



# iDiscovery & APS

## A new level of elevator safety



CEDES develops intelligent and safe sensor solutions. With our pioneering spirit and Swiss quality we strengthen the innovative power of our customers around the globe.



#### **UNDERSTANDING**

We understand our customers, their situations and their markets. Our extensive expertise and passion for technology enable us to develop leading-edge solutions for the future.

#### **PIONEERING**

We are driven to constantly seek new possibilities. Using visionary and unconventional ideas, we captivate and inspire our customers, continually extending our leadership role in global sensor solutions.

#### **TRUSTWORTHY**

We know what we are doing. Our name stands for consistent Swiss quality – this allows our customers around the globe to place their wholehearted trust in us.



“ CEDES has dedicated a significant amount of resources into developing safety-related sensors and controls in the past years. I am proud to present you with the latest jewel of these efforts: The iDiscovery takes over most of the safety-relevant functions of an elevator. It even processes the door signals. This is truly unique.” ”

Christian-Erik Thöny, CEO CEDES Group



**Scan the QR code**  
for the detailed statement.

“ We produce every single circuit board in-house in our modern SMD facilities. We execute assembly and final tests with care and expertise – also in-house, of course. When it comes to safety, we do not delegate to others outside of CEDES. ”

Mirsada Buzimkic, Head of SMD-Testing



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for the detailed statement.



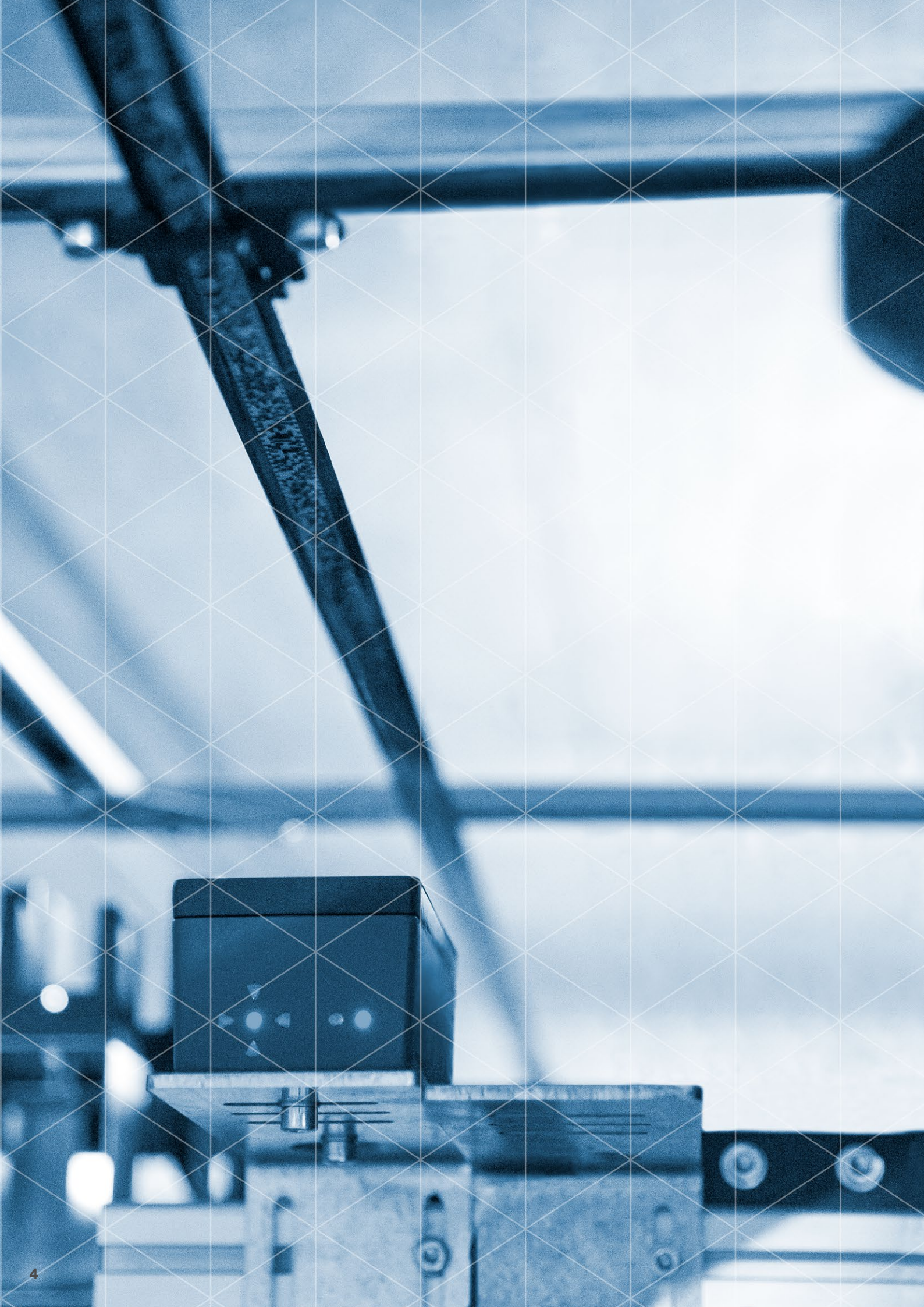
“ Guaranteeing a high safety-level does not necessarily mean that it must be complicated for our customers to handle the system. On the contrary. My team has succeeded in mastering the balancing act between developing a PESSRAL device and delivering a practice-oriented, easy-to-handle system. Convince yourself! ”

Marcial Lendi, Head of iDiscovery Engineering



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for the detailed statement.







# A new level of elevator safety

The iDiscovery is a powerful SIL 3 and EN 81-20/50 compliant position supervisor unit. In conjunction with CEDES' APS (Absolute Positioning System), it takes over the safety-relevant functions of an elevator. This highly integrated system eliminates the need for many individual systems and components currently required by a conventional elevator. In combination, the APS and iDiscovery significantly reduce the cost and complexity of the elevator as well as installation and maintenance time.

## SAFETY FUNCTIONS

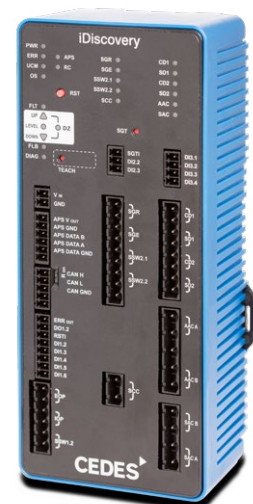
The iDiscovery monitors position and velocity of the elevator car as well as the status of the car doors, hoistway doors, and additional status signals of the elevator such as emergency operation and inspection control switches. In the case of an unsafe condition, iDiscovery opens the safety chain. Further, iDiscovery provides two additional output contacts which trigger an auxiliary braking device and an electronically activated safety gear.

The iDiscovery takes over the safety-relevant functions of an elevator:

- ▶ Door monitoring
- ▶ Leveling, re-leveling and preliminary operation with open doors
- ▶ Detection of unintended car movement (UCM)
  - Door zone speed-monitoring
  - Monitoring that door zone of target floor is not left with open doors
- ▶ Overspeed detection with different speed limits
- ▶ Retardation control / ETSL
- ▶ Final limit switches
- ▶ Bridging of door contacts for maintenance (BYPASS)
- ▶ Check if door contacts are faulty (bridged)
- ▶ Safety gear monitoring

## CONFIGURATION

Safe configuration of rated speed and final limits is performed with configuration clips that are mounted with the APS code tape. This allows the configuration of the safety parameters of the device in the field on the job site. The configuration can also be changed in the field. The use of the configuration clips in combination with the floor indicator clips allow a fully automated teach process and lead to an efficient and straightforward configuration and teaching process.









# A new level of simplicity

## **SIMPLIFIES THE HOISTWAY**

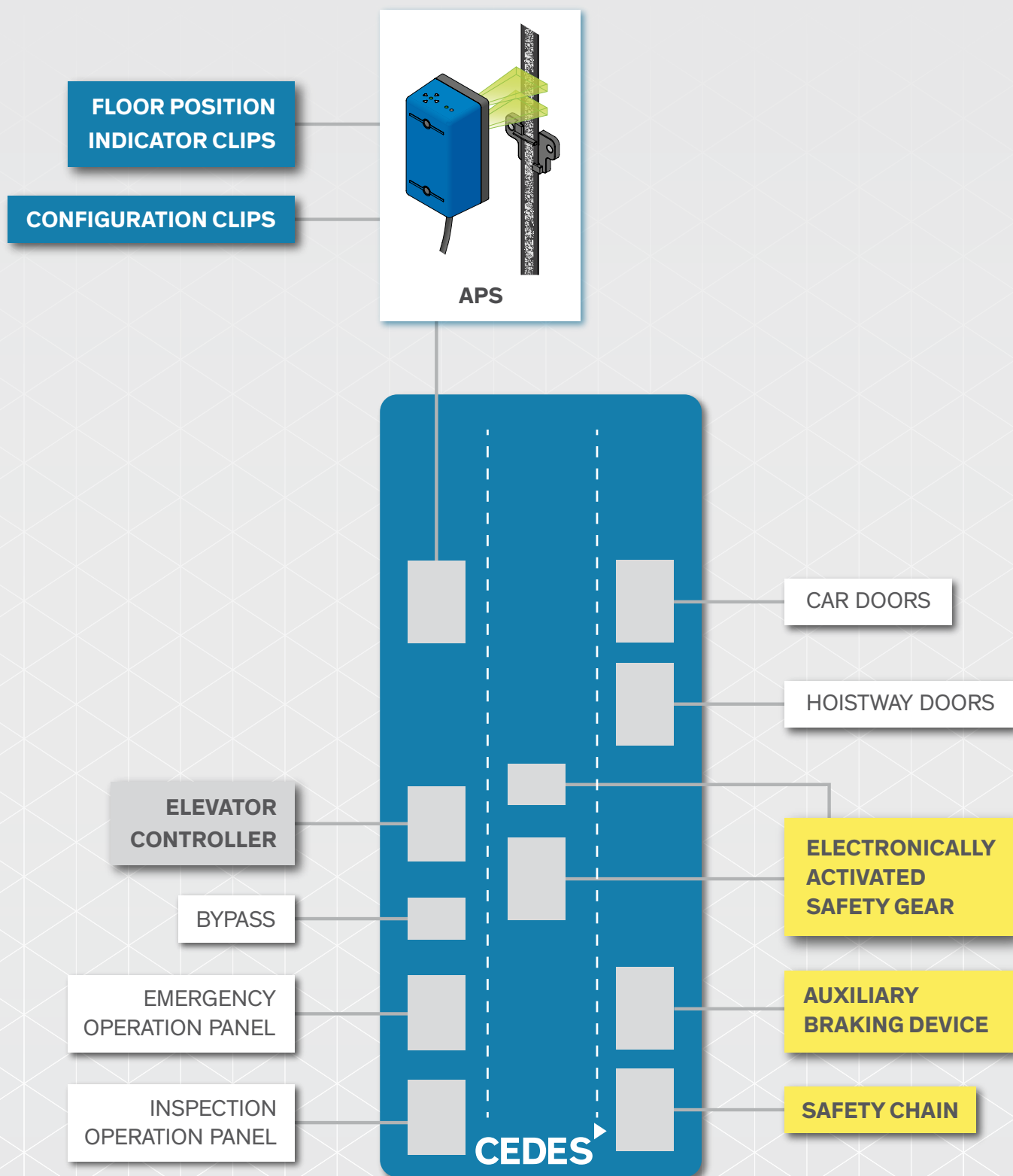
iDiscovery eliminates the need for many individual systems and components currently required. These include the final limit switches, UCM-detection devices, sensors, vanes and safety relays required for door zone functions and retardation control systems. Furthermore, in combination with an electronically activated safety gear, the mechanical overspeed governor including the governor rope and rope tension device becomes obsolete. This provides the ground for optimization of the overall hoistway size and simplifies the entire hoistway in a radical way. Time-consuming, complex and delicate installation, adjustment and maintenance of safety-relevant mechanical systems and components are no longer necessary.

## **SIMPLIFIES THE CONFIGURATION PROCESS**

iDiscovery is configured in the field on the job site. Safe configuration of the safety relevant parameters, e.g. rated speed, is performed with configuration clips that are mounted with the APS code tape. The safety relevant configuration can also be changed in the field. The on-site configuration makes it obsolete to manage and stock devices with different preconfigured rated speeds. This allows for great flexibility and simplicity during the entire lifecycle at every stage – planning, installation and operation.

## **SIMPLIFIES THE TEACH PROCESS**

The teach process of iDiscovery is automated and straightforward. The elevator is moved with inspection speed from bottom to top. Rated speed, bottom floor, top floor, final limits and floor positions are read from configuration clips and floor indicator clips which are mounted with the APS code tape. This process is fast and simple – an advantage in terms of increased efficiency.





# A new level of performance

## AUTONOMOUS

iDiscovery and APS make up a complete and autonomous system with a large operating range of up to 1500 meters and a tripping speed of up to 20m/s. iDiscovery only requires a minimum of interaction with the elevator controller. A single CAN interface that supports CANopen DS417 standard is sufficient. The safety functions are performed independently. This high level of autonomy leads to a simple integration of iDiscovery into the elevator system. The iDiscovery and its safety functions fulfil the requirements of SIL3 according to IEC 61508 and can be used within the intended applications in accordance with EN 81-20, which is provided with the iDiscovery EU type examination certificate.

## FLEXIBLE

iDiscovery is engineered in a modular way. This allows for a maximum level of flexibility when choosing the functionality that matches the different elevator lines. It is also highly flexible when it comes to the location where it is installed. Due to the fact that it is independent from the APS mounting location and the ability of APS to transmit data up to 1500 meters, iDiscovery can be installed wherever it is most suitable and ensures best accessibility. It can be installed directly into the elevator controller in the machine room, into the controllers which are mounted in the landing door frame or directly onto the car.

## ELECTRONIC OVERSPEED GOVERNOR

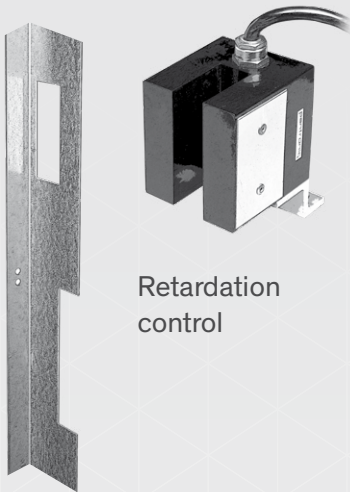
iDiscovery in conjunction with APS features a pure electronic replacement of the overspeed governor. If iDiscovery detects overspeed, dedicated safety outputs open the safety chain to stop the elevator and engage the machine brake, and trigger an electronically activated safety gear.

## CONTACTLESS

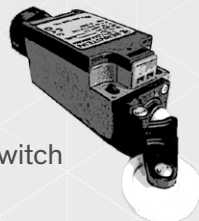
The CEDES' APS (Absolut Positioning System) is a contactless absolute positioning system for elevators. It supports speeds of up to 20 m/s and distances of up to 1500 meters. The contactless principle makes the system operate wear-free as well as noiseless, and requires a minimum of maintenance. With the use of guide clips, the APS code tape stays always in position even at high speed. Due to the optical contactless principle, floor indicators and configuration parameters added to the APS code tape with clips, can be read in addition to the absolute position. This provides the ground for safe and efficient configuration of iDiscovery in the field.



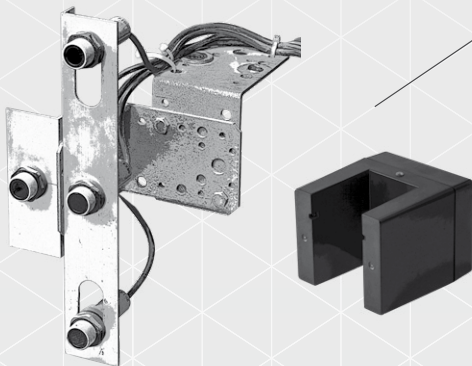
# Conventional elevator



Retardation control



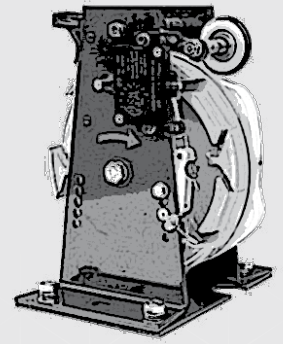
Limit switch



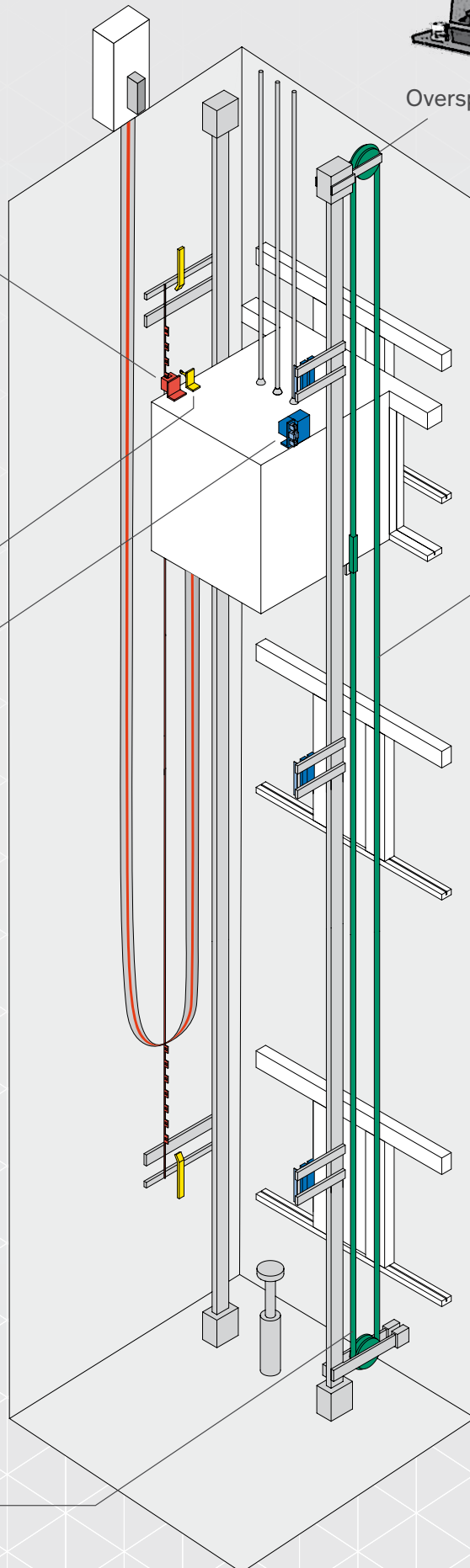
Door zone monitoring



Overspeed governor tension device



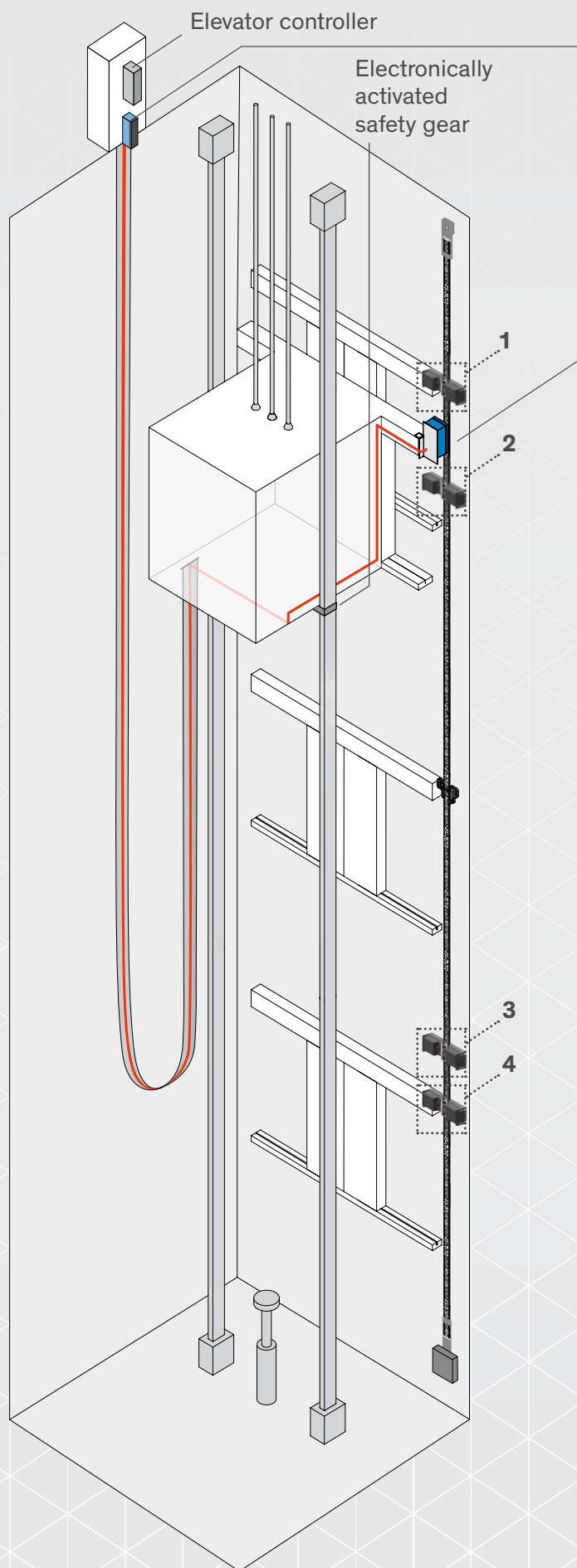
Overspeed governor



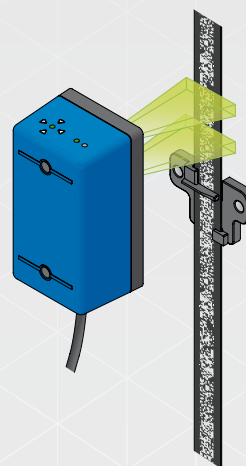
Steel rope of overspeed governor



# Simplified hoistway



**iDiscovery**



**APS**

**Floor position indicator and guide clip**



**Configuration clips**

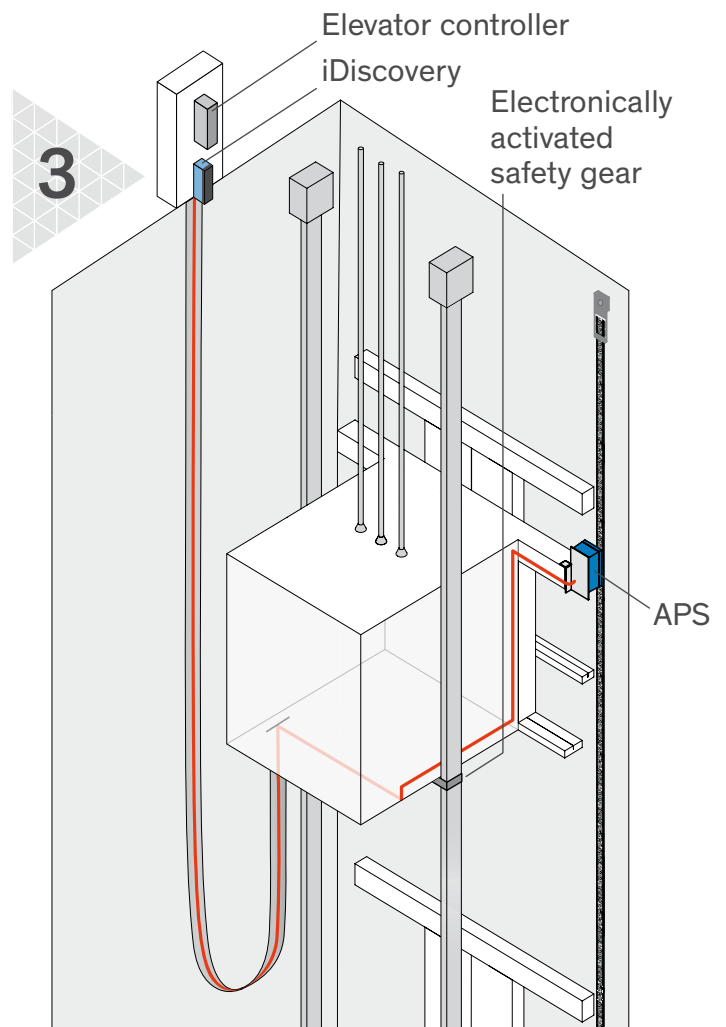
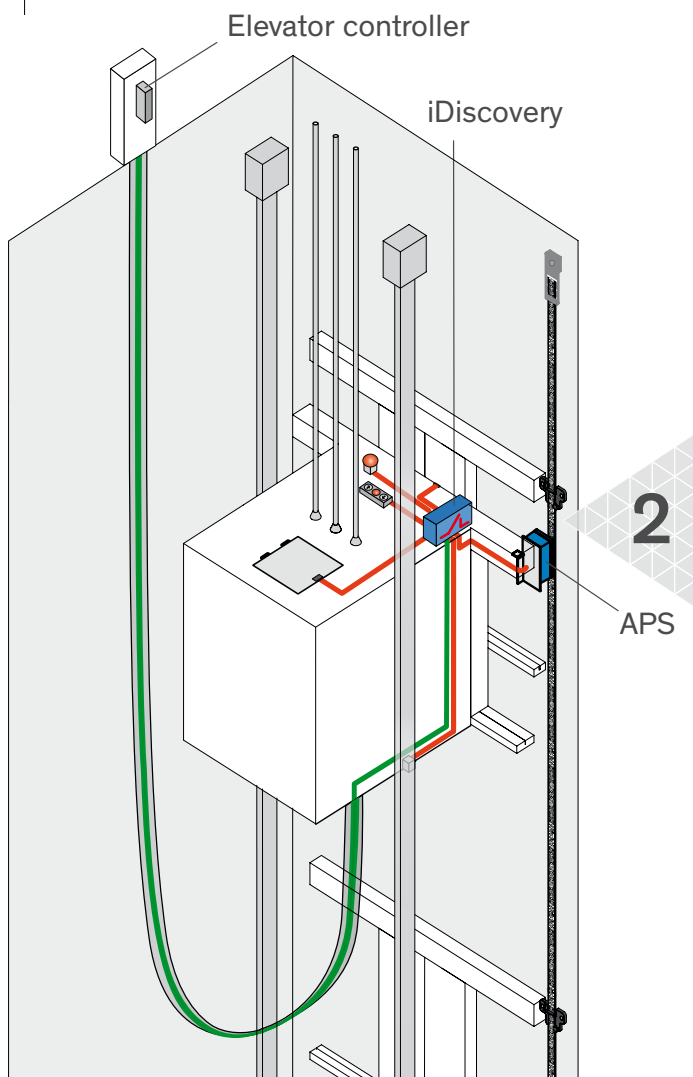
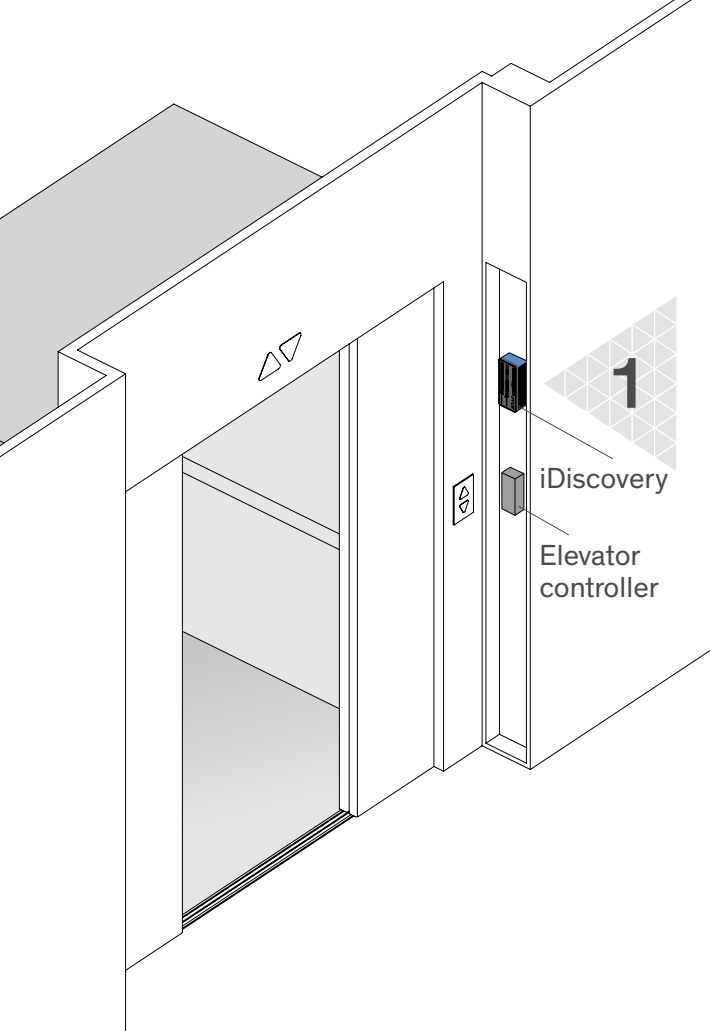
- 1** Top floor
- 2** Speed up (optional)
- 3** Speed down
- 4** Bottom floor



# A new level of flexibility

## Mounting location:

- 1 In the door frame near the elevator controller
- 2 On or in the elevator cabin
- 3 In the machine room



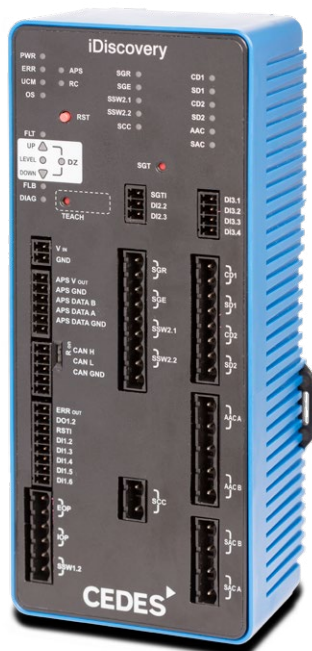
# Technical specifications

## APS



|   |   |
|---|---|
| Housing (h x w x d)                           | 103.6 x 56.6 x 45.6 mm  |
| Enclosure rating                              | IP65  |
| Position resolution                           | 0.5 mm  |
| Velocity resolution                           | 1 mm/s  |
| Range of velocity measurement                 | $\pm 0 \dots 20$ m/s  |
| Distance between APS sensor and APS code tape | 105 mm  |
| Readout tolerance                             |   |
| Distance                                      | $\pm 15$ mm   |
| Left-right                                    | $\pm 15$ mm   |
| Maximum length of APS code tape               | 1500 m  |
| Certificates                                  | CE, TÜV, CSA  |
| Safety category                               | SIL 3   |
| Related standards                             | EN 61508:2010<br>EN 81-20/50:2014<br>CSA B44.1-14 / ASME A17.5-2014<br>ASME A17.1-2013 / CSA B44-13 |

## iDiscovery



|                               |   |
|-------------------------------|---|
| Housing (h x w x d)           | 206.7 x 88.5 x 60.0 mm                      |
| Enclosure rating              | IP20  |
| Rated speed up and down       | configurable via clips $0 \dots 16$ m/s     |
| Interface to elevator control | CANopen DS417                               |
| Versions                      | With and without safety gear control module |
| Certificates                  | CE, TÜV                                     |
| Safety category               | SIL 3                                       |
| Related standards             | EN 61508:2010<br>EN 81-20/50:2014           |





“ Lester Controls has installed over 3'000 APS in the past 4 years. Our customers like the easy installation and because of it's robustness the very high reliability! We are glad and excited to work with CEDES and the iDiscovery. This we hope will take us to the next level of elevator safety. ”



Stuart Davidson  
Managing Director, Lester Controls



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for the detailed statement.

“ iDiscovery can easily be integrated into our control system design. It simplifies the safety chain and reduces the amount of classical safety components of the safety chain. The communication via the CANopen DS417 protocol and the full integration into the front end of our MPK411 simplifies the installation and validation for the service technicians on site. ”

# Kollmorgen

Lars Kollmorgen  
Managing Director  
Kollmorgen Steuerungstechnik GmbH



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## Notes



# CEDES APPLICATION MARKETS

## ELEVATORS



## ESCALATORS



## INDUSTRIAL DOORS



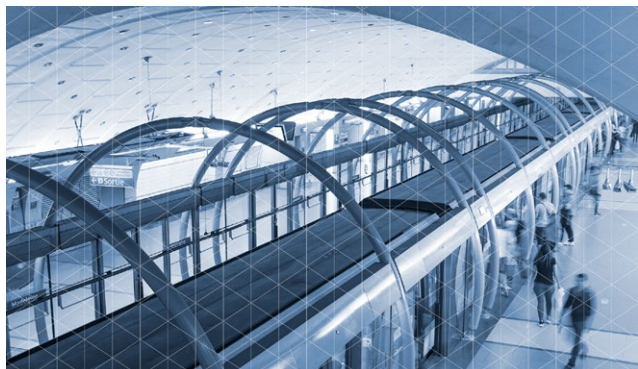
## PEDESTRIAN DOORS



## RESIDENTIAL DOORS



## TRANSPORTATION & PEOPLE-FLOW



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