SAFEMASTER STS

The key to more safety

Modular safety switches and key transfer systems for the highest requirements.

DOLD

Our experience. Your safety.

SAFEMASTER STS – the ultimate safety system

SAFEMASTER STS

Simply revolutionary

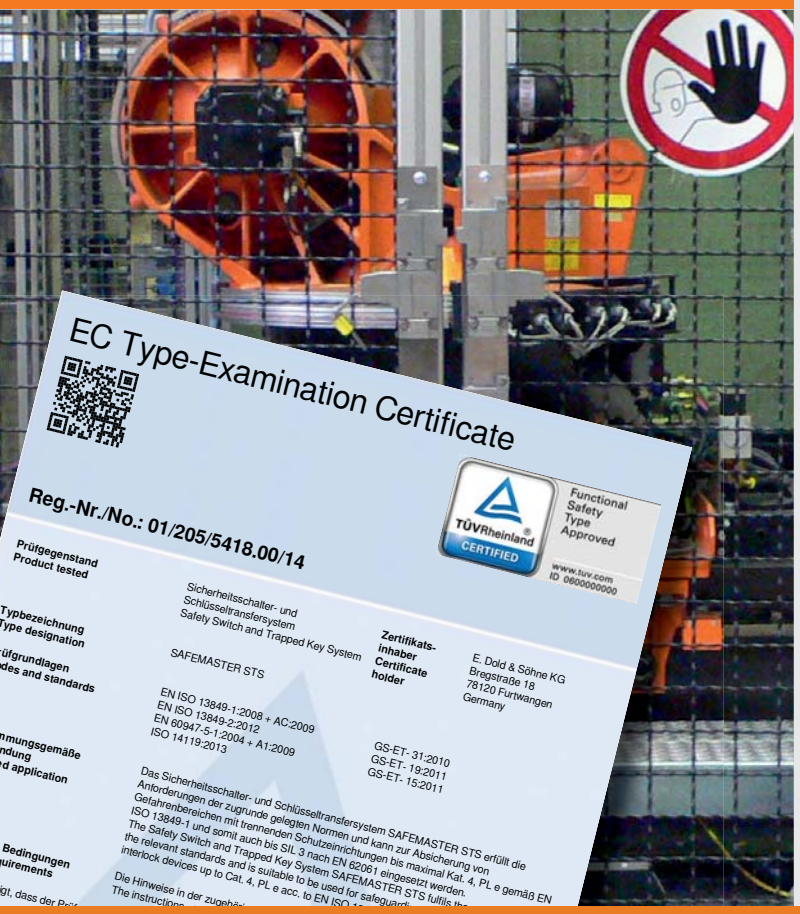
The special thing about SAFEMASTER STS is the system concept and the simple design which allows any conceivable variant, from the smallest standard solution to a complex safety system. Any solution remains flexible, unique and economical thanks to the modular design principle.

Many Safety Concepts – One System

Whether it is a standalone or complex system solution, be it electric, mechanical or a hybrid system – SAFEMASTER STS not only secures your facility from unauthorised entry. Its modular design and fully-developed technology allow for numerous variants – thereby enabling all users to find their individual safety concept, ideally tailored to their specific needs.

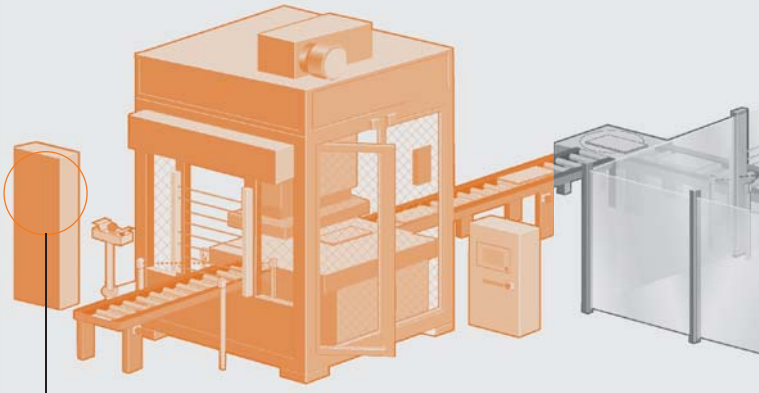
The highest safety standards

This system was developed for the highest safety standards and complies with all applicable standards.
It offers safe and reliable protection to both the employees, machines and production facilities.



Robust, economical and sustainable

SAFEMASTER STS allows you to implement the most demanding safety concepts without any wiring. This saves costs, power, effort and materials. These components are long-lasting and recyclable – thereby making this system a pioneer in terms of energy efficiency and environmental sustainability. Thanks to its stable stainless steel body and its exceptionally-tough design, the system is fully rugged – even under the most extreme conditions.



SAFEMASTER STS saves wiring costs and increases ergonomics and productivity of the plant.

Trapped key interlocking

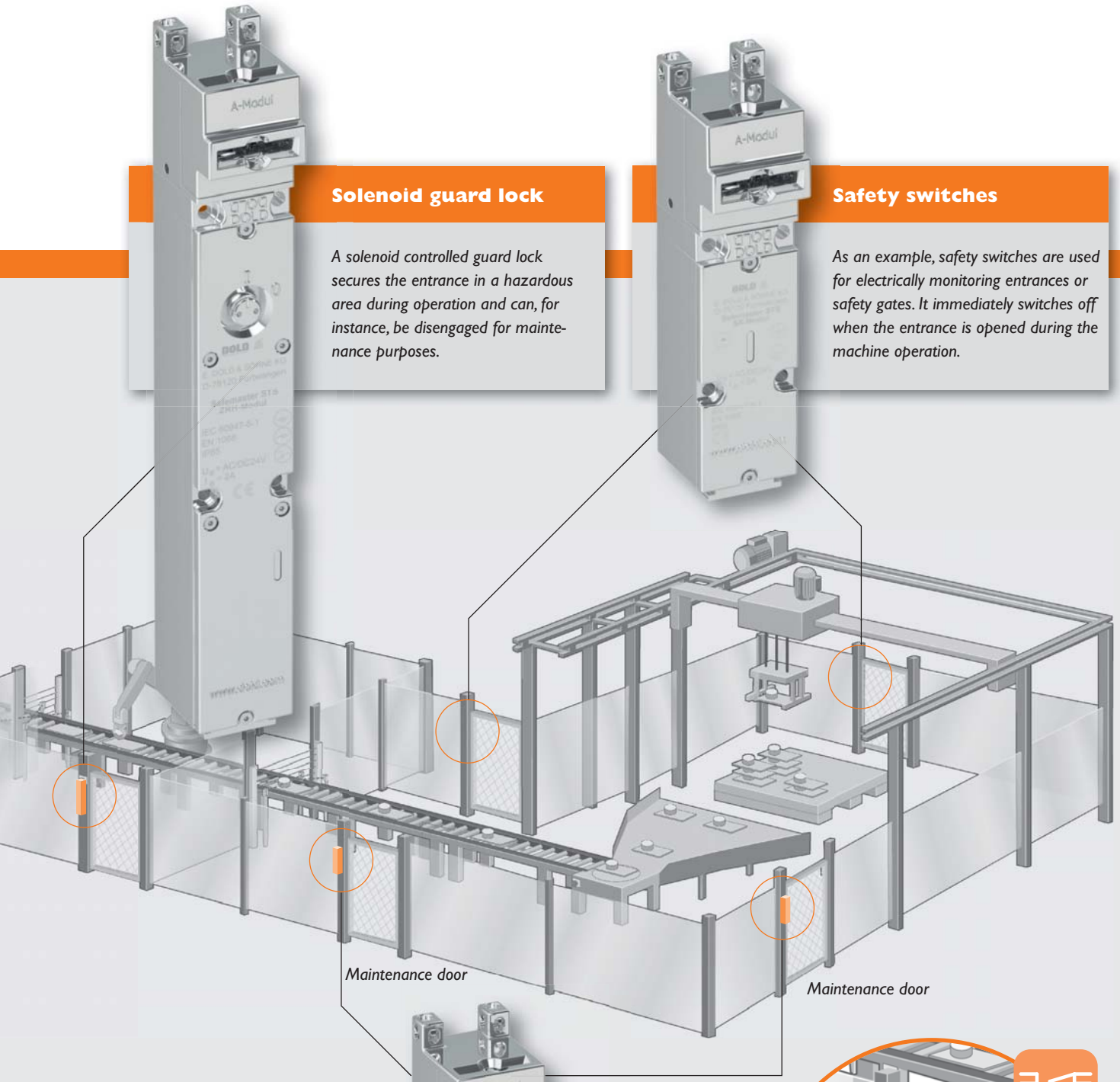
If, for instance, the machine is due for maintenance, the key is withdrawn, which triggers a signal (idle state, safe state). The system cannot be started as long as the key is missing.

Solenoid guard lock

A solenoid controlled guard lock secures the entrance in a hazardous area during operation and can, for instance, be disengaged for maintenance purposes.

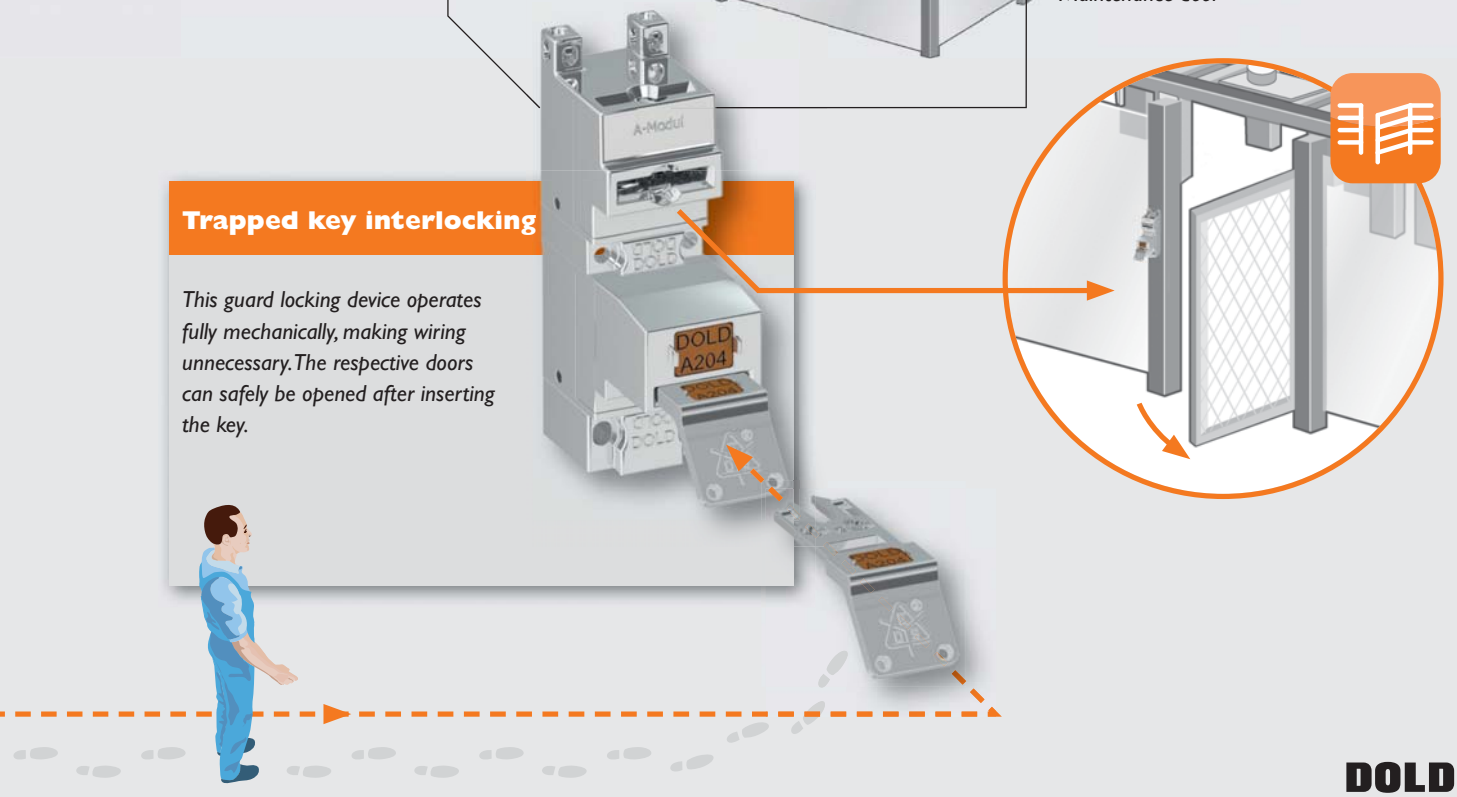
Safety switches

As an example, safety switches are used for electrically monitoring entrances or safety gates. It immediately switches off when the entrance is opened during the machine operation.



Trapped key interlocking

This guard locking device operates fully mechanically, making wiring unnecessary. The respective doors can safely be opened after inserting the key.

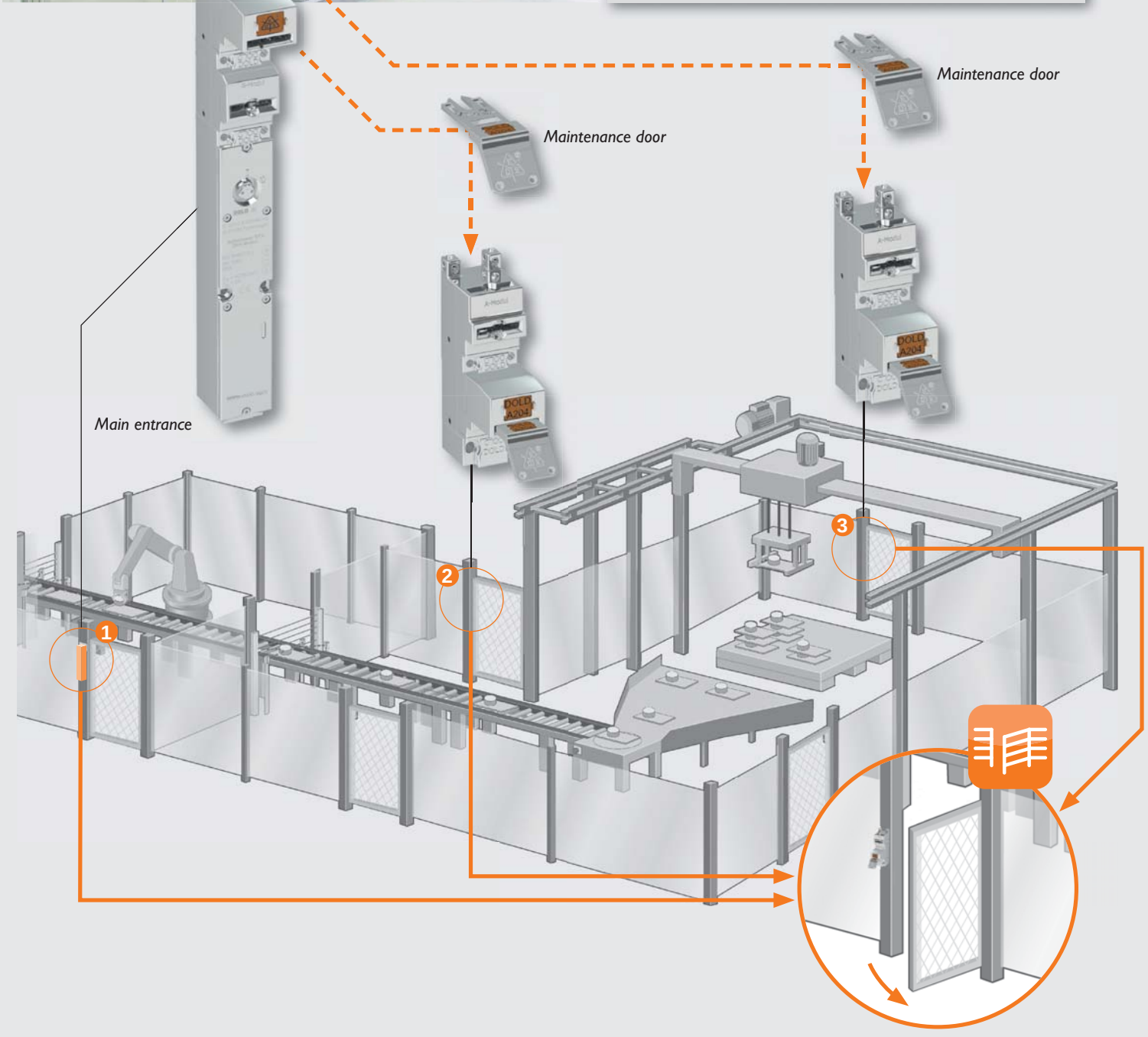


Hybrid System – Ergonomically safeguarding hazardous areas

Hybrid system

SAFEMASTER STS combines the advantages and functionality of safety switches, guard locking and trapped key interlocking in just one system

For example, one can electrically monitor a main entrance that is often utilised (❶), while seldom used entrances and maintenance accesses (❷,❸) are secured in a fully mechanical manner by means of trapped key interlocking.



Example Overview

Zone 1	Zone 2	Zone 3
electrical / mechanical		fully mechanical / wireless system
Control panel	**Main entrance**	**Service / Maintenance doors**

All entrances can be individually actuated and monitored.

One switch can monitor multiple entrances.

Before an entrance can be opened, a key must be removed. This can be used to open additional entrances or serve as a safety key.

Keys can be retained until a safe state has been reached.

A main entrance that is often used can monitor multiple entrances.

Safety key

The employee must take the key with him into the facility for his own safety. By doing so, he safeguards himself against unexpected starting and protects himself from being locked in.

Lock Out Tag Out (LOTO)

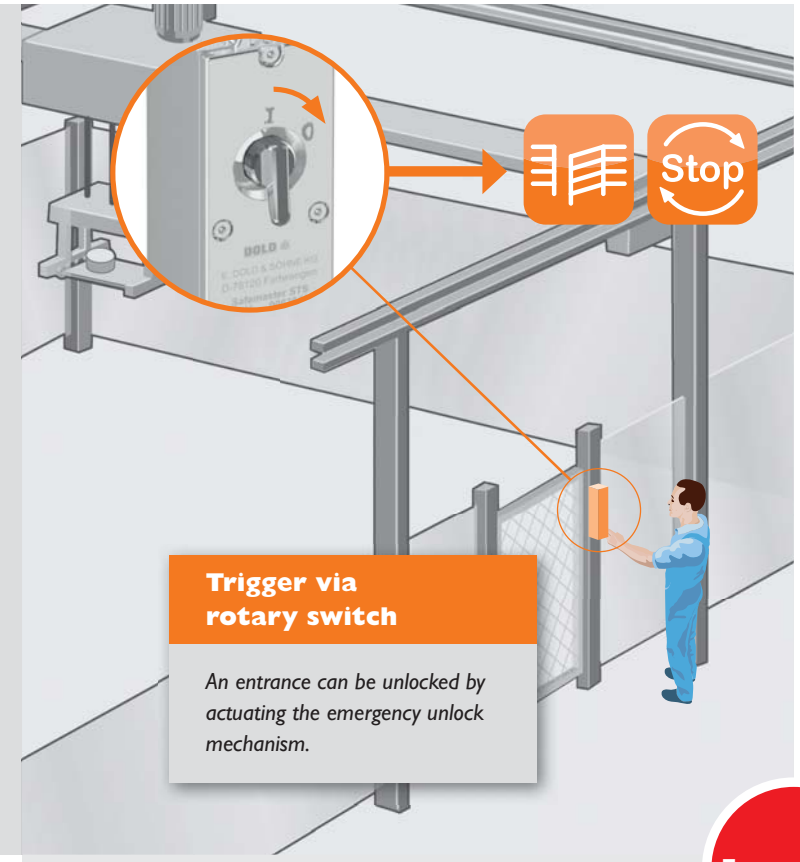
The padlock module offers an additional protective function – this module enables LOTO functions to be integrated into the SAFEMASTER STS system. The device is pulled and any worker who wishes to enter the facility inserts his personal padlock. Therefore, the mechanism can no longer be plugged in. None of the workers need to bring a key into the facility. The machine can only be restarted after all the padlocks have been removed and/or when all employees have left the installation.

Prevention

Authorising persons

Thanks to this module combination, an entrance can be safeguarded in an individual manner. Clearance is only granted when two different-coded keys are inserted. This ensures that an employee is only granted access with the knowledge of a second person.

SAFEMASTER STS –
Reliably control emergencies

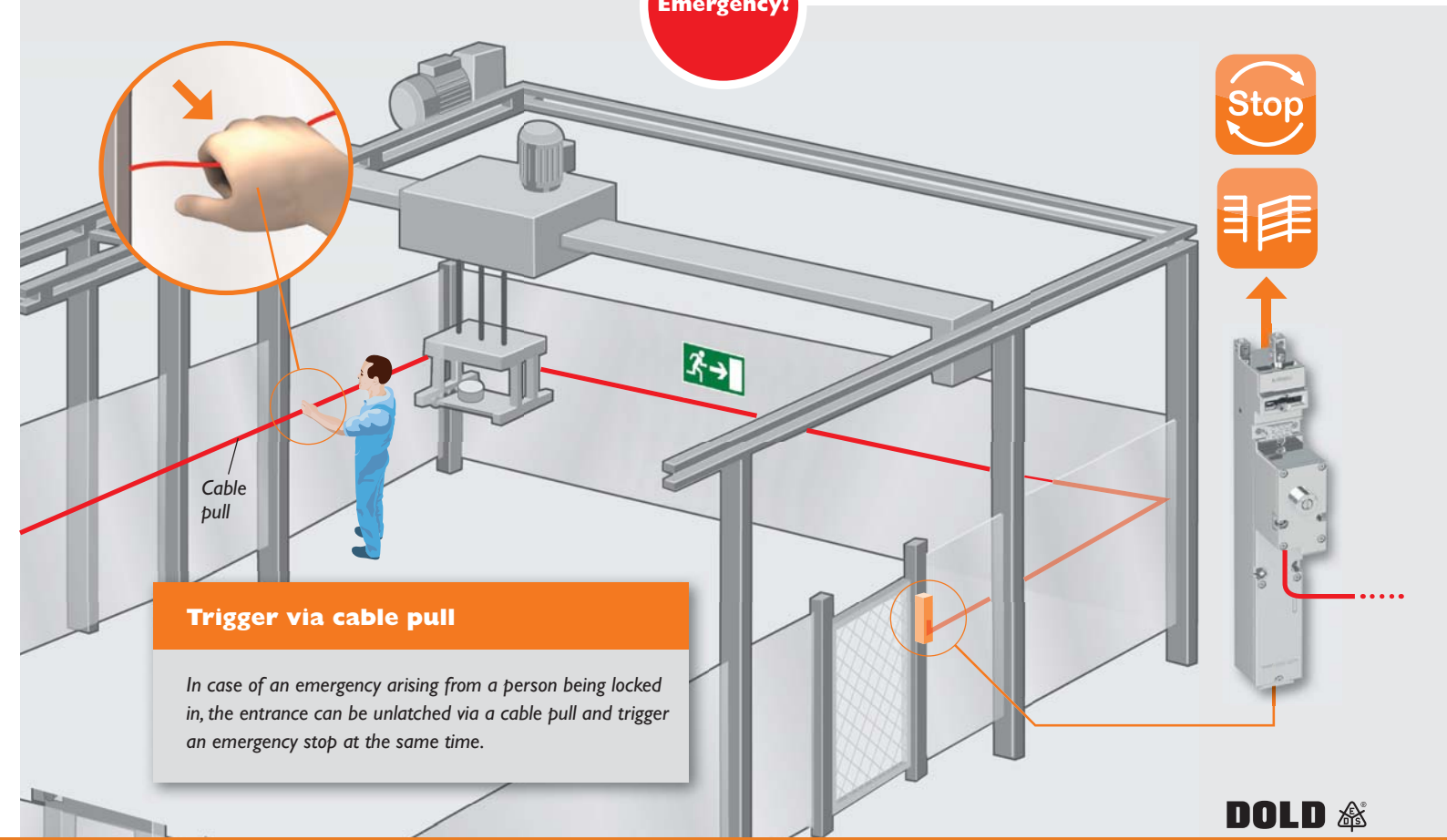


Trigger via rotary switch

An entrance can be unlocked by actuating the emergency unlock mechanism.

Escape and emergency release

SAFEMASTER STS also allows for escape releases and emergency unlocking. People who become locked in by accident can always safely leave the facility. Furthermore, entrances can be equipped with an emergency unlock mechanism. After it is triggered, locked-in people can escape or rescued from outside.



Trigger via cable pull

In case of an emergency arising from a person being locked in, the entrance can be unlatched via a cable pull and trigger an emergency stop at the same time.

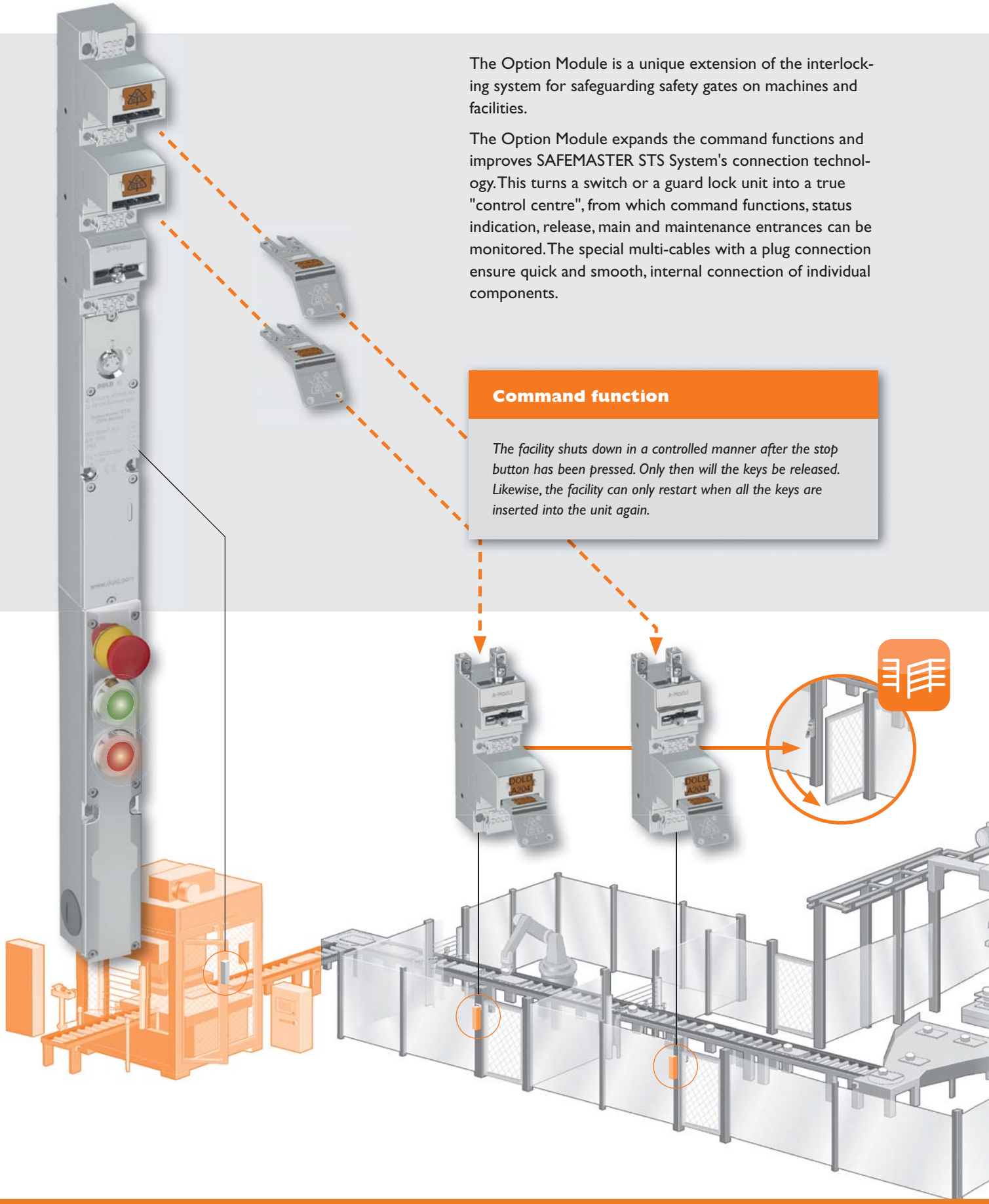
SAFEMASTER STS – Everything under control with the Option Module

The Option Module is a unique extension of the interlocking system for safeguarding safety gates on machines and facilities.

The Option Module expands the command functions and improves SAFEMASTER STS System's connection technology. This turns a switch or a guard lock unit into a true "control centre", from which command functions, status indication, release, main and maintenance entrances can be monitored. The special multi-cables with a plug connection ensure quick and smooth, internal connection of individual components.

Command function

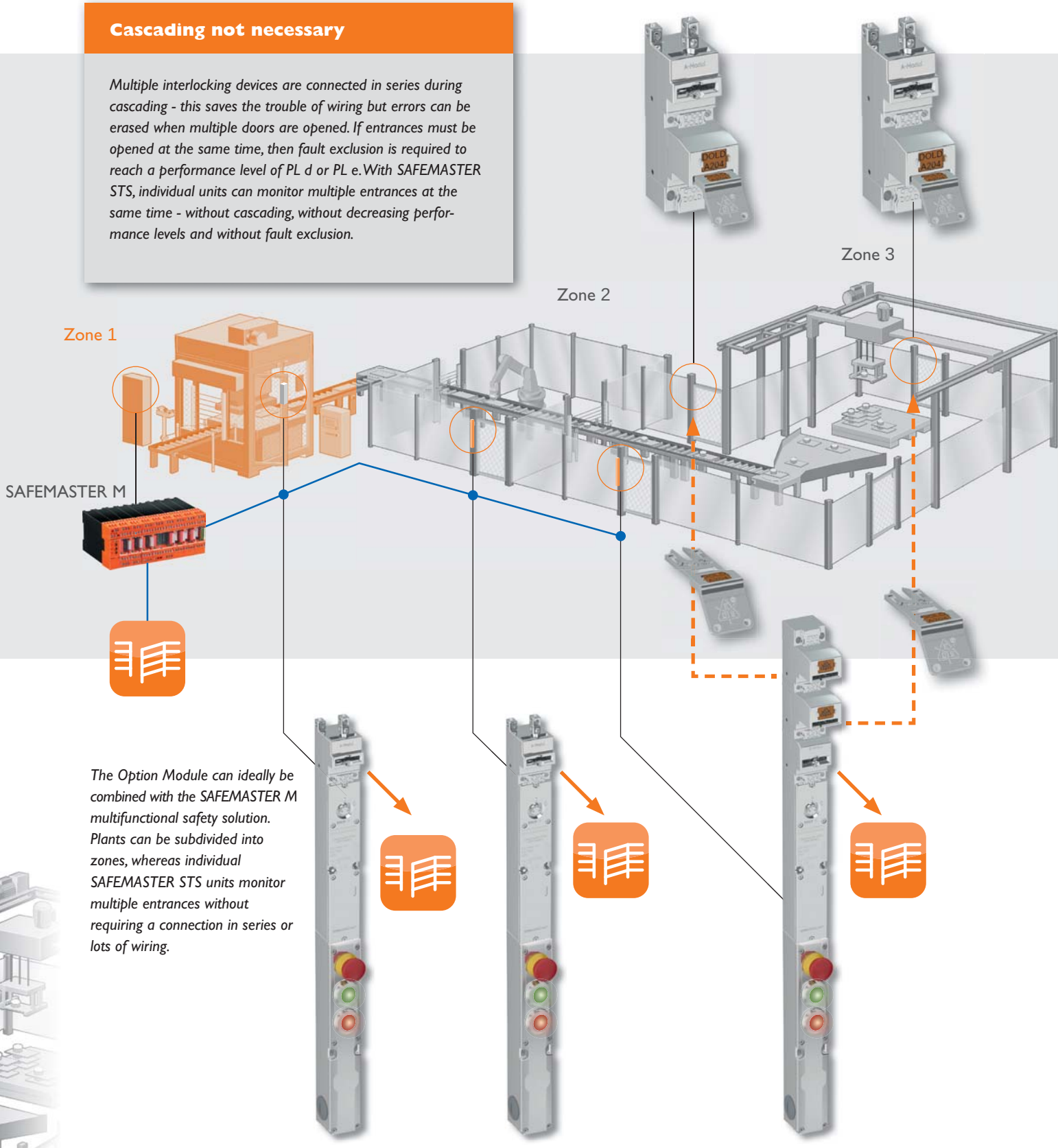
The facility shuts down in a controlled manner after the stop button has been pressed. Only then will the keys be released. Likewise, the facility can only restart when all the keys are inserted into the unit again.



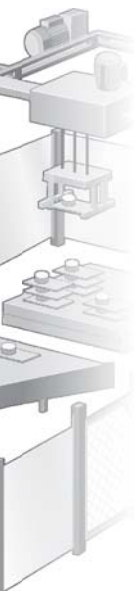
SAFEMASTER STS –
Complex monitoring with one device

Cascading not necessary

Multiple interlocking devices are connected in series during cascading - this saves the trouble of wiring but errors can be erased when multiple doors are opened. If entrances must be opened at the same time, then fault exclusion is required to reach a performance level of PL d or PL e. With SAFEMASTER STS, individual units can monitor multiple entrances at the same time - without cascading, without decreasing performance levels and without fault exclusion.



The Option Module can ideally be combined with the SAFEMASTER M multifunctional safety solution. Plants can be subdivided into zones, whereas individual SAFEMASTER STS units monitor multiple entrances without requiring a connection in series or lots of wiring.

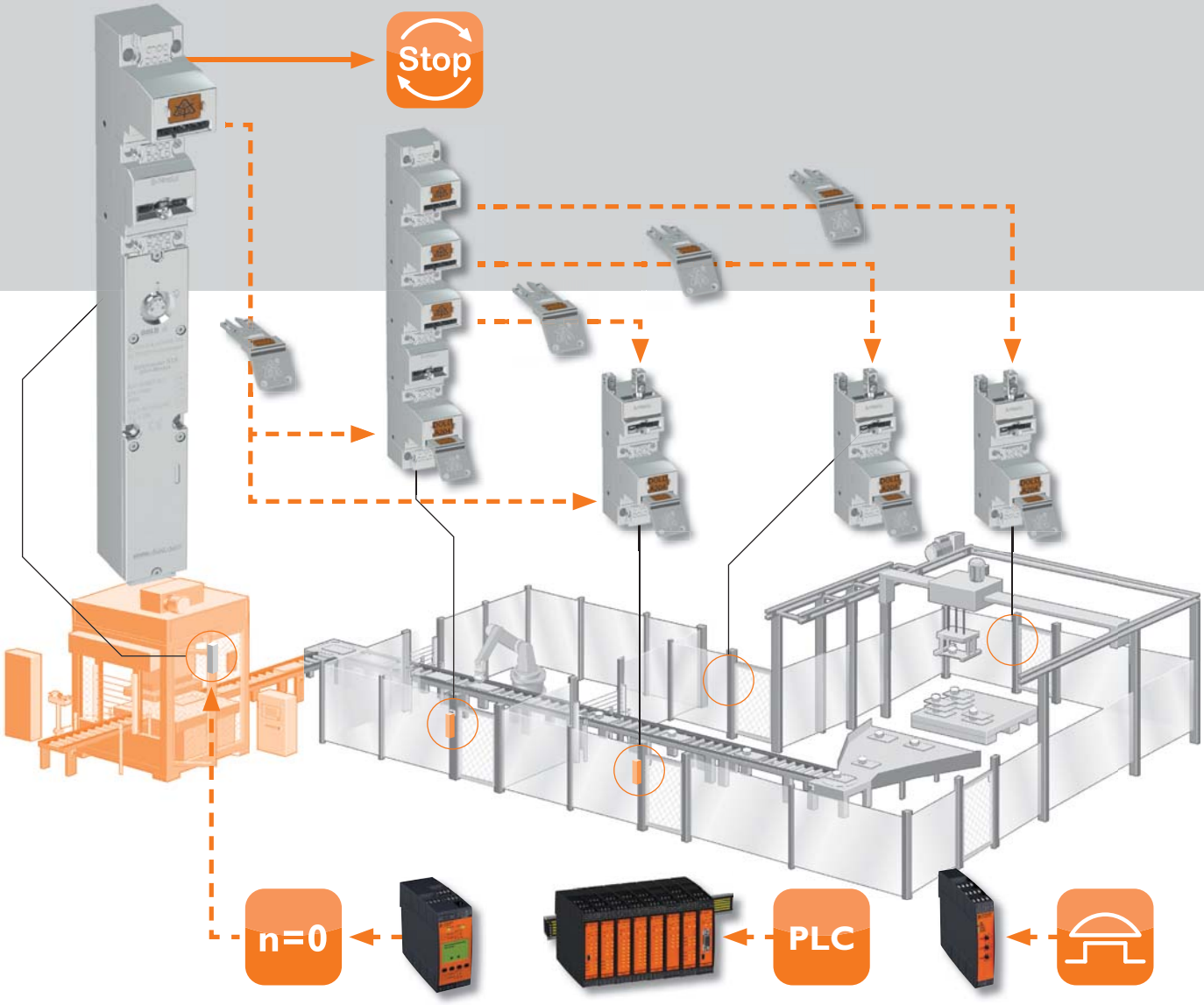


Control Interlocking – controlled safety

Entrance and machine monitoring

Easy and simple, but highly efficient: In control interlocking, machine or facility status is monitored by an higher level control unit, such as braking units, standstill monitors and emergency stop modules. This allows for a facility to be shut down in a controlled manner and ensures that access to the keys, and thereby access to the facility, is only granted after authorization by the monitoring system.

- Complies with EN ISO 13849-1 requirements
- Suitable for both centralised and de-centralised structured systems.

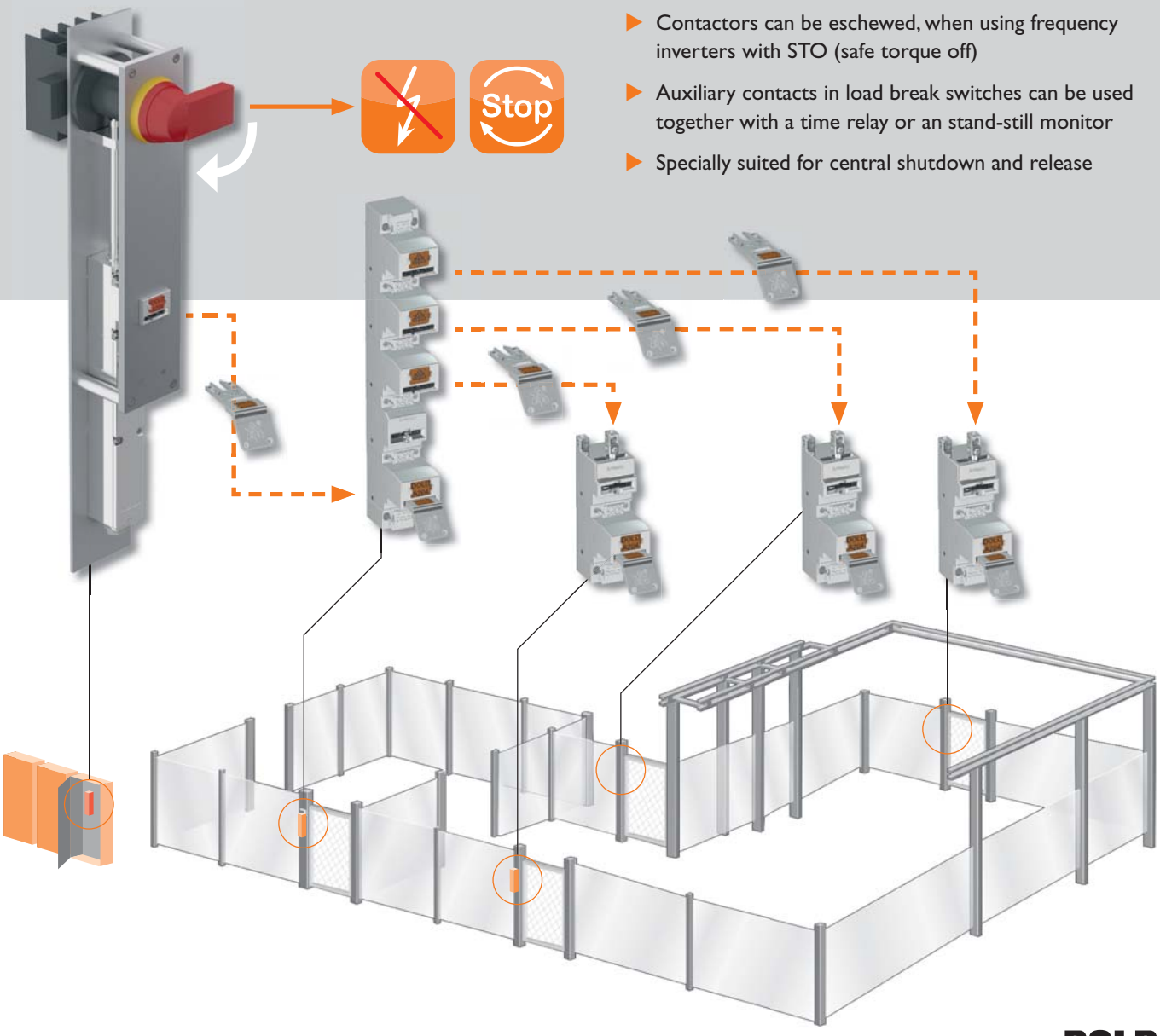


Power Interlocking – flexible and modular up to 800 amperes

Safety, also without a control unit

A machine's energy source is directly shut down here, without a separate electrical or electronic control level. This gives simple machines or facilities as well as retrofits the advantage of not requiring any control units. Even Category 4 PL e can be reached, when the system is properly structured.

- The system is directly cut off from the electrical network using a load break switch
- Up to performance level PL e and category 4
- Emergency stop or zone stop
- Large switching capacity, currents from 25 A to 800 A (AC23)
- EC Type certification in compliance with legal requirements
- It is assured that the main switch is turned off before a machine can be entered.
- Safe interlocking, even in case of auxiliary and control circuit failure
- Contactors can be eschewed, when using frequency inverters with STO (safe torque off)
- Auxiliary contacts in load break switches can be used together with a time relay or an stand-still monitor
- Specially suited for central shutdown and release



Many functional elements – for an ideal configuration of your system

The components

Key modules

01

10

Accessories

Key

Bayonet

M

Padlock modules (LOTO)

V

W

Actuation modules

A

B

K

Actuators

CS

J

C

T

TK

Locking modules

YRX

YRH

YAX

ZRX

ZRH

ZRN

ZRF

ZAX

ZAN

Switch modules

SX

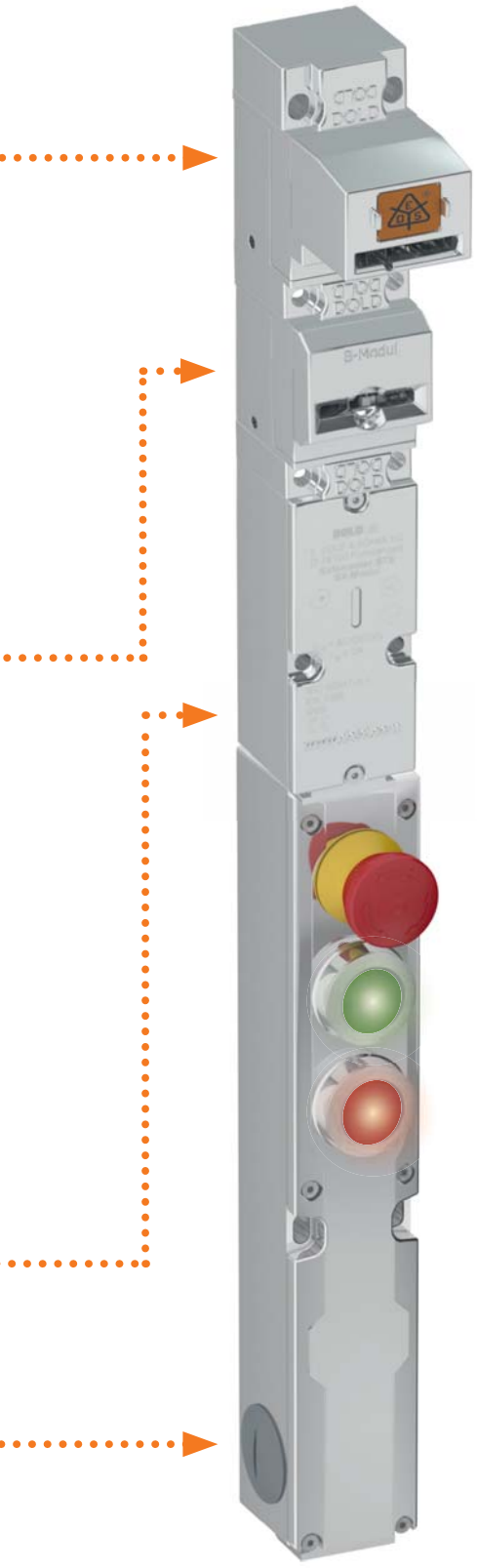
SV

RX

RV

Command devices

Option Module



Individual configuration – for an ideal layout of your system

The basic principle is based on the fact that at least two different modules with specifically-defined functions are merged into one unit: This creates, for example, an individually-made and secure interlocking unit from a key module, a locking and an actuation module.

SAFEMASTER STS's modularity allows for individual customisation of the respective application. Any number of units can be assembled from a few basic modules, using bayonet fittings. The function of the unit is defined by the type and arrangement of the module, wherein multiple units form a system. The possible combinations of assembled units define the individual functions of the overall system.

The SAFEMASTER STS system offers much more than just the option of combining safety switches and trapped key interlock systems. It combines the advantages of both systems by bringing together wireless, mechanical safety, with electrical safeguarding. This makes it highly flexible and ideally adaptable to the user's requirements.

The system offers the highest level of safety and fulfils all user requirements with regards to robustness, long service life and ergonomics. A particular highlight is the stainless steel design and ergonomic carded key.

If desired SAFEMASTER STS can be expanded at any time. In addition to a high level of flexibility, the system consistently ensures safe, failure-free operation. Furthermore, it offers an intelligent and cost-effective solution for all sorts of safety applications.

Additional information regarding the individual modules can be found in their respective data sheets. Please seek the advice of the experts from Dold order to select the right functionality.

The base units –
Only a few of many possibilities

Functions	Safety switch design 2	Safety switch design 2 with locking
Units with basic function	 **SXA** **Switch** The contacts are operated when removing the actuator	 **ZRHA** **Guard locking switch** The actuator can be removed after a release signal is present
Units with a mechanical locking function by means of a key	 **SX01A** **Switch with mechanical locking** The contacts are operated and the actuator is released when the key is removed	 **ZRH01A** **Guard locking switch with key** The actuator is released after a release signal is present and the key is removed
Units with optional key release	 **SXB01M** **Switch with key** The contacts are operated and the key can be removed when the actuator is taken out	 **ZRHB01M** **Guard locking switch with optional key release** The key is released after a release signal is present and the actuator has been removed
Units without actuator	 **SX01M** **Key-operated switch** The contacts are operated when the key is removed	 **ZRH01M** **Key-operated locking switch** The key can be removed after a release signal is present

Mechanical units design 2

M10A

Mechanical guard lock
The actuator can be removed after the key has been inserted

M11A

Mechanical guard lock with key exchange
If the first key has been inserted, then the second one can be removed and the actuator will be released

M10B01M

Mechanical guard lock with optional key release
If the first key has been inserted, then the actuator can be removed and the second key will be released

M11M

Key exchange unit
The second key can be removed after the first key has been inserted

Mechanical units with electrical monitoring

RXK01M
RX10A

Mechanical guard lock with actuator position monitoring
The actuator can be removed and the contacts are switched after the key has been inserted on top. The RX10A variant offers electric monitoring of the key

RXK11M
RX11A

Mechanical guard lock with key exchange and actuator position monitoring
After the first key has been inserted above, the second key and the actuator can be removed, thereby operating the contacts;
The RX11A variant offers electric monitoring of the first key

RX10K01M

Mechanical guard lock with monitoring of second key
After the first key has been inserted above, the actuator and the second key can be removed, thereby operating the contacts; depending on system coding, this function can be inverted and the first key is electrically monitored

RX11M

Key exchange unit with monitoring
The second key can be removed after the first key on top has been removed; this switches the contacts

Mechanical units with electrical release

YRXKM

Guard locking switch with actuator insertion release function
The actuator can be removed at any time; however, a release signal must be present upon re-insertion

YRX10A

Guard locking switch with key release function
The key can be inserted and the actuator can be removed after a release signal is present

YRX10B01M

Guard locking switch with key release function
The key can be inserted and the actuator can be removed after a release signal is present; this releases the second key

YRX11M

Key exchange unit with release signal
The first key can be inserted and the second one can be removed after a release signal is present

Four safety concepts...

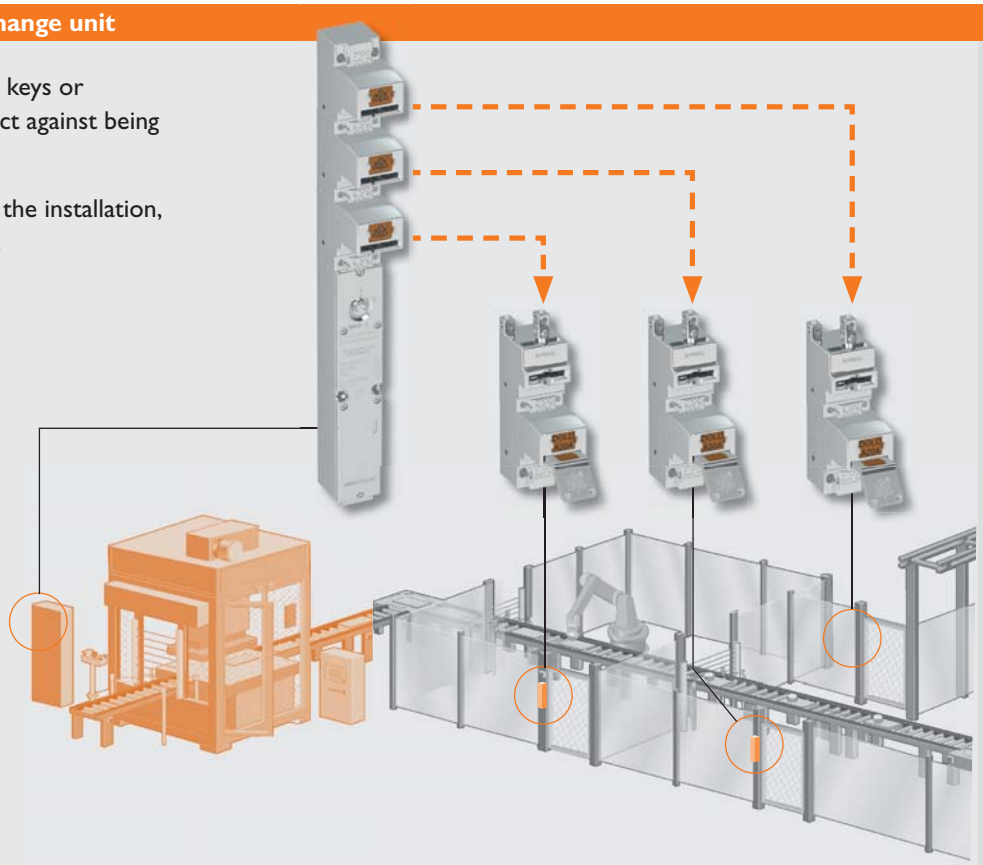
Mechanical system without key exchange unit

None of the entrances are wired. Safety keys or padlock modules can be added to protect against being locked in.

All keys are centrally located outside of the installation, suitable for facilities with few entrances.

Optional:

- Safety key
- Authorisation key
- Padlock module
- Escape release
- Feedback contact



Mechanical system with key exchange unit

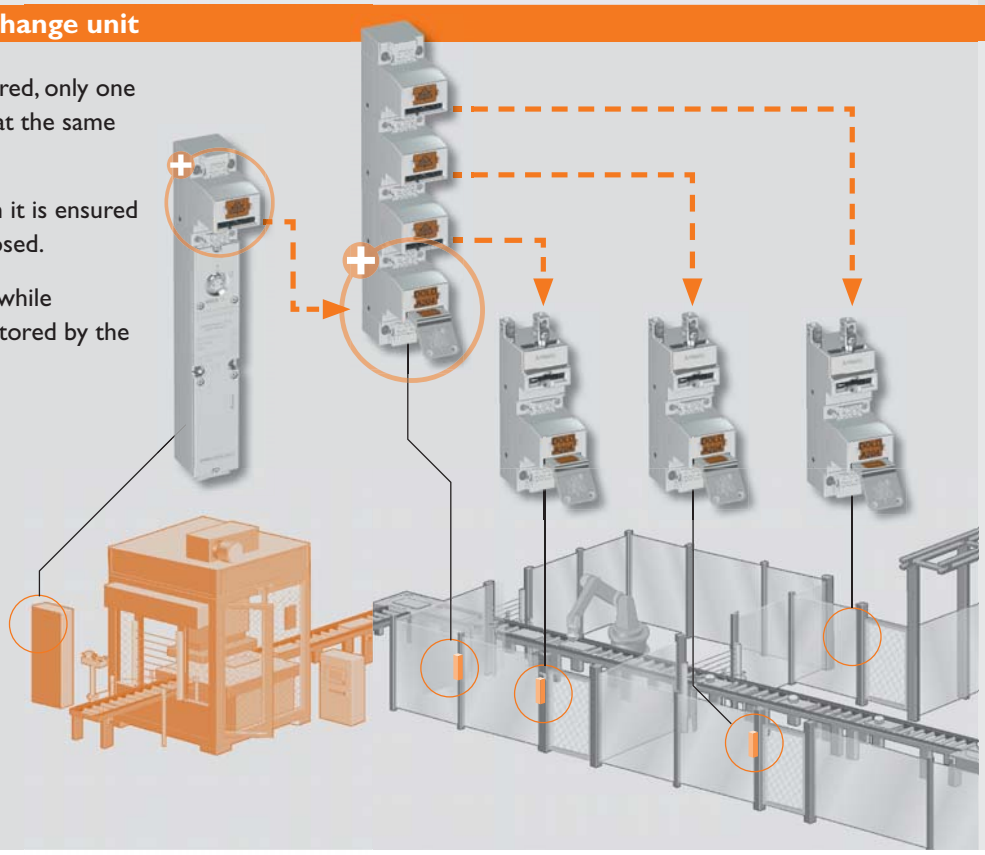
None of the entrances are wired; if desired, only one door or multiple doors can be opened at the same time.

If only one door is directly opened, then it is ensured that the remaining doors will remain closed.

The key exchange unit is located afield, while the key operated locking switch is monitored by the control system.

Optional:

- Safety key
- Authorisation key
- Padlock module
- Escape release
- Feedback contact



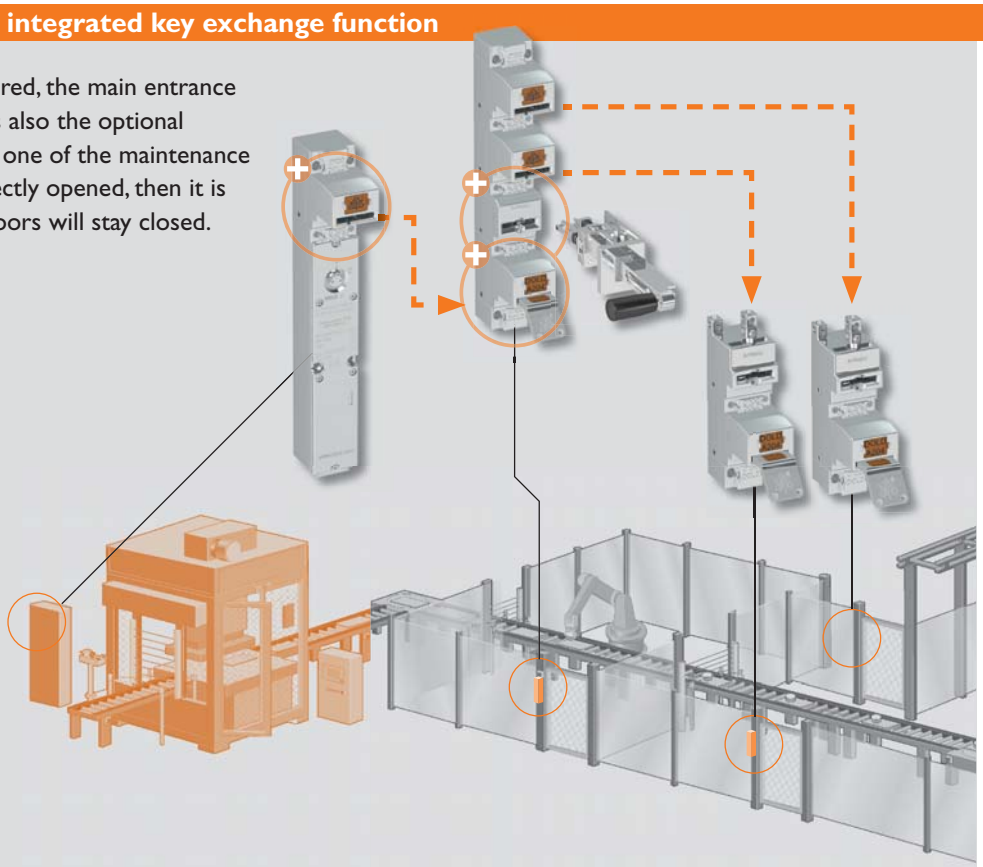
for maximum protection in all areas

Mechanical system with integrated key exchange function

None of the entrances are wired, the main entrance must be opened first. There is also the optional possibility of directly opening one of the maintenance gates. If only one door is directly opened, then it is ensured that the remaining doors will stay closed.

Optional:

- Safety key
- Authorisation key
- Padlock module
- Escape release
- Feedback contact



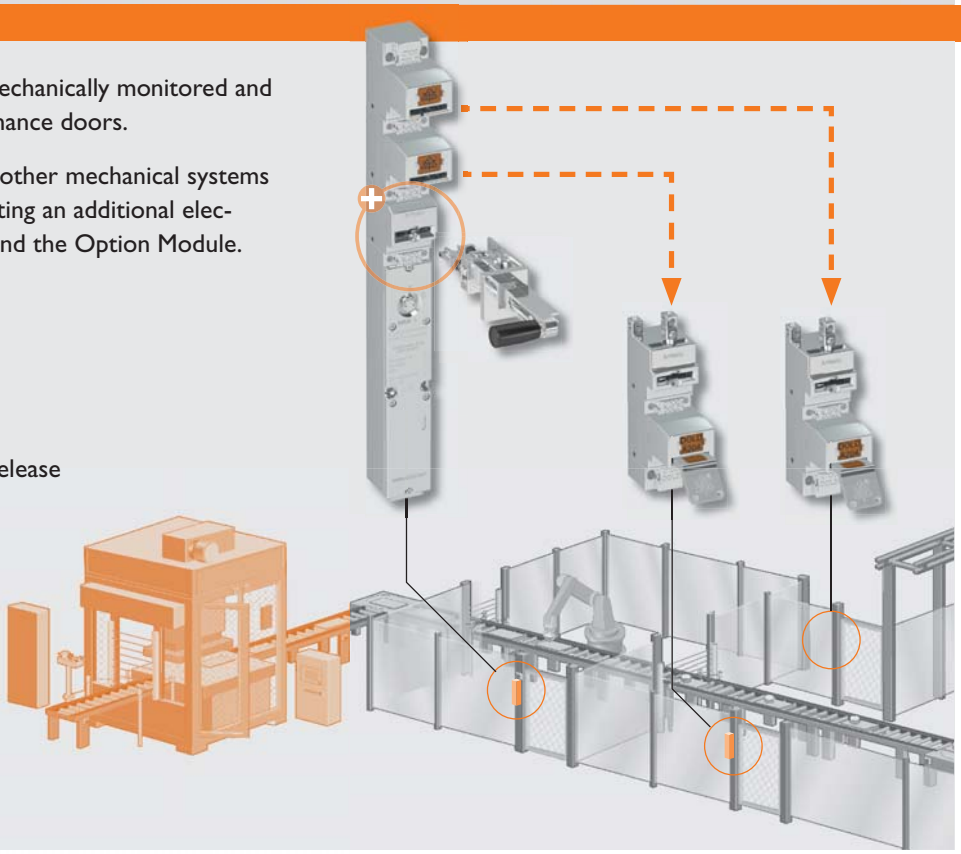
Hybrid system

The main entrance is electro-mechanically monitored and releases the keys of the maintenance doors.

It is quicker to operate than all other mechanical systems and offers the option of integrating an additional electro-mechanical escape release and the Option Module.

Optional:

- Safety key
- Authorisation key
- Padlock module
- Escape release / Emergency release
- Cable pull escape release
- Feedback contact
- Option Module



SAFEMASTER STS – The key to increased safety

Extreme environmental conditions

SAFEMASTER STS was developed for use in the harshest environmental conditions. The system features an open design and allows, among other things, cleaning with high-pressure washers. Moreover, the modules feature cleaning apertures, through which the dirt can partly escape on its own.

Extensive facilities

Production facilities, such as those in the steel industry, can stretch over greater distances. Electric interlocking systems require greater wiring efforts for extensive facilities. Due to the degree of diagnostic coverage, electrical systems, particularly for systems with a higher performance level, cannot be connected in series. SAFEMASTER STS solves both problems. On the one hand, doors can be mechanically secured - which saves wiring, on the other hand, all units feature diagnosis functions.

Safe and independent – thanks to SAFEMASTER STS

With the various safety concepts and the unique units, you can configure your customised and suitable system, tailored to your industry.

More robust than any other safety system

Where other systems have long given up or no longer guarantee one hundred percent safety, SAFEMASTER STS remains highly dependable. Thanks to its simple operation, the rugged design and the use of durable materials, it fulfils its function reliably, even in tough conditions and extreme temperatures.

Plant availability

Wiring can be problematic for many reasons – one of which is damage due to rat bites. This particularly poses a problem in the recycling industry. SAFEMASTER STS requires no wiring, thereby solving this problem.

Securely maintain processes

Brakes, immobiliser systems and discharging static electricity represent challenges associated with safety. Before work can begin on a facility, many different conditions must first be fulfilled. With SAFEMASTER STS, operation sequences and processes, such as actuating immobiliser systems or brakes and discharging static electricity, can be enforced – the system forms a mechanical control system.

These industries already use SAFEMASTER STS

- Steel works
- Lumber industry
- Stone processing
- Recycling
- Food industry
- Cement manufacturing
- Railroad engineering
- Automotive industry
- Conveyor technology
- Transport and storage technology
- ... and many more

Our Experience. Your Safety.

SAFEMASTER - The right solution for every application.

Innovative Safety Concepts

DOLD offers a integrated safety concept for complete solutions under one roof, which have already been successfully implemented worldwide for many decades.
From monofunctional safety modules for simple safety solutions to multifunction, modular safety systems, DOLD develops tailor-made solutions for protecting people and systems.

We would be more than happy to tell you about our additional safety solutions.

SAFEMASTER C

The multifunctional UG 6970 safety module from the SAFEMASTER C family by DOLD monitors two independent safety functions. You can make any desired choice from the following basic functions: emergency stop, safety gate, two-hand controls, safety mat / safety edge, antivalent switch and light barrier.

SAFEMASTER S

The SAFEMASTER S series speed sensing switch ensures increased productivity and safety for your service personnel thanks to a combination of safe speed and stand-still monitoring.

SAFEMASTER PRO

The modular and configurable safety system SAFEMASTER PRO monitors all safety circuits in your machines and systems – easy, flexible and safe. The amount of input and outputs on the central control unit can be expanded at any time using extension modules.

SAFEMASTER W

SAFEMASTER W, the wireless companion for your safety. You can use it to shut down dangerous movements within a fraction of a second. The wireless safety system consists of a radio controlled safety module, a handheld transmitter and an optional infrared receiver.

DOLD

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