

User Manual



SAFEMASTER W

Wireless Safety System

Radio-Controlled Enabling Switch RE 6900

Radio-Controlled Emergency Stop RE 6900

Charger ZB 6900/200

DOLD 

Our experience. Your safety.

Translation of the German Original User Manual

 Digital
unterschrieben
von Aditya Jayanti
Datum: 2026.07.17
08:20:06 +02'00'

 Digital unterschrieben von Michael
Colpi
CN: dc=com, dc=dold, ou=E, Dold,
ou=Mitarbeiterkonten, ou=M365-
Konten, ou=HSE-FA, cn=Michael Colpi
Datum: 2026.07.22 13:24:28 +02'00'



Please enter the ID code of the radio-controlled handheld transmitter RE 6900 and the transmission frequencies used:

ID code:	
System ID:	— — . — — — . — — —
Device ID:	— — —
Set frequency:	 Channel: — —
Alternative frequency:	 Channel: — —
Alternative frequency:	 Channel: — —

It remains the responsibility of the manufacturer to ensure the overall function of the plant or machine. DOLD does not accept liability for the recommendations made or implied here. Nor can any new warranty, guarantee or liability claims be derived which go beyond our general terms and conditions.

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1 Important Notes

This manual is for your safety and the safety of the plant users. Please read the manual carefully before you install the SAFEMASTER W-system, put it into operation or work with it at the protected machine or plant. If any technical difficulties should arise, please contact our Customer Service department:

Telephone: +49 7723 / 654-0

Fax: +49 7723 / 654-356

e-mail: dold-relays@dold.com

1.1 General Safety Regulations



Danger due to improper use!

WARNING

- The radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 are classified as a control device by the European Machinery Directive and as a safety component due to their disconnection ability. The resulting safety regulations must be heeded during operation.
- The radio-controlled safety system SAFEMASTER W may only be installed and put into operation by authorized specialist personnel,
 - which is familiar with the proper handling of safety components,
 - which is familiar with the applicable regulations concerning occupational safety and accident prevention and has read and understood the user manual.
- The operator must be trained accordingly and be authorized to operate the machine.
- The radio-controlled safety module UH 6900, the radio-controlled handheld transmitter RE 6900 and the charger ZB 6900/200 may only be used for the application cases provided for in the mutually applicable data sheets/operating instructions. All specifications, safety notes and ambient conditions must be observed.
- The system, comprising the radio-controlled safety module UH 6900, the radio-controlled handheld transmitter RE 6900 and the charger ZB 6900/200, must be linked with the machine controller in such a way that the safety requirements are fulfilled in accordance with EN ISO 13849-1, EN ISO 13850, EN ISO 10218-1, EN ISO 11161 and EN 60204-1.
- Heed local regulations as well as all applicable safety and accident prevention regulations.
- The manufacturer of a machine or plant is responsible for the correct and safe overall function. Note that validation in accordance with EN ISO 13849-2 is always required for the complete system.
- The radio-controlled handheld transmitter RE 6900 and the charger ZB 6900/200 may only be operated with the radio-controlled safety module UH 6900.
- In the overall control concept, at least one switching element with positive opening must be used in the safety circuit.
- If emergency stop devices are connected in series, the Performance Level in accordance with EN ISO 13849-1 can be reduced due to lower error detection.
- No commands for dangerous states may be initiated with the radio-controlled handheld transmitter RE 6900 alone.

- The radio-controlled handheld transmitter RE 6900 must not be used as a substitute for other safety measures.
- Add-on parts, such as switches, non-safe functional outputs etc. must not be used for safety-related functions.
- Ensure safe cable routing or laying, in particular between radio-controlled safety module UH 6900 and charger ZB 6900/200. The connection cable must not be exposed to increased loads due to tension, pressure, friction, twisting or bending. The connection cable must not come into contact with hot surfaces or get near to them. In accordance with EN ISO 13849-2, heed standard EN 60204-1 section 12 with regard to cable laying outside enclosed installation spaces.
- The user must evaluate and document the residual risks.

**WARNING****Risk of electrocution!**

- Disconnect the plant, radio-controlled safety module UH 6900 and charger ZB 6900/200 from the power supply and ensure they remain disconnected during electrical installation work.

**WARNING****Danger due to manipulation!**

- The safety functions of the enabling switch and emergency stop on the radio-controlled handheld transmitter RE 6900 must not be bypassed, manipulated or rendered ineffective in any other way.
- The enabling signal must not be raked either electrically or mechanically.
- The enabling switch on the radio-controlled handheld transmitter RE 6900 must be protected against tampering by the operator.
- The user must take the requirements of EN 60204-1 concerning measures against bypassing into consideration.

**WARNING****Danger due to faulty operation!**

- Enabling switches may only be operated by authorized persons who can recognize the hazardous states in good time and initiate counter-measures immediately.
- Every person who is in the hazardous area must carry their own enabling switch with them.
- A visible emergency stop button must always work.
- In the case of radio modules that are temporarily inoperable, precautions must be taken to ensure that the emergency stop devices connected to them are not visible. For this reason, always return radio operated handheld transmitters RE 6900 that are not in use to their charger.
- The operator must always have a clear view of the danger zone.

- If the operator's direct field of vision of the relevant plant parts, such as machine entrance, drilling/milling head etc. cannot be overseen from every operating position, additional measures must be taken (e.g. equipping the plant with a light barrier). This means easily visible zones can be defined as start zones where the application must start.
- The operator must always be able to switch the plant off.
- During start-up and operation of the plant, the operator must always be in a position to reach and be able to operate the emergency stop switch.
- Restarting the machine
 - After the safety function of the radio-controlled handheld transmitter RE 6900 has triggered, a reset via the start button may only take place once the cause of switch-off has been recognized and eliminated.
- If several radio-controlled systems are used at the same location, the different systems must be set to different radio frequencies. Make sure that the radio-controlled safety system does not interfere with other systems on site and is not interfered with by them. They should be at least 2 channels apart (e.g. channels 5, 7, 9 etc.).
- Check the safety functions after every commissioning, replacement of components, programming, configuration, parameterization, after longer periods of standstill and after every error.
- As the installer of the machine/plant, you must also clearly refer to these safety regulations in the associated operating instructions.



Danger due to the battery!

WARNING

- A lithium polymer rechargeable battery is used in the radio-controlled handheld transmitter RE 6900 and may only be replaced by a suitable type. Please return the radio-controlled handheld transmitter RE 6900 to DOLD for the battery to be replaced.
- Treat discharged batteries with care. Batteries represent a source of hazard since they can cause a very high short-circuit current. Even if lithium-polymer batteries appear to be in a discharged state, they – like other batteries – are never completely discharged.
- The battery and the radio-controlled handheld transmitter RE 6900 must not be exposed to naked flame or extreme temperature.
- Dismantling or modifying the battery can damage the protective devices. This can lead to heat development, smoke development, ignition or explosion of the battery.
- Do not expose the battery to extremely low air pressure.
- Impact and the penetration of objects can damage the battery. Do not drop, pierce, crush, drill through or cut the battery.
- There is a fire hazard for a charger that is suitable for a certain type of batteries if it is used with other batteries. Only use the chargers provided by DOLD for charging, such as the charger ZB 6900/200.
- Damaged or modified batteries may have unpredictable characteristics that can lead to fire, explosion or injuries.
- The use of a battery must be stopped immediately as soon as it shows signs of abnormal characteristics such as odour development, heat, discoloring or deformation. If operation continues, the battery can develop heat, smoke, ignite, or explode.
- Do not dip the battery in fluids such as water or drinks. The contact with fluids can

damage the battery. This can lead to heat development, smoke development, ignition or explosion of the battery.

- If used incorrectly, fluid can escape from the battery, avoid contact with this. Following chance contact, rinse off with water. If the fluid gets into your eyes as well, seek medical advice. Leaking battery fluid can lead to skin irritation or burns.
- Keep the battery away from other metallic objects such as paper clips, coins, keys, screws or other metal objects that could cause bypassing of the connection contacts. A short-circuit between the battery contacts can result in burns or fire.



Attention!

ATTENTION

- In the event of functional faults or damage, the enabling switch must be replaced. Repairs to the device may only be carried out by the manufacturer.
- The equipment must be checked, maintained and replaced depending on the intensity of operation.
- The equipment must be checked and maintained regularly by trained personnel. Heed the regulations applicable for this. The check covers the complete sub-system and not only individual components, at least all functionalities which are actually involved in the safety function.
- Soiling must be removed regularly. Use a damp cloth for this. Avoid contact with abrasive cleaning agents or other aggressive chemicals.
- Never expose the device to a powerful water jet or high-pressure steam jet. Avoid temporary or permanent immersion. The IP protection class applies for water, avoid contact with other fluids.
- The enabling switch must not be dismantled or modified.

If secondary devices are delivered, the extended safety regulations for second devices also apply in addition to the general safety regulations.

1.2 Extended safety regulations for secondary devices

Each device is identified by an ID code stored in the device. This ID code is programmed by E. Dold & Söhne GmbH & Co. KG and cannot be changed by the customer. Identical devices can be delivered on customer request. For devices with an identical ID code, the following extended safety regulations apply:



WARNING

- The simultaneous use of secondary devices can lead to potentially fatal situations.
- Replacement devices
If radio-controlled safety modules with identical (already assigned) ID codes are delivered for replacement purposes, these devices should be kept under lock and key. Before commissioning a replacement device, the device to be replaced must be permanently decommissioned.
- Second devices in a plant
If there is a secondary device in a system, measures must be implemented to ensure that the simultaneous use of two or more radio-controlled safety modules with identical ID codes is impossible. It must be guaranteed that only one device is supplied with electrical power at any given time.
- Secondary devices in two or more spatially separated systems
If the secondary device is in another plant, the systems must be far enough apart to **ensure that a radio connection between the systems is permanently ruled out**. Furthermore, measures must be implemented to prevent the devices coming together.
- Risk of mix-up
Non-active emergency stop devices must not be mixed up with active emergency stop devices. If there is a secondary device in a system, precautions must be taken to prevent mix-ups. The emergency stop devices must always be able to be uniquely assigned.

1.3 Disposal



Do not dispose of together with household garbage!

The device must be disposed of in compliance with the nationally applicable rules and requirements.



ATTENTION

The product contains a lithium-polymer rechargeable battery. As the end consumer, you are obliged to dispose of the product properly. You can of course return the product to us for disposal

1.4 Regulatory information for devices in the US market

E. Dold & Soehne GmbH & Co. KG
RE6900



FCC ID: 2A3XQRE6900

DOLD article numbers: 0069494, 0069497, 0069500, 0069503

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: Devices with FCC approval do not have CE approval, since the frequencies used do not comply with the Radio Equipment Directive 2014/53/EU (RED) guidelines and vice versa.

NOTE: Changes or modifications made to this equipment, that are not approved by E. Dold & Soehne GmbH & Co. KG, may void the FCC authorization required to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, & can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the antenna of receiver.
- Reorient or relocate the location of usage of handheld transmitter.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE: Regarding radio-frequency radiation exposure information:

In order to fulfill the RF exposure requirements, there is no minimum distance, between device and the human body, is required. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

NOTE: Use of other accessories listed in this operation instructions may void the FCC authorization, required to operate this equipment.

NOTE: Professional installation only

2 Introduction to the system

The radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 from the product series SAFEMASTER W is an innovative wireless safety system for the protection of humans & machinery and decisively increases the safety, room for maneuver, and reaction speed of people working in hazardous areas. Set-up mode, adjustment work etc. can be designed as conveniently, efficiently and safely as possible using SAFEMASTER W.

The radio-controlled safety system mainly comprises a very compact, ergonomic radio-controlled handheld transmitter RE 6900 (implemented as a wireless enabling switch or a wireless emergency stop), the associated charger ZB 6900/200 and one or more radio-controlled safety modules UH 6900.

According to the European Machinery Directive, the radio-controlled safety system is to be regarded as a control unit and safety component for stopping the controlled machine.

A characteristic feature of the radio-controlled safety system is its safety-relevant transmission path for transmission of the signal from the radio-controlled handheld transmitter RE 6900 to one or more radio-controlled safety modules UH 6900. In addition, the system offers the configuration of user-specific control functions which can also be operated via the radio-controlled safety system. Wired safety signal generators can also be integrated in the system.

2.1 Guidelines, standards and certificates

The wireless safety system SAFEMASTER W complies with the safety requirements of the guidelines and standards currently valid.

- Machinery Directive 2006/42/EC
- IEC/EN ISO 13 849-1: Category 4, Performance Level “e”
- IEC/EN 61 508 : SIL-Claim Limit SIL 3

In addition, the wireless safety system SAFEMASTER W complies with the guidelines and standards:

- Radio – EU – variants
 - Radio Equipment Directive 2014/53/EU (RED)
 - EN 300 220
Electromagnetic compatibility and radio spectrum matters (ERM) –
Short range devices (SRD) –
Radio devices for use in the frequency range of 25 MHz to 1000 MHz
with output powers up to 500 mW



- Radio – US – variant
 - FCC Part 15:
Regulations for ISM Band Devices 902-928 MHz



- Near Field Communication (NFC)
 - EN 300 330

Please note that validation in accordance with DIN EN ISO 13849-2 is always required for the complete system.

2.2 Areas of application, intended use

Typical areas of application for the radio-controlled safety system, comprising a radio-controlled handheld transmitter RE 6900 and one or more radio-controlled safety modules UH 6900 are:

- Hazardous areas where protective devices are necessary for personal safety, but wiring is not possible or not feasible, e.g. applications with extensive hazardous areas.
- Mobile and stationary plants e.g. industrial machinery, assembly halls and scaffolds, conveyor belts, high bay storage, warehouses, forklift trucks etc.

The radio-controlled safety system, comprising a handheld transmitter RE 6900 and one or more radio-controlled safety modules UH 6900, is used for the radio remote control of machine and plant parts which have been controlled by cable up to now. The area of application is restricted by the valid safety regulations such as e.g. not standing under a suspended load.

2.3 Structure

The main components of the SAFEMASTER W safety system are the radio-controlled handheld transmitter RE 6900 with the respective charger ZB 6900/200 as well as one or more radio-controlled safety modules UH 6900.



Figure 1: Radio-controlled handheld transmitter RE 6900 in the charger ZB 6900/200 (left) and radio-controlled safety module UH 6900 (right)

The radio-controlled handheld transmitter RE 6900 is light, ergonomic, sturdy and can easily be operated with one hand. It is implemented either as a wireless emergency stop or as a three-step wireless enabling switch. Operation is through up to 6 function push buttons and one start button, while the 4-inch color display and 4 LEDs provide information about settings or status messages from the radio-controlled safety system. An integrated NFC system for detecting individualized electronic keys (RFID tags) permits the assignment and monitoring of user rights to authorized operating personnel only.

The charger ZB 6900/200 takes over the proper charging of the battery included with the radio-controlled handheld transmitter RE 6900. Removal and replacement of the radio-

controlled handheld transmitter RE 6900 is detected by the RFID circuit integrated in the charger and the monitored charging contacts. This ensures unique assignment of radio-controlled handheld transmitter RE 6900 and charger ZB6900/200.

Configuration and initialization of the radio-controlled handheld transmitter RE 6900 is carried out via the USB interface with the aid of the SAFEMASTER W-Manager software.

Every radio-controlled safety module UH 6900 is installed in a switch cabinet or on a mobile device and can be operated with a plug-in or external antenna. It detects the signals of up to two wired safety signal generators plus the signals from the related radio-controlled handheld transmitter RE 6900 that are sent through a safe transmission path. Safety-relevant switching commands are switched by relay outputs, non-safety-relevant control signals through semiconductor outputs.

In addition, a non-contact sender and a non-contact receiver (e.g. light curtain) may be connected to force the system to start from a specific location via radio signal.

2.4 Functions and variants

The radio-controlled handheld transmitter RE 6900 is delivered either as an emergency stop or as an enabling switch. These variants can also be ordered without display on request.

2.4.1 Radio-controlled handheld transmitter RE 6900 configured as a wireless emergency stop

In this variant, there is a latching emergency stop button on the radio-controlled handheld transmitter RE 6900 which can be released by a rotary movement.

If the radio-controlled handheld transmitter RE 6900 is removed from the charger and activated, it takes over operator protection in the hazardous area. Pressing the emergency stop button sends a safety-relevant emergency stop signal via radio signal to the connected radio-controlled safety modules UH 6900 which puts the system in a safe state. The radio signal is thus of a higher order than the wired safety functions. The application can only be restarted after acknowledgment at the radio-controlled handheld transmitter RE 6900.

2.4.2 Radio-controlled handheld transmitter RE 6900 configured as a wireless enabling switch

In this variant, there is a three-step enabling switch on the radio-controlled handheld transmitter RE 6900.

If the enabling switch has been taken from the charger and confirmed in its center position, the operator can move freely and carry out certain control or setting functions via radio signal. If the operator either releases the enabling switch or presses it down fully, a safety-relevant radio signal puts the system in the safe state.

2.4.3 Functions of the radio-controlled handheld transmitter RE 6900

- If the radio-controlled handheld transmitter RE 6900 is in the charger, it is automatically deactivated and cannot be used either as an emergency stop or as an enabling switch. The application can be started in the operating mode “Safety operation with optional radio control” via the wired start button or auto-start (after the safety function has been fulfilled).
- Various operating modes that can be set on the radio-controlled safety module UH 6900 offer several options for designing the startup process.

The following functions are common to all configurations:

- Bidirectional or unidirectional radio operation.

- Start via radio signal or local (start options can be set).
- User legitimization via RFID tags. Several users with different access rights possible.
- Motion and position detection as check on activity.
- Shock detection in accident situations.
- Control functions of the non-safety-relevant semiconductor outputs of the radio-controlled safety module UH 6900 via radio signal through programmable keypad or motion detection.
- If the safety-relevant radio connection is interrupted, the system goes into a safe state.
- Monitored charging of the integrated battery via the charger.
- Unique programmable assignment of a radio-controlled handheld transmitter RE 6900 to a charger ZB 6900/200.
- Joint parameterization of the radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 via USB can be done via the SAFEMASTER W-Manager software.

3 Quick Start Guide

A brief overview of the system and instructions for the initial set-up procedure in just a few steps using a simple example configuration.

3.1 Parts list

In the delivery, you will receive:

- 1 radio-controlled handheld transmitter RE 6900 incl. charger ZB 6900/200,
- 1 or more radio-controlled safety modules UH 6900,
- Antennas with connection adapters or connection cables,
- 1 CD with SAFEMASTER W-Manager software, handbook, and license key,
- Any separate accessories (e.g. light curtain).

3.2 Configuration on delivery

Depending on the intended use for the radio-controlled safety system and the modules they are delivered in one of the following configurations.

Bidirectional mode

- 1 radio-controlled handheld transmitter RE 6900 including charger ZB 6900/200
- 1 radio-controlled safety module UH 6900 MF

Operating mode: Pair mode for receivers
(rotary switch A=0, rotary switch B=0)

Radio mode of operation: Pair mode

Radio channel: Channel 05, in the respective frequency band (EU)

Transmission power: 0 dBm (1 mW)

Unidirectional mode

- 1 radio-controlled handheld transmitter RE 6900 including charger ZB 6900/200
- 1 or more radio-controlled safety modules UH 6900 GR (GR = *Group Receiver*)

Operating mode: Optional radio mode for receivers
(rotary switch A=4, rotary switch B=0)

Radio mode of operation: Unidirectional mode

Radio channel: Channel 05, in the respective frequency band (EU)

Transmission power: 0 dBm (1 mW)

This configuration must be adjusted later according to the desired system installation using the software provided or the rotary switches on the front of the radio-controlled safety modules UH 6900.

The ID numbers have already been assigned.

3.3 View of radio-controlled handheld transmitter RE 6900 and charger

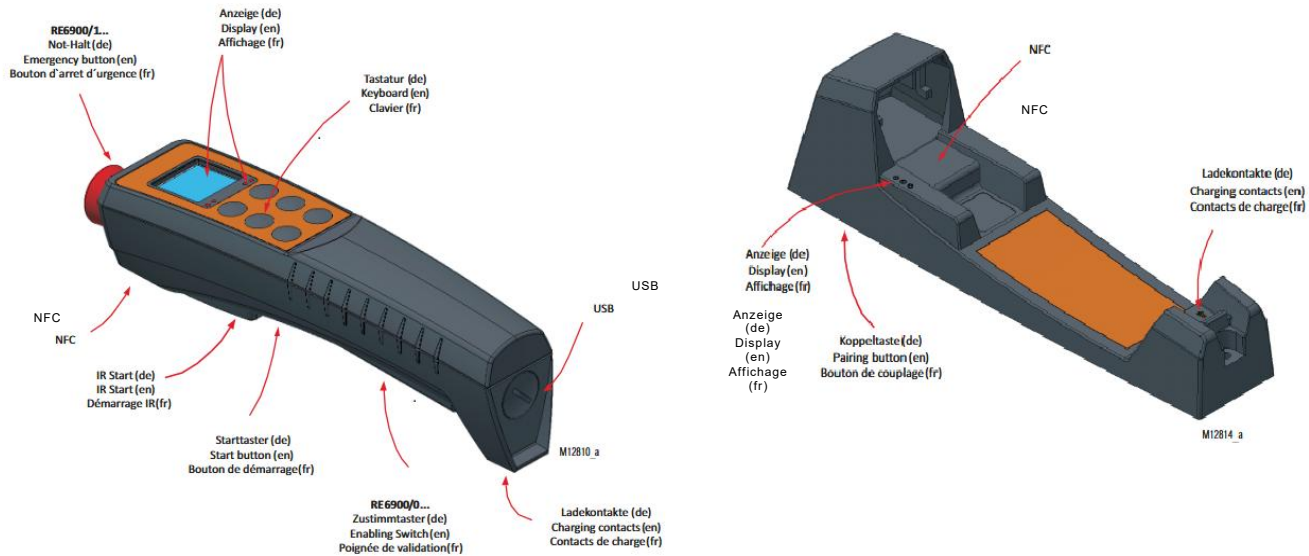


Figure 2: Overview radio-controlled handheld transmitter RE 6900 with charger ZB 6900/200

3.4 View of display and keyboard

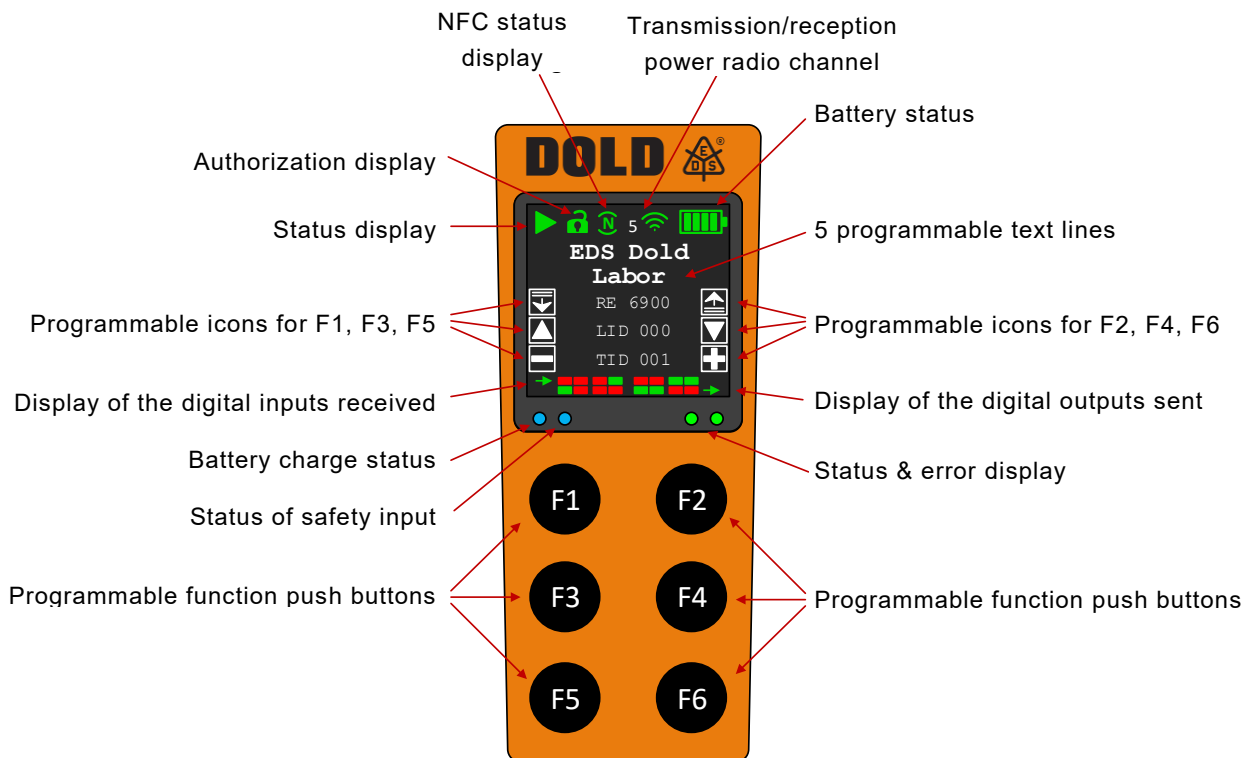


Figure 3: Display and keyboard

The operating keyboard comprises 6 function push buttons F1 to F6 which can be assigned predefined individual functions.

The top and bottom line of the display permanently show the current statuses of the radio-controlled handheld transmitter RE 6900 and the digital function inputs and outputs. The icons on the left and right on the display correspond to the respective function push buttons and can also be programmed in accordance with their function. In addition, there are 5 freely programmable text lines which can contain either an individual text or specific status information. Any errors that occur are also shown on the display

or by the colored LEDs.

3.5 Keyboard levels

There are up to 16 keyboard levels with 6 function push buttons each and the respective display available for operating the radio-controlled handheld transmitter RE 6900; these can be programmed with the aid of the SAFEMASTER W-Manager. Each level works independently and thus makes extremely flexible configuration of the radio-controlled handheld transmitter RE 6900 possible, depending on the application location and the radio-controlled safety module UH 6900 connected.

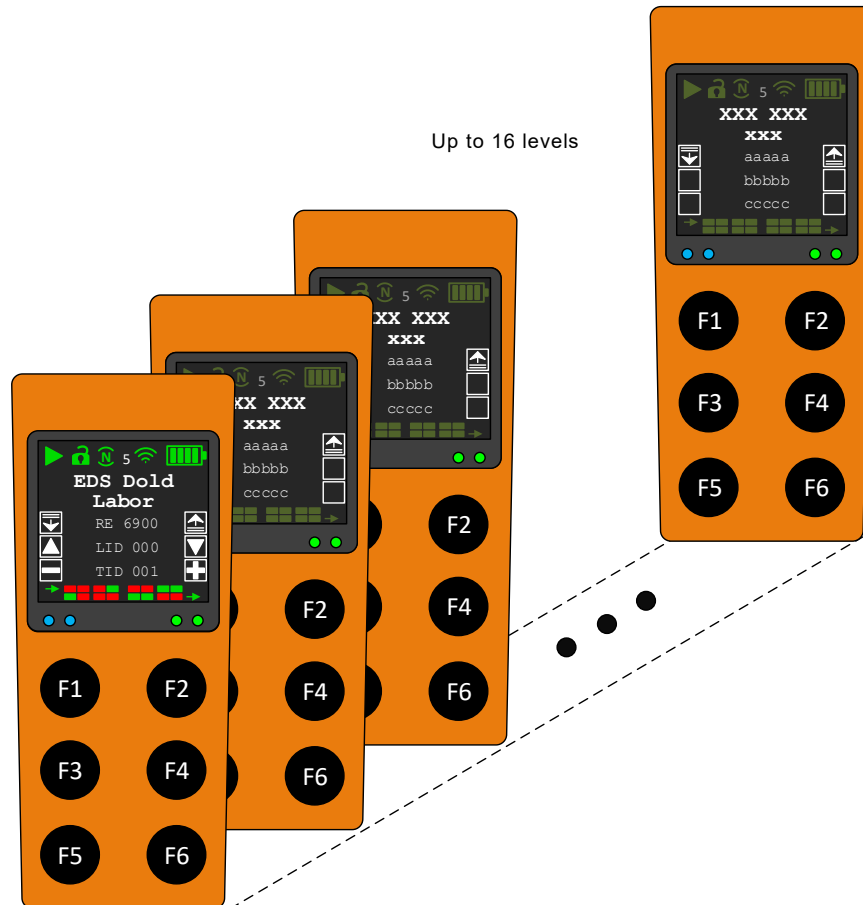


Figure 4: Keyboard levels

The change from one level to the next is done with two predefined functions that must be placed on two function push buttons. This reduces the number of freely programmable function push buttons to four per level of course.

3.6 Front view of the radio-controlled safety module UH 6900

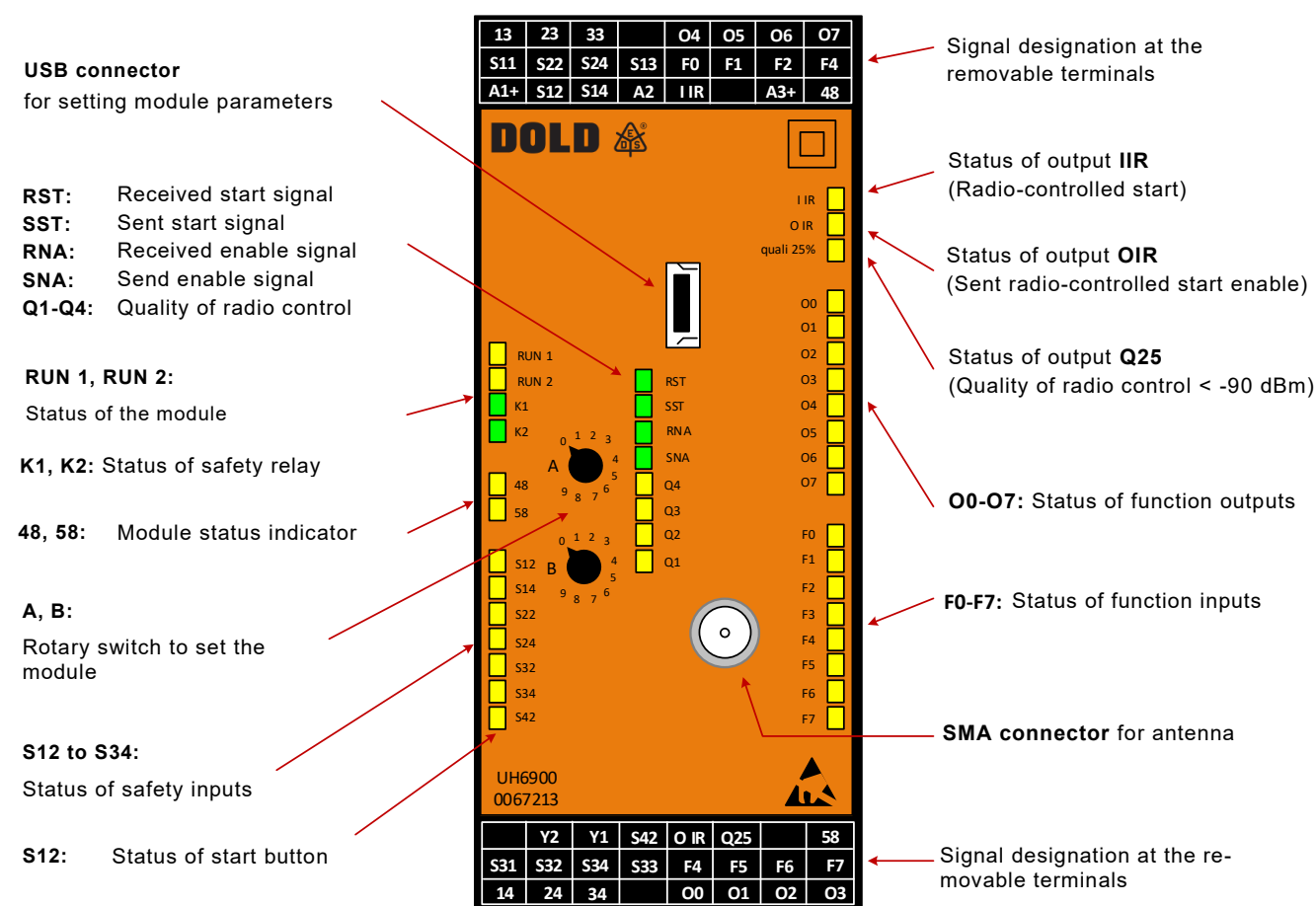


Figure 5: Overview of radio-controlled safety module UH 6900

A detailed description of the respective displays and functions can be found in the manual for the radio-controlled safety module UH 6900.

3.7 Installation of the PC software SAFEMASTER W-Manager

- Insert the included CD and install the SAFEMASTER W-Manager on your PC (Windows operating system). The installation will start automatically, or you can also call up the setup file manually.
- A corresponding program folder will be created on your PC, and the program will be added to the start menu.
- Start the SAFEMASTER W-Manager and enter the license key, which is found in a text file on the CD. Then the program will be ready for operation.

The SAFEMASTER W-Manager works with both, the radio-controlled safety module UH 6900 and the radio-controlled handheld transmitter RE 6900. The respectively connected device is automatically detected and the data are read out and displayed.

3.8 Bidirectional mode in the radio-controlled safety system

In bidirectional mode, the radio-controlled handheld transmitter RE 6900 works almost like a mobile substitute for the second radio-controlled safety module UH 6900. There is a unique pairing of the radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 through the assignments of device and target device IDs.

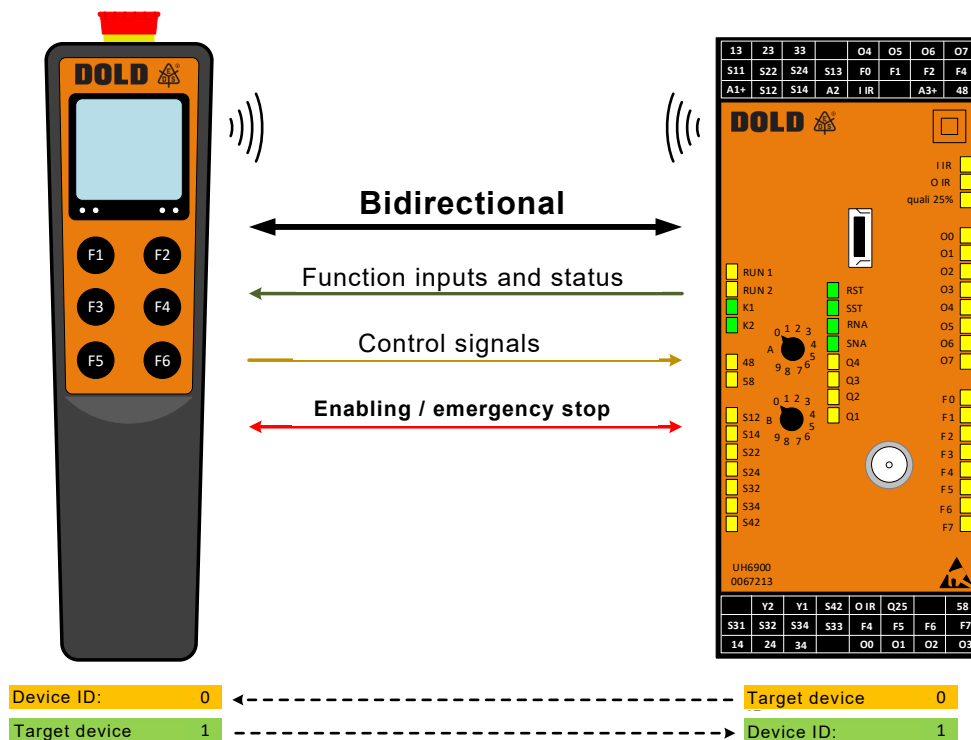


Figure 6: Bidirectional pair mode (Paired Mode – Full Safety Operation)

Data exchange of both the safety signals and the control and status signals takes place in both directions. The system can be started from both sides.
An emergency stop can also be triggered from both sides.

3.9 Unidirectional mode in the radio-controlled safety system

In unidirectional mode, the radio-controlled handheld transmitter RE 6900 works as a control device for one or more safety modules UH 6900.

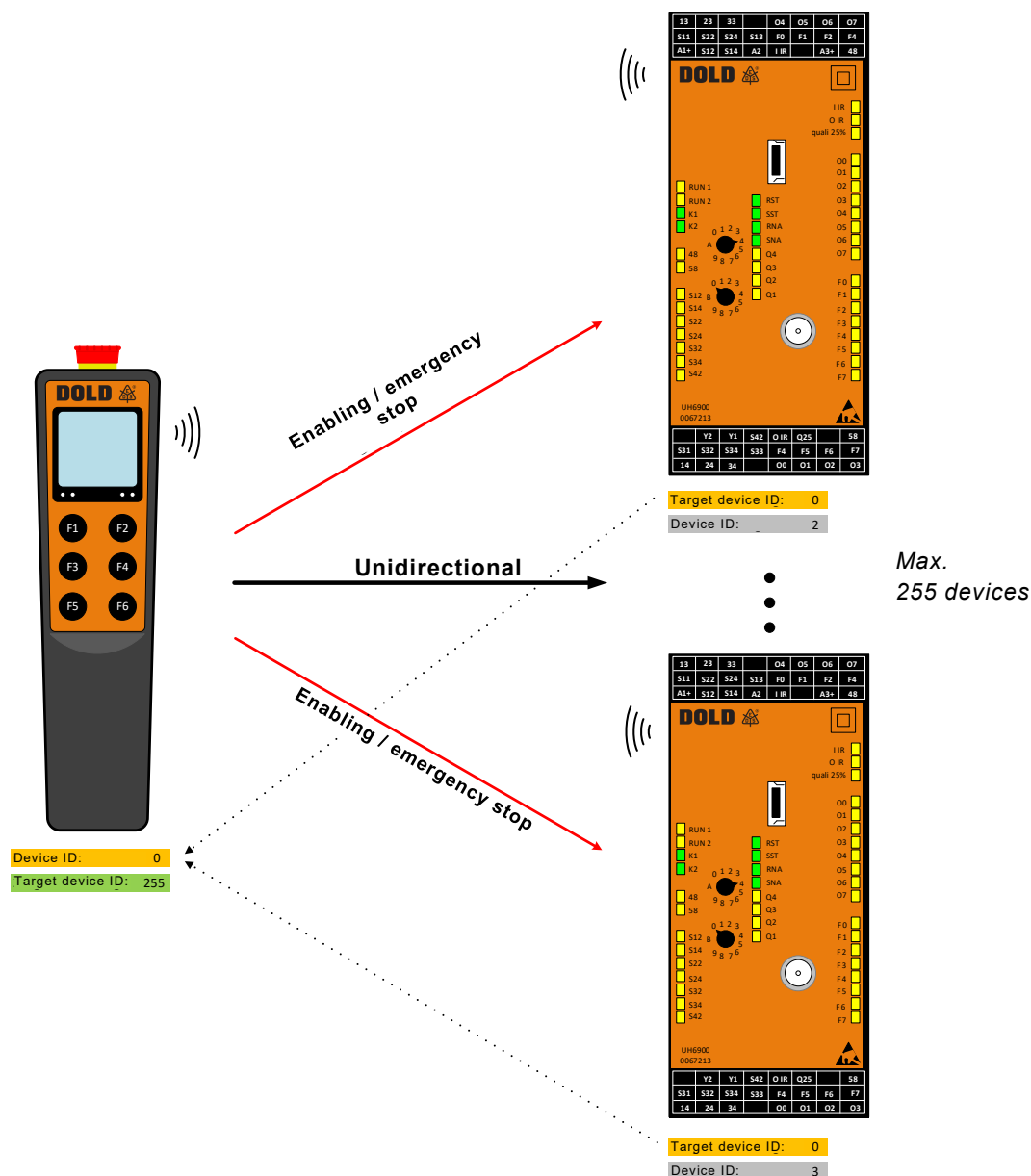


Figure 7: Unidirectional group mode (Group Mode - Controller)

Data exchange takes place exclusively from the radio-controlled handheld transmitter RE 6900 to all the participating safety modules UH 6900. The device ID of the radio-controlled handheld transmitter RE 6900 and the target device IDs of the radio-controlled safety modules UH 6900 are used to uniquely define which radio-controlled safety modules UH 6900 respond to the safety and control signals of the radio-controlled handheld transmitter RE 6900.

3.10 Uni-/bidirectional mode in the radio-controlled safety system

In addition to the pure unidirectional mode, a combined uni-/bidirectional mode can be configured. Here, additional data from one selected radio-controlled safety module UH 6900 can be transmitted to the radio-controlled handheld transmitter RE 6900.

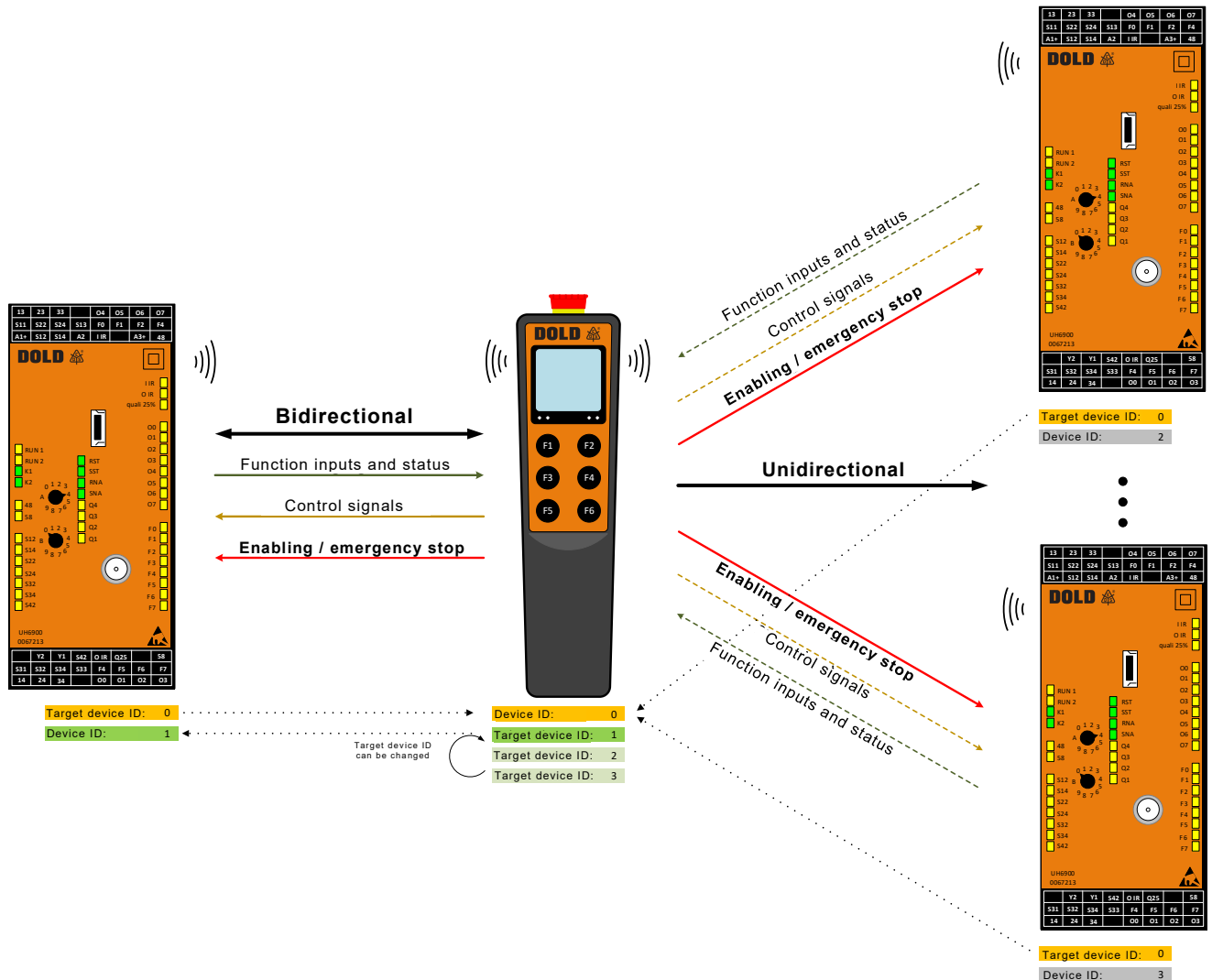


Figure 8: Uni-/bidirectional mode

The device ID of the radio-controlled handheld transmitter RE 6900 and the target device IDs of the radio-controlled safety modules UH 6900 are also used to uniquely define which radio-controlled safety modules UH 6900 respond to the safety and control signals of the radio-controlled handheld transmitter RE 6900. The radio-controlled safety module UH 6900 for the bidirectional mode is selected via the target device ID in the radio-controlled handheld transmitter RE 6900.

The data exchange of the safety signals takes place simultaneously and unidirectionally from the handheld transmitter RE 6900 to all the safety modules UH 6900. An exchange of control and status signals only takes place between the radio operated handheld transmitter RE 6900 and one selected radio-controlled safety module UH 6900.

3.11 Example: Optional radio mode with radio-controlled handheld transmitter RE 6900

A simple configuration with one device each serves as an example for the function and collaboration of the radio-controlled safety module UH 6900 with the radio-controlled handheld transmitter RE 6900. In optional radio mode, the radio-controlled handheld transmitter RE 6900 is added to a safety circuit of a UH 6900 via radio signal and then serves as an additional safety control, either as an enabling switch or as an emergency stop.

3.11.1 Configuration and device connection (for unidirectional mode)

- The radio-controlled safety module UH 6900 is configured as a receiver (GR = Group Reception) and the rotary switches on the front are set to A=4 and B=0.
- The power supply (A1+, A2), 1 safety transmitter, one start signal transmitter, the Y1-Y2 jumper and the antenna are connected to the radio-controlled safety module UH 6900. The unused safety input 2 is bridged together.
- Safety input 3 of the UH 6900 is connected to the control contacts of the charger (bottom of the charger ZB 6900/200).
- The charger of the radio-controlled handheld transmitter RE 6900 is also supplied with power via (A1+, A2).
- The radio-controlled handheld transmitter RE 6900 is configured as an emergency stop (or enabling switch) and rests in the charger. The type of radio mode is group mode (see in SAFEMASTER W-Manager software).

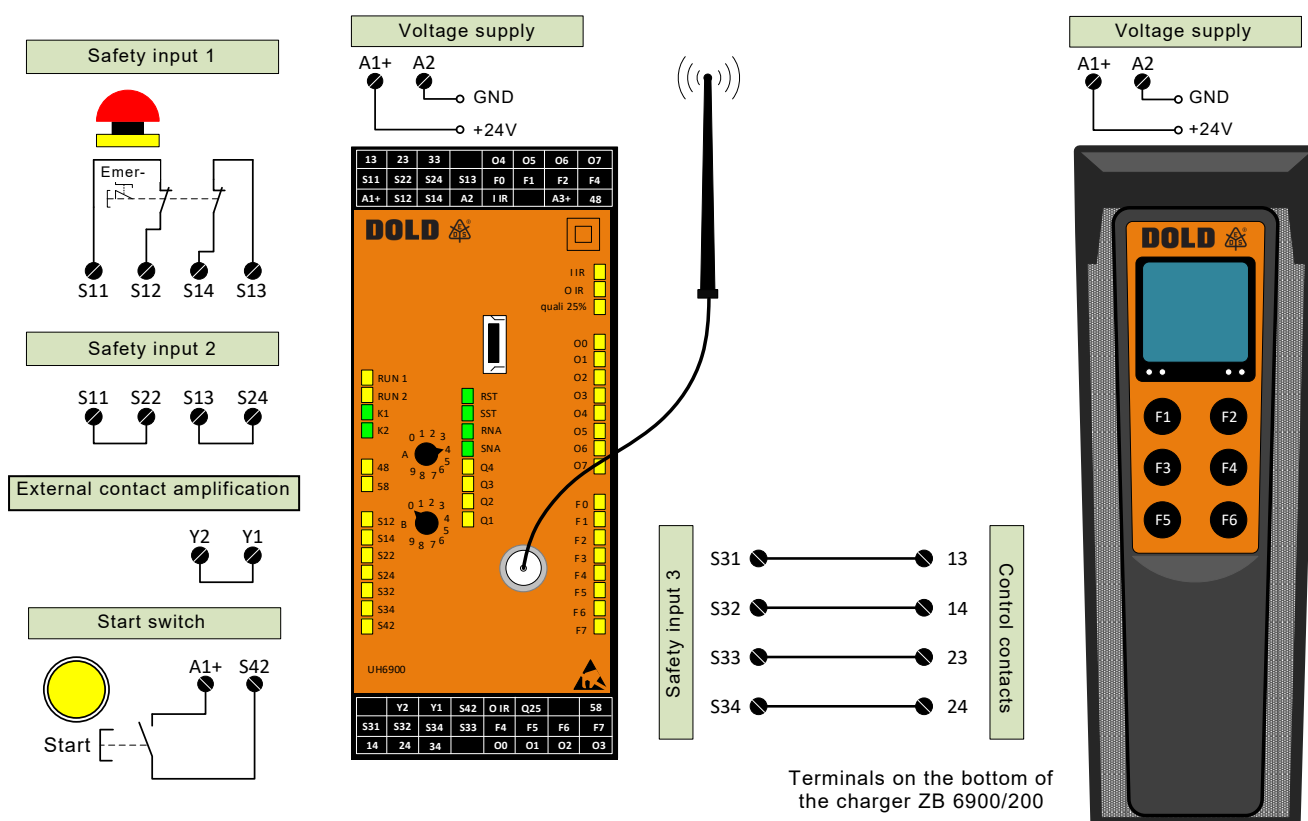


Figure 9: Minimum configuration UH 6900 and RE 6900 (in Group Mode - Controller)

A detailed pin assignment is shown in chapter 5.10.

In this configuration, the readiness of the system for operation is indicated by the following signals:

- Slow flashing of the LEDs (RUN 1, RUN 2, 48, and 58) at the UH 6900.
- Alternate flashing of the two green LEDs on the radio-controlled handheld transmitter RE 6900. Depending on the battery charge status, the blue LED may also light up.
- The display of the radio-controlled handheld transmitter RE 6900 is switched on and indicates the current status.
- All the LEDs (red, yellow, green) on the charger are lit up.

If the setting was incorrect or the wiring was incorrect, the user will be notified via error-code, that is visible on the LED outputs of the UH 6900, RE 6900, and/or ZB 6900/200.

3.11.2 Parameterization

Parameterization for the radio-controlled safety module UH 6900 and the radio-controlled handheld transmitter RE 6900 takes place with the aid of the SAFEMASTER W-Manager software provided.

A minimum configuration for the variant of the overall radio-controlled safety system is already pre-installed, so that a functional test can be carried out in advance.

In this example, we assume the following minimum configuration (in unidirectional mode):

UH 6900:

Radio mode of operation:	Group Reception
Device ID:	1
Target device ID:	0
Channel:	5
Transmission power:	0 dBm (1 mW)
Setting potentiometer on the device:	A=4, B=0

Radio-controlled handheld transmitter RE 6900:

Radio mode of operation:	Group Mode - Controller
Device ID:	0
Target device ID:	1
Safety input:	Emergency stop (or enabling switch)
Channel:	5
Transmission power:	0 dBm (1 mW)
Start button:	Yes
User:	No user recorded (i.e. general enable)
Keyboard setting:	Dold standard setting

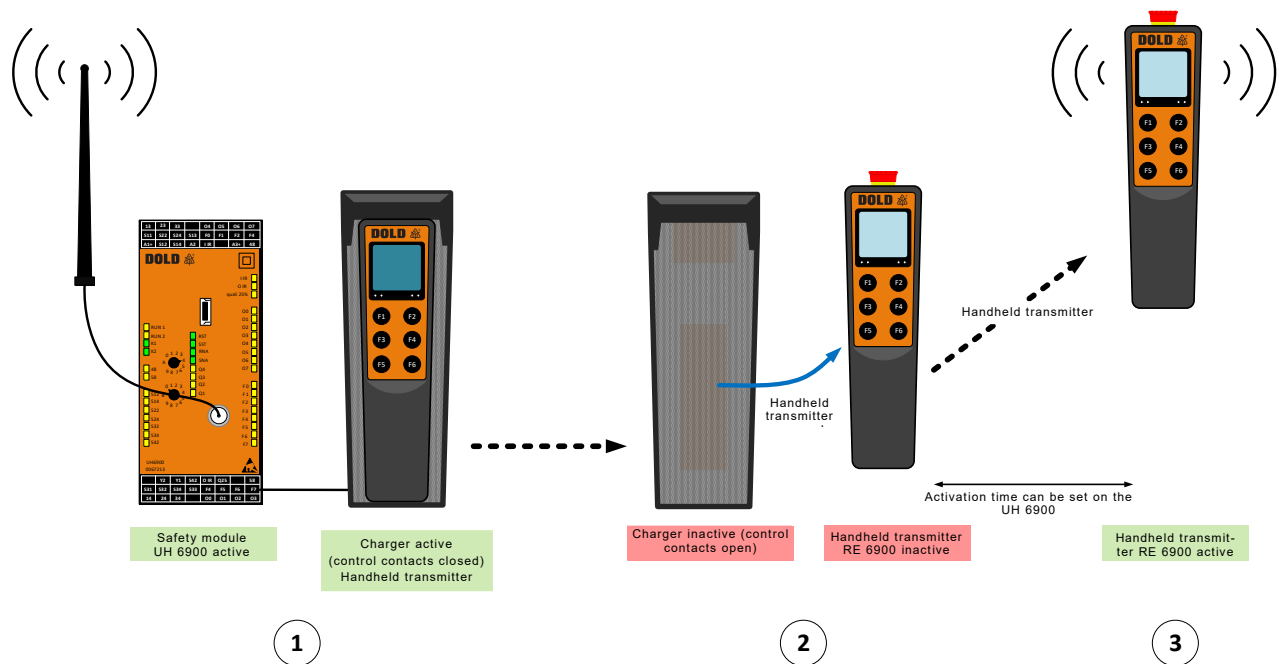
3.11.3 Functional test of removal of the radio-controlled handheld transmitter RE 6900

Figure 10: Radio-controlled handheld transmitter RE 6900 removal from the charger

(1) System start radio-controlled safety module UH 6900

The radio-controlled safety module UH 6900 is connected to the charger ZB 6900/200 and ready for operation. The radio-controlled handheld transmitter RE 6900 is placed in the charger ZB 6900/200 and also indicates readiness for operation.

- Press the start push button (S42) on the radio operated safety module UH 6900.
 - The safety relays of the device respond and are connected through.
- Actuate the emergency stop on the radio-controlled safety modules UH 6900.
 - The safety relays on both devices are released.
- Press the start push button (S42) on the radio operated safety module UH 6900 again.
 - The safety relays of the device respond and are connected through again.

(2) Removal of the radio-controlled handheld transmitter RE 6900

- Remove the radio-controlled handheld transmitter RE 6900 from the charger ZB 6900/200.
 - The green and the yellow LED on the charger ZB 6900/200 turn OFF and the control contacts which are connected to the safety input 3 of the radio-controlled safety module UH 6900, are open.
 - The LEDs **RUN 2** and **58** on the radio-controlled safety module UH 6900 start to flash quickly, signaling that a radio signal from the radio-controlled handheld transmitter RE 6900 is expected.

- (3) **Adding the radio-controlled handheld transmitter RE 6900 to the safety circuit**
- Press the start button of the radio-controlled handheld transmitter RE 6900 within 5 secs.
 - The radio-controlled handheld transmitter RE 6900 sends the expected radio signal and builds up a permanent radio connection to the radio-controlled safety module UH 6900. It is thus integrated in the safety circuit and serves to protect the user in the hazardous area.
 - The start is indicated by slight vibration of the radio-controlled handheld transmitter RE 6900 and by a message on the LCD screen display.
- (4) **Test emergency stop in optional radio mode**
- Press the emergency stop button on the radio-controlled handheld transmitter RE 6900.
 - The radio-controlled handheld transmitter RE 6900 sends a safety-relevant emergency stop signal to the radio-controlled safety module UH 6900 which then switches off its output relays. The system is now in a safe state.
 - Now press the start button on the radio-controlled handheld transmitter RE 6900 again.
 - The radio-controlled handheld transmitter RE 6900 sends a start signal to the radio-controlled safety module UH 6900 which returns the system to the active state. The output relays of the radio-controlled safety module UH 6900 are activated again and the radio-controlled handheld transmitter RE 6900 continues to be integrated in the system.

3.11.4 Functional test of replacement of the radio-controlled handheld transmitter RE 6900

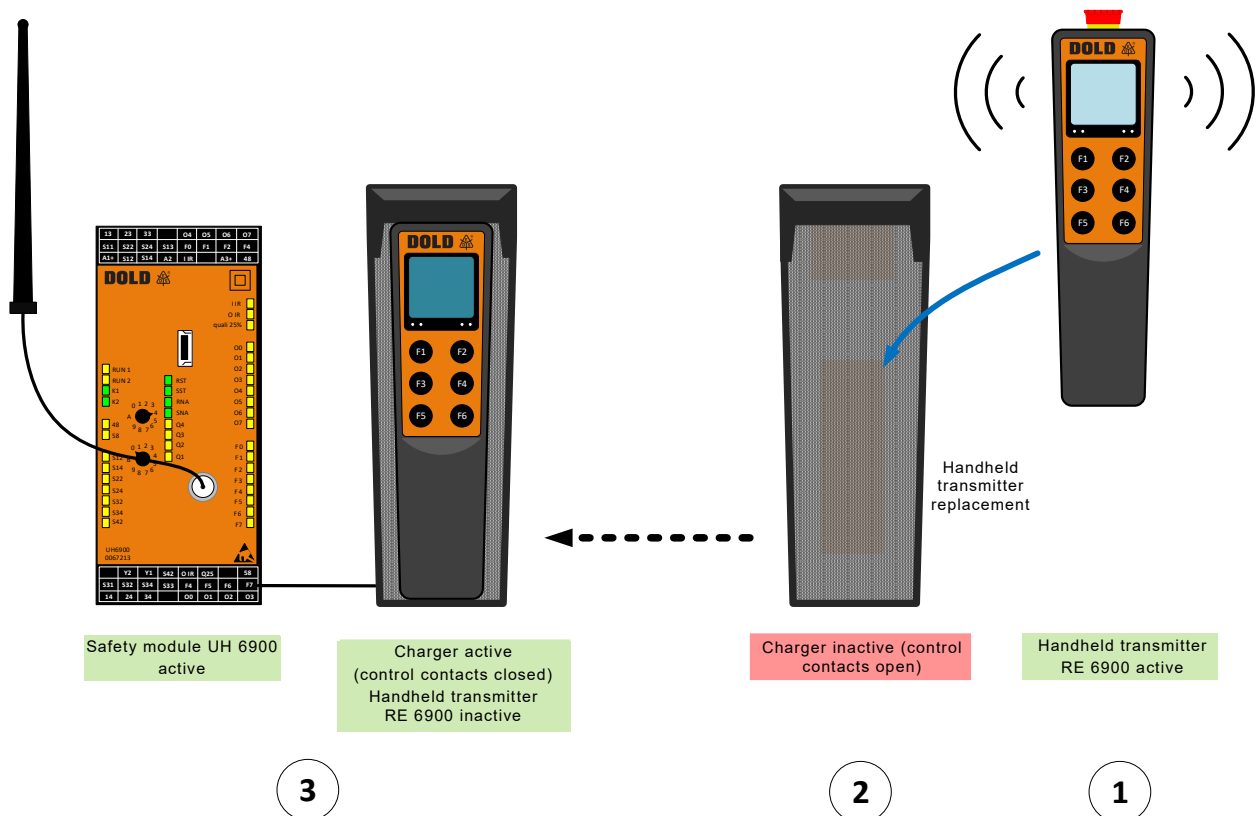


Figure 11: Radio-controlled handheld transmitter RE 6900 replacement in the charger

(1) Active optional radio-controlled handheld transmitter RE 6900

The radio-controlled handheld transmitter RE 6900 is in the system and is activated. It controls the radio-controlled safety module UH 6900 via radio signal and can switch this off via emergency stop and activate it again via the start button.

(2) Inactive charger

As long as the radio-controlled handheld transmitter RE 6900 is outside the charger ZB 6900/200, the charger is not active and the control contacts are open.

(3) Replacement of the radio-controlled handheld transmitter RE 6900

- Place the radio-controlled handheld transmitter RE 6900 back in the charger ZB 6900/200.
 - The radio-controlled handheld transmitter RE 6900 is recognized by the charger ZB 6900/200 and the control contacts are closed again. The green and the yellow LED on the charger ZB 6900/200 turns ON.
 - The closing of the control contacts signals to the radio-controlled safety module UH 6900 at safety input 3 that the radio-controlled handheld transmitter RE 6900 has been removed from the safety circuit again. The radio-controlled safety module UH 6900 then no longer reacts to radio signals.
 - The output relays of the radio-controlled safety module UH 6900 remain active. Replacing the radio-controlled handheld transmitter RE 6900 does not affect the present safety status of the system.
 - The radio-controlled handheld transmitter RE 6900 switches the radio signal off after the control contacts have been closed. It is thus deactivated.

4 System description

4.1 Operating modes

The safety radio protocol of the radio-controlled handheld transmitter RE 6900 is compatible with the radio-controlled safety modules UH 6900. The UH 6900 exists in three different modes:

- Paired mode (UH6900.****/**MF*)
- Group mode (UH6900.****/**GR*) - Group receiver
- Group mode (UH6900.****/**GC*) - Group controller

The radio-controlled handheld transmitter RE 6900 can be configured as a radio-controlled safety module UH 6900 in paired mode or as a group controller. Since only one control device exists in the radio-controlled safety system, the radio-controlled handheld transmitter cannot be operated with a group controller.

For this reason, depending on the application case, the radio-controlled handheld transmitter RE 6900 must be ordered with a **Group Receiver** or a **Paired Mode Device**.

- Paired Mode (UH6900.****/**MF*)
 - o The radio-controlled safety module UH 6900 can be operated in the operating mode “Full safety operation” or in the operating mode “Safety operation with optional radio control” with the radio-controlled handheld transmitter RE 6900.
- Group mode (UH6900.****/**GR*)
 - o The radio-controlled safety module UH 6900 can only be operated in the operating mode “Safety operation with optional radio control” with the radio-controlled handheld transmitter RE 6900.

The operating mode can be configured using the SAFEMASTER W-Manager software.

4.1.1 Block representation of the safety function

The schematic representation of the safety function is shown below. The safety function is triggered by the positively driven relay in the UH 6900. The request to trigger the safety function is either provided by the radio-controlled handheld transmitter RE 6900 or from the locally connected emergency stop on the UH 6900.

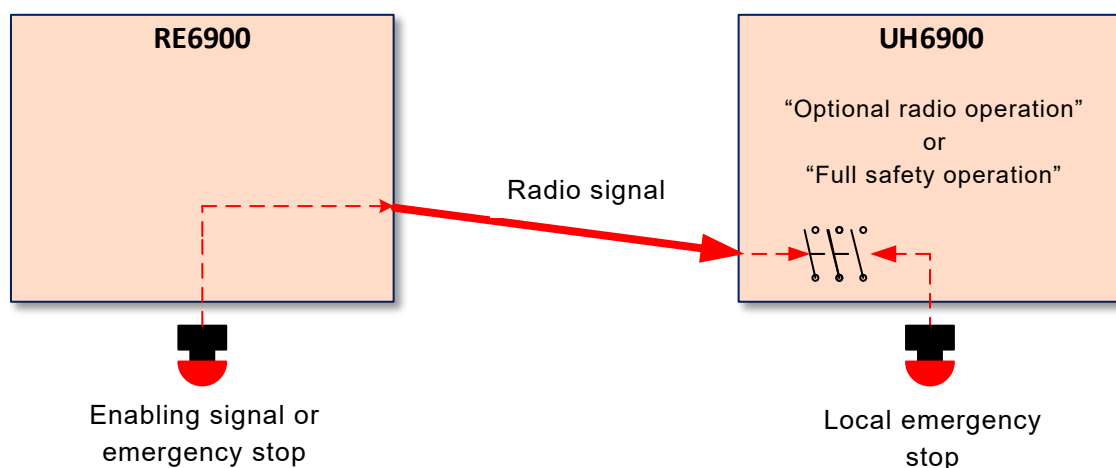


Figure 12: Block representation of the safety function (mode: uni-directional)

4.1.2 Bidirectional pair mode in the radio-controlled safety system

In bidirectional mode, the radio-controlled handheld transmitter RE 6900 works quasi as a mobile substitute for the second radio-controlled safety module UH 6900 (corresponds to pair mode). Pair mode is only possible with UH 6900 devices of the type UH6900.****/**MF*. The radio-controlled safety module UH 6900 is in the operating mode “Full safety operation”. There is a unique pairing of the radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 through the assignments of device and target device IDs.

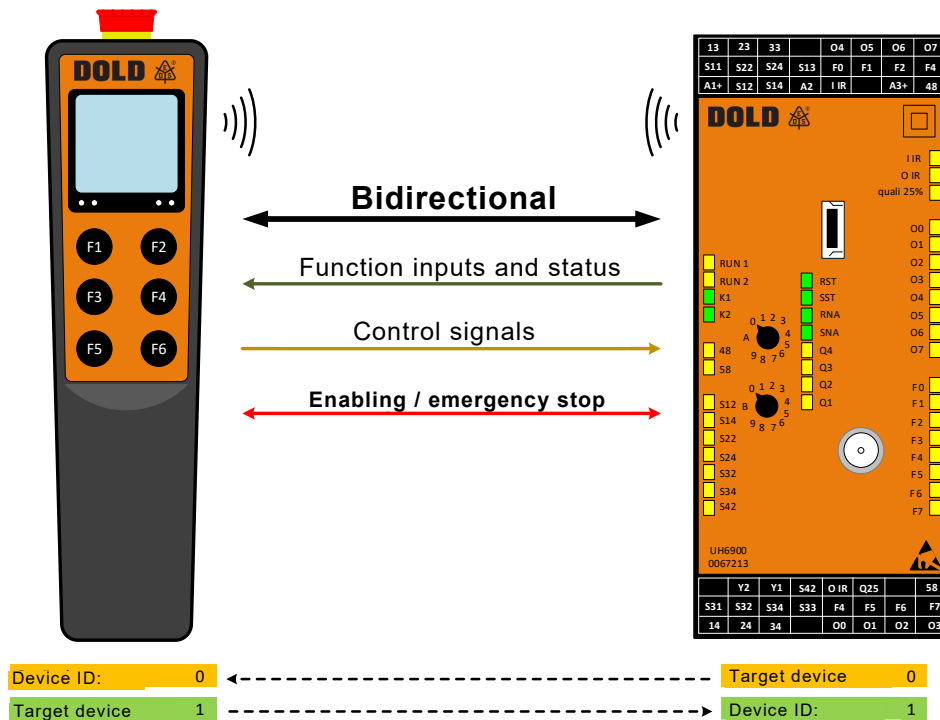


Figure 13: Data exchange between the devices in bidirectional mode of operation MF

The following data are transmitted in the bidirectional radio connection:

- Safety-relevant switch-off and enabling commands
- Non-safety-relevant control signals from the radio-controlled handheld transmitter RE 6900 to the function outputs of the radio-controlled safety module UH 6900.
- Non-safety-relevant status information from the function inputs on the radio-controlled safety module UH 6900 to the radio-controlled handheld transmitter RE 6900.
- Non-safety relevant status information from the radio-controlled safety module UH 6900 to the radio-controlled handheld transmitter RE 6900 (e.g. device name and device IDs).

An emergency stop can be triggered with the same authorization on both sides (via the emergency stop button or the three-step enabling switch on the radio-controlled handheld transmitter RE 6900 or via an emergency stop input of the radio-controlled safety module UH 6900). The positively driven and safe output contacts of the radio-controlled safety module UH 6900 are only closed when the safe radio signal of the radio-controlled handheld transmitter RE 6900 has been activated.

The system start/restart can be carried out from both sides (start button on the radio-controlled handheld transmitter RE 6900 or S42 on the radio-controlled safety module UH 6900), independently of who may have caused the system to stop. During start via radio signal i.e. from the radio-controlled handheld transmitter RE 6900, an additional start signal can be generated via the built-in light emitting diode and a receiver on the radio-

controlled safety module UH 6900. This allows fixed start zones to be defined, which the operator must be in for the plant to be started.

As usual in paired mode, only devices whose device IDs and radio signal parameters have been configured correctly can communicate with one another. This means:

- The system IDs (System ID = SYSID) of the radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 must be identical. The system IDs are permanently assigned and cannot be changed by the user.
- The device IDs (Local ID = LID) and the target device IDs (Target ID = TID) of the two devices must be paired crosswise. The device IDs are also permanently assigned and cannot be changed by the user. In contrast, the target device IDs can be freely configured by the user in order to put together new pairs within a system ID.
- Both devices must be set to the same radio channel.
- The radio mode of operation of the radio-controlled handheld transmitter RE 6900 is "Pair mode full safety operation".
- The radio mode of operation of the radio-controlled safety module UH 6900 is "Paired mode".
- The two rotary switches A and B of the radio-controlled safety module UH 6900 are set for full safety operation (A=0-1, B=0-9).



In paired mode the radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 work independently from one another. This means that the charger is not connected to safety input 3 of the radio-controlled safety module UH 6900.

4.1.3 Unidirectional group mode in the radio-controlled safety system

In unidirectional mode, the radio-controlled handheld transmitter RE 6900 works as a mobile control device for one or more safety modules UH 6900. Group mode is only possible with UH 6900 devices of the type UH6900.****/**GR*. If the group comprises of only one device, operation with a UH6900.****/**MF* is possible. The radio-controlled safety module UH 6900 is in the operating mode “Safety operation with optional radio control”. Unique assignment of the radio-controlled safety modules UH 6900 to the radio-controlled handheld transmitter RE 6900 is also possible with the aid of device and target device IDs.

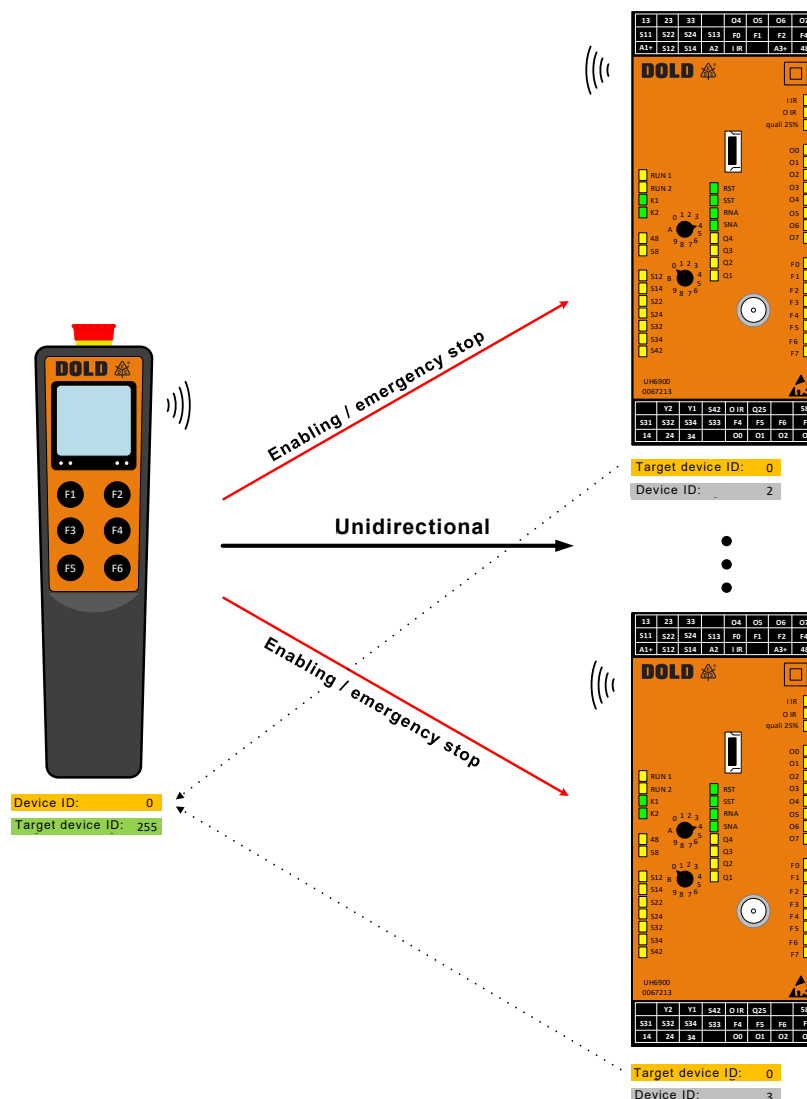


Figure 14: Data exchange unidirectional operation with devices of the type GR

The data exchange in this configuration takes place simultaneously and unidirectionally only for the safety signals from the handheld transmitter RE 6900 to all the safety modules UH 6900.

The following data are transmitted via the unidirectional radio connection:

- Safety-relevant switch-off and enabling commands to **all** active radio operated safety modules UH 6900

A safety-relevant emergency stop signal can either be triggered at the radio-controlled handheld transmitter RE 6900 (via the emergency stop button or the three-step enabling switch) for all the radio-controlled safety modules UH 6900 or locally at each individual

radio-controlled safety module UH 6900. However, a local emergency stop only affects the safety outputs of the respective radio-controlled safety module UH 6900.

The start/reset triggered at the radio-controlled handheld transmitter RE 6900 also only affects the complete system, respectively **all** radio-controlled safety modules UH 6900, whereas a start/restart at one radio-controlled safety module UH 6900 only affects the local device. During start via radio signal i.e. from the radio-controlled handheld transmitter RE 6900, an additional start signal can be generated via the built-in light emitting diode and a receiver on a radio-controlled safety module UH 6900. This allows fixed start zones to be defined, which the operator must be in for the plant to be started.

Similar to pair mode, only devices whose device IDs and radio signal parameters have been configured correctly can communicate with one another. This means:

- The system IDs (System ID = SYSID) of the radio-controlled handheld transmitter RE 6900 and all radio-controlled safety modules must be identical. The system IDs are permanently assigned and cannot be changed by the user.
- The target device IDs (Target ID = TID) of the radio-controlled safety modules UH 6900 have to be set to the device ID (Local ID = LID) of the radio-controlled handheld transmitter RE 6900. The target device IDs can be freely configured by the user in order to put together new groups within a system ID.
- The target device ID in the radio-controlled handheld transmitter RE 6900 is set to 255. This means that no control/status signals are exchanged between the radio-controlled handheld transmitter RE 6900 and a radio-controlled safety module UH 6900.
- All devices must be set to the same radio channel.
- The radio mode of operation of the radio-controlled handheld transmitter RE 6900 is “Group Mode - Controller”.
- The radio mode of operation of the radio-controlled safety module UH 6900 is “Group receiver”.
- The two rotary switches A and B of the radio-controlled safety modules UH 6900 are set for safety operation with optional radio control (A=4-8, B=0-9). This means that the safety input 3 has to be open to make radio control possible.



In unidirectional group mode, the control contacts of the charger must be connected to the safety input 3 of a radio-controlled safety module UH 6900. This then takes over the automatic opening of the contacts of safety input 3 as soon as the radio-controlled handheld transmitter RE 6900 is taken out of the charger.

4.1.4 Uni-/bidirectional group mode in the radio-controlled safety system

In addition to the pure unidirectional mode, a combined uni-/bidirectional mode can be configured. Here, additional data from a selected radio-controlled safety module UH 6900 can be transmitted to the radio-controlled handheld transmitter RE 6900. Here too, the radio-controlled handheld transmitter RE 6900 works as a mobile control device for one or more safety modules UH 6900. Group mode is only possible with radio operated safety modules of the type UH6900.****/**GR*. If the group only comprises one device, operation with a UH6900.****/**MF* is possible. The radio-controlled safety module UH 6900 is in the operating mode “Safety operation with optional radio control”.

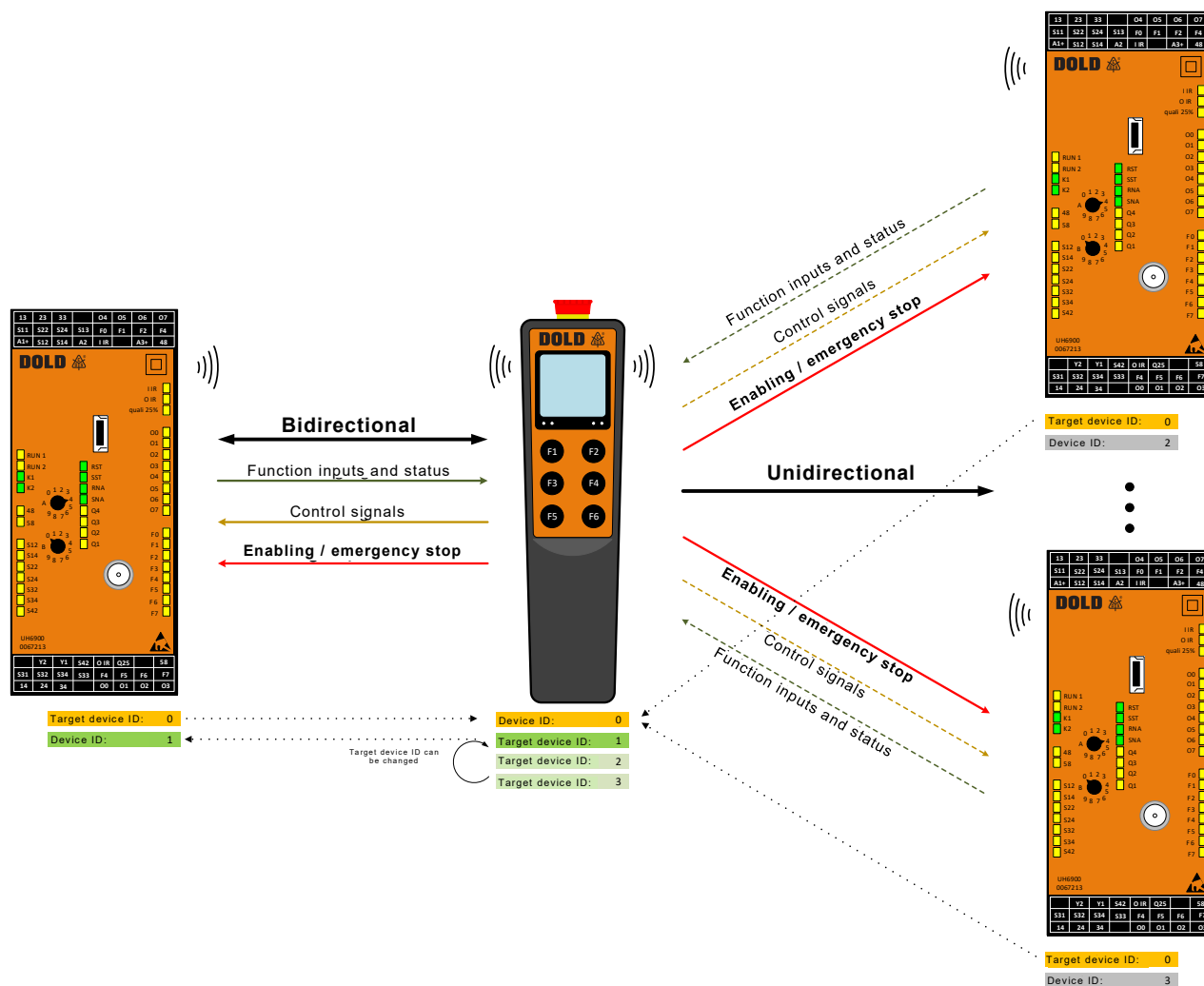


Figure 15: Data exchange uni-/bidirectional mode

The following data are transmitted simultaneously via the uni-/bidirectional radio connection:

- Safety-relevant switch-off and enabling commands to **all** active radio operated safety modules UH 6900.
- Non-safety-relevant control signals from the radio-controlled handheld transmitter RE 6900 to the function outputs of **one** radio-controlled safety module UH 6900.
- Non-safety-relevant statuses from the function inputs of **one** radio-controlled safety module UH 6900 to the radio-controlled handheld transmitter RE 6900.
- Non-safety relevant status information from **one** radio-controlled safety module UH 6900 to the radio-controlled handheld transmitter RE 6900 (e.g. device name and device IDs).

A safety-relevant emergency stop signal can either be triggered at the radio-controlled handheld transmitter RE 6900 (via the emergency stop button or the three-step enabling switch) for all the radio-controlled safety modules UH 6900 or locally at each individual radio-controlled safety module UH 6900. A local emergency stop only affects the safety outputs of the respective radio-controlled safety module UH 6900.

The start/reset triggered at the radio-controlled handheld transmitter RE 6900 also only affects the complete system, i.e. **all** radio-controlled safety modules UH 6900, whereas a start/restart at one radio-controlled safety module UH 6900 only affects the local device. During start via radio signal i.e. from the radio-controlled handheld transmitter RE 6900, an additional start signal can be generated via the built-in light emitting diode and a receiver on a radio-controlled safety module UH 6900. This allows fixed start zones to be defined, which the operator must be in for the plant to be started.

The signals of the function inputs as well as various status information are returned from a selected radio-controlled safety module UH 6900 to the radio-controlled handheld transmitter RE 6900. The selection of the radio-controlled handheld transmitter RE 6900 for bi-directional data exchange can be changed at the radio-controlled handheld transmitter RE 6900 during ongoing operation, so that a cyclical status query of all radio-controlled safety modules UH 6900 is possible.

Similar to pair mode, only devices whose device IDs and radio signal parameters have been configured correctly can communicate with one another. This means:

- The system IDs (System ID = SYSID) of the radio-controlled handheld transmitter RE 6900 and all radio-controlled safety modules UH 6900 must be identical. The system IDs are permanently assigned and cannot be changed by the user.
- The target device IDs (Target ID = TID) of the radio-controlled safety modules UH 6900 have to be set to the device ID (Local ID = LID) of the radio-controlled handheld transmitter RE 6900. The target device IDs can be freely configured by the user in order to put together new groups within a system ID.
- The target device ID in the radio-controlled handheld transmitter RE 6900 is set to the device recognition of the radio-controlled safety module UH 6900 with which the non-safety-relevant signals (function inputs/outputs, status) are to be exchanged.
- All devices must be set to the same radio channel.
- The radio mode of operation of the radio-controlled handheld transmitter RE 6900 is "Group controller".
- The radio mode of operation of the radio-controlled safety module UH 6900 is "Group receiver".
- The two rotary switches A and B of the radio-controlled safety modules UH 6900 are set for safety operation with optional radio control (A=4-8, B=0-9). This means that the safety input 3 has to be open to make radio control possible.



In uni-/bidirectional group mode, the control contacts of the charger can be connected to the safety input 3 of a radio-controlled safety module UH 6900. This then takes over the automatic opening of the contacts of safety input 3 as soon as the radio-controlled handheld transmitter RE 6900 is taken out of the charger.

4.2 Structure and functions of the radio-controlled handheld transmitter RE 6900

4.2.1 Module block diagram

The block diagram of the radio-controlled handheld transmitter RE 6900 is shown below.

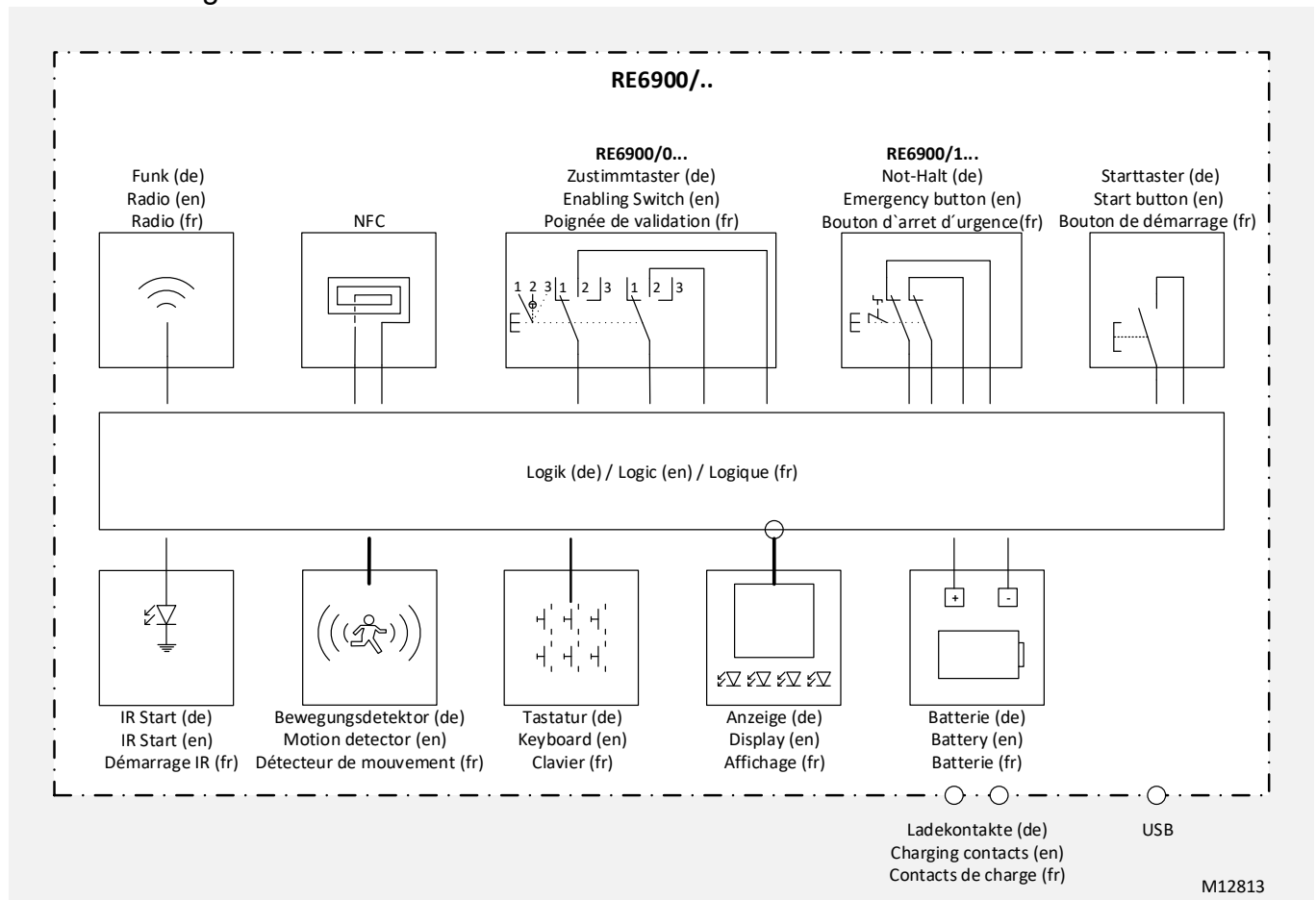


Figure 1: Logical block diagram of RE 6900

The radio-controlled handheld transmitter contains the following blocks and functionalities:

- Radio
 - Transmission unit and receiver for communication of the radio-controlled safety system
- NFC
 - Authentication of the users
 - Authentication of the charger
- Enabling switch
 - Is only equipped in the version RE 6900/0..
 - Three-step enabling switch
 - The safety function is triggered by pressing the enabling switch fully or releasing it.
- Emergency stop
 - Is only equipped in the version RE 6900/1..
 - When the emergency stop is pressed, the safety function is triggered.
- Start button
 - Used for activating the radio-controlled safety system
- IR start
 - In addition to the start signal, the light emitting diode on the underside of the radio-controlled handheld transmitter RE 6900 can be activated.
- Motion detector

- The motion detector detects the motion of the user.
- Keyboard
 - 6 freely programmable function keys
- Display
 - LCD display and LEDs for the display of status information
- Battery
 - Charge control including temperature monitoring of the battery

4.2.2 ID codes

Every radio-controlled handheld transmitter RE 6900 and every radio-controlled safety module UH 6900 is delivered with a uniquely and permanently assigned ID code. This is made up of a system ID (SYSID) and a device ID (LID). The user cannot change these settings.

The radio-controlled safety system is only functional if the system ID of all the participating radio-controlled safety devices match and the device IDs or target IDs match one another. These IDs are checked and compared constantly by all the participants during radio transmission so that only commands that are assigned correctly are carried out.

Whereas the system ID and device ID of the radio-controlled handheld transmitter RE 6900 are already permanently assigned, the user can freely define which and how many radio-controlled safety modules UH 6900 are to be controlled. This is set via the target device ID using the SAFEMASTER W-Manager software during system configuration.

4.2.3 User legitimization

The radio-controlled handheld transmitter RE 6900 can optionally be personalized through an electronic key. This means that only authorized personnel with clearly defined rights may operate the radio-controlled safety system.

If no user legitimization is required, it can be deselected during configuration. The radio-controlled handheld transmitter RE 6900 can then be used by anyone who removes it from the charger.

The legitimization system is based on RFID (“Radio Frequency Identification”) technology. Every approved user has an electronic key which they can use to log in to the radio-controlled handheld transmitter RE 6900. The RFID detector is on underside of the head of the radio-controlled handheld transmitter RE 6900. To log in, the user only has to hold the key closer than about 2 cm to this reading unit.



Figure 16: Radio-controlled handheld transmitter RE 6900 user legitimization

Successful login is shown on the display and the radio-controlled handheld transmitter RE 6900 is activated accordingly. The radio-controlled safety system is only functional following successful login.

The electronic key can be ordered as an accessory. It is uniquely pre-formatted at DOLD. This guarantees that there are not several identical keys in circulation that could possibly be used by unauthorized persons.

The ID numbers of up to 16 electronic keys can be saved in the radio-controlled handheld transmitter RE 6900 during configuration with the aid of the SAFEMASTER W-Manager software. In addition, each key can be assigned to one or more (maximum 8) authorization groups in which the functions are defined that each group may carry out. This is related to the functions of push buttons F1-F6.

In other words, before using the radio-controlled handheld transmitter RE 6900 a user must log in using a valid electronic key and can then execute the functions which are permitted for this key.

The login remains valid until

- the active user logs out or
- someone else logs in with their key or
- a settable time has expired during which the radio-controlled handheld transmitter RE 6900 is not used. (set via PC software SAFEMASTER W-MANAGER software)

Automatic logout ensures that no unauthorized persons can use a deactivated radio-controlled handheld transmitter RE 6900.

4.2.4 Start options IR signal

If the radio-controlled handheld transmitter RE 6900 is in the charger ZB 6900/200, it is switched on but there is no radio contact to any radio-controlled safety module UH 6900.

If the radio-controlled handheld transmitter RE 6900 is now removed from the charger, it is detected by both the RFID unit and the charging contacts.

The radio-controlled handheld transmitter RE 6900 can now be activated by pressing the start button on the underside.

Paired mode:

- Pressing the start button switches the system on via radio signal and the relays on the radio-controlled safety module UH 6900 close.
- Actuation of the emergency stop button or the three-step enabling switch stops the system.
- Startup via the radio-controlled handheld transmitter RE 6900 is possible again at any time.

Group mode

- Pressing the start button adds the radio-controlled handheld transmitter RE 6900 to an existing safety system. The safety input 3 of the radio-controlled safety modules UH 6900 must be opened for radio control.
- Actuation of the emergency stop button or the three-step enabling switch stops all the radio-controlled safety modules UH 6900 in the system.
- It is possible to start all the radio-controlled safety modules UH 6900 in the system again using the radio-controlled handheld transmitter RE 6900.

IR signal

- A radio-controlled safety module UH 6900 can be set via potentiometer B so that an additional signal at input IIR is required for the start signal of the radio-controlled handheld transmitter RE 6900 via radio.
- Pressing the start button on the radio-controlled handheld transmitter RE 6900 activates the light emitting diode on the underside. The signal is received at the receiver of the radio-controlled safety module UH 6900, which in turn generates the additional start signal required.

4.2.5 Switching OFF the RE 6900

The internal voltage supply of the radio-controlled handheld transmitter RE 6900 can be switched off via the firmware. The firmware offers the following options for this:

1. Switch-off when not used

The motion detector does not detect any movement within a defined time and switches the radio-controlled handheld transmitter RE 6900 off. If the radio-controlled handheld transmitter is in the charger ZB 6900/200, the radio-controlled handheld transmitter RE 6900 is not switched off.

Refer to

- Parameter: "Power-saving mode" (chapter 6.3.2.1919)
- Parameter: "Motion limit" (chapter 6.3.2.27)
- Parameter: "Switch-off time" (chapter 6.3.2.24)

2. Switch-off via push button function (single button)

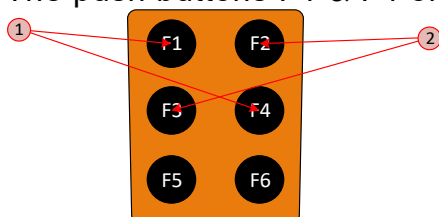
The "Switch off" function can be defined on the push button via SAFEMASTER-W-MANAGER software.

Refer to

- Parameter: 6.3.5.3.5

3. Switch-off via push button (combination of buttons)

The push buttons F1 & F4 or F2 & F3 are pressed cross-wise for 3 seconds.



The radio-controlled handheld transmitter RE 6900 is switched on again by being replaced in the charger ZB 6900/200 or by pressing the start button.

4.2.6 Control functions of the function outputs

Every radio-controlled safety module UH 6900 has 8 digital function inputs and 8 digital function outputs. Under certain configurations, the radio-controlled handheld transmitter RE 6900 can access these control signals resp. This access is not safety-relevant.

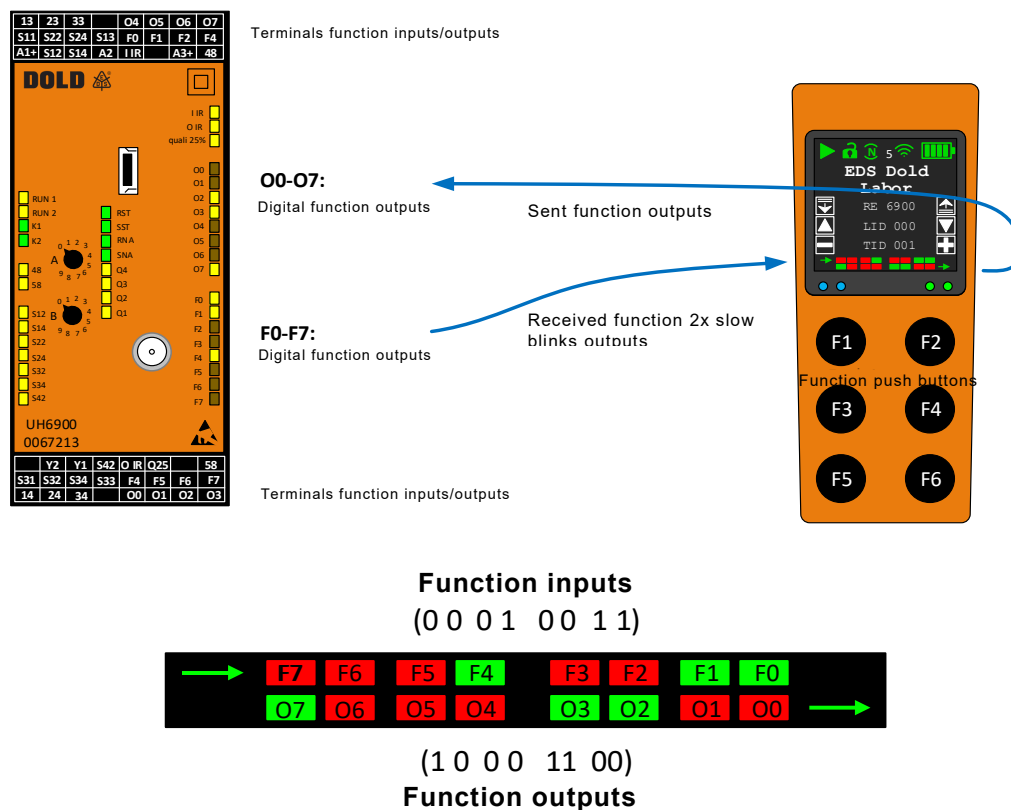


Figure 17: Function inputs and outputs

The digital signals applied to the input terminals of the radio-controlled safety module UH 6900 are transmitted by radio signal to the radio-controlled handheld transmitter RE 6900 and shown on the display there (top row, green=1, red=0). The required values for the digital outputs at the radio-controlled safety module UH 6900 are set using the function push buttons on the radio-controlled handheld transmitter RE 6900, shown on the display (bottom row, green=1, red=0) and transmitted by radio signal to the output terminals of the radio-controlled safety module UH 6900.

The digital function outputs can be addressed individually, in groups (e.g. as binary counter) or as certain patterns.

Bidirectional pair mode (1 radio-controlled handheld transmitter RE 6900 and 1 radio-controlled safety module UH 6900)

The radio-controlled handheld transmitter RE 6900 and the radio-controlled safety module UH 6900 are paired cross-wise (device ID and target device ID in the radio-controlled handheld transmitter RE 6900 and in the radio-controlled safety module UH 6900). The radio-controlled handheld transmitter RE 6900 receives the digital function input values of the radio-controlled safety module UH 6900 and shows these on the display. At the same time, it checks and controls the digital function output values (individually or in groups) via the function push buttons.

Unidirectional group mode (1 radio-controlled handheld transmitter RE 6900 and several radio-controlled safety modules UH 6900)

The radio-controlled handheld transmitter RE 6900 works as a unidirectional group controller, whereby the control signals for the function outputs can be received by all radio-controlled safety modules UH 6900 in the group. The behavior of the function outputs of the radio-controlled safety modules UH 6900 can be set individually for each radio-controlled safety module UH 6900 using the “**Group GPIO mode**” option in the SAFEMASTER W Manager software. Either the digital function outputs of the radio-controlled safety module UH 6900 are always switched or only when the radio-controlled safety module UH 6900 is directly addressed by the radio-controlled handheld transmitter RE 6900.

Since the radio connection is only established unidirectionally, no function inputs of the radio-controlled safety modules UH 6900 are read or displayed by the radio hand-held transmitter RE 6900.

Uni-/bidirectional mode

The radio-controlled handheld transmitter RE 6900 works as a unidirectional group controller and, in addition, establishes a bidirectional connection to exactly one group receiver. The values of the function inputs are read from this and the function outputs set resp. reset. This one selected radio-controlled safety module UH 6900 is determined through the target device ID (TID) in the radio-controlled handheld transmitter RE 6900 and can also be changed during ongoing operation.

4.2.7 Motion and position detection

There is a motion detector installed in the radio-controlled handheld transmitter RE 6900 which permanently monitors the motion and position of the device. This ensures that the radio-controlled handheld transmitter RE 6900 is really being carried by the user and has not simply been set down somewhere or that the radio-controlled handheld transmitter RE 6900 is used in a certain position (e.g. vertically upright).

If no motion or an incorrect position is detected for an activated radio-controlled handheld transmitter RE 6900, a non-safety stop command is sent to switch the plant off.

The motion monitoring option can be adjusted or switched off completely using the SAFEMASTER W-Manager software.

4.2.8 Mechanical shock detection

A further safety feature of the radio-controlled handheld transmitter RE 6900 concerns the detection of a potentially hazardous state in the event of an unusually violent movement. This can occur if the user falls, for example, or drops the radio-controlled handheld transmitter RE 6900 onto the floor. Such a shock detection also leads to a non-safety stop command being sent and the plant being switched off.

The shock detection option can be adjusted or switched off completely using the SAFEMASTER W-Manager software.

4.2.9 Motion control

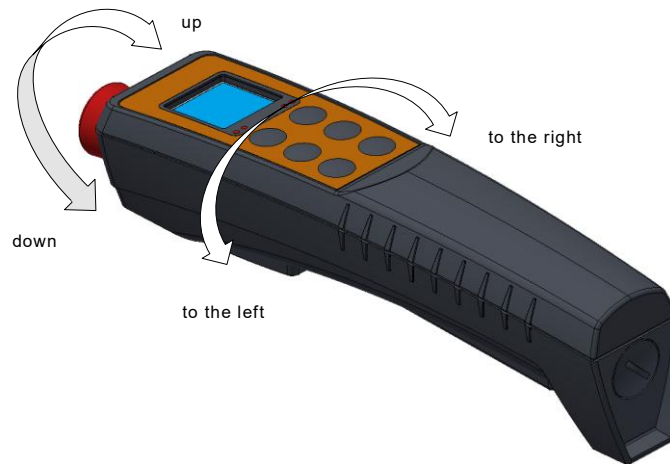


Figure 18: Radio-controlled handheld transmitter RE 6900 motion control

An additional option enables motion-dependent control of the function outputs on the radio-controlled safety module UH 6900 by the radio-controlled handheld transmitter RE 6900. This means that the user can set or reset the function outputs O4 – O7 simply by a defined movement of the radio-controlled handheld transmitter RE 6900 (instead of setting them via the push buttons).

The motions allowed and detected by RE 6900 device are:

- Tilting the front part of the radio-controlled handheld transmitter RE 6900 up or down
- Tilting the radio-controlled handheld transmitter RE 6900 to the left or right along the longitudinal axis

These functions are either permanently active or only in conjunction with an additional push button (can be set via the SAFEMASTER W-Manager software). This would make it possible, for example, to control a crane or trolley (forward/backward and right/left).

4.2.10 Battery

The radio-controlled handheld transmitter RE 6900 is powered by a lithium-polymer rechargeable battery which is located in the top shell of the housing.

The charge state of the battery is permanently shown on the display by a battery icon with four bars in the top right-hand corner. When the battery power decreases, the color of the battery icon changes first to orange then red. The radio-controlled handheld transmitter RE 6900 should be charged again as soon as possible when the icon turns red.

The battery is charged by inserting the radio-controlled handheld transmitter RE 6900 into the charger ZB 6900/200. It is also possible to charge the battery via an USB port as an option.

During charging, the left-hand blue LED (steady light) is also activated; this switches off as soon as the battery has been fully charged. The internal battery management prevents the battery from overcharging.

The battery voltage is permanently monitored during active operation. If the charge state is too low, the plant will switch off before the radio-controlled handheld transmitter RE 6900 is completely without power.

Please return the radio-controlled handheld transmitter RE 6900 to us for the battery to be replaced.

4.2.11 Radio signal and antenna

The radio connection to the radio-controlled safety module UH 6900 is established via an antenna which is integrated in the front part of the radio-controlled handheld transmitter RE 6900. An external antenna is not required.

The devices communicate via free frequency bands which are approved in the respective different geographical regions.

Europe: 433 MHz, 64 channels

869 MHz, 12 channels

The USA: 915 MHz, 128 channels

The frequency band to be used is already permanently set, whereas the channels can be freely selected with the aid of the parameterization software SAFEMASTER W-Manager.



If several radio-controlled safety systems are used at the same location, the different systems must be set to different radio frequencies. A channel spacing of at least 2 is necessary. If necessary, a frequency plan must be set up listing the individual operating frequencies.

To adapt the working range of the devices to the required conditions, the transmission power can be set using the parameterization software SAFEMASTER W-Manager in a range between -40 dBm (0.0001 mW) and max. 10 dBm (10 mW), depending on the frequency channel and frequency band selected.

4.2.12 Displays and LEDs on the radio-controlled handheld transmitter RE 6900

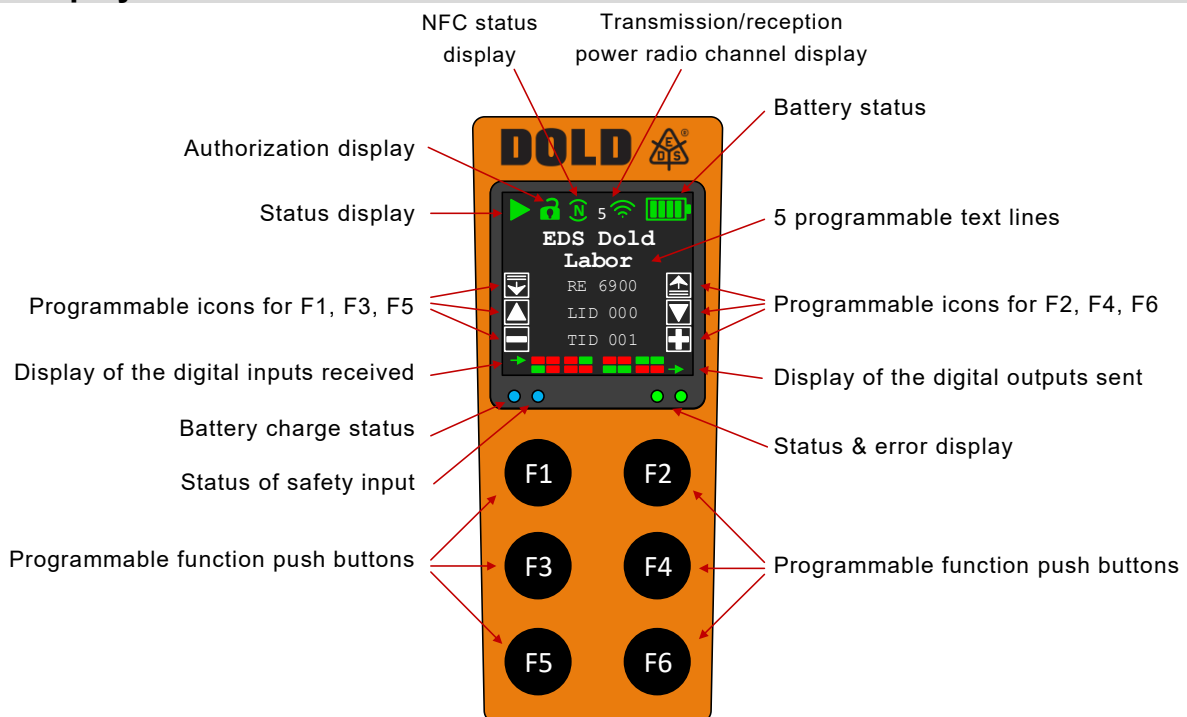


Figure 19: Displays and LEDs

4.2.12.1 Operating statuses

Icons on the top status line

Icon	Description
	Radio-controlled handheld transmitter RE 6900 ready, safety input closed, start possible
	Safety input open, start not possible
	Radio-controlled handheld transmitter RE 6900 and emergency stop active
	System started by start button but not completely synchronized yet
	Radio-controlled handheld transmitter RE 6900 is paused, waiting for authentication for example
	Authentication successful or not necessary, enable granted Flashing icon means that enable is activated
	Authentication not successful, enable not granted Flashing icon means that the electronic key (tag) is not registered
	NFC on, communication active
	NFC on, but no communication
	NFC off
	Radio signal active, signal strength 4 levels, channel number is shown next to it
	Radio signal switched off
	Battery fully charged
	Battery <20%
	Battery discharged, charging urgently required
	Battery is charged either in the charger or via USB

In addition to these icons, the change in operating statuses or other information is displayed by a brief message on the display.

“System start” appears when the system is started up, for example, or “Switch-off emergency stop” when the emergency stop button is pressed.

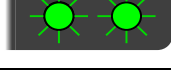
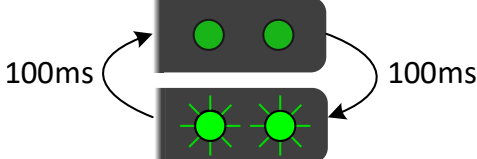
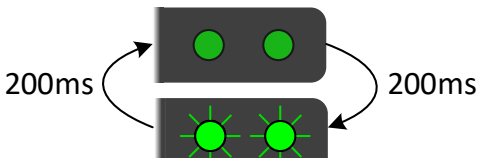
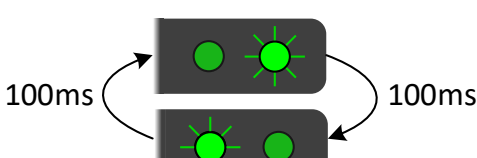
Text lines on the display

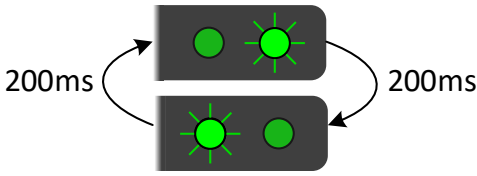
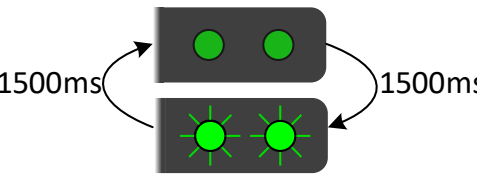
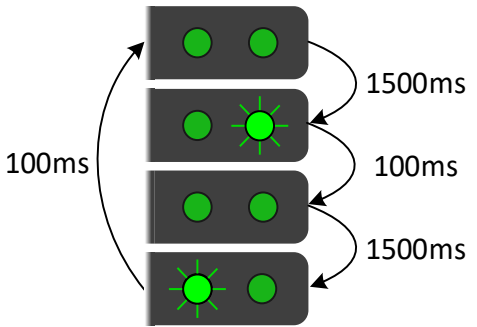
There is a total of 5 lines available, the contents of which can be defined during configuration with the SAFEMASTER W-Manager. There is a choice of the following:

Text	Description
Nothing	The text line remains empty
User-defined text	The text can be freely chosen (ASCII), no special characters (maximum characters allowed: 11 characters)
System ID (SYSID)	The system ID of the radio-controlled handheld transmitter RE 6900 is displayed
Target device ID (TID)	The device ID of the target device is displayed
Name of the target device	The name of the target device is displayed
Device ID (LID)	The device ID of the radio-controlled handheld transmitter RE 6900 is displayed
Device name	The name of the radio-controlled handheld transmitter RE 6900 is displayed
Channel	The channel used is displayed

RX GPIO (dec)	The 8-bit decimal value of the function inputs (i.e., received value) is displayed
TX GPIO (dec)	The 8-bit decimal value of the function outputs (i.e., transmitted value) is displayed
RX power	The received power in dBm is displayed
TX power	The output power in dBm is displayed
Keyboard level	The current keyboard level is displayed
Acceleration	The maximum acceleration is displayed (i.e., position information from the accelerometer)
Temperature	The temperature of the radio-controlled handheld transmitter RE 6900 is displayed
Battery voltage	The battery voltage is displayed (in mV)
Charging voltage	The voltage at the charging contacts is displayed (in V)
Frequency band	The set frequency band (433, 869, or 915) is displayed (in MHz)

LEDs under the display

LED	Status
	Battery is currently being charged
	Battery fully charged
	Safety input open
	Safety input closed
	System in power-saving mode or switched off.
	System activated, radio signal on, safety outputs active
	Start initiated, radio signal on, authentication necessary
	Start initiated, radio signal off, authentication necessary
	Radio signal on, authentication valid, start necessary

	Radio signal off, authentication valid, start necessary
	Radio signal on, start and authentication necessary
	Radio signal off, start and authentication necessary

Keyboard icons

For a better overview and operation, various pre-defined icons can be assigned to the individual function push buttons. The icons are arranged vertically at the left and right edges of the display and correspond to the positions of the function push buttons on the keyboard. Thus, the function used to program the push button can easily be recognized by the icon.

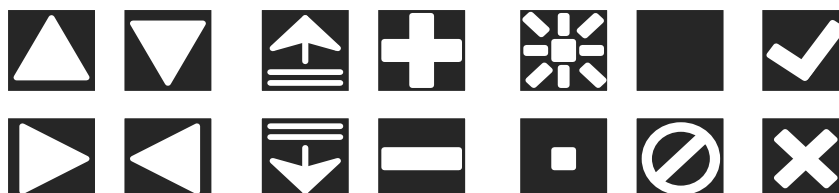


Figure 20: Icons for function push buttons

4.2.12.2 Error message and error codes

Any errors that occur are shown both on the display and by the two green LEDs.

Internal errors which indicate problems with the hardware or software are shown in the following format on the display.

Err uC1 053
Err uC2 012

Figure 21: Example error message on the display

“Err” stands for error, “uC1 uC2” for the processors of channel 1 & channel 2, and the three-digit number is an error code that designates the type of error.

This error code is also indicated by the two green LEDs flashing. The left LED1 shows the error code from channel 1 and the right LED2 the one from channel 2. The tens digit of the code number is shown by fast flashing, the ones digit by slow flashing.

Err uC1 053: LED1 flashes 5x fast (250 ms) and then 3x slow (500 ms)

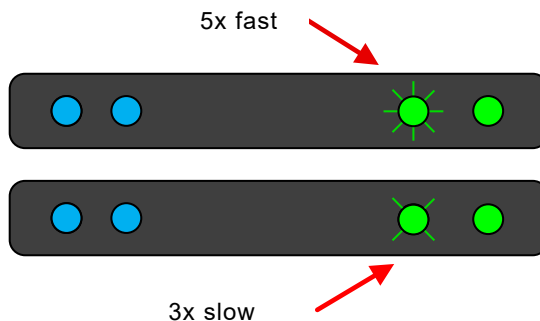


Figure 22: Example error code 53

Err uC2 012: LED2 flashes 1x fast (250 ms) and then 2x slow (500 ms)

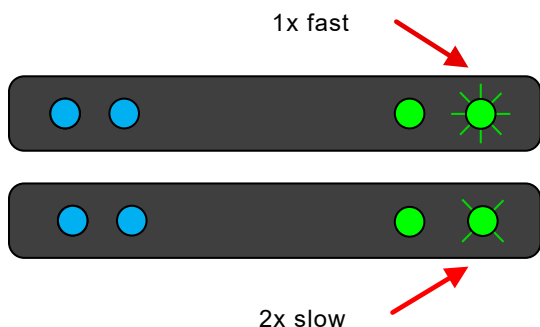


Figure 23: Example error code 12

If there are problems with the radio-controlled handheld transmitter RE 6900, always note the error code and/or take a photo/video of the device and the flashing LEDs.

4.3 Structure and functions of the charger ZB 6900/200

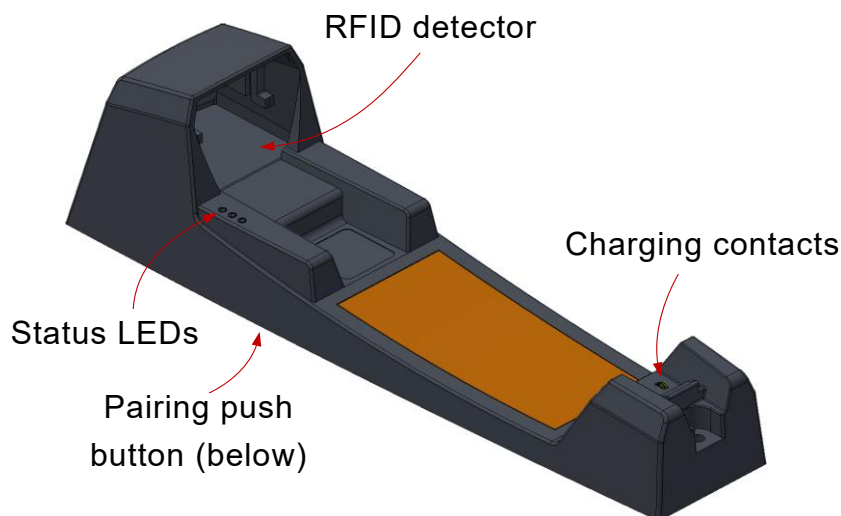


Figure 24: Labelled parts of the charger ZB 6900/200

The charger for the radio-controlled handheld transmitter RE 6900 has the following functions:

- Safe replacement of the radio-controlled handheld transmitter RE 6900 in the inactive status
- Charging possibility for the battery of the radio-controlled handheld transmitter RE 6900
- Control of safety input 3 of the radio-controlled safety module UH 6900 in the optional radio mode
- Pairing and identification of the “right” radio-controlled handheld transmitter RE 6900. Each charger has exactly one radio-controlled handheld transmitter RE 6900 assigned.

4.3.1 Replacement and charging of the radio-controlled handheld transmitter RE 6900

For replacement, the radio-controlled handheld transmitter RE 6900 is first placed into the charger ZB 6900/200 at the front, pushed forward exerting a little pressure and then pushed down onto the charging contacts of the charger until it clicks.

For removal, the radio-controlled handheld transmitter RE 6900 is first moved forward in the charger exerting a little pressure, then lifted off the charging contacts at the rear and taken out of the charger ZB 6900/200.

During replacement, the system first uses NFC to check whether the inserted radio-controlled handheld transmitter RE 6900 and the charger ZB 6900/200 match.

- If the correct radio-controlled handheld transmitter RE 6900 has been inserted, the output relays are closed and the radio signal is deactivated. The green and yellow LEDs light up and a positive message appears on the display.
- If the wrong radio-controlled handheld transmitter RE 6900 is inserted, this is shown on the display. The output relays remain opened.
- The battery is charged as soon as the charging contacts are connected to the radio-controlled handheld transmitter RE 6900.
- To guarantee that the radio-controlled handheld transmitter RE 6900 is in the charger ZB 6900/200, the magnetic field of the NFC coil and the charging current flowing at the charging contacts are monitored. Removal of the radio-controlled handheld transmitter RE 6900 can thus be detected.

4.3.2 Pairing and identification of the radio-controlled handheld transmitter RE 6900

Since the safety input 3 of a radio-controlled safety module UH 6900 may be controlled via the charger ZB 6900/200, every charger ZB 6900/200 is paired with exactly one radio-controlled handheld transmitter RE 6900.

Pairing takes place in three steps.

- Step 1: Insertion of the radio-controlled handheld transmitter RE 6900 into the charger ZB 6900/200
Error message “Charger wrong” on the display,
LEDs: red=on, yellow=flashing, green=off.
- Step 2: Press and release the pairing push button on the underside of the charger ZB 6900/200
LEDs: red, yellow, green flash synchronously three times,
then: red= flashing, yellow=on, green=off.
- Step 3: Removal and repeated insertion of the radio-controlled handheld transmitter RE 6900 into the charger ZB 6900/200
Message “Charger OK” on the display,
LEDs: red=on, yellow=on, green=off.

During pairing, the device ID of the radio-controlled handheld transmitter RE 6900 is transmitted to the charger ZB 6900/200 and saved there permanently. Any already existing device ID from another radio-controlled handheld transmitter RE 6900 is overwritten and replaced during this.

During and after insertion of a radio-controlled handheld transmitter RE 6900 into the charger ZB 6900/200, this device ID is permanently exchanged via the RFID interface to ensure, that the correct radio-controlled handheld transmitter RE 6900 has been inserted into the charger ZB 6900/200.

4.3.2.1 Control of safety input 3 of the radio-controlled safety module UH 6900

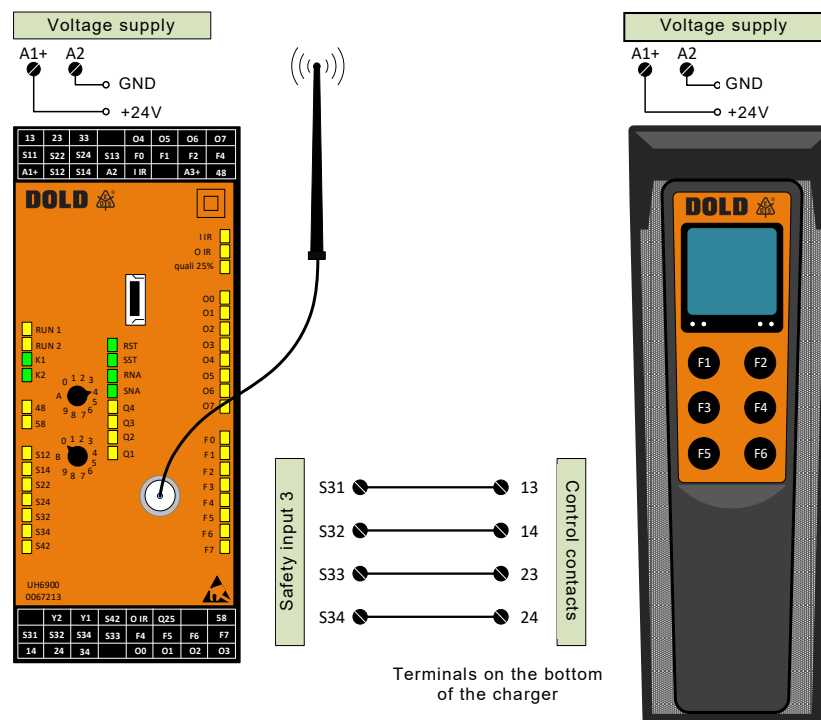


Figure 25: Control of safety input 3 of the UH 6900 with charger ZB 6900/200 control contacts

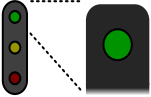
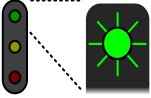
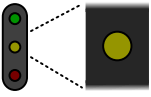
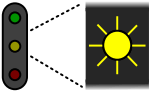
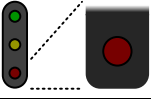
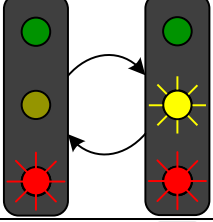
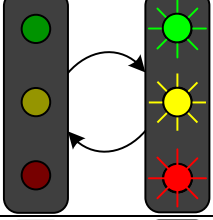
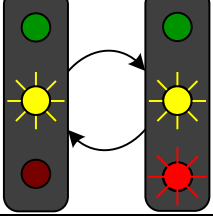
If the radio-controlled safety module UH 6900 is used in the operating mode “Safety operation with optional radio control”, the charger ZB 6900/200 can be connected directly to the two-channel safety input 3 of the radio-controlled safety module UH 6900.

- If the radio-controlled handheld transmitter RE 6900 is placed in the charger ZB 6900/200, the radio-controlled safety module UH 6900 works independently and does not react to a radio command. The output contacts of the charger ZB 6900/200 are closed and the radio signal is switched off.
- If the radio-controlled handheld transmitter RE 6900 is removed from the charger ZB 6900/200, the output contacts of the charger ZB 6900/200 open and the radio signal is switched on after the start button has been pressed on the radio-controlled handheld transmitter RE 6900. This integrates the radio-controlled handheld transmitter RE 6900 into the safety circuit of the radio-controlled safety module UH 6900 and can trigger an emergency stop via a radio signal.

4.3.3 Displays

There are 3 LEDs (red, yellow, green) on the charger ZB 6900/200 to indicate operating statuses and error codes.

4.3.3.1 Operating statuses

LED		Status
	Green off	Relay open
	Green on	Relay closed
	Yellow off	No authentication
	Yellow on	Authentication successful
	Red off	Power off
	Red on	Power on
	Green off Yellow flashing Red on	Wrong radio-controlled handheld transmitter RE 6900
	Green flashing Yellow flashing Red flashing	Pairing activated after pressing the pairing push button
	Green off Yellow on Red flashing	Pairing successful, radio-controlled handheld transmitter RE 6900 must be inserted again.

4.3.3.2 Error codes for charger ZB 6900/200

In the event of an error, the respective error code is indicated by the corresponding flashing of the yellow and green LEDs. The yellow LED represents the tens digit and the green LED the ones digit of the error number. The red LED shows which channel the error has occurred in, i.e. which controller (uC1 or uC2) is controlling the LEDs.

LED red	LED yellow	LED green	Status
Off = uC1 On = uC2	Flashing	Off	Tens digit of the error code

Off = uC1 On = uC2	Off	Flashing	Ones digit of the error code
-----------------------	-----	----------	------------------------------

Example 1: Error 12 in channel 1

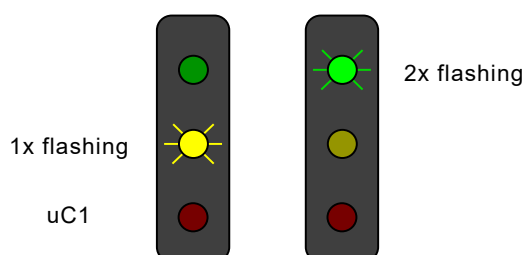


Figure 26: Error code 12 in channel 1

Example 2: Error 24 in channel 2

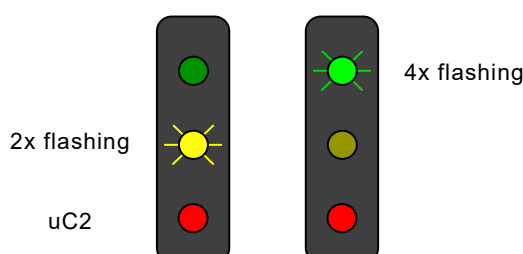


Figure 27: Error code 24 in channel 2

If errors occur in both channels, the error codes are indicated alternately.

If there are problems with the charger, always note the error code and/or take a photo/video of the device and the flashing LEDs.

5 Device assembly and connection

5.1 Important note on device assembly and connection



WARNING

- Before the complete radio-controlled safety system is switched on for the first time, it must be set to the required mode of operation.
- **A visible emergency stop button must always work.**
In situations where the safety function is suspended, precautions must be taken to ensure the emergency stop devices are not visible as long as this is the case.



Before carrying out settings or inserting cables, potential equalization must be ensured.

Experience has shown that successful installation depends on the following factors:

- Position of the radio-controlled handheld terminal and the antenna of the radio-controlled safety module UH 6900
- Connection and positioning of radio start enable devices e.g. light barriers or infrared transmitters and receivers

- Connection of the safety signal generators
- Immediate cable laying
- Protection of the electrical power supply
- Minimum and maximum current at the different outputs
- Interference suppression

5.2 Cable laying

Do not place cables of different classes next to one another. Keep a minimum distance (20 cm) between the different classes:

Class 1: Radio, antenna cable (antenna extension)

Class 2: Mains network for the power supply to the individual housings

Class 3: Capacity control of motors, controllers etc.

Ideally, each cable class is laid in a separate cable duct. If there is only one single cable duct available, the individual cables are laid as far as possible away from one another.



WARNING

The electrical connection of the power supply must be carried out in such a way that the radio-controlled safety system is deactivated when the main switch is deactivated.

If the supply circuit of the owner's plant is not equipped with an all-pole supply circuit switch, a suitable disconnecting device must be available as part of the electrical system of the building.

5.3 Protection of the electrical power supply

Protection against excess current due to overvoltage (EN 60204-1, § 7.2).

The power supply of the radio-controlled safety module UH 6900 is protected internally by PTC fuse.

5.4 Positioning of the charger ZB 6900/200

The charger ZB 6900/200 must be attached as close to the machine to be controlled as possible. It must be protected against impact and the influence of the weather. If the danger zone is not visible from the position of the charger ZB 6900/200, a light barrier ZB 6900/061 must be connected for an additional start signal. The user must ensure that the plant can only be switched on if the danger zone is safely visible.

5.5 Screwing the charger ZB 6900/200 to the wall

Despite their careful construction, electrical devices can still cause a fire. Do not mount the charger on easily flammable substrates or where flammable materials are stored.

- Mount the charger ZB 6900/200 on a firm substrate.
- Always only mount the charger ZB 6900/200 vertically and make sure that the connections are at the bottom or top.
- The charger ZB 6900/200 is fixed to the wall by two screws. Two drill holes with a diameter of 5.3 mm are provided for this.
- The screws, plugs and washers for attachment must be provided on site since they are not included in the scope of delivery.

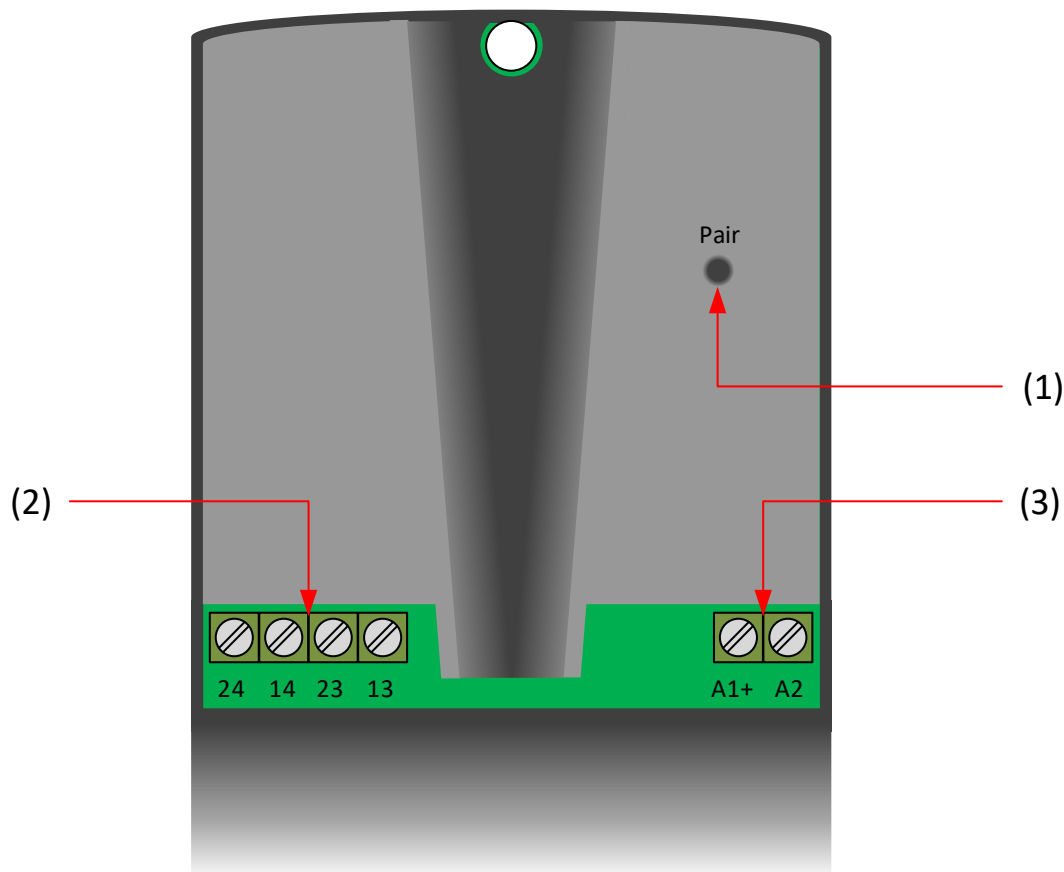
We recommend the following for screw attachment:

- Two cheese head screws ISO 4762 - M5 x ≥ 25 - ≤ 8.8 and washers ISO 7092-5-200 HV or comparable fasteners



It must be ensured that the wall screw attachment can bear the weight of the mounted charger ZB6900/200 even during operation. This includes the removal and insertion of the radio-controlled handheld transmitter RE 6900.

5.6 Terminal layout on the rear of the charger ZB 6900/200



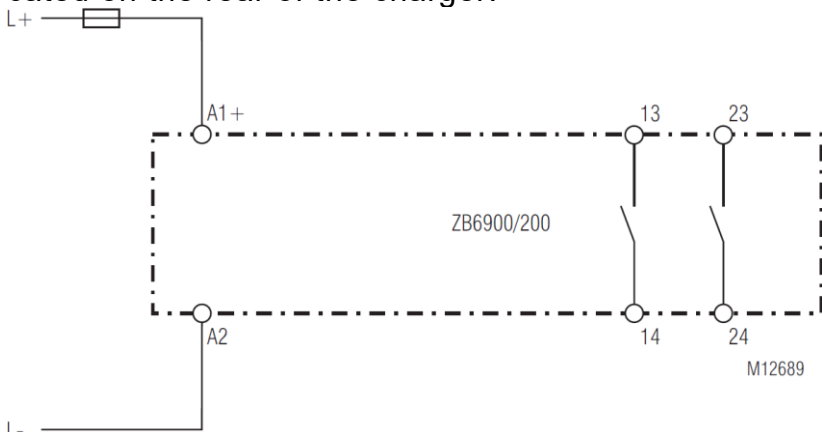
- (1) Small opening for the pairing push button
- (2) Terminals for connection to the radio-controlled safety module UH 6900
- (3) Terminals for connection of the supply voltage

5.7 Terminal assignment of the charger ZB 6900/200

Terminal	Description
A1+	DC 24 V voltage supply
A2	Common ground
13/14	Contact output 1 to the radio-controlled safety module UH 6900
23/24	Contact output 2 to the radio-controlled safety module UH 6900

5.8 Connection of the supply voltage of the charger ZB 6900/200

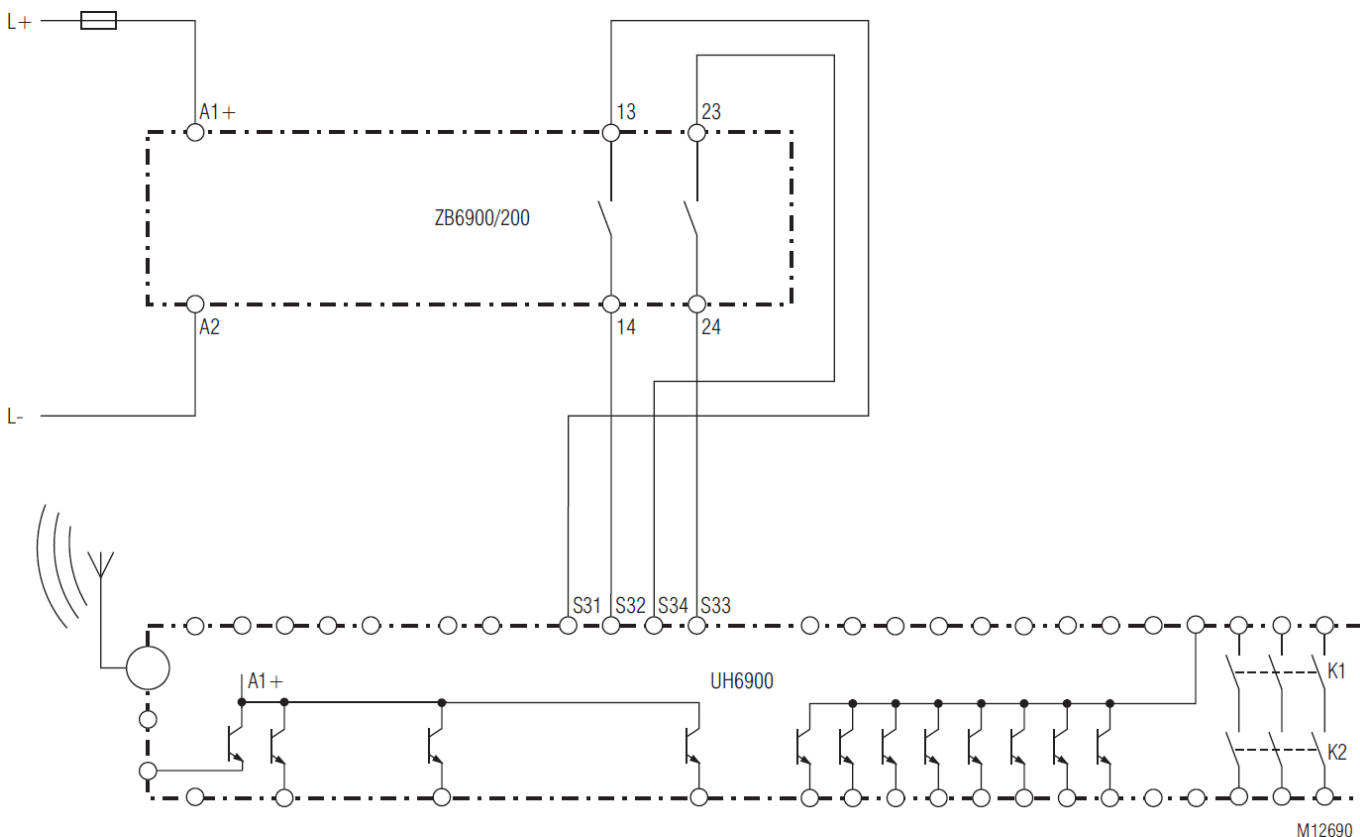
A SELV (Separated Extra Low Voltage) or PELV (Protected Extra Low Voltage) mains adapter must be used for supply voltage. The supply connections for the charger are located on the rear of the charger.



5.9 Connection of the charger ZB 6900/200 to the radio-controlled safety module UH 6900

5.9.1 Connection in the operating mode “Safety operation with optional radio control”

The following illustration shows the connection of the charger ZB 6900/200 to the radio-controlled safety module UH 6900. The charger ZB 6900/200 is operated at safety input 3 of the UH 6900. Furthermore, the radio-controlled safety module UH 6900 is in the operating mode “Safety operation with optional radio control”.



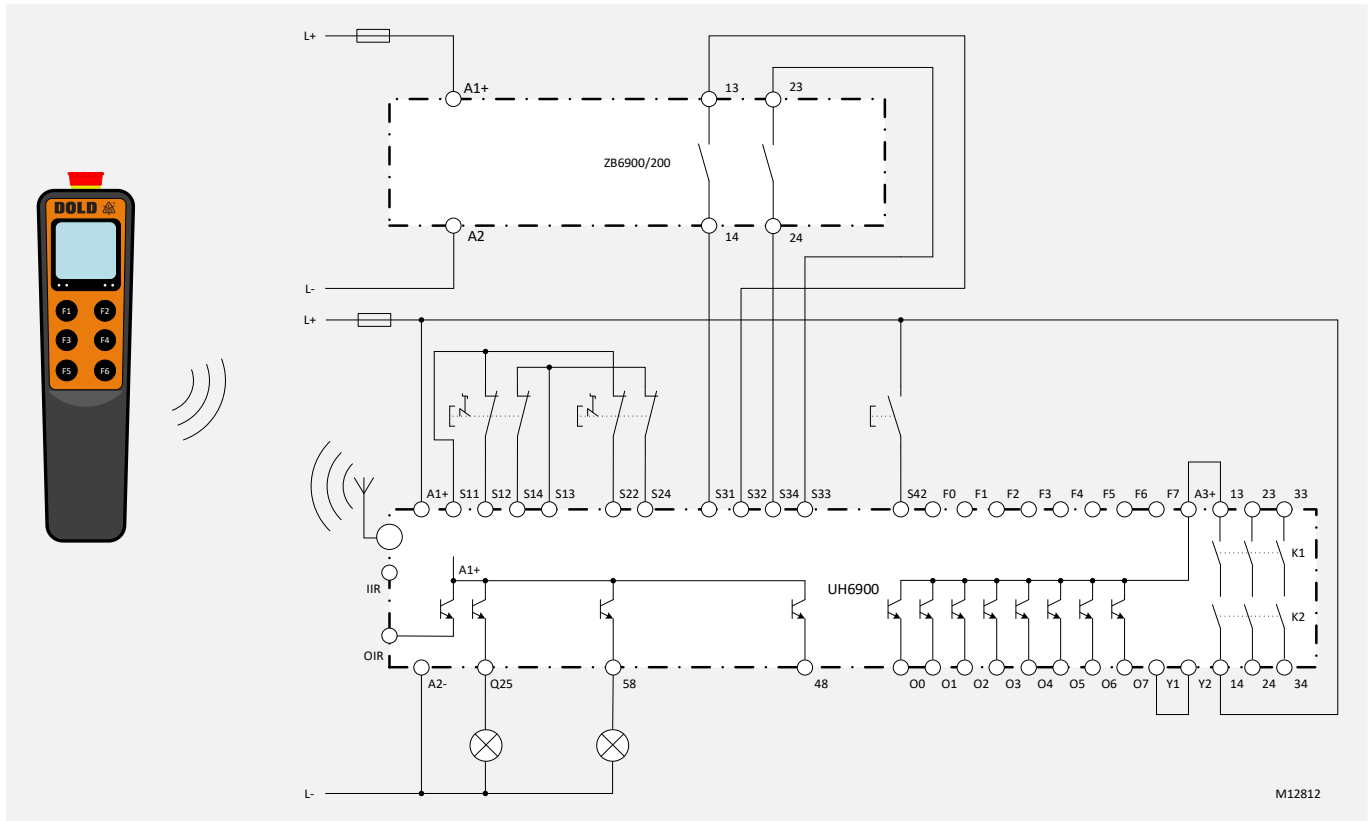
5.9.2 Connection in the operating mode “Full safety operation”

If the radio-controlled safety module UH 6900 is operated in the operating mode “Full safety operation”, the charger ZB 6900/200 must not be connected to the radio-controlled safety module UH 6900. The charger ZB 6900/200 is exclusively used for charging the battery of the radio-controlled handheld transmitter RE 6900.

5.10 Application examples

5.10.1 Application example in the operating mode “Safety operation with optional radio control”

Both the radio-controlled enabling switch RE 6900 and the radio-controlled emergency stop RE 6900 can be operated in this operating mode. In this case, the radio-controlled handheld transmitter RE 6900 replaces the controller. Information and setting options can be found in the user manual for the radio-controlled safety module UH 6900.



- Contacts 13-24 on the charger are connected to contacts S31-S34 on the radio-controlled safety module.
- The safety transmitters are connected to safety inputs S11-S14 and S22-S23. In the figure, S11-S14 and S22-S23 are equipped with a two-channel button. Further connection possibilities for safety transmitters are listed in the chapter “**Connection of the safety transmitters**” in the application manual for the radio-controlled safety module UH 6900.
- The start button is connected to contact S42.
- The radio-controlled safety module UH 6900 is operated in the operating mode “Safety operation with optional radio control”. For this, **rotary switch A is set to a value between 4 and 8**. Applications with **auto-start functions** can be realized in the settings A=7 or A=8. Further information about these modes of operation can be found in the chapter “Safety operation with optional radio control” in the user manual of the radio-controlled safety module UH 6900.
- The monitoring time is set using **rotary switch B**. Further information about the possible monitoring times can be found in the chapter “**Safety operation with optional radio control**” in the user manual of the radio-controlled safety module UH 6900.

- Consumers can be connected to the function outputs O0 to O7 and actuated via the radio-controlled handheld transmitter RE 6900. The push buttons use can be assigned and programmed via the PC SAFEMASTER W-Manager, see chapter 6.3.5 for this. The safety function is executed via the contacts K1-K2 of the positively driven relay of the radio operated safety module UH 6900.

Suitable for applications up to category 4 (categories as per ISO EN 13849).

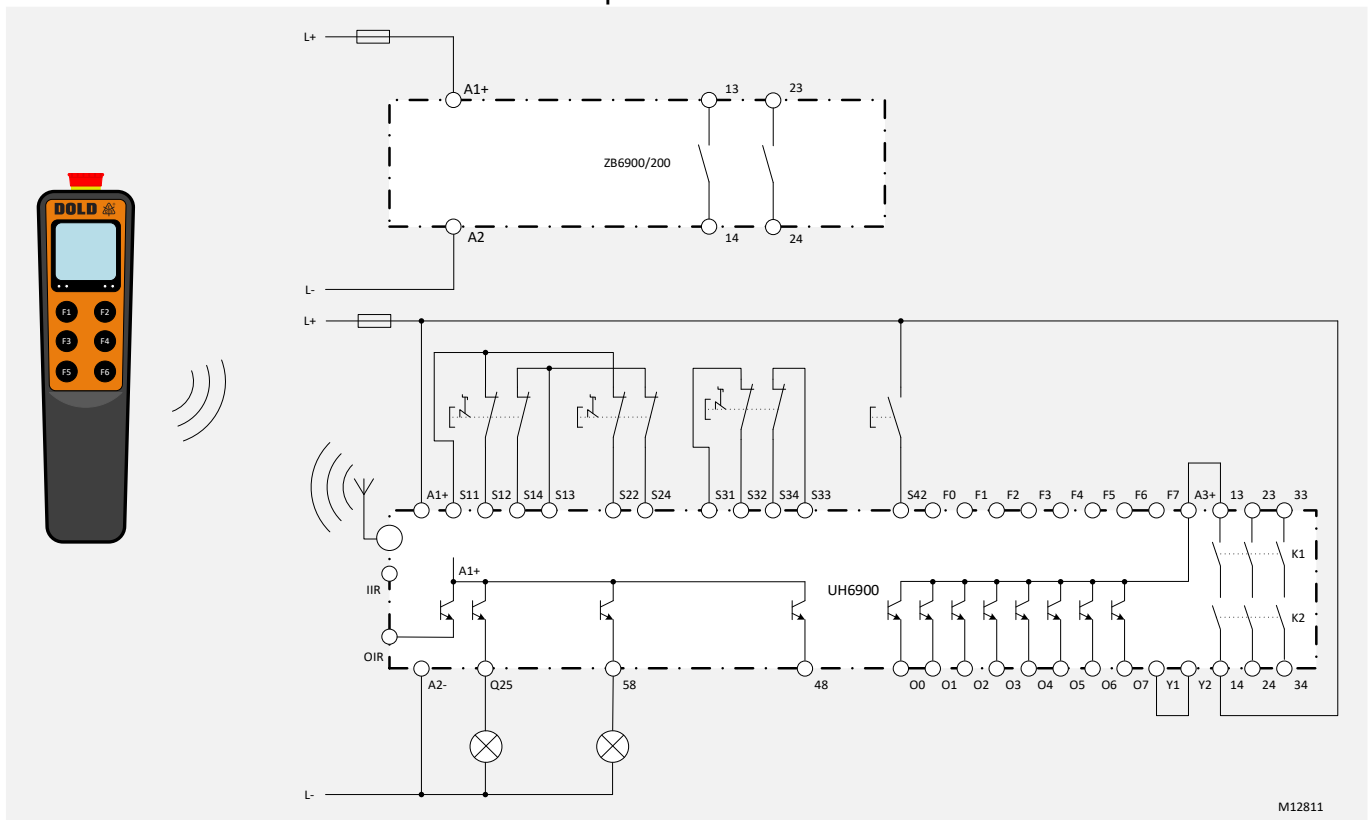
A detailed description of this application example is explained in chapter 3.11.

Note: The resulting Performance Level must be calculated for the complete system.

Attention: In accordance with EN 60204-1, an automatic start may not take place after stopping in an emergency.

5.10.2 Application example in the operating mode “Full safety operation”

Both the wireless enabling switch RE 6900 and the wireless emergency stop RE 6900 can be operated in this operating mode. Information and setting options can be found in the user manual for the radio-controlled safety module UH 6900. In this case, the radio-controlled handheld transmitter RE 6900 replaces the controller.



- Contacts 13-24 of the charger are not connected.
- The safety inputs S11-S14, S22-S23 and S31-S34 are connected to the safety transmitters. Further connection possibilities for safety transmitters such as light barriers or two-handed circuits are listed in the chapter “**Connection of the safety transmitters**” in the application manual for the radio-controlled safety module UH 6900.
- The start button is connected to contact S42.
- The radio-controlled safety module UH 6900 is operated in the operating mode “Full safety operation”. For this, **rotary switch A is set to either 0 or 1 and rotary switch B is set to a value between 0 and 9**. Operating modes with autostart are possible here, too. Further information about these modes of operation can be found in the

chapter “**Full safety operation**” in the user manual of the radio-controlled safety module UH 6900.

- Consumers can be connected to the function outputs O0 to O7 and actuated via the radio-controlled handheld transmitter RE 6900. The push buttons use can be assigned and programmed via the PC SAFEMASTER W-Manager, see chapter 6.3.5 for this.

The safety function is executed via the contacts K1-K2 of the positively driven relay of the radio operated safety module UH 6900.

Suitable for applications up to category 4 (categories as per ISO EN 13849).

Note: The resulting Performance Level must be calculated for the complete system.

Attention: In accordance with EN 60204-1, an automatic start may not take place after stopping in an emergency.

6 Parameterization

The wireless characteristics of the radio-controlled safety module UH 6900 and the radio-controlled handheld transmitter RE 6900 are set using the parameterization software “SAFEMASTER W-Manager” installed on a conventional PC.



ATTENTION

The safety function must be checked after programming, configuration or parameterization. It must even be checked if no parameters have been changed.

6.1 Parameterization software “SAFEMASTER W-Manager”

6.1.1 Hardware requirements (minimum) for the PC to be connected

- Operating system: Windows XP or higher
- RAM: 256 MB
- Hard drive: Free storage space $\geq$ 30 MB
- USB port: 1.1, 2.0 or 3.0
- CD Drive



Before inserting the USB cable in the radio-controlled safety module UH 6900, potential equalization must be ensured.

6.1.2 Installation of the parameterization software

- Insert the installation CD.
- Wait until the self-starting installation program requests the software SETUP.

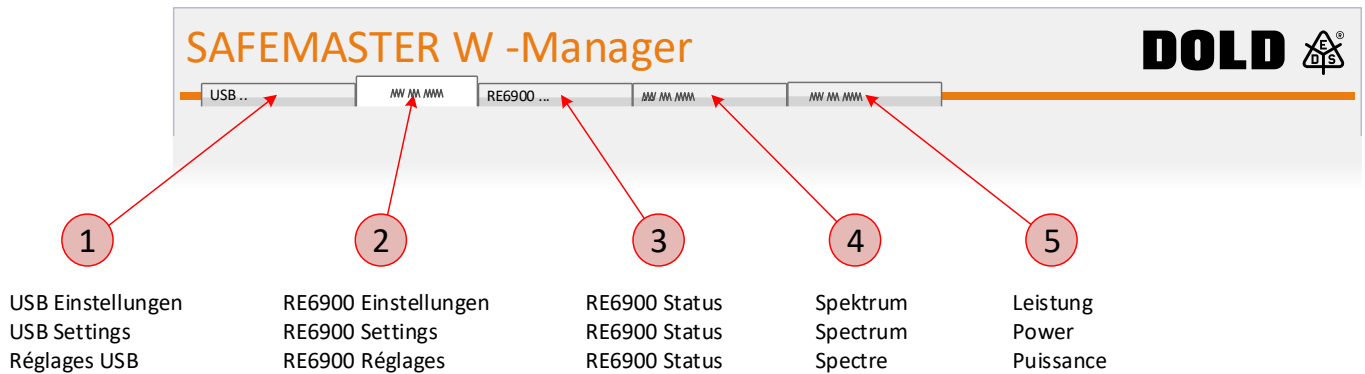
Alternatively, look for the *Setup-SAFEMASTER-W-Manager-x.x.exe* file in the Explorer and open it;

After successful installation, a window will appear for you to close the setup program.

If the installation has been completed correctly, the installation program creates both an entry in the start menu and an icon on the desktop with the title “SAFEMASTER W-Manager”. After opening the SAFEMASTER W-Manager software, you will be requested to enter a license key. This license key is in the text file on the enclosed CD.

6.2 Main menu

After the software has been started, there are different windows resp. tabs available for configuration and status query. You can access the windows by clicking the tabs above them.



Tab:

① "USB settings"

Open and close the connected USB devices

② "RE 6900 settings"

This tab is required for the configuration of the radio-controlled handheld transmitter RE 6900.

- a) Device settings
- b) User
- c) Targets
- d) Keyboard settings

③ "RE 6900 status"

- a) Status display of the processors
- b) Status display of the safety transmission
- c) Log
- d) Reception power
- e) Function inputs and outputs

④ "Spectrum"

- a) Displays the radio channels occupied by spectral analysis

⑤ "Power"

- a) Display of the power received
- b) Logging of the power received

6.3 Window "RE 6900 settings"

After the "RE 6900 settings" tab has been selected, the window changes and the following contents are shown:

- Action bar
- Four further tabs for
 - "Device settings"
 - "User"
 - "Targets"
 - "Keyboard settings"

6.3.1 Action bar

The actions can be selected using the icons on the action bar. The status of the icons depends on the status of the radio-controlled handheld transmitter RE 6900 connected. Only icons highlighted in color in the action bar can be selected, icons highlighted in gray in the action bar cannot be selected.

	Representation without connection of a radio-controlled handheld transmitter RE 6900
	A radio-controlled handheld transmitter RE 6900 is connected and the tabs are locked. ⇒ No changes can be made.
	A radio-controlled handheld transmitter RE 6900 is connected and the tabs are unlocked. ⇒ Changes can be made.

If the radio-controlled handheld transmitter RE 6900 is connected to the PC, the current values are read out from the radio-controlled handheld transmitter RE 6900 and displayed.

The radio-controlled handheld transmitter RE 6900 is protected against manipulation and accidental changes. For this reason, the radio-controlled handheld transmitter RE 6900 is in the locked state by default and the tabs cannot be changed. The lock protection can only be unlocked by entering a password. The standard password is "0000".

List of possible functions on the action bar:

 Lock tabs	⇒ Changes can be made. Tabs are unlocked and can be locked again when this function is selected. The password has to be entered again for unlocking.
 Unlock tabs	⇒ No changes can be made. Tabs are locked and can be unlocked when this function is selected and the password is entered.
 Load from file	Load a configuration from a file.
 Save in file	Save a configuration in a file.
 Load from device	Load a configuration from a connected radio-controlled handheld transmitter RE 6900. Note: The configuration is automatically loaded when the radio-controlled handheld transmitter RE 6900 is connected.
 Program device	Safe configuration to the connected radio-controlled handheld transmitter RE 6900. The configuration previously save in the radio-controlled handheld transmitter RE 6900 will be overwritten.

	The safety function must be checked after programming. It must even be checked if no parameters have been changed.
 Change password	Set a new password as lock protection for the tabs. For the password to be changed, the current password (standard "0000") and the new password must be entered. The change only becomes permanently effective after the configuration has been saved to the connected radio-controlled handheld transmitter RE 6900. Note: Change the password to ensure that only authorized personnel can change the parameters.
 Load default	Load the default configuration. Resets the radio-controlled handheld transmitter RE 6900 to the delivered state.
 Examples	Display and load example configurations. When this function is selected, different suggestions are displayed for a configuration. You can select whether only the keyboard or the complete settings are to be loaded. Furthermore, you can define a directory for your own predefined configurations. The location is saved in the Windows registry and is available again next time you start the software.

6.3.2 Window "RE 6900 settings" – "Device settings"

The parameters in the radio-controlled handheld transmitter RE 6900 are explained below.

6.3.2.1 Device type

The parameter, device type is set to "RE 6900".

This device type cannot be changed by the user.

6.3.2.2 Device name

Selection:

- 1) Text box (with maximum 11 characters)

The user can assign a name to the radio-controlled handheld transmitter RE 6900. This can be shown on the display, for example.

6.3.2.3 Radio mode of operation

Selection:

- 1) "Paired mode – full safety operation"
- 2) "Group mode – controller"

The user setting depends on the mode of operation set on the remote controlled radio-controlled safety module UH 6900.

6.3.2.4 System ID (SYSID)

The system ID is assigned when delivered from Dold and cannot be changed. Only devices with the same system ID can communicate with one another.

The system ID cannot be changed by the user.

6.3.2.5 Device ID (LID)

In addition to the system ID, the device ID is also used for uniquely assigning the devices to one another. For this reason, both the own device ID and the device ID of the target device are stored in each device. Since the device has a two-channel structure, the device ID and the target device ID are saved twice in the device and each of these IDs is displayed double by the parameterization software.

The target devices have to be specified in the "Targets" tab.

The device ID cannot be changed by the user.

6.3.2.6 Frequency band

The radio-controlled handheld transmitter RE 6900 is available for the frequency bands 433 MHz, 869 MHz, or 915MHz. The parameterization software shows which frequency band the device hardware has been equipped for.

The frequency band cannot be changed by the user.

6.3.2.7 Radio standard

The radio standard depends on the equipment variant and cannot be changed by the user. The following radio standard is available in accordance with the Radio Equipment Directive 2014/53/EU (RED):

- DIN EN 300 220 Radio – EU – variant
Electromagnetic compatibility and radio spectrum matters (ERM) –
Short range devices (SRD) –
Radio devices for use in the frequency range of 25 MHz to 1000 MHz with output powers up to 500 mW
- FCC Part 15.249 Frequency – US – variant
Regulations for ISM Band Devices
902-928 MHz



The radio standard cannot be changed by the user.

6.3.2.8 Channel

The following numbers of channels are available, depending on the frequency band:

Standard	Frequency band	Number of channels
EN 300 220	433 MHz	64
EN 300 220	869 MHz	12
FCC 15.249	915 MHz	128

A frequency channel not used at the site can be set using the parameterization software.

6.3.2.8.1 List of the available frequencies in the 433 MHz band

Frequency 433 MHz – 434 MHz, frequency interval: 0.025 MHz.

Channel	Frequency (in MHz)	Channel	Frequency (in MHz)	Channel	Frequency (in MHz)	Channel	Frequency (in MHz)
01	433.100	17	433.500	33	433.900	49	434.300
02	433.125	18	433.525	34	433.925	50	434.325
03	433.150	19	433.550	35	433.950	51	434.350
04	433.175	20	433.575	36	433.975	52	434.375
05	433.200	21	433.600	37	434.000	53	434.400
06	433.225	22	433.625	38	434.025	54	434.425
07	433.250	23	433.650	39	434.050	55	434.450
08	433.275	24	433.675	40	434.075	56	434.475
09	433.300	25	433.700	41	434.100	57	434.500
10	433.325	26	433.725	42	434.125	58	434.525
11	433.350	27	433.750	43	434.150	59	434.550
12	433.375	28	433.775	44	434.175	60	434.575
13	433.400	29	433.800	45	434.200	61	434.600
14	433.425	30	433.825	46	434.225	62	434.625
15	433.450	31	433.850	47	434.250	63	434.650
16	433.475	32	433.875	48	434.275	64	434.675

With a transmission power > 0 dBm, only channels 40 to 64 are available.



If there is a change to the frequency channel in an area where the set transmission power is no longer permitted, the transmission power is reduced to the greatest permissible value by the parameterization software.

6.3.2.8.2 List of the available frequencies in the 869 MHz band

Frequency 869 MHz, frequency interval: 0.025 MHz.

Channel	Frequency (in MHz)	Channel	Frequency (in MHz)	Channel	Frequency (in MHz)	Channel	Frequency (in MHz)
1	869.7125	4	869.7875	7	869.8625	10	869.9375
2	869.7375	5	869.8125	8	869.8875	11	869.9625
3	869.7625	6	869.8375	9	869.9125	12	869.9875

6.3.2.8.1 List of the available frequencies in the 915 MHz band

Frequency 911 MHz to 918 MHz, frequency interval: 0.050 MHz.

Channel	Frequency (in MHz)	Channel	Frequency (in MHz)	Channel	Frequency (in MHz)	Channel	Frequency (in MHz)
1	911,800	33	913,400	65	915,000	97	916,600
2	911,850	34	913,450	66	915,050	98	916,650
3	911,900	35	913,500	67	915,100	99	916,700
4	911,950	36	913,550	68	915,150	100	916,750
5	912,000	37	913,600	69	915,200	101	916,800
6	912,050	38	913,650	70	915,250	102	916,850
7	912,100	39	913,700	71	915,300	103	916,900
8	912,150	40	913,750	72	915,350	104	916,950
9	912,200	41	913,800	73	915,400	105	917,000
10	912,250	42	913,850	74	915,450	106	917,050
11	912,300	43	913,900	75	915,500	107	917,100
12	912,350	44	913,950	76	915,550	108	917,150
13	912,400	45	914,000	77	915,600	109	917,200
14	912,450	46	914,050	78	915,650	110	917,250
15	912,500	47	914,100	79	915,700	111	917,300
16	912,550	48	914,150	80	915,750	112	917,350
17	912,600	49	914,200	81	915,800	113	917,400
18	912,650	50	914,250	82	915,850	114	917,450
19	912,700	51	914,300	83	915,900	115	917,500
20	912,750	52	914,350	84	915,950	116	917,550
21	912,800	53	914,400	85	916,000	117	917,600
22	912,850	54	914,450	86	916,050	118	917,650
23	912,900	55	914,500	87	916,100	119	917,700
24	912,950	56	914,550	88	916,150	120	917,750
25	913,000	57	914,600	89	916,200	121	917,800
26	913,050	58	914,650	90	916,250	122	917,850
27	913,100	59	914,700	91	916,300	123	917,900
28	913,150	60	914,750	92	916,350	124	917,950
29	913,200	61	914,800	93	916,400	125	918,000
30	913,250	62	914,850	94	916,450	126	918,050
31	913,300	63	914,900	95	916,500	127	918,100
32	913,350	64	914,950	96	916,550	128	918,150

6.3.2.9 Transmission power

To adapt the working range of the devices to the required conditions, the transmission power can be set using the parameterization software, depending on the selected frequency channel and standard.

To adapt the working range of the devices to the required conditions, the transmission power can be set using the parameterization software, depending on the frequency band, selected frequency channel, equipment and regulations.



ATTENTION

FCC 15.249

Only the following configurations comply with the FCC 15.249 regulations.

#	Antenna	Cable	Maximum power that can be set in the PC software
1	internal	-	-3.0 dBm

The use of other configurations may void the FCC approval required for the operation of this device.

EN 300 220

Frequency band	Channel	ERP
433 MHz	1..39	0 dBm (1 mW)
433 MHz	40..64	10 dBm (10 mW)
868 MHz	1..12	7 dBm (5 mW)

ERP is the effective radiated related to a half-wave dipole.

The adjustable transmission power relates to the power outputted by the antenna.



When the transmission power is changed, the parametrization software only allows entries which are also permissible for the set radio channel. Thus, for example, powers over 1 mW (0 dBm) only become permissible when the frequency channel ≥ 40 is also set in the 433 MHz band.

6.3.2.10 Safety input

The safety inputs used for RE 6900 are:

- Emergency stop
- Enabling switch

The safety input cannot be changed by the user.

6.3.2.11 Language

The user can choose between three device languages:

- German
- English
- French

The language settings are for the radio-controlled handheld transmitter RE 6900 and not for the PC software.

6.3.2.12 Permitted operation in vertical position

Selection:

- Off
- On

Using a sensor, the radio-controlled handheld transmitter RE 6900 measures the acceleration in all three axes, with respect to the center of the earth. The radio-controlled handheld transmitter RE 6900 calculates its position to the earth using the acceleration values. If the option “Operation only in vertical position” is activated, the radio-controlled safety system can only be started when the radio-controlled handheld transmitter RE 6900 is held vertically. If the radio-controlled handheld transmitter RE 6900 leaves its vertical position, a non-safety stop is sent to the receivers UH 6900.

6.3.2.13 Permitted operation in horizontal position

Selection:

- Off
- On

Using a sensor, the radio-controlled handheld transmitter RE 6900 measures the acceleration in all three axes to the center of the earth. The radio-controlled handheld transmitter RE 6900 calculates its position to the earth using the acceleration values. If the option “Operation only in horizontal position” is activated, the radio-controlled safety system can only be started when the radio-controlled handheld transmitter RE 6900 is held horizontally. If the radio-controlled handheld transmitter RE 6900 leaves its horizontal position, a non-safety stop is sent to the receivers UH 6900.

6.3.2.14 Authentication

Selection:

- Off
- On

If user authentication is activated, the user must log in for activation of the remote controlled relays via the installed RFID reader of the radio-controlled handheld transmitter RE 6900. The RFID key fobs are taught via the “User” tab. The user can be authenticated first for use of the radio-controlled handheld transmitter RE 6900 and then start or start first and then be authenticated.

Refer to parameter:

- “Login time limit after start [s]”

6.3.2.15 Start button (automatic start)

Selection:

- Off
- On

If the start button is deactivated, an automatic start takes place if the safety conditions are met. With the wireless emergency stop, the start button must always be used, which means it cannot be deselected for an automatic start.



ATTENTION

In accordance with EN 60204-1 section 9.2.5.4.2 an automatic start may not take place after stopping in an emergency. For this reason, a higher-order controller must prevent an automatic start after an emergency stop in the operating modes with automatic start.

6.3.2.16 Motion detector

Selection:

- Off
- On

When activated, a radio-controlled emergency stop signal is sent if the radio-controlled handheld transmitter RE 6900 is not moved. The radio-controlled handheld transmitter RE 6900 uses an accelerometer to calculate absolute acceleration. If the acceleration is below a threshold value for a defined time, a stop signal is sent via radio signal.

Refer also to:

- Parameter: "Motion limit [mg]"
- Parameter: "Switch-off time if no motion [s]"

6.3.2.17 Mechanical shock detector

Selection:

- Off
- On

When activated, a radio-controlled emergency stop signal is sent if the radio-controlled handheld transmitter RE 6900 suffers impact. The radio-controlled handheld transmitter RE 6900 uses an acceleration sensor to calculate absolute acceleration. If the acceleration exceeds a threshold value, a stop signal is sent via radio signal.

Refer also to:

- Parameter: "Motion limit shock [mg]"

6.3.2.18 Logout due to inactivity

Selection:

- Off
- On

When activated, users are logged out if they are not using the radio-controlled handheld transmitter RE 6900. Prerequisite for inactivity is that none of the push buttons on the radio-controlled handheld transmitter are being used and the device is motionless.

Refer also to:

- Parameter: "Motion limit [mg]"
- Parameter: "Logout time if no motion [s]"

6.3.2.19 Power-saving mode

Selection:

- Off
- On

When the power-saving mode is activated, the radio-controlled handheld transmitter RE 6900 is disconnected from the power supply when not in use. Reactivation of the radio-controlled handheld transmitter RE 6900 is either by inserting the radio-controlled handheld transmitter RE 6900 into the charger ZB 6900/200 or by means of the start button.

6.3.2.20 Light emitting diode

Selection:

- Off
- On

If the light emitting diode is activated, a start signal is sent to the radio-controlled safety module UH 6900 by the light emitting diode in addition to the start signal via radio. The light emitting diode is used for starting the radio-controlled safety system within a defined

area. For this purpose, an IR receiver (ZB 6900/060) must be connected to the radio-controlled safety module UH 6900 and the radio-controlled safety module UH 6900 must be set to the operating mode “Detection of the radio start signal together with the start signal at terminal IIR”.

**ATTENTION**

- Only one radio-controlled safety module UH 6900 in the system may be set to the operating mode “Detection of the radio start signal together with the start signal at terminal IIR”.
- The danger zone must be visible from the start zone of the radio-controlled safety system.

6.3.2.21 Vibration with low RF power

Selection:

- Off
- On

When activated, the vibration motor in the radio-controlled handheld transmitter RE 6900 is briefly actuated when the radio signal range is poor. This signals to the users, that they are leaving the radio signal range. If the option is deactivated, the vibration motor is not actuated.

6.3.2.22 Vibration when push button pressed

Selection:

- Off
- On

When activated, the vibration motor in the radio-controlled handheld transmitter RE 6900 is briefly actuated when the keyboard is pressed. If the option is deactivated, the vibration motor is not actuated.

6.3.2.23 Login time limit after start [s]

Selection:

- Free time specification (in secs)

When the start button is pressed, the user has time for authentication. If no authentication takes place within this time, the enable is withdrawn and the radio-controlled handheld transmitter RE 6900 returns to its original status.

See parameter:

- **“Authentication”** (chapter 6.3.2.14).

6.3.2.24 Switch-off time if no motion [s]

Selection:

- Free time specification (in secs)

This time specification is required for the motion detector and is mainly used as manipulation protection for the wireless enabling switch.

See parameter:

- **“Motion detector”** (chapter 6.3.2.16).

6.3.2.25 Logout time limit after start [s]

Selection:

- Free time specification (in secs)

This specifies the time after which the user is logged out by the radio-controlled handheld transmitter RE 6900.

Refer to parameter:

- **“Logout in the event of non-use”** (chapter 6.3.2.18).

6.3.2.26 Switch-off time for power-saving mode [s]

Selection:

- Free time specification (in secs)

This specifies the time after which the radio-controlled handheld transmitter RE 6900 is disconnected from the power supply if it is not being used.

Refer to parameter:

- **“Logout in the event of non-use”** (chapter 6.3.2.19).

6.3.2.27 Motion limit [mg]

Selection

- Free input of the acceleration in 1/1000 of gravity acceleration 1g.

Specifies the threshold value of the acceleration detector.

Refer to parameter:

- **“Motion detector”** (chapter 6.3.2.16)

6.3.2.28 Motion limit shock [mg]

Selection

- Free input of the acceleration in 1/1000 of gravity acceleration 1g.

Specifies the threshold value of the acceleration detector for mechanical shock or impact detection.

Refer to parameter:

- **“Shock detector”** (chapter 6.3.2.17).

6.3.2.29 Brightness

Selection:

- Decimal value between 0 and 255.

This parameter specifies screen brightness. 0 corresponds to no actuation of the display and 255 means maximum brightness.

6.3.2.30 Firmware version

Display of the firmware version of the controlled handheld transmitter RE 6900 connected.

6.3.3 Window “RE 6900 settings” – “User”

A maximum of 16 different RFID key fobs can be saved in the radio-controlled handheld transmitter. The RFID key fobs are taught via the PC software “SAFEMASTER W-Manager”. For this, the user must hold the RFID key fob to the reader on the radio-controlled handheld transmitter RE 6900.

If the RFID key fob is detected successfully, this is shown in the window and the button for adding a key fob is highlighted in color. Changes in the radio-controlled handheld transmitter RE 6900 are always only possible if the tabs have been unlocked.

 Add RFID key fob	When this icon is selected, the key fob is added.
---	---

 Delete RFID key fob	Delete the selected key fob.
--	------------------------------

After the RFID key fob has been added, the key fob can be assigned to 8 different authorization groups. Multiple assignment is possible. The authorization groups are required for configuration of the keyboard levels.

All changes are made in the memory of the PC software first. The changes are only permanently saved in the radio-controlled handheld transmitter RE 6900 when the final action “Program device” is carried out, see action bar in chapter 6.3.1.

6.3.4 Window “RE 6900 settings” – “Targets”

The remote-controlled radio-controlled safety modules UH 6900 are managed in this window. Each target corresponds to one radio-controlled safety module UH 6900. Each target is assigned an index number, the first target is index “000”, the second target index “001” etc.

If the radio-controlled handheld transmitter RE 6900 is in the radio mode of operation “Paired mode – full safety operation”, only one radio-controlled safety module UH 6900 can be added. In group operation, up to 255 targets can be added.

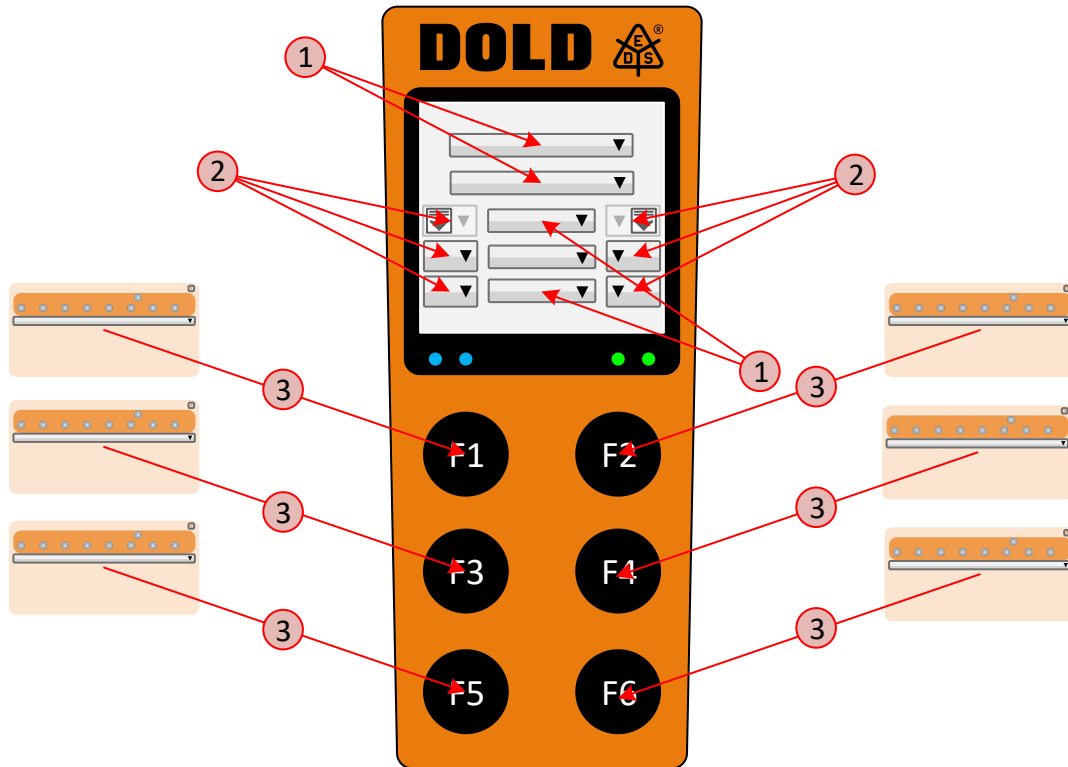
Changes in the radio-controlled handheld transmitter RE 6900 are always only possible if the tabs have been unlocked. All changes are made in the memory of the PC software first. The changes are only permanently saved in the radio-controlled handheld transmitter RE 6900 when the final action “Program device” is carried out, see action bar chapter 6.3.1.

6.3.5 Window “RE 6900 settings” – “Keyboard settings”

There are 6 push buttons on the keyboard which can be assigned multiple times and are freely programmable. The multiple assignment of a push button is solved by keyboard levels. The user can create up to 16 keyboard levels in total. The keyboard levels are managed by the buttons.

 Add keyboard level	Adds a keyboard level
 Delete keyboard level	Deletes the current keyboard level
 Previous keyboard	Move to the previous keyboard level
 Next keyboard	Move to the next keyboard level

The following illustration shows the keyboard in the SAFEMASTER W-Manager:



Legend:

① Text boxes

When selected, a drop-down menu is shown on the display of the radio-controlled handheld transmitter RE 6900.

Refer to chapter 6.3.5.1 for more info.

② Icons

The icons assigned to the push button functions are shown here. The layout of the icons on the display corresponds to the layout of the push buttons on the membrane keyboard e.g. function push button F1 corresponds to the top left icon etc. When selected, the user can assign an icon for the push button function depending on the function. There is a range of predefined icons available for the user to choose from.

Refer to chapter 6.3.5.2 for more info.

③ Push button function

The push button function can be defined here. The layouts of the indicated fields correspond to the layouts of the push buttons on the membrane keyboard. Within these fields, the user can specify the permitted authorization groups and define the function behind these. Following authentication, the authenticated authorization group can trigger this function.

Refer to chapter 6.3.5.3 for more info.

6.3.5.1 Text boxes

Selection:

a. Nothing

An empty text box is shown.

b. User-defined text

The user can enter a character string (max. 11 characters) in the text box.

c. Display system ID

The system ID is displayed in the form "00.000.000".

d. Display target device ID

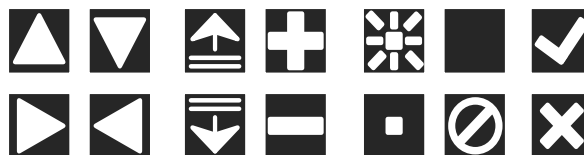
The current target device ID is displayed.

e. Display name of the target device

- The name of the target device is displayed.
- f. Display device ID**
The local device ID of the radio-controlled handheld transmitter RE 6900 is displayed.
 - g. Display device name**
The locally assigned device name of the radio-controlled handheld transmitter RE 6900 is displayed.
 - h. Display channel**
The frequency channel used for the radio-controlled handheld transmitter RE 6900 is displayed.
 - i. Display RX GPIO [dec]**
The received function inputs of the remote-controlled radio-controlled safety module UH 6900 are shown as a decimal value.
 - j. Display TX GPIO [dec]**
The transmitted function outputs which are sent to the remote-controlled radio-controlled safety module UH 6900 are displayed as a decimal value.
 - k. Display RX power**
The received power is displayed (in dBm).
 - l. Display TX power**
The transmission power sent is displayed (in dBm).
 - m. Display keyboard level**
The current keyboard level is displayed. The keyboard level starts with the number 0.
 - n. Display maximum acceleration**
The maximum acceleration with respect to the g (g =acceleration due to earth's gravity) is displayed.
 - o. Display temperature**
The temperature is shown in degrees Celsius.
 - p. Display battery voltage**
The current battery voltage is displayed (in mV).
 - q. Display the voltage at the charging contacts**
The voltage of the charging contacts is displayed. The information is transmitted from the charger ZB 6900/200 to the radio-controlled handheld transmitter RE 6900 (in mV).
 - r. Display the frequency band**
The respective frequency band used is displayed (433, 869, 915) MHz.

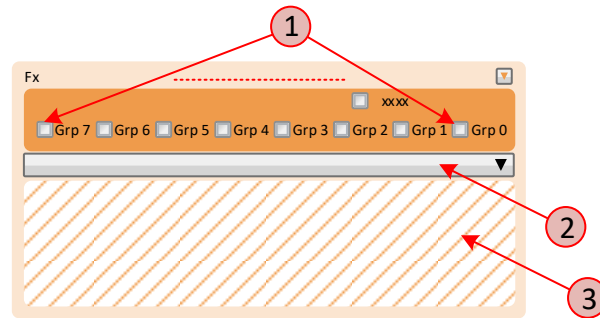
6.3.5.2 Icons

Selection:



6.3.5.3 Push button functions

The following field is displayed for each push button:



Each programming field contains the following elements:

1 Authorizations

The authorizations are activated or deactivated individually for the authorization groups. If a checkmark is shown in the field, this group can operate the function push button. Several authorization groups can be defined at the same time.

2 Function selection

The user can choose between the following functions:

a. Nothing

With the selection the push button does not have a function assigned.

b. Keyboard level

The configuration concerns changing the keyboard level.

c. Function output

The selection concerns transmitting and controlling the non-safe function outputs of the remote controlled radio-controlled safety module UH 6900.

d. Tilt settings

The selection concerns the configuration of the tilt sensor.

e. Other functions

The selection concerns further functional options such as switch-off.

3 Changed function field

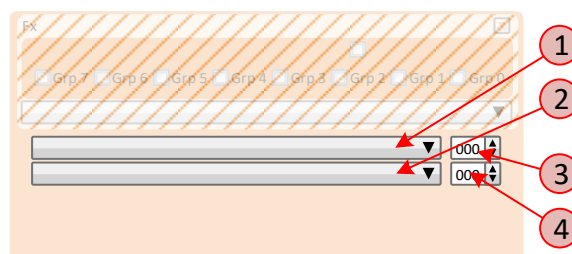
This field changes depending on the **function selection** 2

6.3.5.3.1 Function selection: “Nothing”

No function is assigned to the push button.

6.3.5.3.2 Function selection: “Keyboard level”

The keyboard level or the remote controlled target is changed using the following function. The function outputs of the remote controlled radio-controlled safety module UH 6900 are not changed.



1 Action concerning keyboard level

The following selection points are available. These refer to changing the keyboard level.

a. Retain keyboard level

The current keyboard level is not changed. This function makes sense if a target is to be changed on the same keyboard level, for example.

b. Next keyboard level

The keyboard level is increased by one. If the current keyboard level is the last keyboard level, the keyboard level is not further increased by one. The icon for the function is predefined and cannot be changed.

c. Previous keyboard level

The keyboard level is decreased by one. If the current keyboard level is level “0”, it cannot be decreased further. The icon for the function is predefined and cannot be changed.

d. Set keyboard level

The device moves directly to a keyboard level. If this selection is made, the field (3) is switched active and the user can enter the keyboard level.

② Action concerning target selection

In addition to the keyboard level, the target, i.e. the remote controlled radio-controlled safety module UH 6900 can also be changed. The function outputs are not changed.

a. Retain target

The current target is not changed. This function makes sense if the keyboard level is to be changed, for example, but the target is to remain the same.

b. Next target

The next target is selected. The order is defined by the settings “RE 6900 settings” – “Targets”. The index is increased by one in this case.

c. Previous target

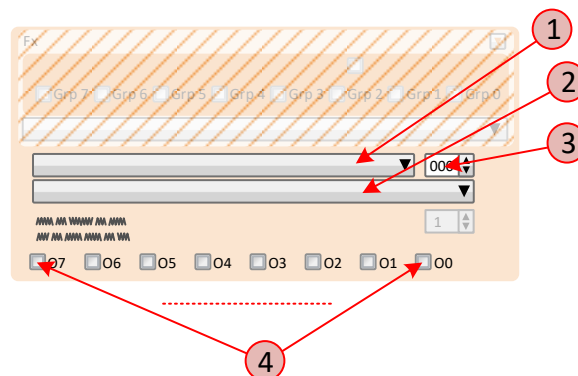
The previous target is selected. The order is defined by the settings “RE 6900 settings” – “Targets”. The index is decreased by one in this case.

d. Set target

The target address is changed directly. If this selection is made, the field ④ is switched active and the user can enter the index of the target. The device ID is not entered here, rather the index from “RE 6900 settings” – “Targets”

6.3.5.3.3 Function selection: “Function output”

The following window is used to define actions which concern the function outputs of the remote controlled radio-controlled safety module UH 6900. The icon for the function can be taken from the list of predefined icons.



① Target selection

In addition to changing the function outputs, the target of the remote controlled radio-controlled safety module UH 6900 can also be changed. This is required, for example, if different radio-controlled safety modules UH 6900 are to be remote controlled by each push button.

a. Retain target

The current target is not changed.

b. Set target

The target address is changed by pressing the button. If this selection is made, the field ③ is switched active and the user can enter the index of the target.

The device ID is not entered here, rather the index from “RE 6900 settings” – “Targets”. This function is useful, for example, when a different target is to be controlled by each push button.

② Function output

The action as to how the function outputs are to be changed is defined here. Individual function outputs or pattern functions can be outputted and changed.

a. Next pattern function +1

When the push button is released, the selected function outputs in the control box ④ are incremented or increased by one.

b. Previous pattern function -1

When the push button is released, the selected function outputs in the control box ④ are decremented or decreased by one.

c. Set pattern function (push button pressed) / retain pattern function (push button released)

When the push button is pressed, the selected function outputs are set in the control box ④. When the push button is released, the function outputs are retained and not deleted. If users wish to delete these function outputs, they must define the function “Set function (push button pressed) / zero (push button released)” on a further push button.

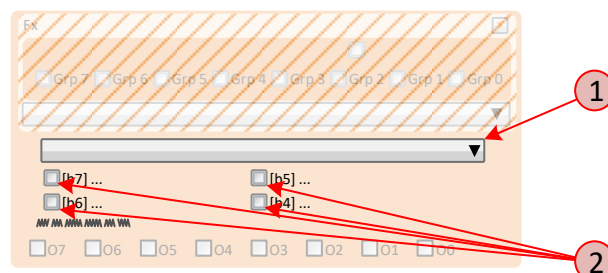
d. Set pattern function (push button pressed) / retain pattern function (push button released)

When the push button is pressed, the selected function outputs are set in the control box ④. When the push button is released, the function outputs are deleted.

④ Pattern function

The user defines the function outputs affected using the control field. The control field has 8 control boxes. Each control box represents a function output on the remote controlled radio-controlled safety module UH 6900.

6.3.5.3.4 Function selection: “Tilt settings”



① Tilt setting

This selection menu is used to define how the tilt control is activated.

a. Switch on tilt control

Tilt control is activated when the push button is released. It cannot be switched back off again by pressing the same push button again.

b. Switch off tilt control

The tilt control is deactivated when the push button is released.

c. Tilt control when push button pressed

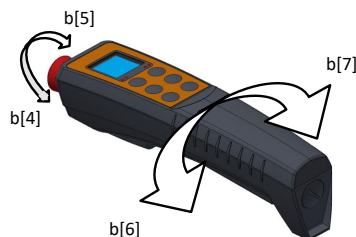
Tilt control is activated when the push button is pressed and remains activated as long as the push button remains pressed. When the push button is released, tilt control is deactivated.

d. Switch tilt control

With this configuration, the same push button is used to switch on and off. When released, the tilt control switches either on or off.

2 Activated tilts

The function outputs of the remote controlled radio-controlled safety module UH 6900 are switched depending on the tilt or rotation of the radio-controlled handheld transmitter RE 6900. The function outputs affected can be selected in the control field.



b[4] Tilt forward

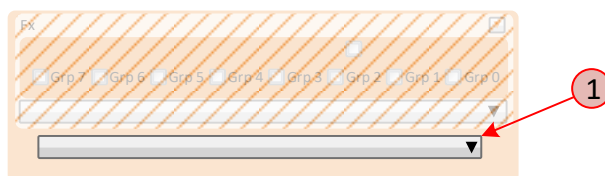
b[5] Tilt back

b[6] Rotate to the left

b[7] Rotate to the right

The switching angle is 22° related to the reference plane for rotation and tilting. The reference level is the level at which tilt control was activated.

6.3.5.3.5 Function selection: “Other functions”



1 Selection of the function:

a. Switch radio signal on

The radio signal is switched on and the radio-controlled handheld terminal connects to the remote-controlled radio-controlled safety module UH 6900.

b. Switch radio signal off

The radio signal is switched off.

c. Toggle radio signal on/off

The radio signal is switched on/off

d. Delete authentication

User authentication is deleted. The user has to log in again.

e. Switch off

The radio-controlled handheld transmitter RE 6900 is disconnected from the power supply. The radio-controlled handheld transmitter RE 6900 can be activated again by insertion in the charger ZB 6900/200 or by the start button.

f. Increase frequency channel

The frequency channel is increased by one.

g. Decrease frequency channel

The frequency channel is decreased by one.

h. Save settings globally

The settings are saved globally. The radio-controlled handheld transmitter RE 6900 saves the new frequency channel both locally as well as in all radio-controlled safety modules UH 6900.

i. Save settings locally

The new frequency channel is only saved locally.

j. Cancel

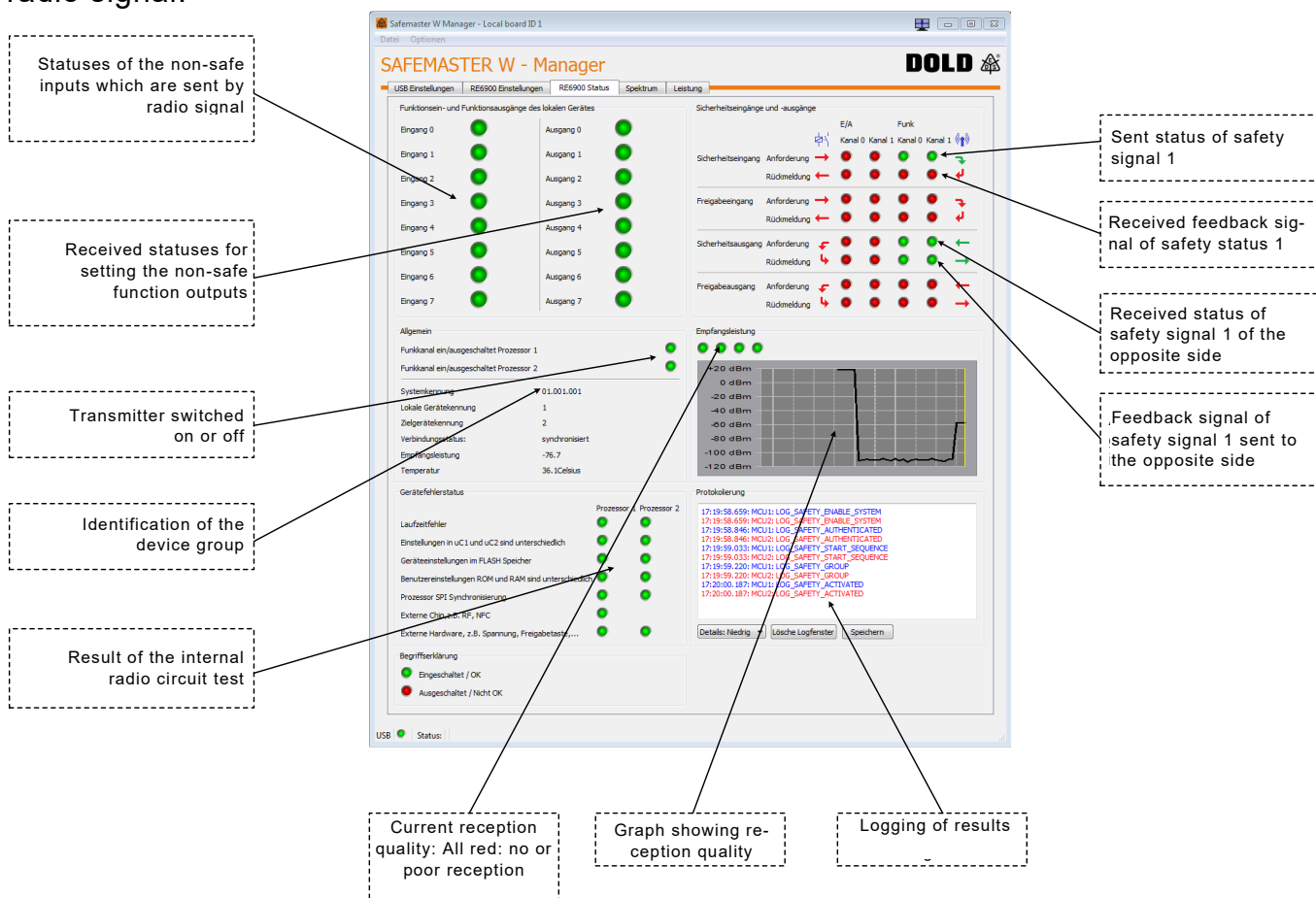
Nothing is saved and the user is returned to the first keyboard level

k. Switch-over of LCD and LEDs

The LCD display and the LEDs are switched on or off.

6.4 Window “RE 6900 status”

This window shows the current status of the radio operated module of the device which is connected to the PC via USB as well as the signal statuses received and sent by it via radio signal.

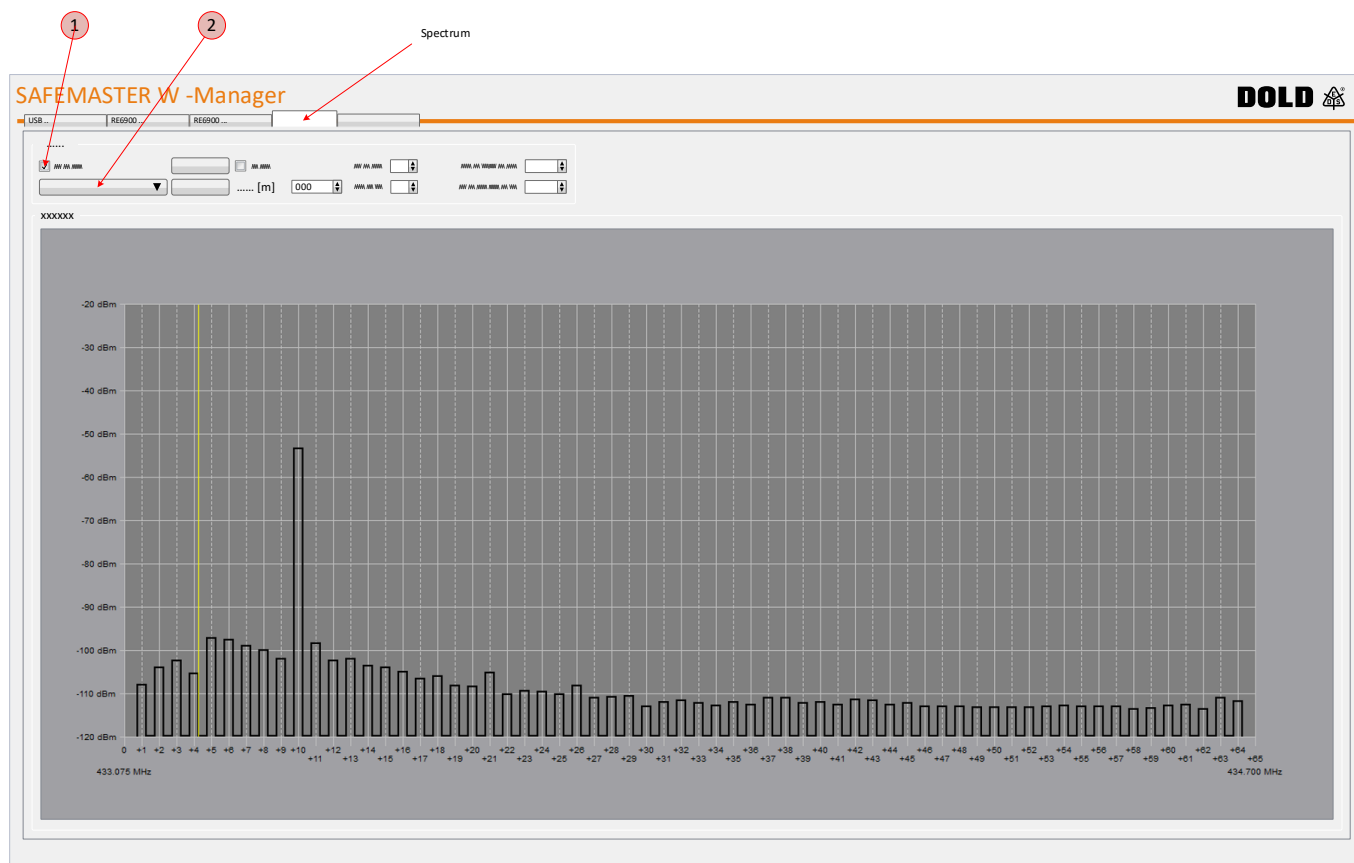


Furthermore, the internal log data of the radio-controlled handheld transmitter RE 6900 can be read out.

6.5 Window “Spectrum”

This window can be used to get a quick overview of channels that are already occupied and that are still free in the current environment.

For this purpose, the radio-controlled module is set to a receive mode in which it scans the desired frequency range channel by channel and measures the received field strength.



The spectral analysis is started by the control field ①. The field ② can be used to choose between the operating modes of the spectral analysis:

- **Operating mode “Fast analysis”**

In the operating mode “Fast analysis” the channels defined by channel start and channel stop are scanned as quickly as possible. Here, one measurement per channel is performed on the exact channel frequency as well as on the left and right of it at a distance defined by the frequency step size (in Hz). The default value of 6250 Hz normally does not need to be changed. Likewise, the time per point value of 50 ms (corresponds to the measurement time per frequency value).

- **Operating mode “Detailed analysis”**

In the operating mode “Detailed analysis” the channels defined by channel start and channel stop are scanned and shown at a higher resolution. Here the frequency range is scanned with a fixed step size, which is also defined with the parameter frequency step size. Due to the lower speed of the measurement, it only makes sense to use this operating mode with a small number of channels to be considered.

In the example above, channel 10 is clearly occupied. Measured values below -90 dBm are usually noise or are caused by broadband transmitters of the neighboring channels.

6.6 Window “Power”

This window can be used both to indicate the received power from the locally connected radio-controlled handheld transmitter RE 6900 and the received power from the remote-controlled radio-controlled safety module UH 6900.

7 Troubleshooting

7.1 Troubleshooting and error codes radio-controlled handheld transmitter RE 6900

Any errors that occur in the radio-controlled handheld transmitter RE 6900 are shown both

on the display and by the two green LEDs (see chapter 4.2.12).

A unique error number is displayed per channel on the display.

Err uC1 053

Err uC2 012

In addition, this error number is also indicated by the two green LEDs flashing. The left LED1 shows the error code from channel 1 and the right LED2 the one from channel 2. The tens digit of the code number is shown by fast flashing, the ones digit by slow flashing.

Basically, a distinction can be made between 3 types of errors:

- System error, caused by defective hardware. In this case, the device either switches off automatically or has to be switched off manually (push button combination F1 & F4 or F2 & F3, see chapter 4.2.5). A restart may be possible, but usually the radio-controlled handheld transmitter RE 6900 has to be sent for repair.
- Temporary error, caused by measuring inaccuracies or unfavorable environmental conditions such as poor radio reception. In this case, it is recommended to first check the external conditions and possibly the configuration. The device should only be sent in for checking if the errors occur frequently.
- Configuration error, caused by a faulty configuration. In this case, it is usually sufficient to check the set parameters.

Independently of the type of error, the radio-controlled handheld transmitter RE 6900 goes into a safe state first in all cases or cannot even be started up.

uC1/uC2	Type	Comment
001	Processor in non-permitted state	System error, restart, repair necessary
002	Stack point error in the processor	System error, restart, repair necessary
003	Time error in the processor	System error, restart, repair necessary
004	Program code defective during program start	System error, restart, repair necessary
005	Internal memory defective	System error, restart, repair necessary
006	Processor register defective	System error, restart, repair necessary
007	Voltage supply fault	System error, restart, repair necessary
008	No response from the second processor	System error, restart, repair necessary
010	No communication to the radio chip	System error, restart, repair necessary
011	SPI error to the radio chip	System error, restart, repair necessary
012	External hardware fault	System error, restart, repair necessary
013	Wrong radio parameters	System error, restart, repair necessary
015	Self-test of acceleration sensors incorrect	System error, restart, repair necessary
016	Incorrect acceleration value	Temporary, poss. restart
017	No change to acceleration values	Temporary, poss. restart
018	Acceleration values of channels differ	Temporary, poss. restart
019	No elimination of error 017 and 018	System error, restart, repair necessary
020	Cyclical program test failed	System error, restart, repair necessary
021	Parameters in ROM defective	System error, restart, repair necessary
022	Parameters in RAM and ROM differ	System error, restart, repair necessary
023	Parameter programming	Temporary
024	Programming failed	Restart, reprogramming
025	Parameters differ between processors	Temporary, poss. restart
031	Faulty program run	System error, restart, repair necessary
050	Safety input: Synchronization error	Temporary, poss. restart
051	Safety input: Short-circuit	System error, restart, repair necessary
052	Safety input: Short-circuit to ground	System error, restart, repair necessary
053	Safety input: State machine	System error, restart, repair necessary
060	Safety process not called	System error, restart, repair necessary
061	Authentication failed	Temporary, poss. restart, check configuration
062	Timeout authentication	Temporary, poss. restart, check configuration

063	Safety input open	Temporary, check safety input
064	State machine error	System error, restart, repair necessary
065	Timeout for start sequence	Temporary, poss. restart, check radio reception
066	Timeout during data reception	Temporary, poss. restart, check radio reception
067	Several target device IDs in pair mode	Restart, check configuration
070	Wrong user command	Temporary, check configuration
080	UART connection error	Restart, UART is not used

7.2 Error codes charger ZB 6900/200

In the event of an error, the respective error code is indicated by the corresponding flashing of the yellow and green LEDs. The yellow LED represents the tens digit and the green LED the ones digit of the error number. The red LED shows which channel the error has occurred in, i.e. which controller (uC1 or uC2) is controlling the LEDs.

Basically, a distinction can be made between 2 types of errors:

- System error (caused by defective hardware): A restart may be possible by switching the power supply off and back on again, but usually the charger ZB 6900/200 has to be sent in for repair.
- Temporary error (caused by external influences): The device should only be sent in for checking if the errors occur frequently.

uC1/uC2	Type	Elimination
001	State machine error	System error, restart, repair necessary
002	Stack point error in the processor	System error, restart, repair necessary
003	Time error in the processor	System error, restart, repair necessary
004	Program code defective during program start	System error, restart, repair necessary
005	Internal memory defective	System error, restart, repair necessary
006	Processor register defective	System error, restart, repair necessary
007	24V voltage supply fault	System error, check voltage, repair
008	Charging current too high	System error, restart, repair necessary
009	Voltage supply fault of the channels	System error, restart, repair necessary
010	Charging voltage outside the range	System error, restart, repair necessary
011	Watchdog error	System error, restart, repair necessary
012	Charge current without handheld transmitter	System error, restart, repair necessary
013	Non-compatible handheld transmitter inserted	Temporary, insert correct handheld transmitter
020	Parameterization defective	System error, restart, repair necessary
021	Cyclical program test failed	System error, restart, repair necessary
022	Parameters in RAM and ROM differ	Temporary, poss. restart
023	Parameter programming	Temporary, poss. new pairing, restart
024	Programming failed	System error, repeat pairing, repair necessary
025	Parameters differ between processors	Temporary, poss. restart
031	Faulty program run	System error, restart, repair necessary
032	Deleting of the error failed	System error, restart, repair necessary
040	Synchronization error between processors	System error, restart, repair necessary
090	Timeout	System error, restart, repair necessary

8 Technical data

8.1 Radio-controlled handheld transmitter RE 6900

Radio – EU variants

Conformity:	EN 300 220
Carrier frequency:	UHF, modulated in frequencies (FM)
Channels:	64 channels in the 433 MHz frequency band 12 channels in the 869 MHz frequency band
Frequency range (license-free):	433.1000 ... 434.6750 MHz in the 433 MHz frequency band 869.7125 ... 869.9875 MHz in the 869 MHz frequency band
Maximum HF transmission power:	10 dBm (10 mW) in the 433 Hz frequency band 7 dBm (5 mW) in the 869 Hz frequency band
Range with free line of sight:	Approx. 250 m

NFC

Conformity:	EN 300 330
Frequency	13.56 MHz
Field Strength in 10 m distance:	-27.2 dBμA/m

Charging voltage at the contacts:

Nominal voltage U_N :	DC 24 V
Voltage range:	0.85 to 1.15 U_N at max. 5% ripple
Maximum charging power:	4.8 W

Three-step enabling switch

Test standard:	EN 60947-5-8
Mechanical service life:	10^5 (EN ISO 13849 Annex C Table C.1)
Permissible switching frequency:	Max. 1200 switching cycles / h
Force for positive opening:	60 N min.
Travel for positive opening:	4.7 mm
Actuation force:	200 N max.
Material handle cover:	NBR/PVC, silicon-free

Emergency-stop push button

Test standard:	EN 60947-5-1
B10d:	2.5×10^5
Mechanical service life:	5×10^5 switching cycles
NC contact:	Positive opening
In accordance with EN 60947-5-1, Annex K	

Typ. switch-on times at U_N:

Readiness for operation after power-on:	Max. 3 s
Automatic startup:	No operating mode with automatic startup
Operating modes "Pair mode"	
Manual start:	Max. 1 s
Automatic restart:	Max. 1 s
Operating modes "Group mode"	
Manual start:	Max. 1 s
Automatic restart:	Max. 1 s

Switch-off times (response time)

Switch-off via radio signal:	Max. 180 ms
Passive switch-off if radio signal interrupted:	Max. 500 ms

General data

Nominal mode of operation:	Permanent operation
Nominal power outside the charger:	360mW
Operating time in transmission mode	approx. 10 hours
Time between warning of low battery level and switch-off	approx. 30 minutes

Temperature range for radio-controlled handheld transmitter RE 6900 with display:

Discharging:	-10 ° ... +55 °C
Charging:	0 ° ... +45 °C
Storage temperature:	-10 ° ... +55 °C

Temperature range for radio-controlled handheld transmitter RE 6900 without display:

Discharging:	-20 ° ... +55 °C
Charging:	0 ° ... +45 °C
Storage temperature:	-20 ° ... +55 °C

Relative air humidity:	25 % to 75 %
Operating altitude:	-200 m to 3000 m above sea level

Rated impulse voltage:	(circuit to charging contacts) 800V EN 60 664-1
Degree of contamination:	1 EN 60 664-1
Degree of contamination (at the charging contacts):	2 EN 60 664-1
Overvoltage category:	III EN 60 664-1

EMC:

Interference suppression:	IEC/EN 61 326-3-1 Limit value class B EN 55 011
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Degree of protection:

Housing:	IP 65 EN 60 529
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Housing:

Material:	PA66-GF-FR
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Shock resistance 1

Test Ea EN 60068-2-27

Acceleration:	10 g
Impulse length:	16 ms
Type of shock:	Half-sine
Number of shocks per polarity and axis:	1000

Shock resistance 2

Test Ea EN 60068-2-27

Acceleration:	30 g
Impulse length:	11 ms
Type of shock:	Half-sine
Number of shocks per polarity and axis:	3

Vibration resistance 1

Test Fc EN 60068-2-6

Frequency range:	10 – 55 Hz
Amplitude:	0.5 mm
Vibration duration	5 min
Duration with resonance frequency or 55 Hz:	30 min
Number of vibrations (per axis):	3

Vibration resistance 2

Test Fc EN 60068-2-6

Frequency range:	10 – 150 Hz
Amplitude:	0.35 mm / 5 g
Frequency cycles:	20
Tuning speed:	1 octave/min

Climate resistance:

10 / 55 / 04 EN 60068-1

Net weight:

310 g

Device dimensions:Width x height x depth: 53 x 226 x 59
(in mm)

8.2 Charger ZB 6900/200

Supply voltage:

Nominal voltage U_N :

DC 24 V

Operation only permitted with SELV/PELV

Voltage range:

0.85 to 1.15 U_N at max. 5% ripple

Nominal consumption in charge state:

<4.8 W

Nominal consumption:

240 mW

Contact equipping

Type of contact:

Relays, 2 NO contacts for connection to UH 6900

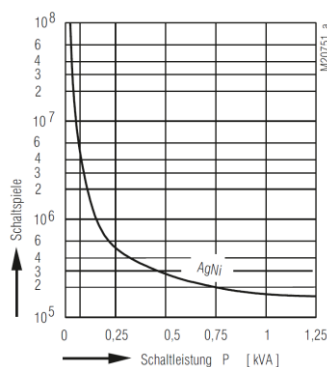
Contact material:

AgNi + 0.3 μ m Au

Electrical service life

After AC 230 V 5A

at 1 s On, 1 s Off



Contact service life

Mechanical service life

Mechanical service life:

10 x 10⁶ switching cycles

General data

Nominal mode of operation:

Permanent operation

Operation only permitted with SELV/PELV

Temperature range:

-20 ° ... +55 °C

Storage temperature:

-40 ° ... +80 °C

Relative air humidity:

25 % to 75 %

Operating altitude:

-200 m to 3000 m above sea level

Rated impulse voltage:

(circuit to supply) 800 V EN 60 664-1
 (circuit to ZB 6900/200 relay contacts) 1.5 kV EN 60 664-1
 (circuit to UH 6900 relay contacts) 6 kV EN 60 664-1

Degree of contamination:

2 EN 60 664-1

Overvoltage category:

III EN 60 664-1

EMC:

Interference suppression:

IEC/EN 61 326-3-1, IEC/EN 62 061

Limit value class B EN 55 011

Degree of protection:

Housing:

IP 40 EN 60 529

Housing:

Material:

PA12

Shock resistance 1	Test Ea EN 60068-2-27
Acceleration:	10 g
Impulse length:	16 ms
Type of shock	Half-sine
Number of shocks per polarity and axis:	1000
Shock resistance 2	Test Ea EN 60068-2-27
Acceleration:	30 g
Impulse length:	11 ms
Type of shock	Half-sine
Number of shocks per polarity and axis:	3
Vibration resistance 1	Test Fc EN 60068-2-6
Frequency range:	10 – 55 Hz
Amplitude:	0.5 mm
Vibration duration	5 min
Duration with resonance frequency or 55 Hz:	30 min
Number of vibrations (per axis):	3
Vibration resistance 2	Test Fc EN 60068-2-6
Frequency range:	10 – 150 Hz
Amplitude:	0.35 mm / 5 g
Frequency cycles:	20
Tuning speed:	1 octave/min
Climate resistance:	10 / 55 / 04 EN 60068-1
Terminal designation:	In accordance with EN 50 005
Max. conductor cross-section:	1 x 2.5 mm ² stranded wire with sleeve or 1 x 2.5 mm ² solid or 2 x 1 mm ² stranded wire with sleeve or 2 x 1 mm ² solid DIN 46 228-1/-2/-3/-4
Min. conductor cross-section:	0.25 mm ² stranded wire with sleeve or 0.2 mm ² solid DIN 46 228-1/-2/-3/-4
Conductor attachment:	Screw terminals
Attachment:	Screw attachment
Net weight:	250 g
Device dimensions:	
Without radio-controlled handheld transmitter RE6900	
Width x height x depth:	73.2 x 296 x 75 mm
With inserted radio-controlled handheld transmitter RE6900	
Width x height x depth:	73.2 x 296 x 89 mm

9 Key safety-related data

Requirement on the part of the safety function for the device		Interval for cyclical monitoring of the safety function
In accordance with EN ISO 13849-1	PL e, Cat. 3 or Cat. 4	1x per month
	PL d, Cat. 3	1x per year
In accordance with EN IEC 62061 IEC/EN 61508	SIL 3, HFT = 1	1x per month
	SIL 2, HFT = 1	1x per year
In accordance with EN 61511	SIL 3	1x per year

9.1 Radio-controlled handheld transmitter RE 6900

EN ISO 13849-1:		
Category	4	
PL:	e	
MTTF _d :	820.7	a (years)
DC _{avg} :	97.5	%
d _{op} :	365	Days/a
h _{op} :	24	h/day
t _{cycle} :	3600	s/cycle

EN IEC 62061, IEC/EN 61508, EN IEC 61511:		
Maximum SIL	3	EN IEC 62061
SIL	3	IEC/EN 61508, EN 61511
HFT ¹⁾	1	
DC _{avg} :	97.6	%
PFH _D :	4.6E-10	h ⁻¹
PFD _{avg} :	4.0E-5	Low Demand Mode
T ₁ ²⁾	175200	h
¹⁾ HFT = Hardware fault tolerance		
²⁾ Maximum usage duration		

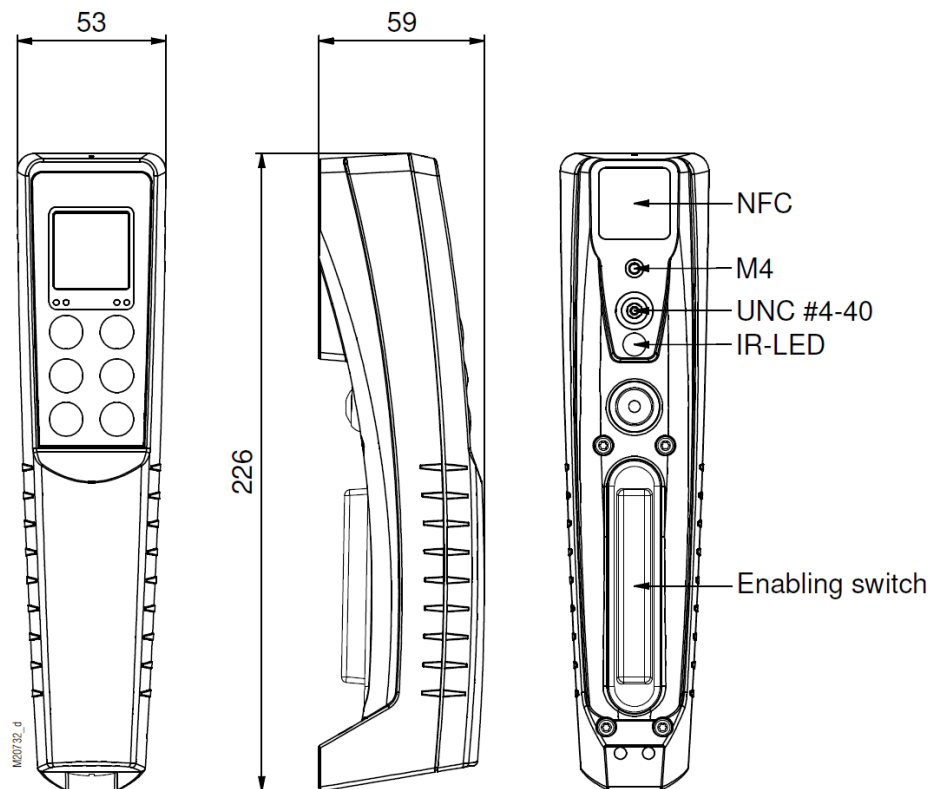
9.2 Charger ZB 6900/200

EN ISO 13849-1:		
Category	4	
PL:	e	
MTTF _d :	701.3	a (years)
DC _{avg} :	99.0	%
d _{op} :	365	Days/a
h _{op} :	24	h/day
t _{cycle} :	3600	s/cycle

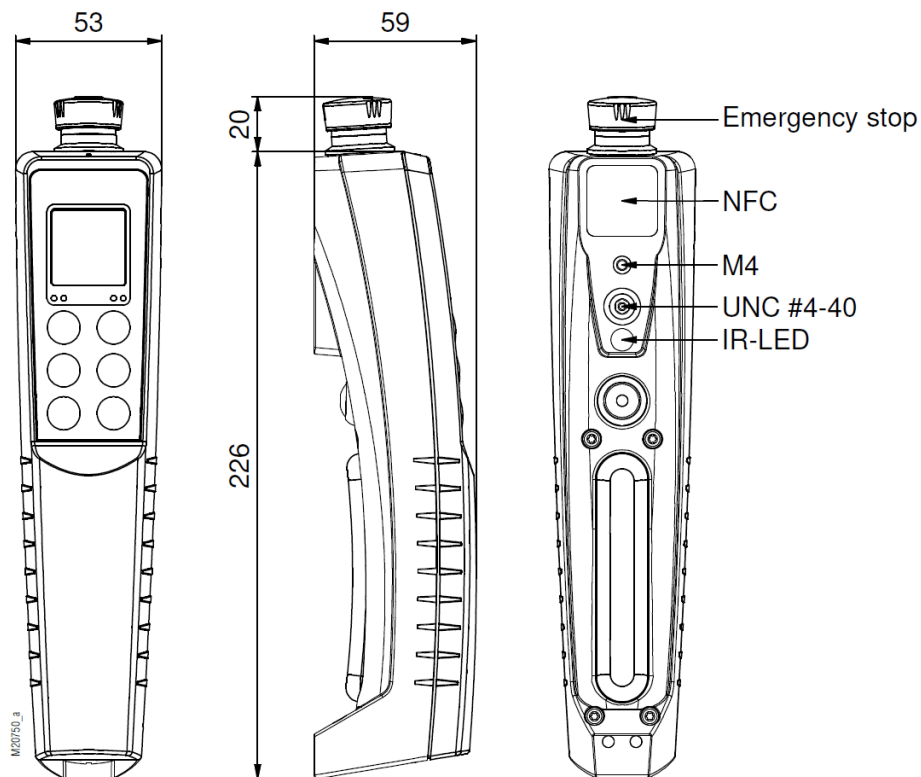
EN IEC 62061, IEC/EN 61508, EN 61511:		
Maximum SIL	3	EN IEC 62061
SIL	3	IEC/EN 61508, EN 61511
HFT ^{*1)}	1	
DC _{avg} :	99.0	%
PFH _D :	7.9E-11	h ⁻¹
PFD _{avg} :	4.9E-6	Low Demand Mode
T ₁ ^{*2)}	175200	h

^{*1)} HFT = Hardware fault tolerance

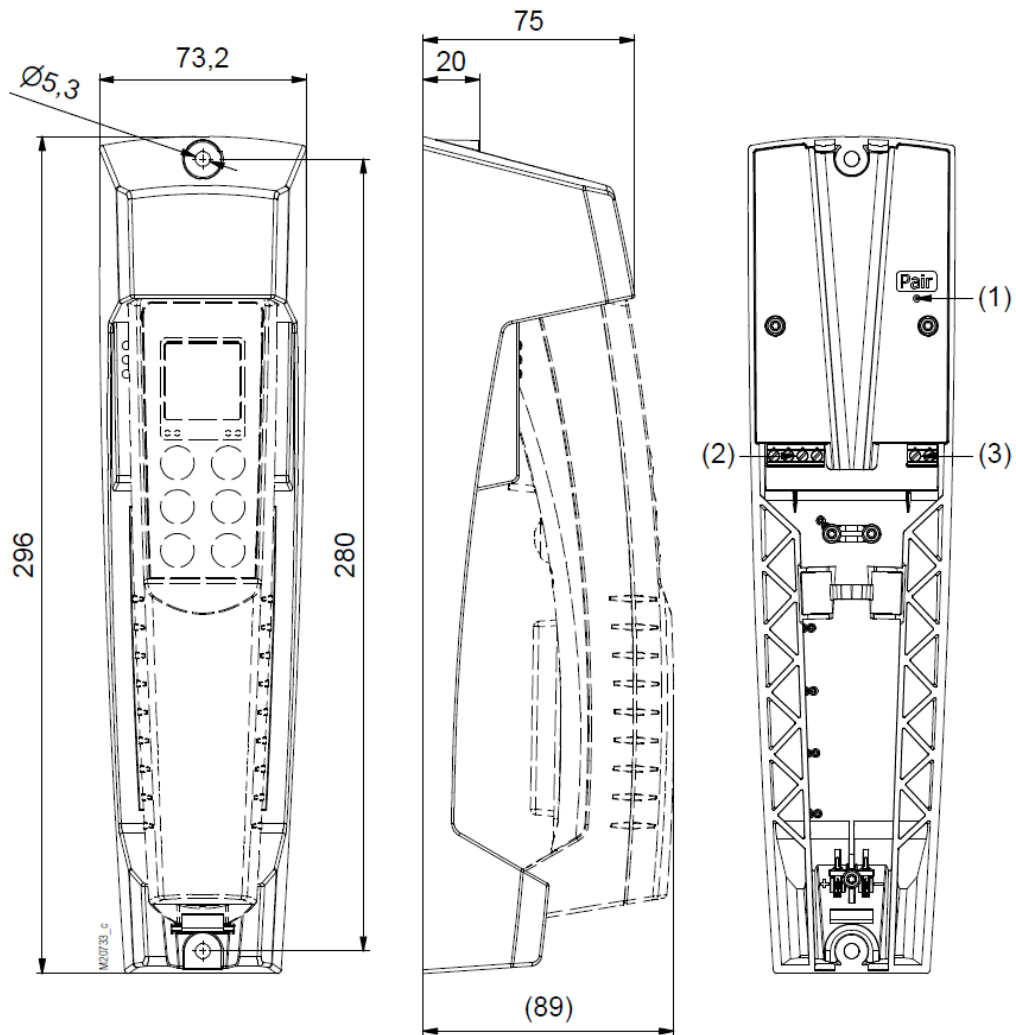
^{*2)} Maximum usage duration

10 Dimensional diagrams (in mm)**10.1 Radio-controlled handheld transmitter RE 6900**

Radio-controlled handheld module with enabling switch RE 6900/0..



Radio-controlled handheld module with emergency stop RE 6900/1..

10.2 Charger ZB 6900/200 (M20733)**Charger ZB 6900/200**

- (1) Small opening for the pairing push button
- (2) Terminals for connection to the radio-controlled safety module UH 6900
- (3) Terminals for connection of the supply voltage

11 Order information**11.1 Radio-controlled handheld transmitter RE 6900 and charger ZB 6900/200**

Type	Frequency	Variant	Designation	Article number
RE6900 / 0ABBB / 4000 / 00	433 MHz	EU	Radio-controlled enabling switch with LCD display	0069492
RE6900 / 0ABBB / 4001 / 00	869 MHz	EU	Radio-controlled enabling switch with LCD display	0069493
RE6900 / 0ABBB / 4002 / 00	915 MHz	US	Radio-controlled enabling switch with LCD display	0069494
RE6900 / 1ABBB / 4000 / 00	433 MHz	EU	Radio-controlled emergency stop with LCD display	0069495
RE6900 / 1ABBB / 4001 / 00	869 MHz	EU	Radio-controlled emergency stop with LCD display	0069496
RE6900 / 1ABBB / 4002 / 00	915 MHz	US	Radio-controlled emergency stop with LCD display	0069497
RE6900 / 00BBB / 4000 / 00	433 MHz	EU	Radio-controlled enabling switch without LCD display	0069498
RE6900 / 00BBB / 4001 / 00	869 MHz	EU	Radio-controlled enabling switch without LCD display	0069499
RE6900 / 00BBB / 4002 / 00	915 MHz	US	Radio-controlled enabling switch without LCD display	0069500
RE6900 / 10BBB / 4000 / 00	433 MHz	EU	Radio-controlled emergency stop without LCD display	0069501
RE6900 / 10BBB / 4001 / 00	869 MHz	EU	Radio-controlled emergency stop without LCD display	0069502
RE6900 / 10BBB / 4002 / 00	915 MHz	US	Radio-controlled emergency stop without LCD display	0069503

11.2 Accessories

Type	Designation	Article number
ZB6900 / 200	Charger	0069510
ZB6900 / 201 / sw	Electronic key black	0069627
ZB6900 / 201 / bl	Electronic key blue	0069628
ZB6900 / 201 / gn	Electronic key green	0069629
ZB6900 / 201 / rt	Electronic key red	0069630
ZB6900 / 201 / ge	Electronic key yellow	0069631
ZB6900/ 063	Infrared signal receiver	0068526
ZB6900 / 070	RE6900 leather holder for belts	0070357

11.3 Order example for variants

RE6900/ABBBB/CDEE/FF

00: Standard version

```
|-----E) Communication
00: Frequency band 433-434 MHz (EN 300 220)
01: Frequency band 869 MHz (EN 300 220)
02: Frequency band 915MHz (FCC 15.249)
```

|-----D) Wiring
0: No wiring

|-----C) Device type
4: Wireless

-----B) Operator panel
OB: Without display, with 6 push button keyboard
AB: With display, with 6 push button keyboard

-----A) Device variants
0: Enabling switch (4-pole)
1: Emergency stop (4-pole)

12 Maintenance and care

Regular checks

In addition to the checks carried out during commissioning, the following checks must be carried out at regular intervals and after each maintenance (at least once a year):

- User-friendliness, such as smoothness of the operating elements etc.
- Response times of the wireless safety system
- Cable laying of the radio-controlled safety module UH 6900 with the circuit of the machines
- Cable laying of the charger ZB 6900/200 to the radio-controlled safety module UH 6900.
- Proper function of active switch-off via radio signal.
- Proper function of passive switch-off if radio signal interrupted.
- Check radio-controlled handheld transmitter RE 6900 and charger ZB 6900/200 for: correct connection, undamaged housing, cleanliness and freedom from oxidation

Please also observe the interval checks specified in chapter 9 “**Key safety-related data**”.

13 Exclusion of liability and warranty

The suitability of the radio-controlled safety system and wiring must be checked separately by the user for each individual case. For this purpose, read the manual of the radio-controlled safety module UH 6900 completely.

Please note that our SAFEMASTER W is a radio-based system which could be affected by external radio interference. In the event of external interference pulses, the availability of

the system could be impaired by unintentional shutdown without limiting the safety for humans and machine.

We cannot accept any liability for this.

It is advisable to avoid possible double use of frequencies by means of an internal frequency usage plan.

14 CE Declaration of Conformity**EG - Konformitätserklärung****Declaration of Conformity****Déclaration de conformité européenne**

Hersteller: E. Dold & Söhne GmbH & Co. KG
Manufacturer: / Fabricant:
Anschrift: Bregstraße 18
Address: / Adresse: 78120 Furtwangen
 Germany

Produktbezeichnung: Funk-Not-Halt RE6900.xABBB/40yy/00 mit: x = 0, 1
 Funk-Zustimmtaster RE6900.x0BBB/40yy/00 yy = 00, 01
Product description: Radio-Controlled Emergency Stop inkl. ZB6900/200 with:
 Radio-Controlled Enabling Switch
Désignation du produit: Arrêt d'urgence radio avec:
 Poignée de validation radio

Das bezeichnete Produkt stimmt mit den Vorschriften folgender europäischer Richtlinien überein:

The indicated product is in conformance with the regulations of the following european directives:

Le produit désigné est conforme aux instructions des directives européennes:

Maschinenrichtlinie:	2006/42/EG	EU-Abl. L157/24, 09.06.2006
<i>Machinery directive: / Directives Machines:</i>		
RED-Richtlinie:	2014/53/EU	EU-Abl. L153/62, 22.05.2014
<i>RED directive: / Directives - RED:</i>		
EMV - Richtlinie:	2014/30/EU	EU-Abl. L96/79, 29.03.2014
<i>EMC - Directive: / Directives- CEM::</i>		
RoHS - Richtlinie	2011/65/EU	EU-Abl. L174/88, 01.07.2011
<i>RoHS -Directive: / Directives - RoHS:</i>		

Prüfgrundsätze:	EN ISO 13849-1:2023	EN 61508 Parts 1-7:2010
<i>Basis of Testing:</i>	EN ISO 13850:2015	
Lignes de contrôle:	EN 61326-1:2022	EN 61326-3-1:2018
	EN 62368-1:2014 + A11:2017 (RED Article 3.1a)	EN 301 489-1 V2.2.3 (RED Article 3.1b)
	EN 301 489-3 V2.3.1 (RED Article 3.1b)	EN 300 220-1 V3.1.1 (RED Article 3.2)
	EN 300 220-2 V3.1.1 (RED Article 3.2)	EN 300 330-1 V2.1.1 (RED Article 3.2)

Die Übereinstimmung eines Baumusters des bezeichneten Produktes mit der oben genannten Maschinenrichtlinie wurde bescheinigt durch:

Consistency of a production sample with the marked product in accordance to the above machiney directive has been certified by:

La conformité d'un échantillon du produit désigné aux directives machines susmentionnées a été certifiée par:

Benannte Stelle: TÜV Rheinland Industrie Service GmbH
Certification office: / l'organisme notifié: Am Grauen Stein, 51105 Köln
Nummer der benannten Stelle: NB0035
Number of certification office: / Numéro de l'organisme notifié:
Nummer der Bescheinigung: 01/205/6048.00/25
Certification number: / Numéro de certificat:
Ausstellungsdatum: 02.09.2025
Date of issue: / Date de délivrance:

Die Übereinstimmung eines Baumusters des bezeichneten Produktes mit der oben genannten RED-Richtlinie wurde bescheinigt durch:

Consistency of a production sample with the marked product in accordance to the above RED-directive has been certified by:

La conformité d'un échantillon du produit désigné aux directives-RED susmentionnées a été certifiée par:

Benannte Stelle: Cetecom Advanced GmbH
Certification office: / l'organisme notifié: Untertürkheimer Str. 6-10, 66117 Saarbruecken
Nummer der benannten Stelle: 0682
Number of certification office: / Numéro de l'organisme notifié:
Nummer der Bescheinigung: EU24-0154-01-TEC
Certification number: / Numéro de certificat:
Ausstellungsdatum: 17.10.2024
Date of issue: / Date de délivrance:

EG - Konformitätserklärung**Declaration of Conformity****Déclaration de conformité européenne**

**Für die Zusammenstellung der technischen Unterlagen
ist bevollmächtigt:**

For the compilation of technical documents is authorized:

Pour la composition des documents techniques est autorisé:



Stefan Müller, Entwicklungsleiter / R&D Manager

Rechtsverbindliche Unterschrift:

Signature of authorized person:

Signature autorisée :



Christian Dold, Produktmanagement / Productmanagement

Ort, Datum :

Furtwangen, 10.09.2025

Place, Date: / Lieu, date:

Diese Original - Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, beinhaltet jedoch keine Zusicherung von Eigenschaften. Die Sicherheitshinweise der Produktdokumentation sind zu beachten.

This original declaration confirms the conformity of the mentioned directives but does not comprise any guarantee of the product characteristics. The safety directives of the product documentation are to be considered.

Cette déclaration originale certifie la conformité des directives nommées mais ne comprend aucune garantie des caractéristiques du produit. Les directives de sécurité de la documentation du produit sont à considérer.



E. Dold & Söhne GmbH & Co. KG
 Bregstraße 18 • 78120 Furtwangen • Deutschland
 Telefon +49 7723 654-0 • Fax +49 7723 654356
 dold-relays@dold.com • www.dold.com