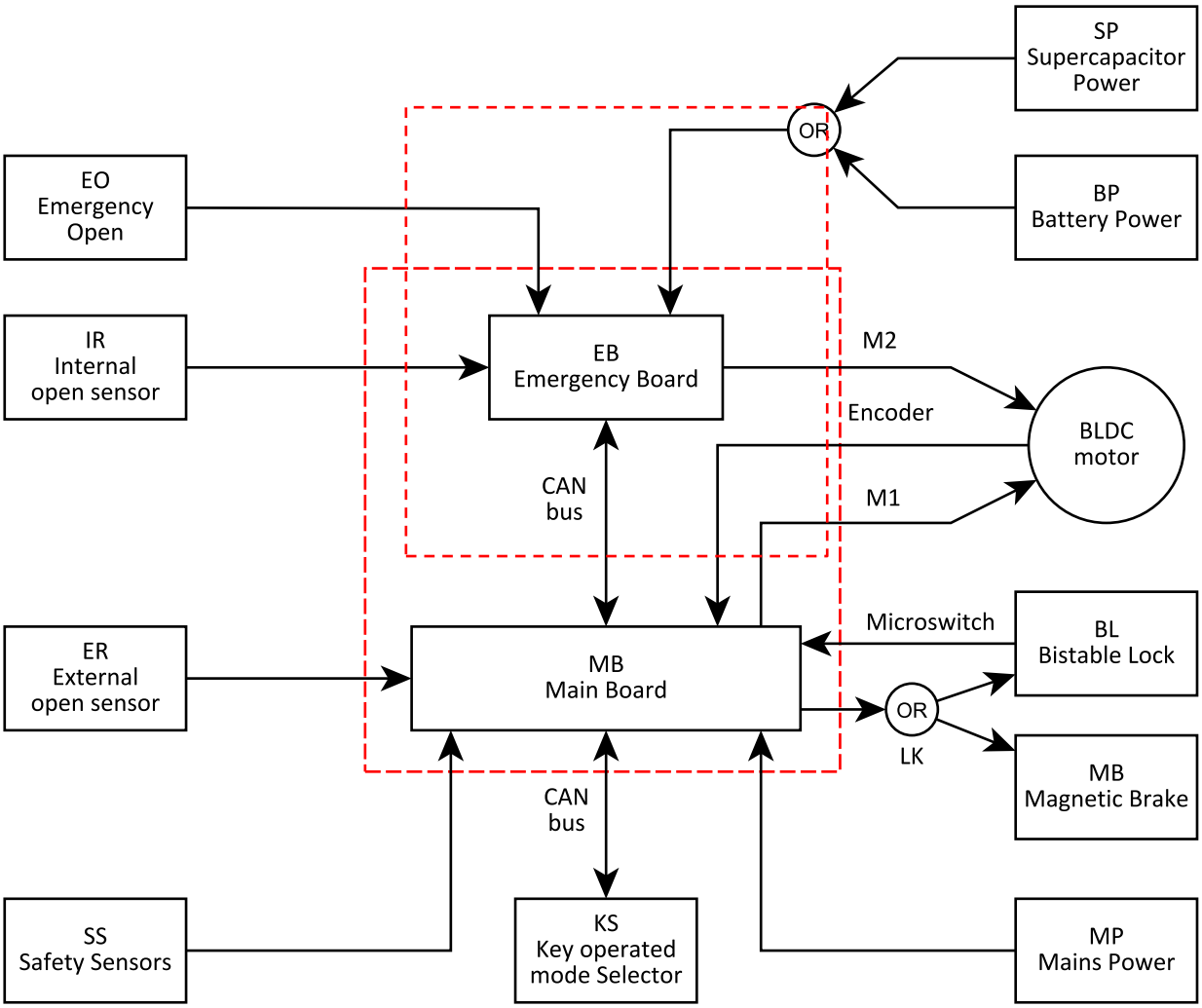
- Operator for normal installations
- Operator with a double winding motor for escape routes

1.2 **Usage and certifications.**

The **SL4, SL5, SL6** and **SLT** (telescopic) series are designed for residential and commercial applications. The applications are according to the European norm EN 16005, and to the German norm DIN 18650 regarding the Powered Pedestrian Doors. For escape routes operator the applications shall be according to the German norm AutSchR.

## 2 OPERATORS AND COMPONENTS

2.1 **Architecture of the operator.** The following figure describes the architecture of the operator for escape routes, in terms of power sources, sensor inputs, control unit (Main board plus Emergency Board) and drive unit.




2.2 **Motor.** A brushless DC motor is used, that drives the belt without gearbox. A sophisticated control of the motor is used to optimize torque and increase the efficiency. The position sensor, mounted on the cap of the motor, is used to detect position and speed of the wings. The motor has two, completely independent three-phase winding system. This solution, together with the electronics, guarantees the ability of opening the door in any condition of electrical fault. Even the position sensor is not necessary during the emergency opening. The performance of each winding system is periodically checked, thus giving the ability to move the door properly.

2.3 **Electronic unit.** The electronic unit is, for the installer, one unique unit, and he is not required to make complex cabling between different boards, thus giving a very simple and easy to understand system.

**Internally, the electronic unit is made of a main board including:**

- a switch mode power supply, that can accept an input varying between 100 and 240 Vac nominals;
- a main logic unit with a 32-bit microcontroller, that manages all the input commands and the outputs, in particular the I/Os related to safety functions;
- a three-phase motor driving circuit;
- communication ports, in particular a CAN port for local communication with other electronic units of the door;
- A four alphanumeric characters LED display and four push buttons, for the setting of all the system parameters.

**An emergency card mounted on the main board.** An additional emergency board is connected onto the main board. The main board and the emergency board are connected by a CAN based serial communication, but the emergency board is completely independent from the main board, has its own microcontroller, an additional power supply and manages an intrinsically safe movement sensor for the opening of the escape route, and supervises the operation of the main board. It can drive autonomously the motor, to achieve the emergency opening of the wings.

2.4 **Additional power supply.**

The additional power supply can be obtained from two different devices: **SLCOD** Kit which is equipped with **SUPERCAPACITORS**. The capacitors are always kept fully charged and tested periodically to guarantee their efficiency. In case of device failure, the drive operates in state of emergency opening.

**SL5BD2** battery kit is based on a 12 V battery and is available as soon as the main power supply fails. The battery kit voltage is thus able to power the motor driving circuits in order to move the door in open mode, since a power supply failure is to be considered an emergency condition. Normally the battery is kept charged and periodically tested to guarantee its efficiency. In case of a battery failure or low charge, the drive operates in state of emergency opening.

2.5 **Bistable locking device.** The bistable lock has a mechanical feature, that makes it able to remain in both the locked or unlocked position, with no need for permanent current. In escape routes the door shall never be locked, except when the emergency function is disabled, like “door closed”. A microswitch is used to monitor the position of the lock and its proper transition locked-unlocked, thus detecting any failure that could involve the locking system, and compromise the safety of the door in terms of emergency.

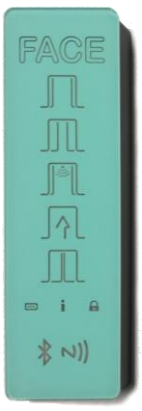
2.6 **Electro-magnetic braking device.** The electro-magnetic braking device must be installed in place of the transmission unit. It allows the door to be locked in all positions (30 kg max). It may be used when is desired that the door is locked while maintaining the escape route function. In the absence of electricity, the brake is released, the door is opened with the additional power supply and can be moved manually.

2.7 **Function selectors.**

The electronic function selector has a capacitive touch panel with clear symbols that allows to change the door function depending on the needs for the entrance/exit. In an emergency door, the function selector must be protected against unintentional change of function by unauthorized persons, since this could lead to a loss of safety.

**FSD5** protection is achieved by a RFID key, whose code is recognized if previously stored in the system, and enables the selector to change function.

**FSD6** can be protected with a numeric code.




FSD5


FSD6

## 3 SAFETY FUNCTIONS OF THE OPERATOR

3.1 **Functional Safety.** Referring to the Machine Directive 2006/42/EC, to the European norm EN 16005 and to the German norm DIN 18650, it is mandatory to comply with EN ISO 13849 regarding the Functional Safety. It is then necessary to identify and specify the safety functions of the door. The SL5E series presents the same features of a normal door, where the Functional Safety is related to the safety of the users passing through the door. Basically, a force limitation is provided to avoid injuries in case of contact between the users and the wings, but this is not sufficient in several environments. As a safety function, presence sensors shall be used to avoid contact ("collision prevention") both in closing and in opening direction. The norm EN 16005 requires a Performance Level "c" for this safety function. In emergency doors the Functional Safety, in addition to the features of a normal operator, requires the emergency opening by the internal sensor, and in any case of failure like a failure on power supply, in order to guarantee the proper evacuation of the place in a condition of panic. The norm EN 16005 requires a Performance Level "d" for this additional safety function.

3.2 **Safety function "Collision prevention".** Monitored presence sensors avoid contact during closing or opening maneuver. A failure detected in the presence sensors when closing, determines the leaves to re-open. A failure detected in the presence sensors when opening, determines low speed / stop of the door when approaching to open position.

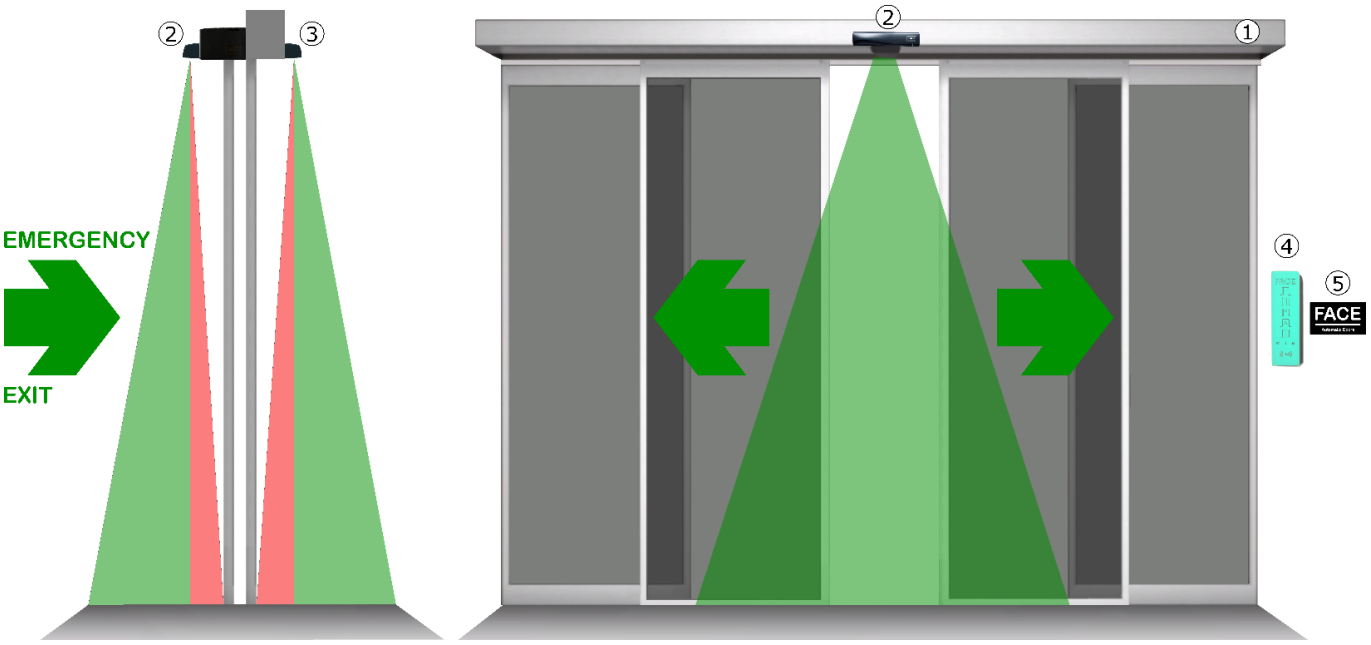
3.3 **Safety function "Emergency opening from an internal sensor".** An Intrinsically safe movement sensor (that must be approved for this application according to European Norm EN 12978) in the inner side of the operator detects people in the direction of the escape route and opens the door. This function does not operate when the door is in "door closed" modality (also called "off" or "locked"). This is why the operation mode can be changed only by authorized people, by mean of a RFID key (badge) in our function selector **FSD5** or with a numeric code in **FSD6**.

## 4 DIAGNOSTIC METHODS

4.1 **General requirements.** Diagnostic methods are intended to detect failures with different periodicity: according to EN 16005, an electrical failure preventing normal operation shall be detected in maximum 15 s, while a 24 h test is used to check the emergency opening function in escape routes.

| Diagnostic method description | Diagnosed blocks | Diagnostic test Interval |
|---|---|---|
| Power Supply Diagnostics | Power supply | 15 s |
| Supercapacitors Diagnostics/ Battery presence | Supercapacitors/Battery | 15 s |
| Supercapacitors Diagnostics/Battery charge level | Supercapacitors/Battery | 24 h |
| Motor windings | Motor driving | 24 h |
| Lock position Diagnostics | Lock | 15 s |
| CAN bus communication | Communication | 15 s |
| Digital Input Diagnostics (internal open sensor) | Digital input block | 15 s |
| Digital Input Diagnostics (safety sensors) | Digital input block | 15 s |

## EXAMPLE OF AUTOMATIC SLIDING DOORS SYSTEM WITH TWO LEAVES FOR ESCAPE ROUTES AND EMERGENCY EXITS IN COMPLIANCE WITH EN 16005




| Rif | Code | Description |
|---|---|---|
| 1 | **SL4E220** > 266 | Automation SL4E (Emergency) for 2-leaf sliding doors |
| | **SL5E220** > 266 | Automation SL5E (Emergency) for 2-leaf sliding doors |
| | **SL6E220** > 266 | Automation SL6E (Emergency) for 2-leaf sliding doors |
| | **SLTE230** > 266 | Automation SLTE (Telescopic-Emergency) for 2+2-leaf sliding doors |
| | **SLCOD** | SUPERCAPACITOR device for emergency opening, inside the automation |
| 1 | **SL5BD2** | Battery power device for emergency operation, inside the automation |
| 1 | **SL5LD** | Bistable locking device, inside the automation |
| 1 | **SL5SL** | Signaling device lock position, optional device, inside the automation |
| | **SL5SB3** | Magnetic braking device, to be installed in place of the transmission group, inside the automation |
| 2 | **OSD4 - OSD8** | Mono-bidirectional sensor for opening the door in escape routes and emergency exits, approved EN16005 |
| 3 | **SL5FS** | Magnetic device for fixing the sensor to the automation |
| 4 | **OSD1 - OSD3** | Mono-bidirectional safety sensor for door opening, approved EN16005 |
| 5 | **FSD5 - FSD6** | Electronic function selectors |
| 6 | **TB1** | Proximity transponder badge |

# TECHNICAL FEAUTURES OF THE AUTOMATION

| Series | SL4E | SL5E | SLTE |
|---|---|---|---|
| Model | EMERGENCY | EMERGENCY | TELESCOPIC-EMER. |
| Use | Sliding doors automation | Sliding doors automation | Telescopici sliding doors automation |
| Special Applications | **Emergency routes and exits without break-out system** | **Emergency routes and exits without break-out system** | **Emergency routes and exits without break-out system** |
| Approved<br>EN 16005 + DIN 18650 | **TÜV THÜRINGEN** | **TÜV THÜRINGEN** | **TÜV THÜRINGEN** |
| Dimensions mm | 156 x 125 x max 6600 | 156 x 125 x max 6600 | 216 x 125 x max 6600 |
| Load | 100 kg one leaf<br>180 kg two leaves | 140 kg one leaf<br>240 kg two leaves | 200 kg two leaves<br>280 kg four leaves |
| Maximum opening and closing speed: | 0,8 m/s one leaf<br>1,6 m/s two leaves | 0,8 m/s one leaf<br>1,6 m/s two leaves | 0,8 m/s two leaves<br>1,6 m/s four leaves |
| Duty class | Continuous operation | Continuous operation | Continuous operation |
| Intermittent operation | 100% | 100% | 100% |
| Traction | Direct drive brushless motor | Direct drive brushless motor | Direct drive brushless motor |
| Power supply | Extended range 100-240 V 50/60 Hz | Extended range 100-240 V 50/60 Hz | Extended range 100-240 V 50/60 Hz |
| Rated power | 70 W | 70 W | 70 W |
| Stand-by | 10 W | 10 W | 10 W |
| Rated load | 150 N | 150 N | 150 N |
| Protection rating | IP 20 | IP 20 | IP 20 |
| Parameter settings | Buttons and display | Buttons and display | Buttons and display |
| Memory for settings and saving | USB standard | USB standard | USB standard |

TÜV THÜRINGEN

# Certificate P-4071/15 (English Issue)

(valid only in association with the terms overleaf)

**Holder of the certificate:** FACE S.r.l.
Viale delle Industrie 74; 31030 Dosson di Casier (TV) - Italy

**Site of Manufacture:** FACE S.r.l.
Viale delle Industrie 74; 31030 Dosson di Casier (TV) - Italy

Type Approval Mark: valid until **2022-12-31**




**Product:** Automatic in-line sliding door for the use on escape and rescue routes

**Model:** **SL6E / SL5E / SL4E**

**Testing based on the following:**

- Guideline for automatic sliding doors on escape and emergency routes (AutSchR): 1997-12
- DIN 18650-1/2: 2010-06
  Locks and metal fittings - automatic door systems
- DIN EN 16005: 2013-01
  Power operated pedestrian doorsets - Safe in use
- DIN EN 60335-1: 2012-10
  Household and similar electrical appliances – Safety
  Part 1: General requirements
- DIN EN 60335-2-103: 2016-05
  Household and similar electrical appliances – Safety
  Part 2-103: Particular requirements for drives for gates, doors and windows
- DIN EN ISO 13849: 2008
  Safety of machinery - Safety-related parts of control systems

All standards, regulations or guidelines named in the above-mentioned basic documents must also be considered valid.

**Result of testing:**

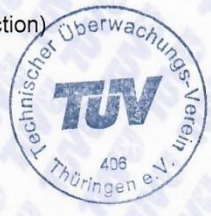
The demands made in the test requirements are fulfilled by the product.

Permission is hereby given to use the Test Mark illustrated above, in accordance with the contractual terms printed overleaf. This certificate replaces the certificate from 2018-06-26.

Zella-Mehlis, 2018-12-12

TÜV Thüringen e.V. (Association for Technical Inspection)
Test Centre for Building Products

Graduate Engineer (FH) Reichelt
Manager of the Test Centre



TÜV THÜRINGEN

# Certificate P-4082/16 (English Issue)

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Viale delle Industrie 74; 31030 Dosson di Casier (TV) - Italy

**Site of Manufacture:** FACE S.r.l.
Viale delle Industrie 74; 31030 Dosson di Casier (TV) - Italy

Type Approval Mark: valid until **2022-12-31**




**Product:** Automatic in-line telescope-sliding door for the use on escape and rescue routes

**Model:** **SLTE**

**Testing based on the following:**

- Guideline for automatic sliding doors on escape and emergency routes (AutSchR): 1997-12
- DIN 18650-1/2: 2010-06
  Locks and metal fittings - automatic door systems
- DIN EN 16005: 2013-01
  Power operated pedestrian doorsets - Safe in use
- DIN EN 60335-1: 2012-10
  Household and similar electrical appliances – Safety
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Zella-Mehlis, 2018-06-26

TÜV Thüringen e.V. (Association for Technical Inspection)
Test Centre for Building Products

Graduate Engineer (FH) Reichelt
Manager of the Test Centre

Technischer Überwachungs-Verein TÜV Thüringen e.V. 406

# INNOVATE TO SIMPLIFY
# RESPECTING THE PLANET

**MARCATURA CE E NORMA EUROPEA EN 16005**

Le automazioni FACE sono provviste di marcatura CE, e sono progettate e costruite in conformità ai requisiti di sicurezza della norma europea EN 16005 e delle seguenti direttive europee: Direttiva Macchine (2006/42/CE), Direttiva Compatibilità Elettromagnetica (2004/108/CE).
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La presente edizione del documento annulla e sostituisce le precedenti. In caso di modifica verrà rilasciata una nuova edizione.
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