System overview

SAFEMASTER W

Radio-controlled safety system RE 6900 -
Wireless Functional Safety
in **group mode**

DOLD

Our experience. Your safety.

SAFEMASTER W - Wireless Safety System

SAFEMASTER W

Maximum mobility with the highest level of safety up to Cat. 4 / PL e or SIL 3

The new RE 6900 wireless safety system from the SAFEMASTER W series is the perfect solution if you want to work safely in hazardous areas during maintenance or setup of machines and systems - all while enjoying maximum mobility.

Wireless, safe, reliable

The wireless enabling switch ensures safe operation and prevents the unintentional initiation of hazardous movements, as only an active middle position of the three position switch grants permission for the machine movement via radio. Releasing or pressing the button all the way interrupts the movement and triggers a safety-related shutdown. Thanks to its ergonomic design, the wireless enabling switch fits perfectly in the hand and allows for intuitive one-handed operation - all while ensuring the highest level of safety up to Cat. 4 / PL e or SIL 3.

Use in various applications

The wireless enabling switch is primarily used in robotics for setup work, while the radio-controlled emergency stop is particularly effective in large-scale facilities, transportation, or logistics areas - anywhere where a quick response from a distance is required.

Wireless Safety System in group mode

In group mode, the RE 6900 wireless safety system consists of a transmitter - available as either a wireless enabling switch or a wireless emergency stop - and up to 255 UH 6900 group receivers. Each RE 6900 wireless handheld transmitter is uniquely assigned to one or more group receivers.

Quick and easy commissioning

Commissioning is quick and easy using the included SAFEMASTER W Manager configuration software. In addition, the wireless handheld transmitter and the wireless safety module can be individually configured. Additional diagnostic functions round off the system.

Radio-controlled safety system RE 6900 - Group mode

SAFEMASTER W - Your advantages at a glance:

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

Ergonomic One-Handed Operation
Thanks to its ergonomic design, the wireless handheld transmitter fits comfortably in the hand and allows for intuitive one-handed operation

Safe signal transmission
The safety-related transmission of stop or enable commands offers greater flexibility in securing hazardous areas

Control signals
Non-safety-related control signals affect the signal outputs of the assigned group receivers

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

Configurable control buttons
The outputs of the group receivers can be flexibly controlled via six freely programmable buttons and 16 keyboard levels

Shock detection
If the wireless handheld transmitter is subjected to shock, a non-safety-related shutdown is triggered

Authentication
User authentication via an electronic key enables the personalization of multiple users with different permissions

Motion and Position Detection
If there is a deviation from a defined target position or a lack of movement of the wireless handheld transmitter, a non-safety-related shutdown is triggered

Motion control
Motion-dependent gesture control of the forward/backward and right/left function outputs

Frequency band
License-free frequency range 433 – 434 MHz or 869 MHz available

Configuration & Diagnostic options via USB
Additional status displays and logging using the SAFEMASTER W Manager software

Haptic feedback
Tactile vibrations when buttons are pressed ensure intuitive operation – even without visual contact

Radio-controlled safety system RE 6900 Group mode

Microsite

System overview
Radio-controlled enabling switch

Group mode

In this version, the RE 6900 wireless handheld transmitter functions as a three-position enabling switch. When the enabling switch is in the middle position, it allows the operator to move freely during service and maintenance operations and to perform user-specific control tasks via radio. When the operator releases the enabling switch or presses it all the way down, the system is set to the safe state via a safety-related radio signal sent to the assigned UH 6900 wireless safety module.

Display

The color display and 4 LEDs provide information about settings and system status messages.

RFID

The RFID detector enables the authentication of operating personnel and the loading tray.

IR Start

The infrared transmitter enables starting within defined start zones.

Keypad

Six freely programmable keys and 16 keypad levels allow for flexible control of up to eight outputs.

Start button

The ergonomically positioned start button is used to activate the RE 6900 wireless safety system.

Enabling switch

Pressing or releasing the enabling switch triggers the safety function.

Motion Detector

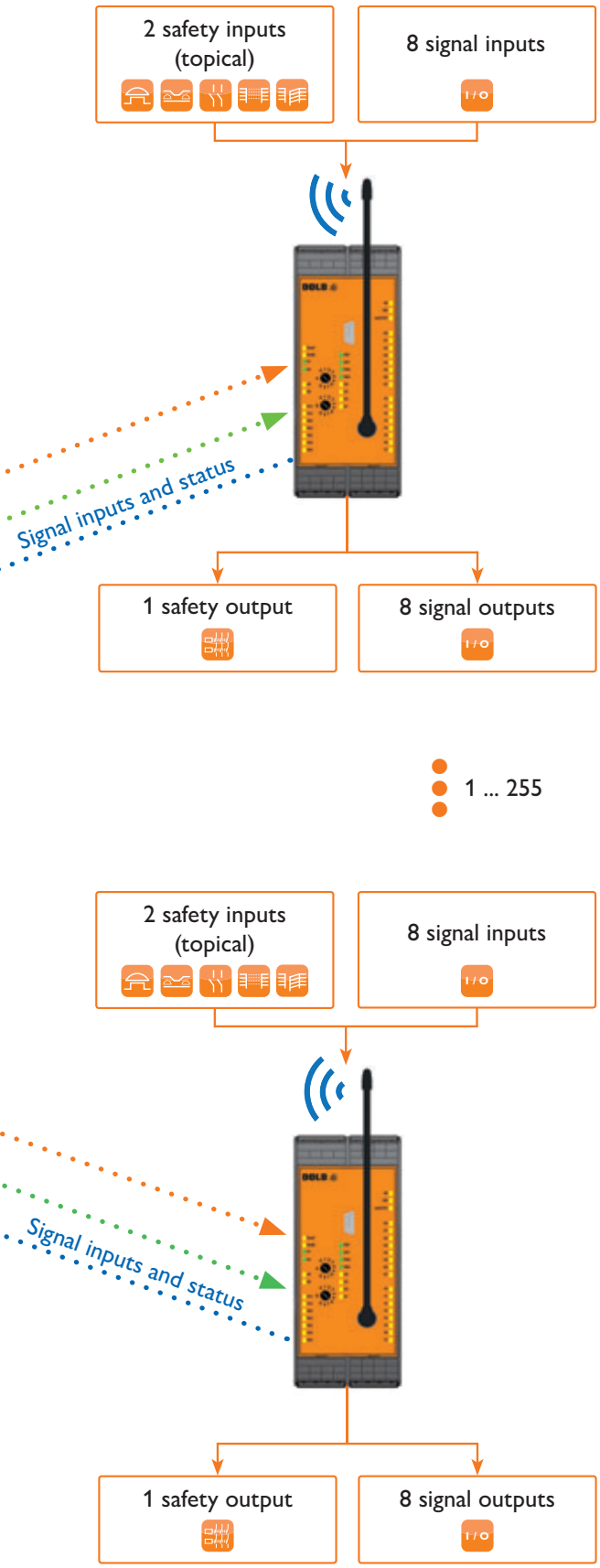
The motion detector detects the movement of the handheld transmitter and reduces the risk of manipulation.

Vibration

Intuitive operation through haptic feedback when a button is pressed.

Battery

The battery charge level is continuously displayed on the screen.



Operating Principle

With the RE 6900 wireless safety system, safety-related signals are transmitted in group mode from the RE 6900 wireless enabling switch to one or more UH 6900 group receivers.

Safety-related authorization is transmitted unidirectionally from the RE 6900 wireless authorization master to all assigned UH 6900 group receivers. Control, status, and alarm signals are exchanged only between the RE 6900 wireless enabling switch and a selected UH 6900 group receiver. The selected group receiver can be chosen using the control buttons on the RE 6900 wireless enabling switch.

A UH 6900 group receiver features each with 2 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 module offers 8 signal inputs and 8 signal outputs for user-specific control tasks. Two additional status semi conductor outputs, one signal output for reception quality, and the USB interface provide for comprehensive diagnostic options.

Application example
Radio-controlled enabling switch

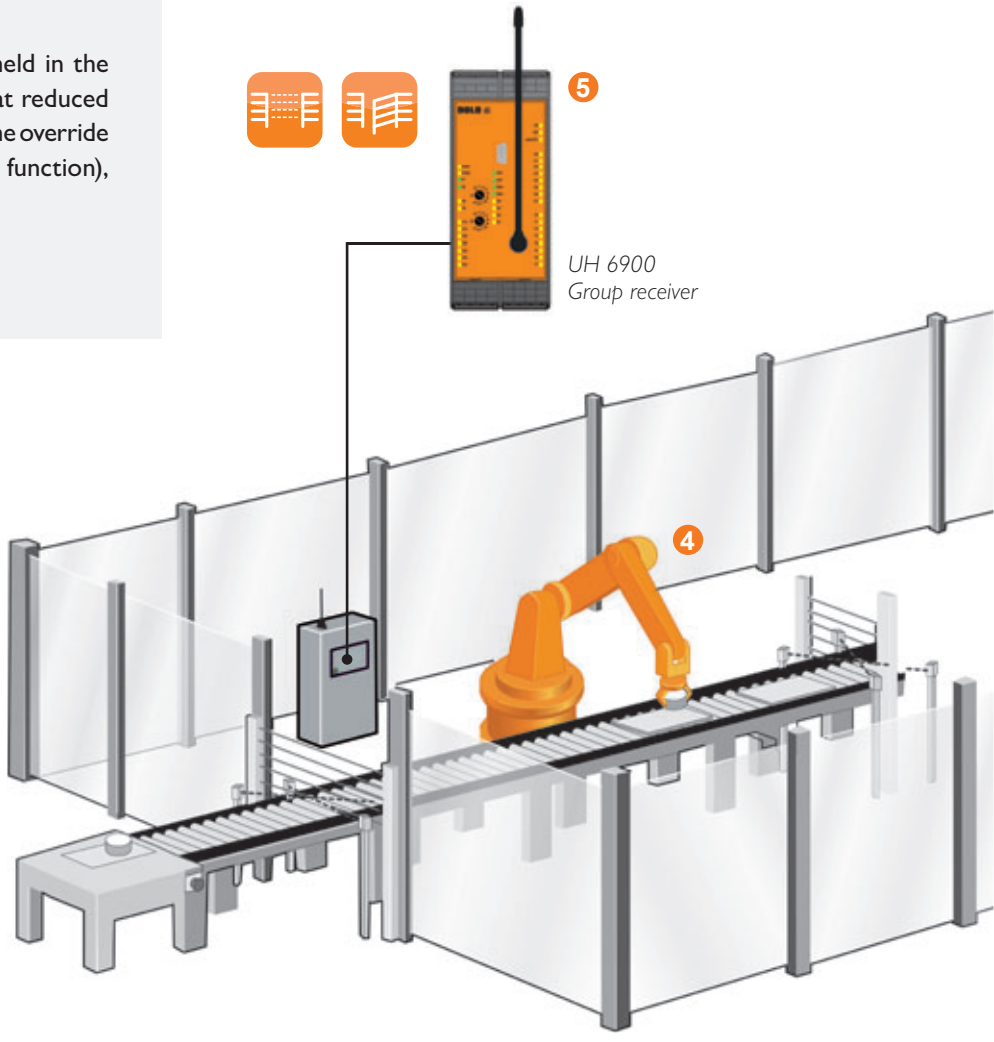
Group mode

Safe mobile operation in hazardous areas of machines and systems using the wireless enabling switch.

In automated production facilities, process operations are fully controlled by a PLC. During normal operation, all safety devices are active, the system runs in automatic mode and entry into the hazardous area is not permitted. However, safe access to the system is required for maintenance and service work or targeted control interventions.

To do this, the system is first switched from automatic to maintenance or service mode via a key switch. Only after this switchover is made the wireless handheld transmitter is enabled, and the wireless connection between the RE 6900 wireless enabling switch and all group receivers of UH 6900 can be established using the start button.

As long as the override control is actively held in the middle position, the system can only move at reduced speed or in jog mode. If the operator releases the override control or presses it all the way down (panic function), a safe stop is triggered immediately.



Safe mobile working
in service and maintenance operations

1. The RE 6900 wireless enabling switch is deactivated in its charging cradle. The operator wants to enter the robot cell to do maintenance work.

2. Using the command function on the safety door, the operator switches to service mode.

3. The operator removes the wireless enabling switch RE 6900 from the charging cradle and authenticates themselves with an electronic key (RFID chip). They can start the system using the start button on the handheld transmitter.

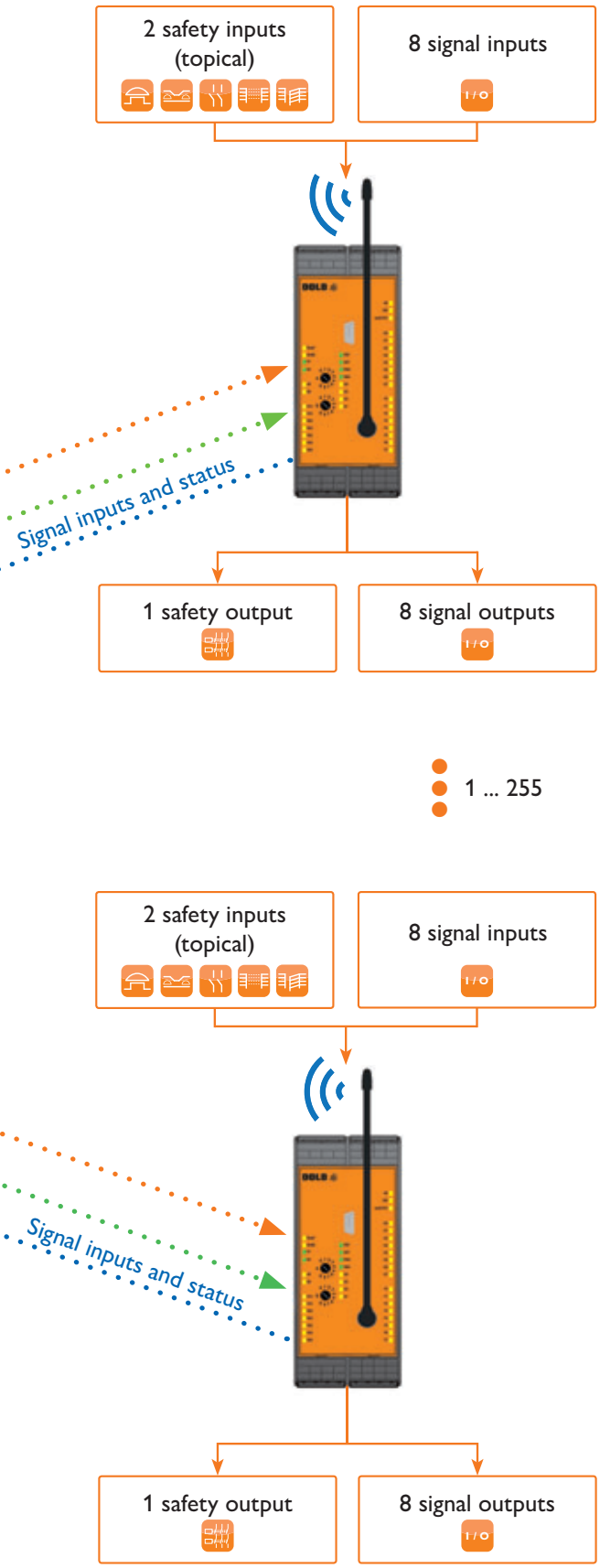
4. The operator can now enter the robot cell and, for example, perform maintenance or user-specific control tasks.

5. In case of danger, the operator either presses the enabling switch all the way down or releases it. The system immediately switches to a safe state.

System overview
Radio-controlled emergency stop

Group mode

In this version, the RE 6900 wireless handheld transmitter features a latching emergency stop button that can be unlocked by turning it. Pressing the emergency stop button sends a safety-related emergency stop signal via radio to the associated UH 6900 wireless safety module, which puts the system into a safe state.



Operating Principle

With the RE 6900 wireless safety system, safety-related signals are transmitted in group mode from the RE 6900 wireless emergency stop to one or more UH 6900 group receivers.

Safety-related shutdown occurs unidirectionally from the RE 6900 wireless emergency stop to all assigned UH 6900 group receivers. Control, status, and alarm signals are exchanged only between the RE 6900 wireless enabling switch and a selected UH 6900 group receiver. The selected group receiver can be chosen using the control buttons on the RE 6900 wireless enabling switch.

A UH 6900 group receiver features each with 2 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 module offers 8 signal inputs and 8 signal outputs for user-specific control tasks. Two additional status semi conductor outputs, one signal output for reception quality, and the USB interface provide for comprehensive diagnostic options.

Application Example
Radio-controlled emergency stop

Group mode

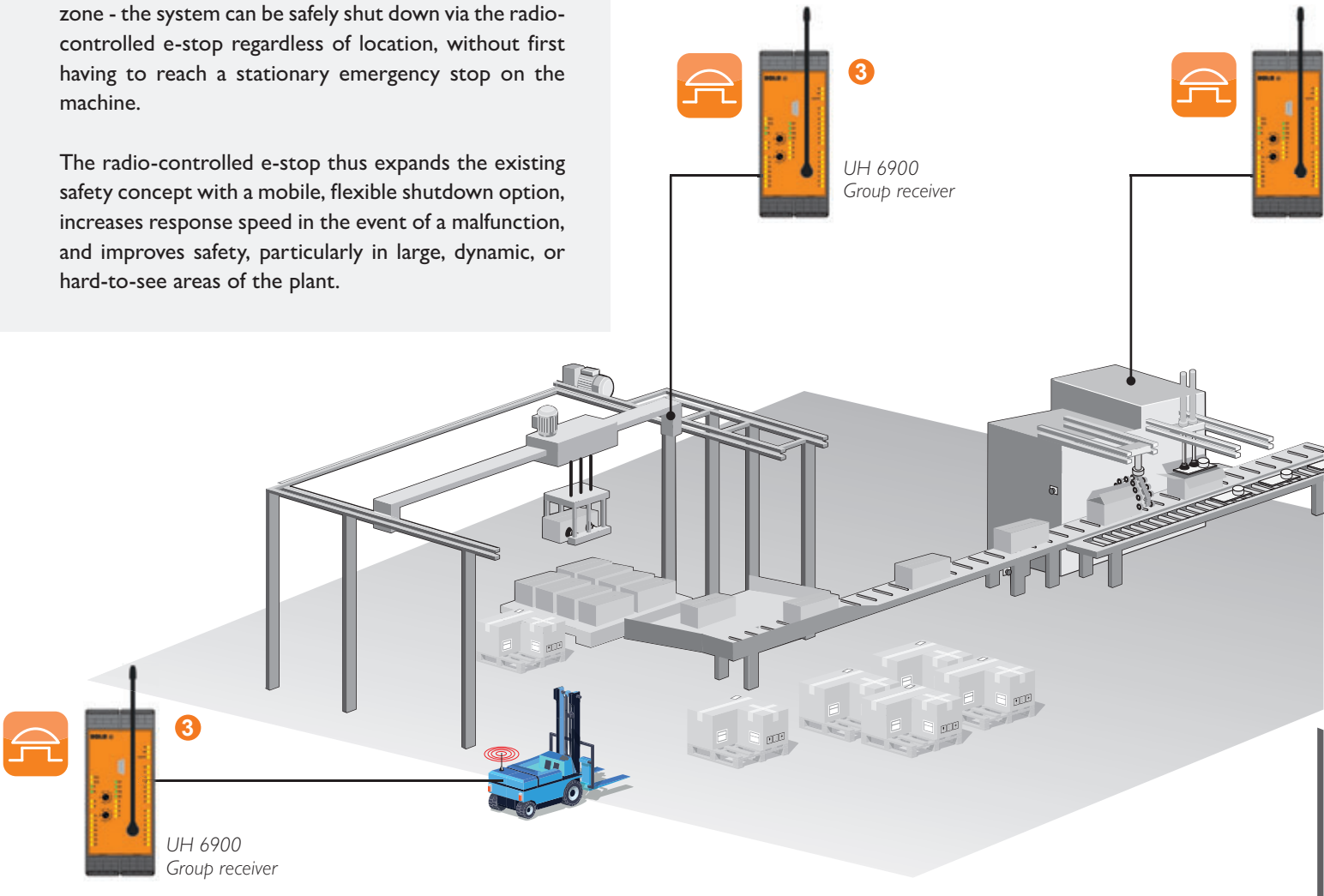
Safe shutdown of machines and systems using the radio-controlled emergency stop.

In automated production systems, process operations are fully controlled by a PLC. The system operates autonomously without requiring an operator to intervene continuously or remain in the danger zone.

In this case, the radio-controlled e-stop serves as an additional mobile safety feature that is available independently of permanently installed emergency stop buttons. The operator moves outside the system, for example along an extensive production line, in interconnected systems, or in areas of the system with limited visibility.

If a hazardous situation is detected - such as malfunctions, faults, uncontrolled movements or people in the danger zone - the system can be safely shut down via the radio-controlled e-stop regardless of location, without first having to reach a stationary emergency stop on the machine.

The radio-controlled e-stop thus expands the existing safety concept with a mobile, flexible shutdown option, increases response speed in the event of a malfunction, and improves safety, particularly in large, dynamic, or hard-to-see areas of the plant.



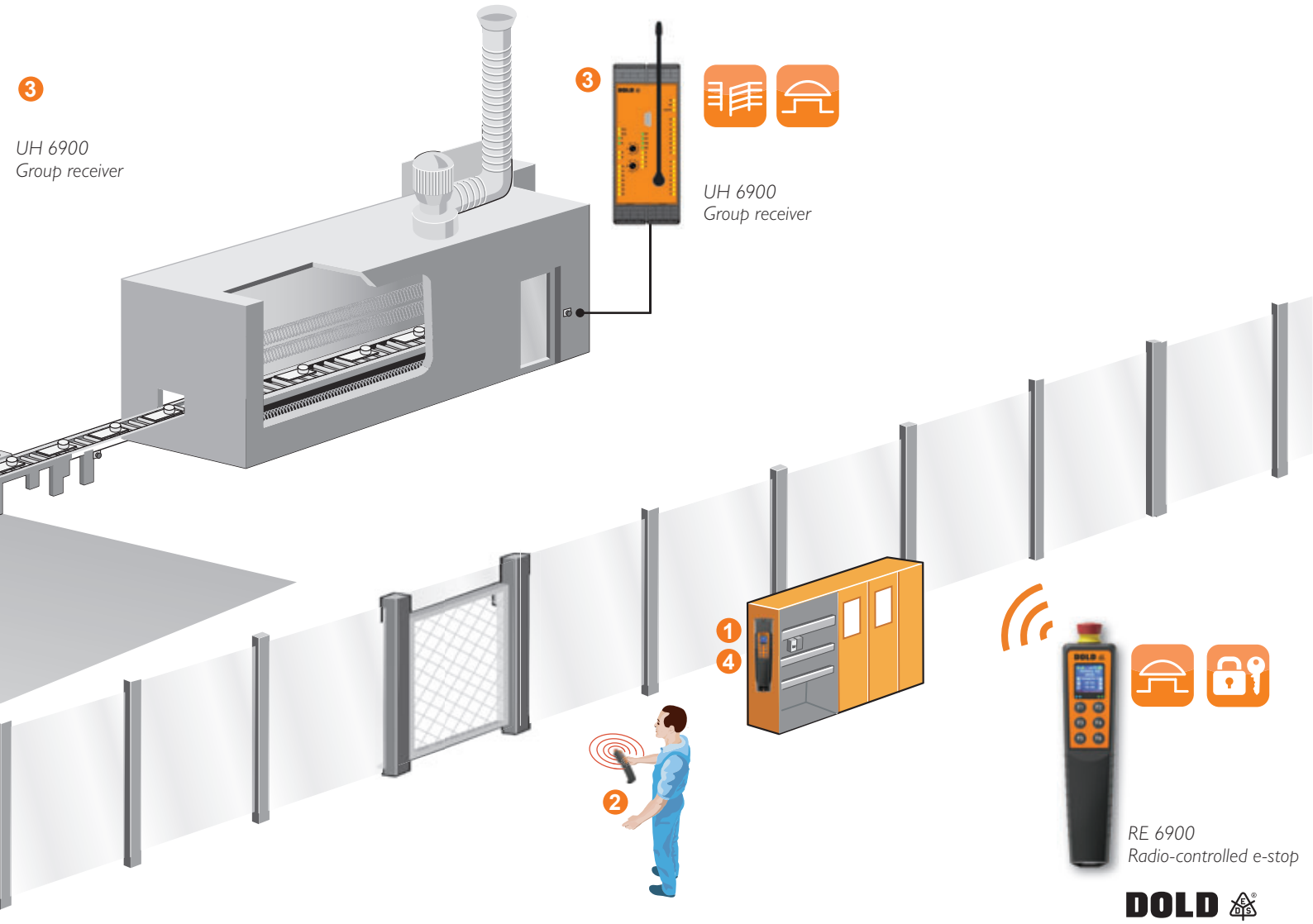
Safety-related shutdown of machines and systems

1 The RE 6900 radio-controlled e-stop is removed from its charging cradle, causing the cradle's control contacts to open. The UH 6900 group receivers wait for a signal from the RE 6900 radio-controlled e-stop.

2 Pressing the start button on the RE 6900 wireless handheld transmitter establishes a wireless connection to all group receivers UH 6900.

3 The radio-controlled e-stop is integrated into the safety system and active. When the emergency stop button is pressed, the hazard zone is safely shut down.

4 The RE 6900 radio-controlled e-stop is placed back in the charging cradle. The group receiver UH 6900 and the RE 6900 radio-controlled e-stop are deactivated again.



SAFEMASTER W Manager
Comprehensive adjustment options

Configuration software

Quick and easy set up and diagnostics for your wireless system

With the SAFEMASTER W Manager Dold offers configuration software that enables advanced operation via a simple graphical user interface.

Furthermore, the software ensures rapid diagnostics, additional status information, and logging during operation. Thanks to its six freely programmable function keys and 16 key levels, the wireless handheld transmitter offers individually configurable control functions.

The SAFEMASTER W Manager works with both the RE 6900 wireless handheld transmitter and the UH 6900 radio-controlled group receivers. The connected device is automatically detected, and the data is read and displayed accordingly.

▶ *Parameterization*
Parameterization of key functions, keypad levels, symbol assignments, and function outputs; configuration of the display

▶ *Display*
Device labeling, set frequency range, received transmission power

▶ *Settings*
Function and device settings, frequency channel, and transmit power

▶ *Key levels*
6 freely programmable function keys and 16 key levels allow for individually configurable control functions

Easy start up
Quick start in just 3 steps

1 **Configure and connect the wireless handheld transmitter and wireless safety module**

2 **Configure the wireless safety system using the SAFEMASTER W Manager software**

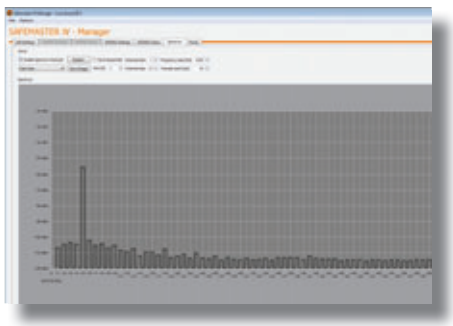
3 **Test the wireless handheld transmitter with the charging cradle - removal and placement**

▶ *Diagnostic*

Real-time status display of devices, assessment of status log and additional diagnostic options

▶ *Spectrum analysis*

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



Radio-controlled safety system RE 6900

Product Selection

Wireless Safety Solutions from a single source

The system components of the RE 6900 wireless safety system form the basis for a variety of applications. The wireless handheld transmitter is available either as a radio-controlled emergency stop or as a three-stage wireless enabling switch - each with or without a display.

Additional components, such as the charging cradle and various versions of the group receivers, are also available. Additional accessories for the wireless safety system are available as options.

Product	Frequency range	Type	Device type	With display	Category	Inputs	Outputs	Semiconductor	Art. no.
RE 6900	433 - 434 MHz EU variant	RE 6900/1ABBB/4000/00	Radio-controlled emergency stop	●	Up to Cat. 4 / PL e or SIL 3				0069495
		RE 6900/0ABBB/4000/00	Radio-controlled enabling switch	●					0069492
		RE 6900/10BBB/4000/00	Radio-controlled emergency stop						0069501
		RE 6900/00BBB/4000/00	Radio-controlled enabling switch						0069498
		UH 6900.03PS/00GR0	Radio-controlled group receiver			3 [1]	3 NO [2]	8 IN / 8 OUT	0067957
		UH 6900.22PS/00GR0	Radio-controlled group receiver			3 [1]	2 NO, 1 NC [2]	8 IN / 8 OUT	0067961
	869 MHz EU variant	RE 6900/1ABBB/4001/00	Radio-controlled emergency stop	●					0069496
		RE 6900/0ABBB/4001/00	Radio-controlled enabling switch	●					0069493
		RE 6900/10BBB/4001/00	Radio-controlled emergency stop						0069502
		RE 6900/00BBB/4001/00	Radio-controlled enabling switch						0069499
UH 6900		UH 6900.03PS/00GR1	Radio-controlled group receiver			3 [1]	3 NO [2]	8 IN / 8 OUT	0067958
		UH 6900.22PS/00GR1	Radio-controlled group receiver			3 [1]	2 NO, 1 NC [2]	8 IN / 8 OUT	0067962
ZB 6900/200	Accessories	ZB 6900/200	Charging cradle				2 NO		0069510
		ZB 6900/040	Aerial 1/2 wave, BNC (433 - 434 MHz)						0067254
		ZB 6900/041	Aerial 1/4 wave, SMA (433 - 434 MHz)						0067255
		ZB 6900/050	Aerial 1/2 wave, SMA (869 MHz)						0067256
		ZB 6900/042	2-meter antenna extension cable						0067257
		ZB 6900/044	Adapter BNC/SMA						0067642
		ZB 6900/045	Angle connector SMA						0067675
		ZB 6900/063	IR receiver						0068526
		ZB 6900/064	2-meter connection cable for IR receiver						0068529
		ZB 6900/201/SW	Black electronic key						0069627
		ZB 6900/201/BL	Blue electronic key						0069628
ZB 6900/201		ZB 6900/201/GN	Green electronic key						0069629
		ZB 6900/201/RT	Red electronic key						0069630
		ZB 6900/201/GE	Yellow electronic key						0069631
		ZB 6900/070	Leather holder						0070357

[1] *2-channel* [2] *Forcibly guided contacts*

System components in detail

Accessories

Extensive range of accessories for the RE 6900 wireless safety system

Accessories for the RE 6900 wireless safety system include the charging cradle for the wireless handheld transmitter. Optional accessories include an electronic key (RFID chip), available in five different colors, a leather holder, and an IR receiver for detecting start signals.

Charging cradle ZB 6900/200

The charging cradle includes the following functions/features:

- Holds the wireless handheld transmitter
- Charges the battery via the charging contacts
- RFID detector for pairing and identifying the associated wireless handheld transmitter
- Connection terminals for connecting the supply voltage and the UH 6900 radio-controlled group receiver

Electronic key ZB 6900/201

The RE 6900 wireless handheld transmitter can optionally be personalized using an electronic key (RFID chip). This means that only authorized personnel with clearly defined permissions can operate the RE 6900 wireless safety system. Each authorized user has an electronic key with which they can log in to the wireless handheld transmitter. A successful login is indicated on the display, and the wireless handheld transmitter is activated accordingly.

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

With machinery and equipment, there are operating modes and situations in which it is necessary to be present in a hazardous area. The three-position enabling switch RE 6909 from the SAFEMASTER series ensures the safety of personnel during startup, maintenance, or changeovers.

More

Info

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