SAFEMASTER W

Radio controlled safety system -
Wireless Functional Safety
in **pair mode**

DOLD ®

Our experience. Your safety.

SAFEMASTER W – Wireless Safety bidirectional radio controlled system ...

... with high availability for ranges up to 800 m

SAFEMASTER W

Safe radio module – reliably connects safety zones wirelessly

The UH 6900 wireless safety system offers new options and solutions in the field of functional safety. Even in areas where classic safety technology has confronted its limitations:

▶ If you need to securely activate an emergency disconnect for systems wirelessly in a far-away high-bay shelving unit,
▶ ensure safe access to hazardous areas with continuously running machines or conveyor belts
▶ or whether you need to safely stop a system to complete maintenance work on a conveyor belt or other moving equipment.

It's no problem with UH 6900 wireless safety modules! Safe certified radio controlled technology by DOLD offers a wide variety of combinations for autonomous, mobile and stationary systems.

Wireless, safe, reliable

The new UH 6900 is part of the SAFEMASTER W series of wireless safety systems. it offers safety-oriented, bidirectional transmission of E-stop and control functions offering greater flexibility for the protection of hazardous areas up to Cat. 4 / PL e or SIL 3. By implementing the latest radio-controlled technologies, a high degree of plant availability and safety is achieved. Two safety zones can be connected wirelessly to each other over a considerable distance. The main application areas include wide ranging systems and mobile applications such as fully automated conveyor systems and driverless autonomous transport systems.

Easy set-up procedure, configurable modules

Quick set-up is possible thanks to pre-configured modules. The free SAFEMASTER W Manager software makes it easy to adapt the modules for different functions. Additional diagnostic functions aid set up in the field.

Certified safety

The SAFEMASTER W series is approved for use in safety applications up to Cat. 4 / PL e or SIL 3. The latest radio controlled technology ensures reliable protection for people, machinery, and the environment.

SAFEMASTER W - Your advantages at a glance:

Bidirectional
Wireless, safe signal transmission ensures high availability, even in rugged, difficult to access, and wide ranging systems

Safe signal transmission
Safe radio transmission of emergency stop functions offers additional flexibility in protecting hazardous areas

PL e SIL 3 · Highest safety standards
Suitable for use in safety applications up to Cat. 4 / PL e or SIL 3

High availability
A stable wireless connection ensures disruption-free operation

800 m · Range
The range in open areas is up to 800m allowing exceptional signal coverage

Signal strength
Adjustable transmission power offers variable area coverage

Spectrum analysis
The integrated Spectrum Analyzer provides a quick overview of all available channels

Operating modes and start options
Selectable operating modes and start options allow for customised adaptation

2-Channel safety inputs
Connect up to 3 two-channel safety functions (E-stop, LC, safety gate, two-hand operation, etc.)

I / O · Control functions
Up to 8 function inputs and outputs

Positively driven output contacts
One safety output with 3 redundant contact paths

USB · Diagnostic options via USB
Additional status displays and logging using the free SAFEMASTER W Manager software extends functionality

Radio controlled safety module UH 6900

DOLD

2

3
www.dold.com

Radio controlled safety system

3 safety inputs

8 control inputs

I / O

3 safety inputs

8 control inputs

I / O

Scope of functions

The TÜV certified UH 6900 wireless safety module is suitable for safety requirements up to Cat. 4 / PL e or SIL 3.

The safety modules each have 3 two-channel safety inputs (such as emergency stop, light curtain, safety gate, etc.) and 1 safety output with 3 redundant contact paths.

In addition, the modules each provide 8 inputs and outputs for user-specific control functions. Two additional status semi-conductor outputs, one indicator output for reception quality, and the USB interface provide for comprehensive diagnostic options.

Operating modes / Start options

Safe operating modes, selectable system start – simple and functional.

The following operating modes can be selected using the rotary switches: Full safety mode, cross safety mode, and safety mode with selectable optional radio control. This allows you to quickly adapt the system to your safety application.

In addition, automatic, manual, or two-hand start options are available for system start.

Diagnostic options

USB

1 safety output

8 control outputs

I / O

1 safety output

8 control outputs

I / O

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Operating mode 1: Full safety mode

Safe, wireless emergency stop – safely separate system components and zones

Just two UH 6900 wireless safety modules are required to fully secure two hazardous zones. Both wireless safety modules are connected by a bidirectional safe radio connection.

If a safety function is triggered (such as emergency stop, safety gate, etc.), both UH 6900 wireless safety modules shut down the entire system in both hazardous areas in a safe controlled manner.
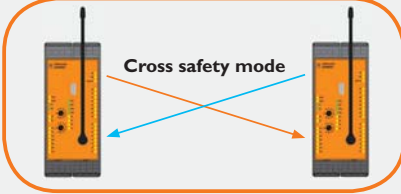
SI — **3 two-channel safety inputs for each device**

- Emergency stop
- Two-hand
- 2-channel*
- Light barrier
- Protective door

*Option to connect 2-channel safety transmitters (such as speed monitors, standstill monitors, ...)

Operating mode selectable with rotary switches A and B

Full safety mode

Application example - Full safety mode:

If a safety function (emergency stop or safety gate) is activated on a system in zone 1 or zone 2, both systems are powered down in a safe and controlled manner. Only after they are shut down can persons enter the hazardous area (for instance access through releasing a safety gate lock (SAFEMASTER STS)).

▶▶▶ 800 m ▶▶▶

Zone 1

Zone 2

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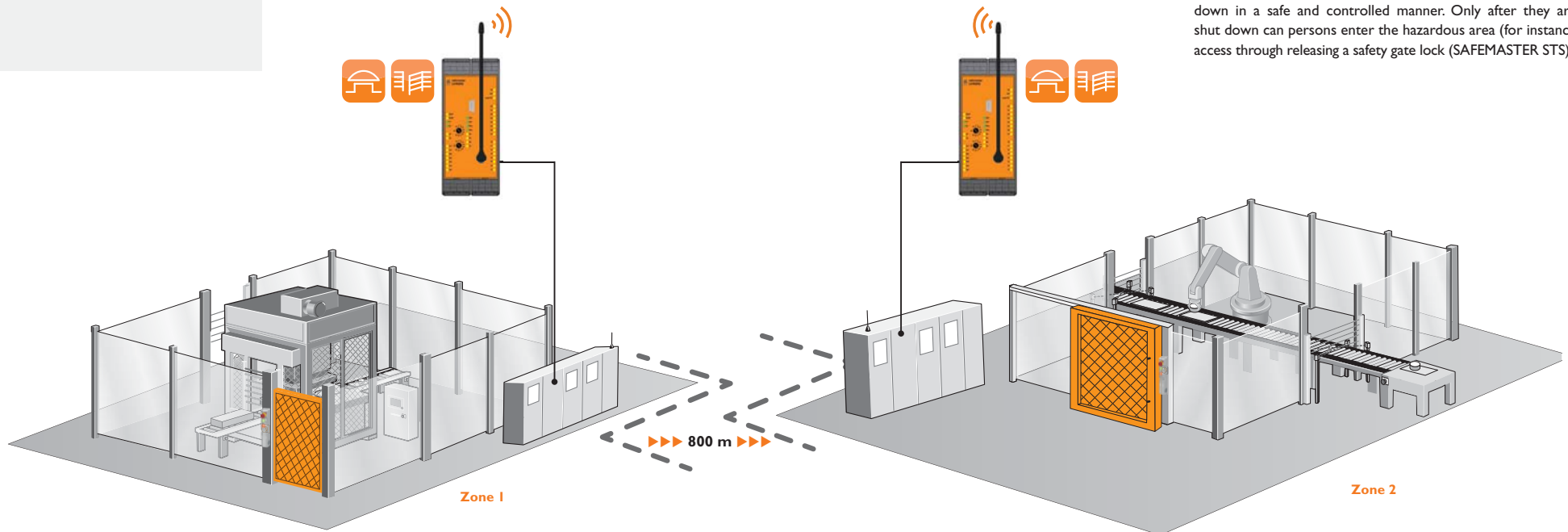
Safely sequenced processes via emergency stop and access approval

Operating mode 2: Cross safety mode

Safe, wireless protection for hazardous areas, monitoring to multiple conditions

Even complicated tasks can be handled easily with just two wireless safety modules. A safe function (access approval, start a subsequent process, etc.) is only wirelessly released if a condition, for instance in zone 1, is fulfilled. Only then is a safety function (such as access authorisation) triggered wirelessly from the other safety zone.

An example: A conveyor belt in a hazardous area first has to be run in no-load operation and the belt stopped before safety gates can be released to allow access. In this operating mode, the system ensures that persons can only enter a hazardous area if the equipment or system is safe.
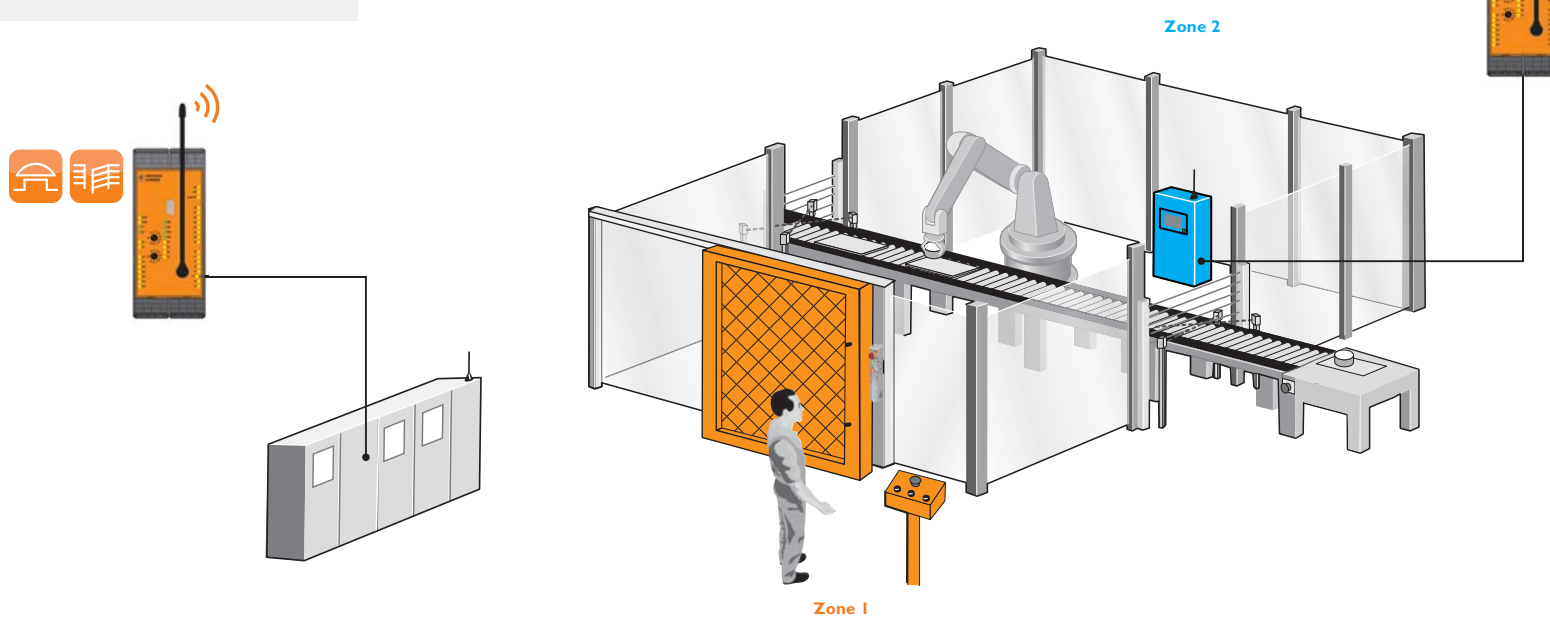

SI — 3 two-channel safety inputs for each device

- Emergency stop
- Two-hand
- 2-channel*
- Light barrier
- Protective door

*Option to connect 2-channel safety transmitters (such as speed monitors, standstill monitors, ...)

Operating mode selectable with rotary switches A and B

Cross safety mode

Zone 2

Zone 1

Application example - Cross safety mode:

A person wants to enter a secure system area (zone 2). The person activates the emergency stop in zone 1. The emergency stop signal from zone 1 is transmitted wirelessly to zone 2. The machine in zone 2 powers down in a controlled manner. As soon as it reaches a safe status, it returns a release signal for zone 2 (for instance, approve safety gate locking). Only then can the person safely enter zone 2.

Operating mode 3: Safety mode with wireless connection option

Link safety and control functions

A UH 6900 wireless safety module monitors a production system in a hazardous area. The device first works locally without a wireless connection with its safety inputs and output. However, there is the option to connect a second UH 6900 wireless safety module (e.g. in a forklift) to the safety functions (such as emergency stop) in the production system and safely drive through the hazardous area (additional authentication can be provided by an optional infrared connection).

When the wireless connection between the two modules is created, the safety functions of both devices will be active. In a hazardous situation, both the forklift and or the machine can trigger an emergency stop..

In addition, certain control functions of the system (such as the crane) can be used – entirely safely and without additional wiring work.
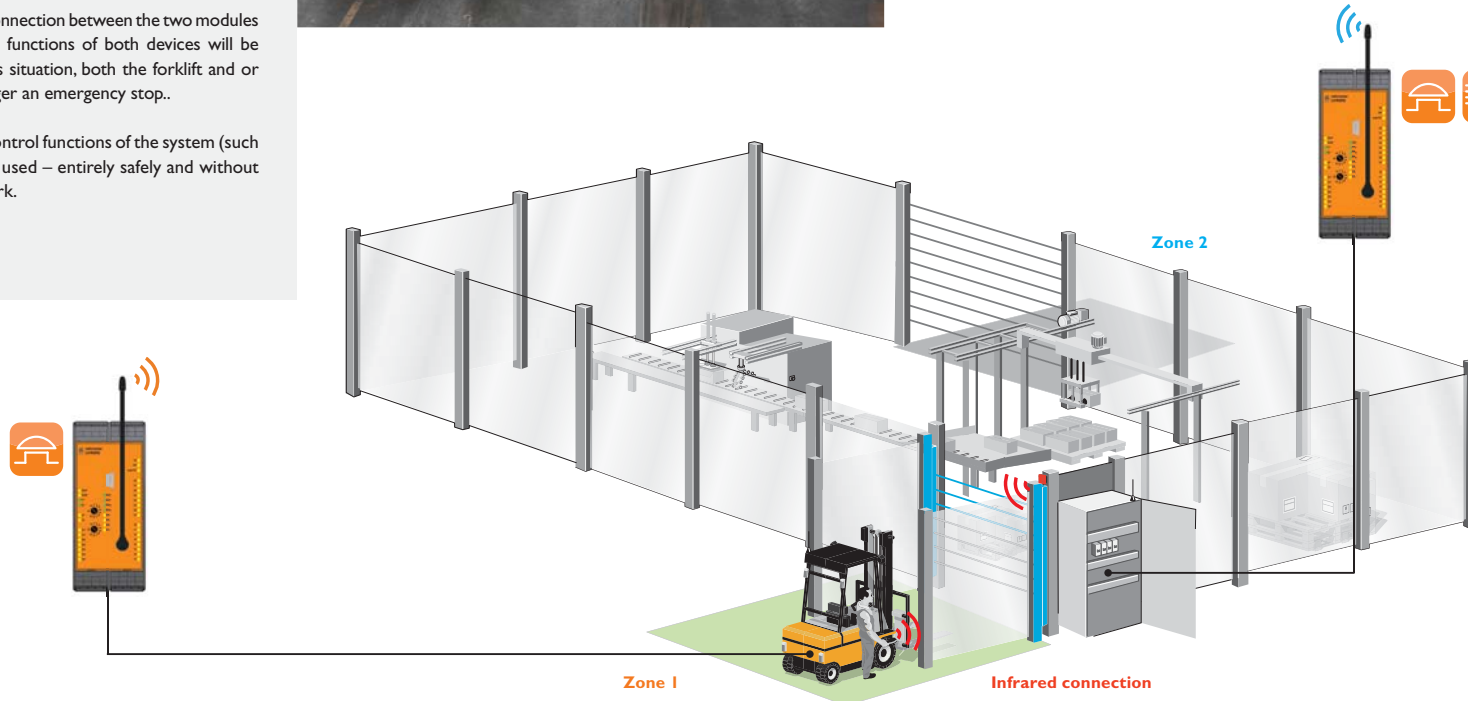
SI 3 two-channel safety inputs for each device

- Emergency stop
- Two-hand
- 2-channel*
- Light barrier
- Protective door

*Option to connect 2-channel safety transmitters (such as speed monitors, standstill monitors, ...)

Operating mode selectable with rotary switches A and B

Connectable wireless

Application example - Safety mode with wireless connection option

A wireless safety module secures a production system in zone 2. It first works fully autonomously without a wireless connection. A second wireless safety module is located in the forklift. To pick up produced parts on pallets, the forklift (zone 1) has to drive into the system. In order to gain access to the system (zone 2), the forklift must connect wirelessly and position itself in the specified start zone (green) and authenticate itself via infrared connection. Access to the hazardous area is approved and the forklift can drive into zone 2. The safety functions (such as emergency stop) of both modules are now active, defined control functions can be activated by the mobile vehicle. In a hazardous situation, both the forklift and the machine operator can trigger an emergency stop.

Your advantage: Access to approved control functions for the loading crane and mobility and safety in the system's hazardous area.

Zone 2

Zone 1

Infrared connection

Easy start up -
Quick start in just 3 steps

1 **Quickly and easily set the operating mode using the rotary switch**

1 Full safety mode

2 Cross safety mode

3 Connectable wireless
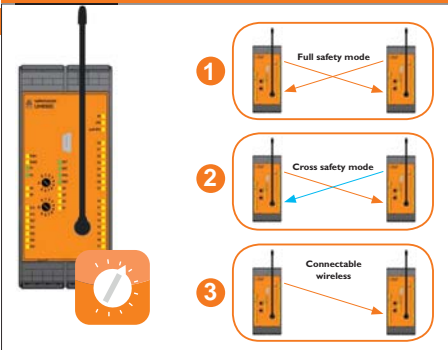
2 **Select frequency channel using SAFEMASTER W Manager***

5

1 — 64

3 **Set transmission power using SAFEMASTER W Manager***

* Optional - not required for start-up operation

USB

SAFEMASTER W Manager

Quick and easy set up and diagnostics for your wireless system

DOLD offers a free software program "SAFEMASTER W Manager" which facilitates set up, diagnostics and system logging through a simple graphic user interface.

The software ensures fast diagnostics, additional live status displays and data logging, facilitating the best possible availability of machinery and systems.

The integrated Spectrum Analyzer provides a quick overview of all available radio channels and potential interference.
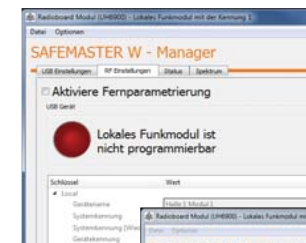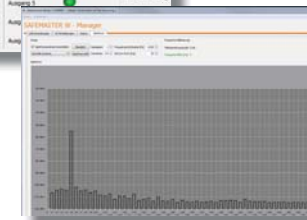
▶ **Display** *(device labeling, set frequency range 433 MHz or 869 MHz, received transmission power)*

▶ **Setting** *(device names for the two UH 6900 modules connected wirelessly, frequency channel, transmission power)*

▶ **Diagnostics** *(current module status display, assessment of status log and additional diagnostic options)*

▶ **Spectrum analysis** *(the integrated Spectrum Analyzer provides a quick overview of all available channels)*
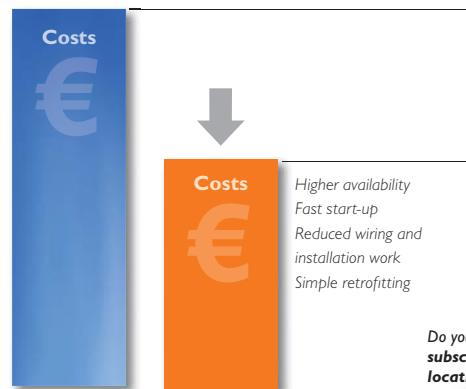
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SAFEMASTER W
System overview

Wireless Safety Solutions from a single source

The radio controlled safety system UH 6900, expands on the comprehensive DOLD functional safety wireless product range. In addition to the existing SAFEMASTER W safe mobile emergency stop systems and wireless enabling switches, DOLD now offers a safe wireless solution for paired and group mode operation systems. It can be integrated wirelessly into a variety of safety-related applications, even in rugged, difficult to access and wide ranging systems.

The radio controlled safety system UH 6900 can be configured to easily and efficiently handle many different wireless functional safety challenges. Especially in areas where wiring would be impractical or impossible. Evaluate the Safemaster W solutions now for yourself!

Economic efficiency

The UH 6900 wireless safety module - safe and economical to use:

Costs
€

Costs
€

Higher availability
Fast start-up
Reduced wiring and
installation work
Simple retrofitting

*Do you need a group shutdown by **every subscriber, wireless and from every location?***

UH 6900 group mode

- Machine building industry
- Intralogistics
- Paper and printing industry
- Food industry
- Automotive industry
- Recycling industry
- Packaging machines
- Mining and steel industry
- Gantry cranes
- Mountain railways and ski lifts
- Transportation and conveying technology
- Wind energy systems
- Ship building and harbour systems
- Construction materials industry

... and anywhere else where safety is the highest priority. Also in your industry!

Our experience. Your safety – Protect your system or machine reliably.

	Frequency range	Type	Device type	Performance Level (PL) according to EN ISO 13849-1	Safety Integrity Level (SIL) according to IEC 61508	Safety		Semiconductor		Connection type [3]	Art. no.
						Inputs [1]	Outputs [2]	Inputs	Outputs		
	433 / 434 MHz	UH 6900.03PS/00MF0	Wireless safety module	Cat. 4 / PL e	3	3	3 NO	8	8	Screw terminal	0067213
		UH 6900.22PS/00MF0	Wireless safety module	Cat. 4 / PL e	3	3	2 NO, 1 NC	8	8	Screw terminal	0067214
		ZB 6900/040	Aerial 1/2 wave, BNC without adapter	-	-	-	-	-	-	-	0067254
		ZB 6900/041	Aerial 1/4 wave, SMA	-	-	-	-	-	-	-	0067255
	869 MHz	UH 6900.03PS/00MF1	Wireless safety module	Cat. 4 / PL e	3	3	3 NO	8	8	Screw terminal	0067216
		UH 6900.22PS/00MF1	Wireless safety module	Cat. 4 / PL e	3	3	2 NO, 1 NC	8	8	Screw terminal	0067217
		ZB 6900/050	Aerial 1/2 wave, SMA	-	-	-	-	-	-	-	0067256
	Accessories	ZB 6900/042	Cable extension with cable pass through (2 m) SMA	-	-	-	-	-	-	-	0067257
		ZB 6900/043	Cable extension with cable pass through (5 m) SMA	-	-	-	-	-	-	-	0067258
		ZB 6900/044	Adapter BNC/SMA	-	-	-	-	-	-	-	0067642
		ZB 6900/045	Angle connector SMA	-	-	-	-	-	-	-	0067675
		ZB 6900/060	Photo sensor for additional start signal (infrared)	-	-	-	-	-	-	-	0067259
		ZB 6900/061	Extension cable set for photo sensors (2 m)	-	-	-	-	-	-	-	0067260
		OA 6920	Programmer cable mini USB/USB (1 m)	-	-	-	-	-	-	-	0064160

*) Aerial not included in scope of delivery   [1] 2-Channel   [2] Forcibly guided contacts   [3] Also available as cage clamp terminals

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# Our experience. Your safety.

SAFEMASTER - Multifunctional safety solutions

Innovative safety concepts

As a solution provider for safe automation and electrical safety, DOLD offers a comprehensive product portfolio from a single source. Our SAFEMASTER solutions have been successfully used for many decades around the world.

From single function safety switching devices for simple safety applications through to multifunction, modular safety systems, DOLD develops tailor-made solutions for your industry and applications.

We would be happy to provide you with information about further safety solutions.
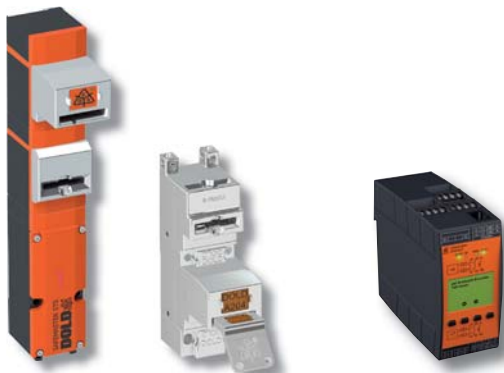
SAFEMASTER STS

The SAFEMASTER STS modular safety switch and key transfer system serves to monitor the moveable safety guards. It combines the advantages of safety switches, guard locks, key transfer and command functions in a single system. The new FRP variation stands out for its attractive design, and can be combined with our trusted stainless steel version.

SAFEMASTER S

Our solutions for secure drive monitoring utilise a combination of safe speed, standstill, or frequency monitoring, with or without external sensors, to increase productivity and safety.

SAFEMASTER PRO

The modular and configurable SAFEMASTER PRO safety system monitors all safety circuits of your machinery and installations – in a simple, flexible and safe manner. The number of inputs and outputs of the central control unit can be upgraded via extension modules at any time. Now also featuring safe speed monitoring and dynamic program realization.

SAFEMASTER W

The emergency stop system and radio-controlled enabling switch in the SAFEMASTER W series can be used to wirelessly shut down hazardous movements in a fraction of a second. The Wireless Safety System thus ensures maximum freedom of movement for the operating and maintenance personnel.

More

Info

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