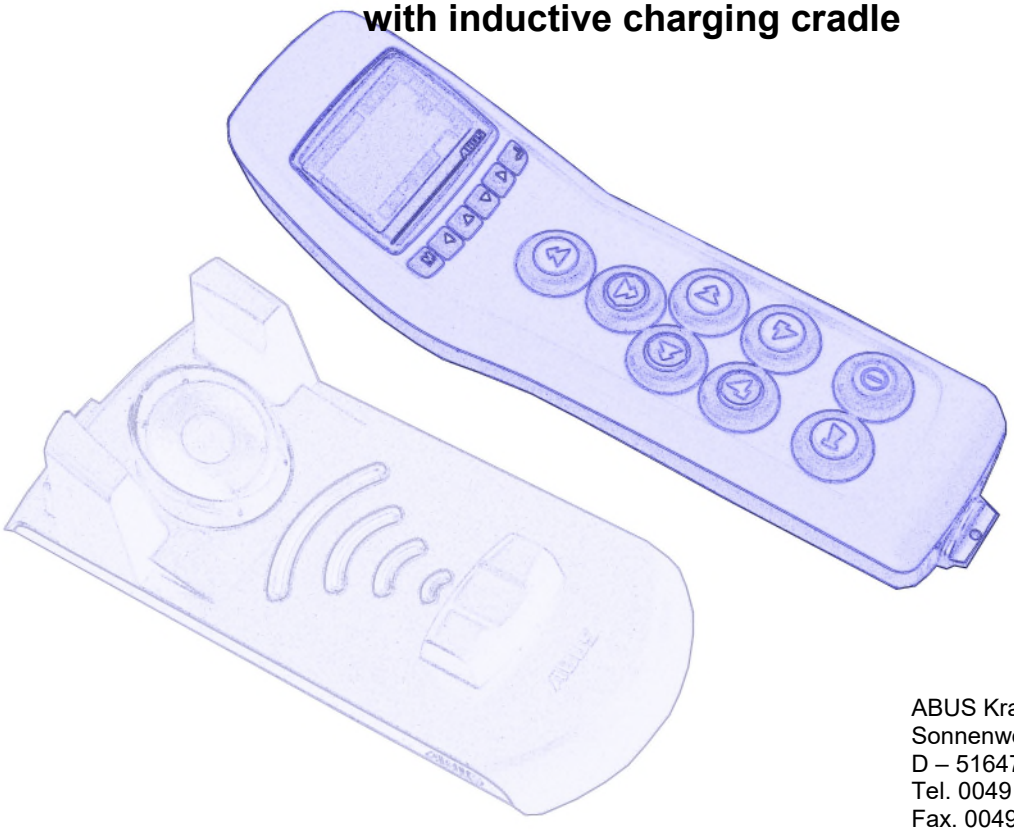
Product Manual

ABUS Radio Remote Control

ABURemote Button and ABURemote AC with inductive charging cradle



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AN 120184EN004 2021-03-04 Translation of the original operating instructions

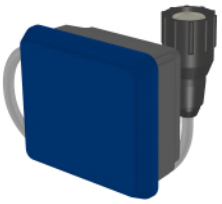
ABURemote: Various versions and options

This product manual is valid for ABURemote with its various versions and options. The work steps described and the technical data will differ according to the ABURemote version and the options it features. The parts of this product manual which do not apply to all ABURemote cranes, but are only applicable under certain conditions, are framed by a dashed box. At the start of the box, the versions and options for which the section is applicable are specified.

Receiver (model)

Receiver with relay

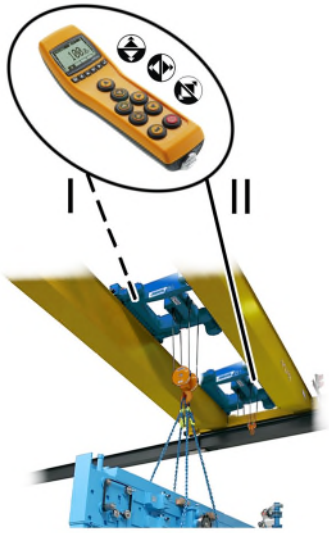
CAN bus receiver



Receiver for ABURemote AC

Two trolleys on one crane (optional)

Trolley selection I II
(The trolleys can be operated in alternation)



Trolley selection I I+II II
(The trolleys can be operated in alternation, or together)

In alternation: as shown at the left.
Joint operation: joint operation of both trolleys

Contents

1. General information

This section applies to anyone who lifts loads using the crane, performs work on the crane, or works nearby.

1.1 At the start

Using this product manual

The following symbols are used in this product manual:

Danger to persons!
This warning notice indicates hazards for persons.

Danger from electric shock!
This warning notice indicates hazards for persons due to incorrect handling of the electrical system and electricity.

Danger from falling suspended load!
This warning notice describes hazardous situations that can lead to the suspended load falling.

Notice of possible damage!
This notice describes situations in which a component could be damaged.

→ This is an instruction regarding an action and prompts you to perform a work step.

- This is the result of an action and describes what happens on the device.

– This is a list.

Only with...

A section that appears in a box framed by a dotted line is only applicable for certain types, versions or options. The condition to which the section applies is specified at the beginning in the heading “Only with...”.

Instructions for the product manual

Read the product manual through carefully before beginning work. Also be sure to observe additional product manuals for accessories and components.

Afterwards, keep the product manual available in the vicinity of the crane. It must be accessible to all who work with or on the crane.

In the case of reselling or hiring out, always provide the product manual together with the crane.

Proper use

The radio remote control ABURemote is used for wireless operation of ABUS cranes.

– ABURemote cannot be used on cranes from other manufacturers.

– Do not use ABURemote to operate other devices or machines.

– ABURemote AC is used for wireless operation of ABUS chain hoists. The receiver is thereby directly mounted on the chain hoist.

Regulations

The installation has been built and tested according to European standards, rules and regulations applicable at the time of its manufacture. The conventions applied during design and construction are specified in the Declaration of Conformity or the Declaration of Incorporation. The conventions must also be observed for installation, operation, inspection and maintenance, as must the applicable occupational health and safety regulations.

Danger to persons!
Non-observance of the regulations can result in the death of persons or serious accidents.

To ensure that the work can be performed safely, thorough instruction in regard to this product manual and the regulations is necessary.

Which provision applies in individual cases will greatly depend on the crane's use and the national regulations. Review and observe all applicable and current regulations, including the occupational health and safety regulations. Refer also to the Declaration of Conformity or Declaration of Incorporation.

Warranty

- ABUS assumes no liability for damages that were caused by improper use, inadequately trained personnel, incorrect performance of work, as well as any changes, reconstruction or other modification of the crane or crane components which were not approved by ABUS.
- Any warranty claim becomes invalid if components were modified without consent, the crane or crane components were installed, used or serviced in any way other than that described in this product manual, or if parts other than original ABUS replacement parts were used.
- Safe operation of the crane or crane components is only guaranteed if original ABUS replacement parts are used.
- The guarantee does not cover rechargeable batteries or the rubber parts on the buttons.

1.2 Instructions regarding safety

Observe these instructions for safe handling of the crane. Special hazard notices are located in the corresponding sections in which the danger arises.

- If the transmitter is damaged, it could send the wrong commands to the crane. The crane could then lift or travel unchecked. This could result in the death or injury of persons. Only use the transmitter if there are no visible signs of damage on it. Do not throw, drop or jolt the transmitter.
- If the crane operator stumbles or falls, the transmitter may be unintentionally activated. These unintended crane movements could result in the death or injury of persons. Only operate the crane from a safe position with secure footing.
- If the crane operator does not have an unobstructed view of the load, persons could be hit by the load and be killed or injured. Only operate the crane when the load, crane and operating range can all be seen. Otherwise, work together with a banksman.
- When changing location with the transmitter (particularly when turning around), the sensitivity for the travel direction of the crane and trolley changes. This could cause unintended operating commands to be sent in the wrong direction. These unintended crane movements could result in the death or injury of persons. When changing location, proceed with utmost caution. Observe the operating direction signs on the crane and the transmitter!
- If an activated and logged-in transmitter is set aside, unauthorised persons could use the transmitter to operate the crane. These crane movements could result in the death or injury of persons. Never leave an activated transmitter unattended.
- Rechargeable batteries can explode or burst if they are thrown on a fire, short-circuited or inserted the wrong way round in the transmitter.

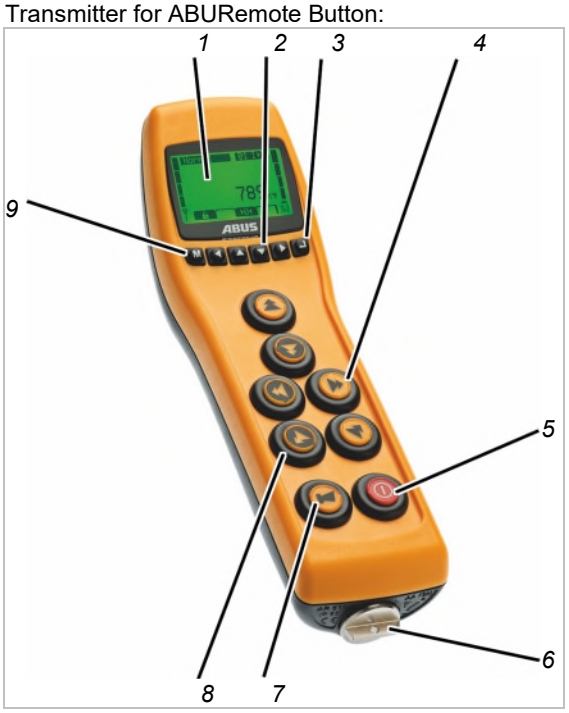
1.3 The Radio Remote Control

Description of the device

The radio remote control is comprised of:

- Transmitter for ABURemote
- Receiver
- Inductive charging cradle with power pack and wall bracket
- Protective case with carrying strap, belt clip and hand loop

Transmitter for ABURemote Button:

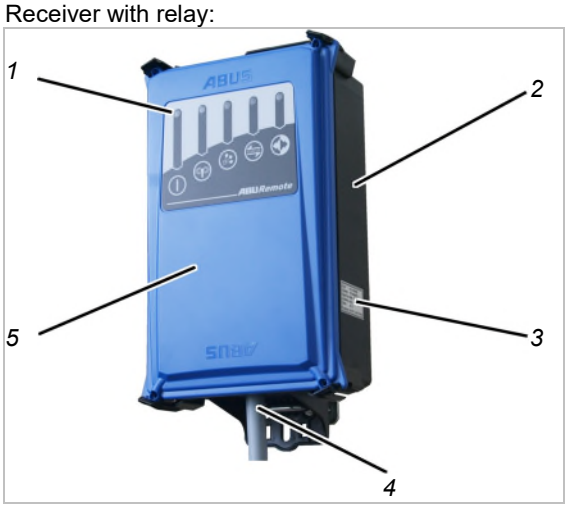


- 1: Display
- 2: Arrow buttons / Direct access buttons
- 3: ENTER
- 4: Buttons for crane travel, trolley travel, lifting/lowering

  Only for jib crane: Instead of the buttons for crane travel there are buttons for slewing.

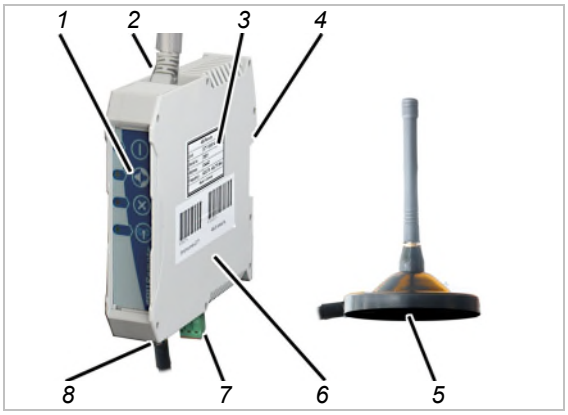
  Only for ABURemote AC: Instead of the buttons for crane travel there are dummy plugs.
- 5: On/Stop button
- 6: Cap of battery compartment
- 7: HORN button
- 8: Sleeve
- 9: MENU

Receiver with relay:



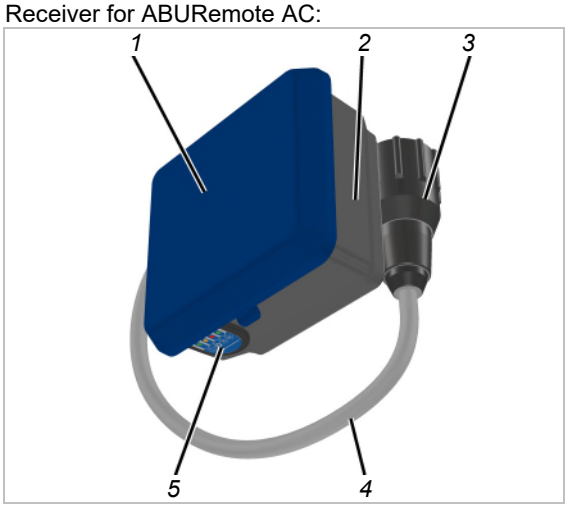
- 1: Status LEDs
- 2: Housing
- 3: Type plate
- 4: Connection cable
- 5: Cover

CAN bus receiver:



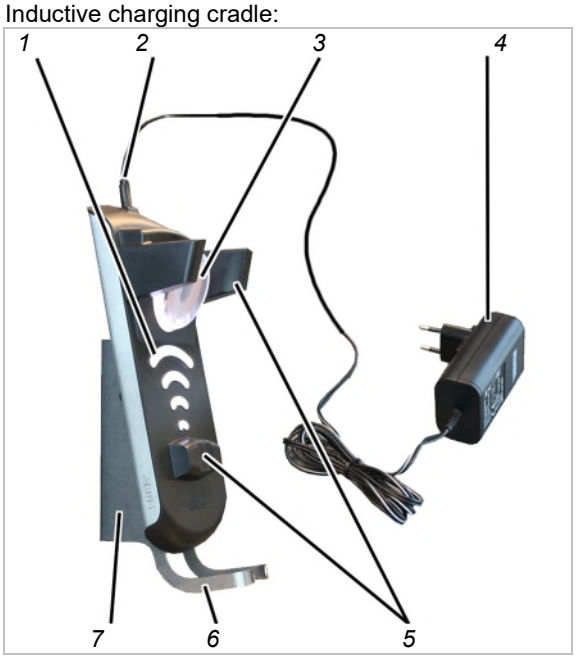
- 1: Status LEDs
- 2: Connection cable for CAN bus network (from above)
- 3: Type plate
- 4: Fastening for top-hat rail
- 5: Magnetic base antenna
- 6: Housing
- 7: Mains connection (from below)
- 8: Connection for magnetic base antenna

Receiver for ABURemote AC:



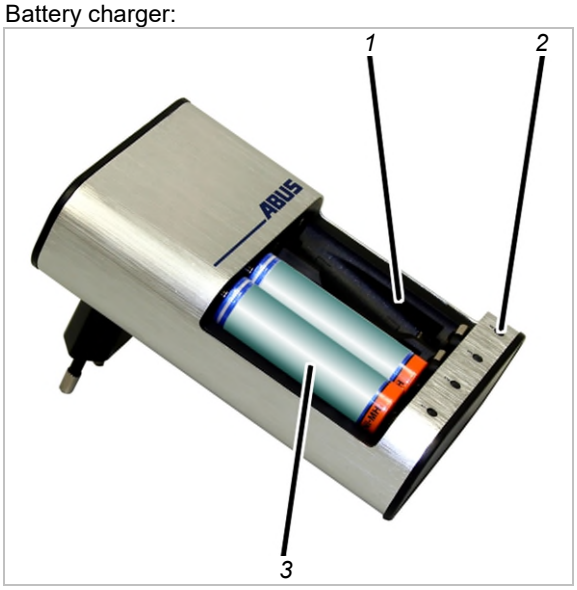
- 1. Housing cover
- 2. Housing base
- 3. Bayonet connector for chain hoist
- 4: Connection cable
- 5: Status LEDs

Inductive charging cradle:



- 1: Charge state gauge
- 2: Micro-USB connection for voltage supply
- 3: Induction coil for contactless battery charging
- 4: Power pack
- 5: Magnetic support
- 6: Holding bracket
- 7: Wall bracket

Battery charger:



- 1: Charging slots
- 2: Charge state gauge
- 3: Battery

Performance features

The ABURemote radio remote control:

- The ABURemote enables ABUS cranes to be operated remotely.
- ABURemote can be used to operate all the normal crane functions (crane travel/slewing, trolley travel, lifting/lowering) and, depending on the crane equipment, many additional functions.
- ABURemote is tailored especially for the components of ABUS cranes and operates together with the electronic modules of the crane directly (e.g. load indicator system LIS, ABUControl).
- ABURemote has a range of more than 100 metres, depending on, for example, the walls and objects between the transmitter and receiver. Additional factors which can limit the range include other devices with wireless technology, and ambient conditions such as weather and humidity.
- The transmitter features an ergonomic design for a comfortable grip. The crane functions can be operated with one hand. The buttons are large-sized and have a long stroke for safe operation.
- The transmitter has a housing made of impact- and scratch-resistant plastic, which makes it stable and robust.
- The transmitter houses an internal antenna which cannot break off if the transmitter is dropped.
- The transmitter features a display with coloured lighting which shows the current operating mode. The functions of the radio remote control are adapted to individual needs in the integrated menu.
- The current operating mode of the transmitter is also visualised through the background lighting in various colours.
- For cranes with the load indicator system LIS-SV or ABUControl crane control: The load attached to the crane is shown on the display during operation. The tare function can be operated using the transmitter.
- The transmitter is operated using three rechargeable AA batteries or three single-use AA batteries.
- ABURemote features semi-automatic frequency management. When switching on, or when the crane operator calls up “Freq. change” from the menu, ABURemote will search for a free radio channel for data transmission.

  For wireless technology XR2: The transmitter scans the 433 MHz frequency range and evaluates the current radio situation in its surroundings. Based on this, the transmitter selects the most optimal radio channel for the connection.
- At least 20 ABURemote units can be operated in parallel without causing interference. The actual number may be limited by other devices which use wireless transmission.
- ABURemote is designed so that the crane is deactivated in the event of a faulty signal or radio interference, preventing it from operating unchecked.
- ABURemote has a reliable emergency stop function. The transmitter continuously emits a ready signal to the receiver. If this ready signal is not detected for half a second (e.g. due to radio interference), the receiver switches to emergency stop. In addition, the transmitter emits an active stop signal and is deactivated when the On/Stop button is pressed.
- The transmitter features a “Standby” operating mode. The transmitter switches to “Standby” operating mode when no button is pressed within a preset time.
- ABURemote operates in the 433 MHz ISM frequency range.

  For wireless technology XR2: The data transmission is based on a 4 GFSK modulation. This enables a short signal propagation delay, in other words, a fast response of the crane.
- The receiver is available for delivery as receiver with relay or as CAN bus receiver. For chain hoists, a special chain hoist receiver can also be ordered.
- The receiver with relay has an inner-lying antenna and a compact construction, status indicator LEDs which are visible from a distance and can also be opened quickly with conventional tools.
- The CAN bus receiver is intended for top-hat rail assembly in the crane control. It has a connection for an external magnetic base antenna and is designed for use with the ABUControl crane control unit.
- The receiver for ABURemote AC is specially designed for the ABUS chain hoists ABUCompact GM2 to 8 and can be directly mounted on the chain hoist and connected.

With tandem control system:

- ABURemote can be used to control two cranes with a tandem control system. The transmitter is logged in on both cranes and controls them in a synchronised manner. The monitoring of limit switches and other safety functions is ensured by the control of the two overhead travelling cranes.
- It is possible to switch back and forth between the two cranes using the transmitter. Switching on the tandem control system temporarily enables control of an individual crane (e.g. for slinging the load or compensating height differences).

With two trolleys on one crane:

- For trolley selection I I+II II: It is possible to switch back and forth between the two trolleys using the transmitter. This allows the trolleys to be operated in alternation. Furthermore, joint operation can be selected which allows the trolleys to be operated together.
- For trolley selection I II: It is possible to switch back and forth between the two trolleys using the transmitter. This allows the trolleys to be operated in alternation.

Inductive charging cradle:

- The charging cradle with the integrated induction battery charger enables easy and contactless charging of the battery inside the transmitter.
- The charging cradle is a safe and designated storage location for the transmitter when not working with the crane.
- By means of its magnetic lock in the charging cradle, the transmitter can be positioned for an optimal energy transfer. At the same time, the transmitter can be quickly and easily removed.
- The transmitter can also be laid in the charging cradle with protective case, belt clip and hand loop.
- The separate wall bracket of the charging cradle enables space-saving mounting near the work area.
- The charging process of the battery is shown by a large charge state gauge on the charging cradle and in the display of the ABURemote.
- Using optional accessories (conventional battery charger and replacement battery), the transmitter can also be used in three-shift operation.

The battery charger:

- The battery charger can charge 1 to 4 rechargeable batteries (NiMH).
- The battery charger monitors each individual charging slot separately from the other.
- The battery charger monitors the battery temperature, prevents overcharging, detects defective batteries and detects any single-use battery inserted.
- The battery charger detects when the rechargeable battery is charged and switches over to trickle charging.
- With the separate battery charger and two sets of batteries, the transmitter can be used without interruption (e.g. in three-shift operation).

Technical data

Transmitter:

Electrical connection	
Operating voltage	3.0 to 5.0 V DC
Current consumption	60 to 85 mA
Transmission power	< 10 dBm
Weight (without batteries, protective case and hand loop)	400 g

Ambient conditions for operation	
Protection class	IP 65
Relative humidity	20 to 90%, non-condensing
Ambient temperature	-20 °C to +55 °C

Receiver with relay:

Electrical connection	
Operating voltage	42 V to 270 V AC or 24 V DC
Mains frequency	50/60 Hz
Current consumption	~100 mA
Voltage at the outputs	Equivalent to the operating voltage
Weight	1.1 kg

Ambient conditions for operation	
Protection class	IP 65
Relative humidity	20 to 90%, non-condensing
Ambient temperature	-20 to +70 °C

CAN bus receiver:

Electrical connection	
Operating voltage	24 V DC
Current consumption	< 100 mA
Max. transmission power	≤ 10 mW
Ambient temperature	-20 to +80 °C

Receiver for ABURemote AC:

Electrical connection	
Operating voltage	48 V AC
Current consumption	< 100 mA
Max. transmission power	≤ 10 mW
Ambient temperature	-20 to +80 °C

Battery charger:

Electrical connection	
Operating voltage	100 to 240 V
Mains frequency	50 to 60 Hz
Current consumption	Max. 145 mA

Inductive charging cradle:

Electrical connection	
Operating voltage	5 V DC
Current consumption	Max. 1500 mA
Frequency	130 kHz
Weight	750 g (without wall bracket)
Protection class	IP 20

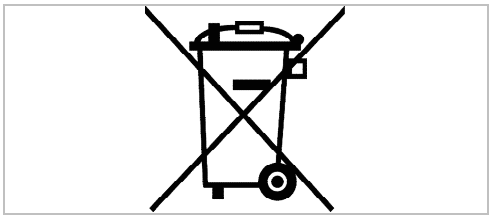
Power pack for inductive charging cradle

Electrical connection	
Operating voltage	100 to 240 V AC
Mains frequency	50/60 Hz
Current consumption	180 mA
Output voltage	5 V DC +/- 10%
Output current	1500 mA
Weight	138 g
Protection class	IP 40

1.4 Disposing of ABURemote

If ABURemote is to be disposed of:

- ➔ Dismantle transmitter and receiver as far as possible.
- ➔ Observe local regulations concerning disposal and recycling.
- ➔ Dispose of the individual parts sorted by material in an environmentally sound manner.
  - – Dispose of electronic components as scrap electronic parts.
  - – Dispose of cables and plug-in connections as scrap electronic parts.
  - – The housing and plastic parts should be recycled with plastic waste.
  - – Dispose of metal parts as scrap metal.



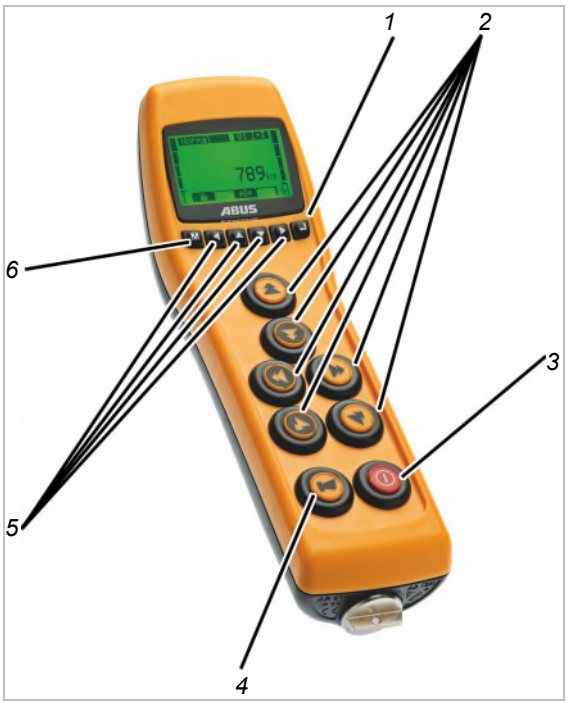
This product or electrical device may not be disposed of at the end of its service life with regular domestic waste.

Disposing of rechargeable batteries

- ➔ Do not dispose of rechargeable batteries with the household waste. Dispose of them in accordance with the locally applicable regulations.

1.5 Using the ABURemote menu

Functions of the buttons



- 1: ENTER:

  Opens menu items and confirms values. See “Using the ABURemote menu”, page 13.

- 2: Buttons:

  In “Normal” operating mode: Controls the crane. See “Lifting and lowering, trolley travel, crane travel”, page 38.

  In the menu: Menu operation (LIFT, LOWER, TROLLEY TRAVEL TOWARD LEFT and TROLLEY TRAVEL TOWARD RIGHT). See “Using the ABURemote menu”, page 13.

- 3: On/Stop button:

  Press of button: Triggers an emergency stop on the crane. See “Emergency stop”, page 33.

  Fully pressing and holding button: Switches transmitter on and off. See “Checking, switching on and releasing prior to beginning work”, page 36 and “Logging out and switching off the transmitter”, page 42.

- 4: HORN button:

  Fully pressed: Activates the horn. See “Horns”, page 39.

  Pressed halfway down together with TROLLEY TRAVEL TOWARD LEFT or TROLLEY TRAVEL TOWARD RIGHT: Selects one of the two trolleys or both trolleys. See “Operating a crane with two trolleys”, page 56.

  Pressed halfway down together with CRANE TRAVEL FORWARD and/or CRANE TRAVEL BACK: selects one of the two cranes or both cranes. See “Operating cranes in tandem operation”, page 58.

- 5: Arrow buttons / Direct access buttons:

  In the menu: Menu operation. See “Using the ABURemote menu”, page 13.

  In “Normal” operating mode: Can be assigned as direct access buttons with additional crane functions (e.g. tare, crane lighting). See “Setting the direct access buttons”, page 71.

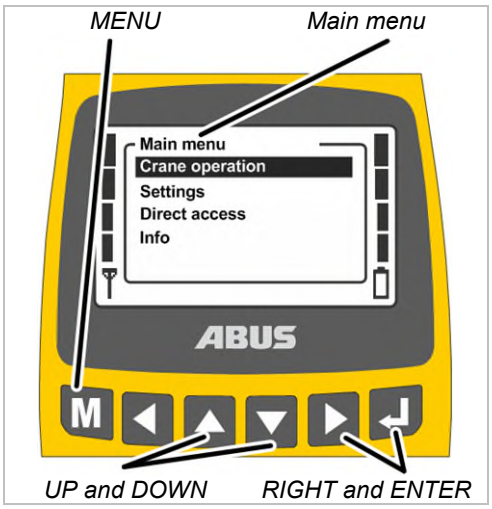
- 6: MENU:

  Press of button: Opens or closes the main menu. See “Opening and closing the menu and menu items”, page 14.

Opening and closing the menu and menu items

Many functions and settings can be conveniently selected from the menu.

To open the menu and menu items:



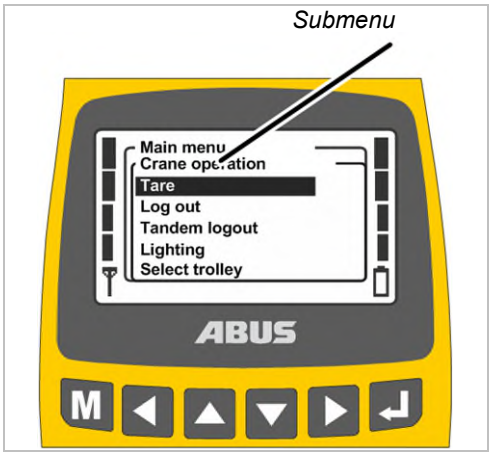
➔ Press MENU.

- The main menu is shown in the display.

➔ Select the desired menu item using the UP and DOWN arrow buttons.

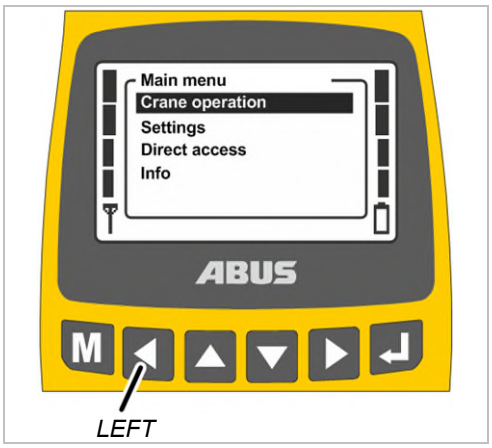
- The menu item selected is backlit in black.

➔ Open the selected menu item using the RIGHT arrow button or ENTER.



- The opened menu item or a submenu appears in the display.

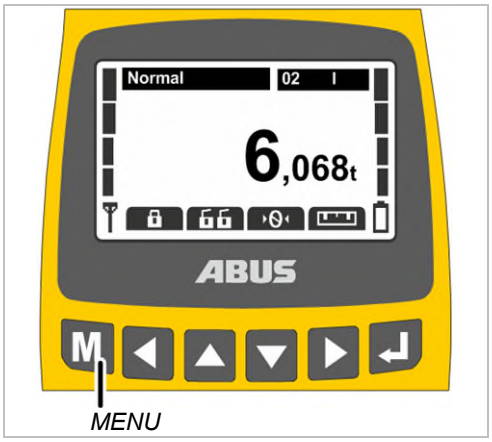
To switch to the previous menu or return to the main menu:



➔ Press the LEFT arrow button.

- The previous menu or main menu appears on the display again.

To quit the menu:



➔ Either:

Press MENU.

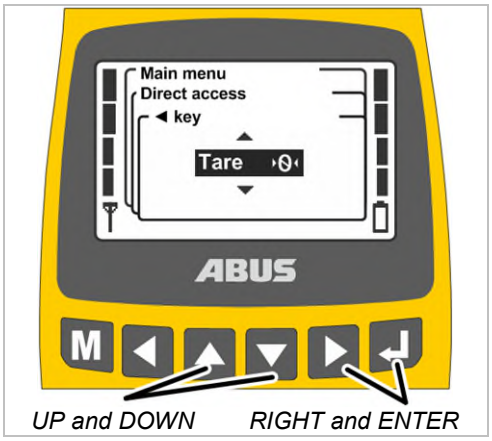
Or:

Press the LEFT arrow button several times.

- The transmitter closes the menu and returns to the previous operating mode.

Changing a value

Values can be selected or set for many functions.



- A window with the currently set or selected value appears on the display.

➔ If values can be selected or set at several places on the display: Select a place using the RIGHT and LEFT arrow buttons.

The place selected is backlit in black.

➔ Select or set the required value using the UP and DOWN arrow buttons.

➔ Confirm the selected or set value using the RIGHT arrow button or using ENTER.

- The value selected or set is now saved.

If the value does not need to be changed:

➔ Either:

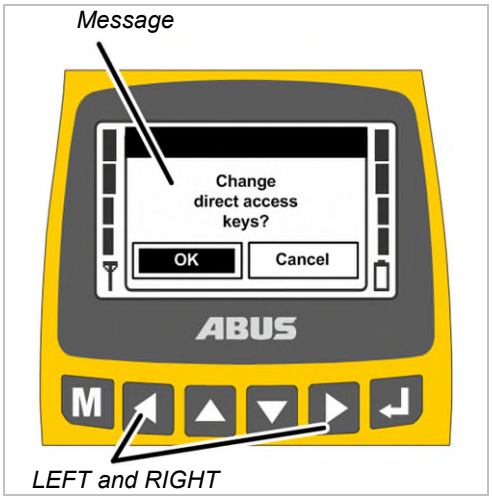
Use MENU to quit the menu.

Or:

Use the LEFT arrow button to change back to the previous menu.

Confirming or cancelling a message

Error codes or other information appear in the form of messages.

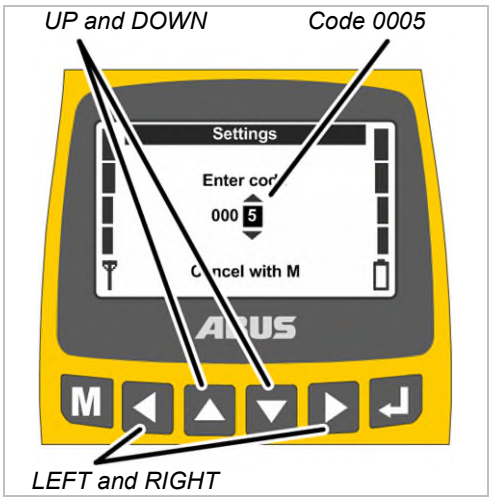


➔ Only with multiple buttons: Select the required button (backlit in black) using the LEFT and RIGHT arrow buttons.

➔ Press ENTER.

Entering the code or PIN

A number of menus are protected by a code to prevent any unintentional changes. Furthermore, the entire transmitter as well as certain functions can be protected by a PIN.



- The display shows the code query (protection of certain menus) or the PIN prompt (transmitter PIN code and protected functions).

➔ Select the digits to be set using the LEFT and RIGHT arrow buttons.

- The digit selected is backlit in black.

➔ Set the digits using the UP and DOWN arrow buttons.

➔ Set the code or PIN in this way.

– The code for the “Settings” menu is “0005”.

– The code for the service menu is “0055”.

– The transmitter PIN code (locking of the transmitter) can be activated and defined as required at any time. See “Setting PIN for transmitter PIN code and special functions”, page 81

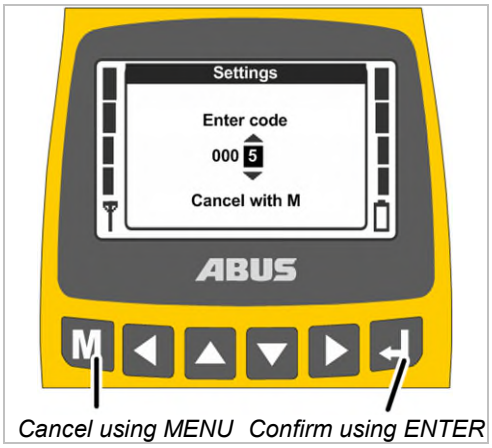
The factory default setting is “0000”.

– Only for protected functions: The PIN for protected functions (load limiting system and override of travel limit switches) can be set as required.

The factory default PIN for the protected function “Override travel limit switch” (PIN level 1) is “9001”.

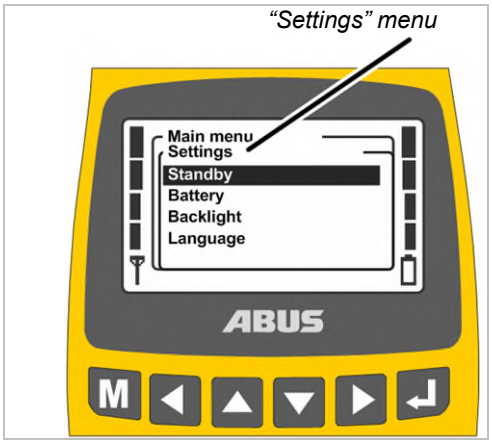
The factory default PIN for the protected load limiting system (PIN level 2) is “8201”.

The factory default PIN for a complete unblocking of all protected functions (PIN level 3) is “0190”.



➔ Press ENTER to confirm or MENU to cancel.

To confirm:

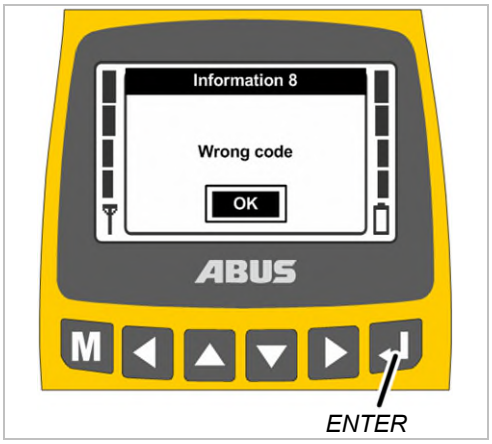


- The menu item selected appears in the display.

To cancel:

- The transmitter closes the menu and returns to “Normal” operating mode.

If an incorrect code or PIN was entered:



- The message “Wrong code” or “Wrong PIN” appears on the display.

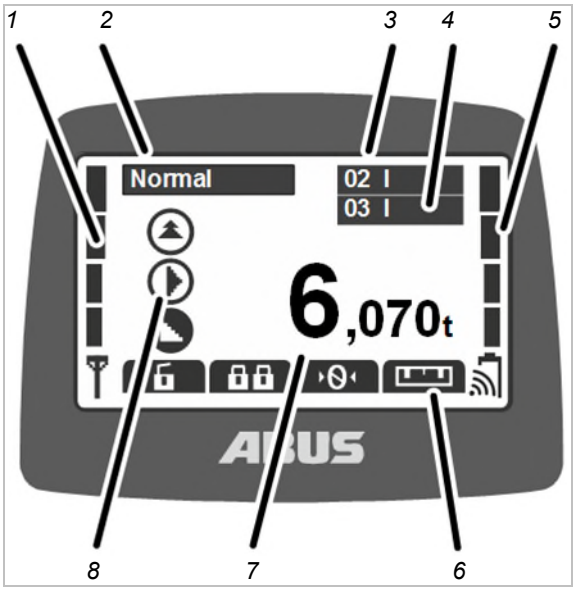
➔ Press ENTER.

- The code query or PIN prompt appears again on the display.

  The code or PIN can be entered incorrectly any number of times. The transmitter will not be disabled if the code or the PIN was entered incorrectly too many times.

Display in normal operating mode (transmitter)

In the “normal” operating mode:



– 1: Signal: The signal quality of the wireless connection appears on the display. The fewer bars shown, the poorer the signal quality.

– 2: Normal operating mode: The current operating mode, “Normal”, appears on the display.

– 3: “Crane number” and trolley: The display shows the crane number (01, 02, etc.) on which the transmitter is logged in.

  For a crane with one trolley, a “I” for trolley I is shown.

  For a crane with two trolleys, the selected trolley (I and/or II) is additionally shown. See “Operating a crane with two trolleys”, page 56.

  For a crane with one trolley, you can also switch between the displays for “I” or “II” on the transmitter, but only trolley I will be controlled.

– 4: “Crane number” and trolley in tandem operation: The display also shows the crane number of the partner crane on which the transmitter is logged in for tandem operation. See “Operating cranes in tandem operation”, page 58.

– 5: Charge state gauge: The remaining capacity of the rechargeable batteries is shown on the display. Four full bars represents a fully charged battery; four empty bars indicates the battery is empty.

  The symbol for radio waves above the battery indicates whether inductive charging of the battery is available for this transmitter.

– 6: Functions set for the direct access buttons: The symbols for the functions assigned to the direct access buttons (arrow buttons) appear on the display. See “Setting the direct access buttons”, page 71.

  Symbol with black backlighting: The function is available and can be selected.

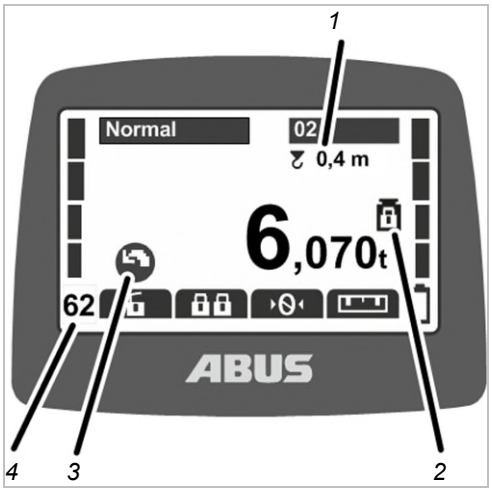
  Symbol with white backlighting: The function is currently unavailable.

  Symbol completely white: No function has been selected for this direct access button.

– 7: Load display: The current weight of the load suspended in the load hook appears in the display (optional). If the crane has no load measuring system (e.g. as with ABURemote AC), nothing will be displayed here.

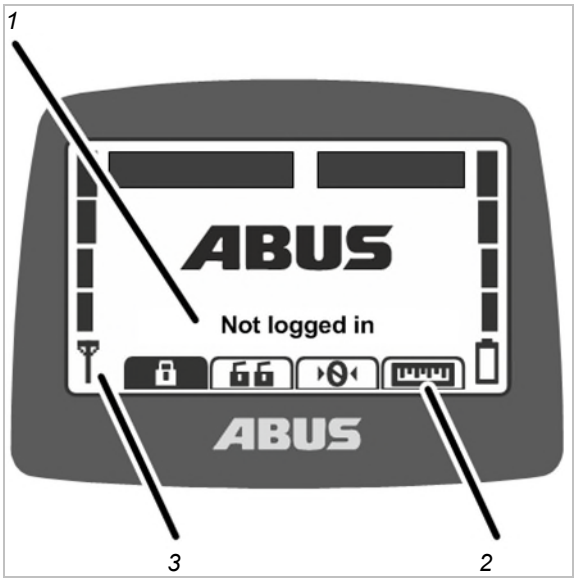
– 8: Symbols for crane travel, trolley travel, lifting/lowering: The corresponding symbol for the button appears on the display. See “Operating the crane”, page 38.

Additional symbols:



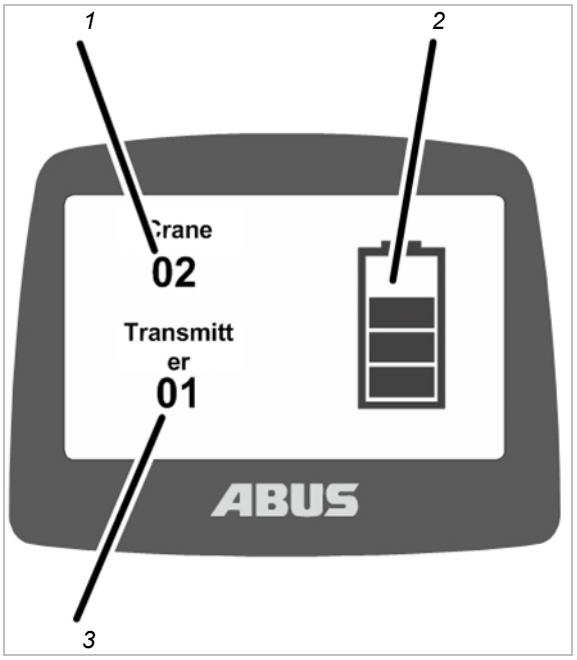
- 1: Sway control: The display shows whether the sway control is switched on and what length is set for the load lifting attachment. See “Switching sway control on and off”, page 49.
- 2: Protected load limiting system: The display shows whether the protected load limiting system is switched on (weight symbol with closed padlock) or switched off (weight symbol with opened padlock). See “Switching load limiting system on and off”; page 54.
- 3: Symbols for slewing: For a jib crane, the symbol display can be toggled to show the symbols for slewing instead of for crane travel. See “Setting the crane type for display symbols”, page 70.
- 4: Radio channel: The display shows the current radio channel. See “Setting the channel display”, page 78.

In operating mode “Not logged in”:



- 1: Operating mode: The current operating mode “Not logged in” appears on the display.
- 2: Direct access buttons: All direct access buttons (except “Log in”) are backlit in white (unavailable) on the display.
- 3: Signal quality: No bar appears on the display because the transmitter is not logged in to a crane.

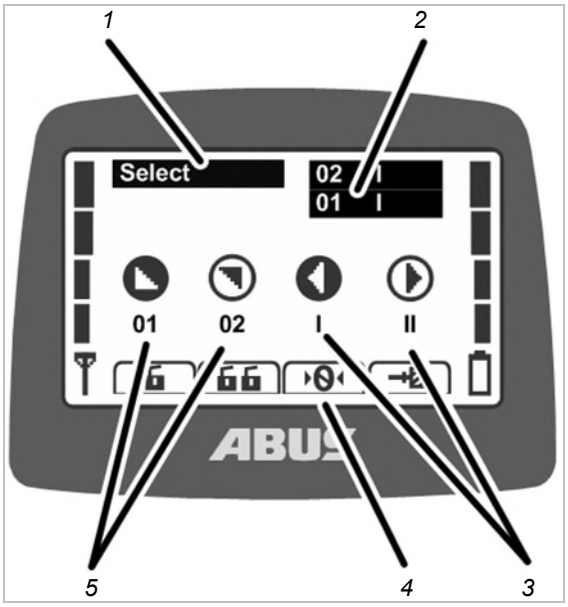
In operating mode “Standby”:



- 1: Crane number: The display shows the crane number (01, 02, etc.) on which the transmitter is logged in.

  If the transmitter is not logged in, the ABUS logo is shown here.
- 2: Charge state gauge: The remaining capacity of the rechargeable batteries is shown on the display. Four full bars indicate a full battery.
- 3: Transmitter number: The display shows the number of the transmitter.

In operating mode “Select”:



- 1: Operating mode: The current operating mode “Select” appears on the display.
- 2: Trolley selection and crane selection: The selected crane and selected trolley are shown on the display. See “Operating a crane with two trolleys”, page 56 and “Operating cranes in tandem operation”, page 58.
- 3: Trolley selection: only with two trolleys:

  Trolley I is selected in the “Select” operating mode (press HORN button halfway and hold it) with the TROLLEY TRAVEL TOWARD LEFT button.

  Trolley II is selected in the “Select” operating mode (press HORN button halfway and hold it) with the TROLLEY TRAVEL TOWARD RIGHT button.

  Trolley I+II is selected in the “Select” operating mode (press HORN button halfway and hold it) with the TROLLEY TRAVEL TOWARD LEFT and TROLLEY TRAVEL TOWARD RIGHT buttons.

  For a crane with one trolley, you can also switch between the displays for “I” or “II” on the transmitter, but only trolley I will be controlled.
- 4: Direct access buttons: All direct access buttons are backlit in white (unavailable) on the display.
- 5: Crane selection: only with tandem operation switched on:

  The first crane is selected in the “Select” operating mode (press HORN button halfway and hold it) with the CRANE TRAVEL FORWARD button.

  The second crane is selected in the “Select” operating mode (press HORN button halfway and hold it) with the CRANE TRAVEL BACK button.

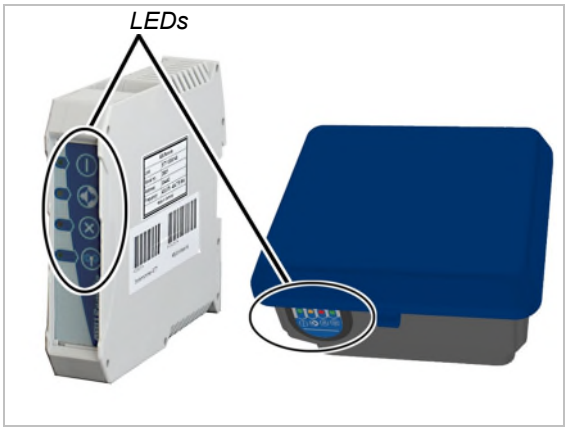
  The first and second cranes are selected together in the “Select” operating mode (press HORN button halfway and hold it) by simultaneously pressing the CRANE TRAVEL FORWARD and CRANE TRAVEL BACK buttons.

Display in normal operating mode (Receiver)

Receiver with relay:

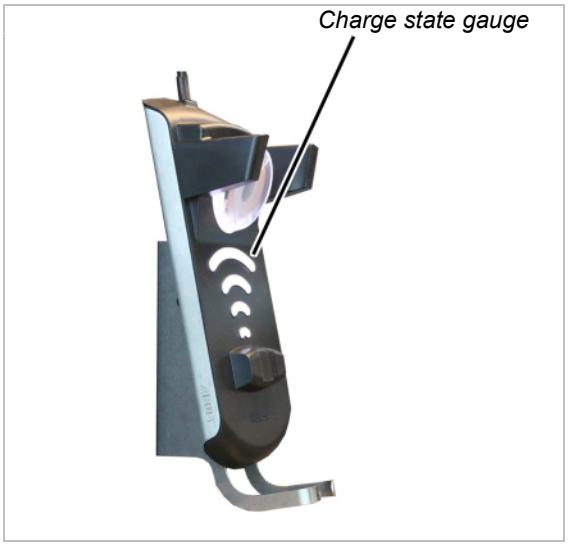
Symbol	Meaning
	Off: Receiver switched off Flashing: Problem with the operating voltage On: Receiver switched on
	Off: No wireless connection to transmitter Flashing: Receiver is searching for transmitter On: Wireless connection established
	Flashes once: Tandem operation deactivated Flashes twice: Tandem operation activated
	Off: Data connection disconnected Flashing: Data connection quality is poor On: Data connection established
	Off: Emergency stop pressed Flashing: Transmitter in “Normal” operating mode On: Crane travel, trolley travel, lifting/lowering button pressed

CAN bus receiver and receiver for ABURemote AC:



Symbol	Meaning
	Off: Receiver switched off Flashing: Problem with the operating voltage On: Receiver switched on
	Off: Emergency stop pressed Flashing: Transmitter in “Normal” operating mode On: Crane travel, trolley travel, lifting/lowering button pressed
	Off: Receiver operating fault-free Flashing: Error in the emergency stop function On: Error in the CAN bus network
	Off: No wireless connection to transmitter Flashing: Receiver is searching for transmitter On: Wireless connection established

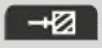
Display in operating mode (charging cradle)



Charge state gauge:

- Lights up white: Charging cradle is switched on and ready for operation
- Lights up red: Transmitter is inserted and rechargeable batteries are charging.
- Lights up green: Transmitter is inserted and rechargeable batteries are fully charged.
- Flashes red: Fault during charging procedure. See “Fault indicators of charging cradle”, page 96.

1.6 Overview of main menu

Menu item	Menu item	Functions	Direct access button	See
“Crane operation”	“Tare”	Set load display to zero		“Tare”, page 48.
	“Log in”	Log in the transmitter on the receiver.		“Checking, switching on and releasing prior to beginning work”, page 36.
	“Log out”	Log out the transmitter from the receiver.		“Logging out and switching off the transmitter”, page 42.
	“Tandem login”	Log in the transmitter on the second crane for tandem operation.		“Operating cranes in tandem operation”, page 58.
	“Tandem logout”	Log out the transmitter from the second crane in tandem operation.		“Operating cranes in tandem operation”, page 58.
	“Lighting”	Switch the crane lighting on and off.		“Switching the crane lighting on and off”, page 48.
	“Sway control on”	Switch on the sway control and set the length of the load lifting attachment.		“Switching sway control on and off”, page 49.
	“Sway control off”	Switch sway control off.		“Switching sway control on and off”, page 49.
	“Select trolley”	Switch between trolley I, trolley II and trolley III	(not available)	“Operating a crane with two trolleys”, page 56.
	“Select crane”	Switch between the first and second crane in individual operation and tandem operation.	(not available)	“Operating cranes in tandem operation”, page 58.
	(not available as menu item)	Override travel limit switch of a bypass control.		“Overriding travel limit switch of a bypass control”, page 51.
	“Sup.pre.lift on”	Switch on super-precision lifting on the wire rope hoist.		“Switching super-precision lifting on and off”, page 53.
	“Sup.pre.lift off”	Switch off super-precision lifting on the wire rope hoist.		“Switching super-precision lifting on and off”, page 53.
	“Freq. change”	Allow the transmitter to search for a new radio channel.		“Changing the radio channel”, page 40.
	“Teach-In”	Perform teach-in with an electronic hoist limit switch.		“Performing teach-in with an electronic hoist limit switch”, page 51.
	“Positioning”	Approach positions of a positioning control.		“Positioning”, page 52.
	“Option 1” to “Option 6”	Switch additional functions (1 to 6).		“Using additional functions on the crane with direct access buttons”, page 55

Menu item	Menu item	Functions	Direct access button	See
“Settings”	“Battery”	Displaying the remaining battery charging time and set the alarm		“Displaying the remaining battery time and setting the alarm”, page 66.
	“Transmitter no.”	Set the number of the transmitter which will be shown on the display.		“Setting the transmitter no. and crane no.”, page 68.
	“Crane no.”	Set the number of the crane which will be shown on the display.		“Setting the transmitter no. and crane no.”, page 68.
	“Standby”	Set the time which elapses before the transmitter changes to “Standby”.		“Setting standby”, page 65.
	“Backlight”	Set the display light		“Setting the display light”, page 67.
	“Language”	Select the language for menus and messages.		“Setting the language”, page 69.
	“Crane type”	Select the crane type (overhead travelling crane or jib crane) for display symbols		“Setting the crane type for display symbols”, page 70.
“Direct access”	“◄ key”	Select the assignment of the direct access button.		“Setting the direct access buttons”, page 71.
	“▼ key”	Select the assignment of the direct access button.		“Setting the direct access buttons”, page 71.
	“▲ key”	Select the assignment of the direct access button.		“Setting the direct access buttons”, page 71.
	“► key”	Select the assignment of the direct access button.		“Setting the direct access buttons”, page 71.
“Info”		Display the electronic type plate		“Displaying transmitter information”, page 73.

1.7 Overview of service menu

Menu item	Menu item	Functions	Access to menu item	See
“Radio”	“Channel”	Activate automatic search for a free radio channel or set a fixed radio channel.	With transmitter logged out or logged in	“Setting the radio channel”, page 74.
	“Channel range”	Limit the automatic search for a free radio channel to certain radio channels	Only with transmitter logged out	“Setting the channel range”, page 76.
	“Channel display”	Switch on display of the radio channel in “Normal” operating mode	With transmitter logged out or logged in	“Setting the channel display”, page 78.
	“Address”	Set the address of the receiver in the transmitter.	Only with transmitter logged out	“Setting the address (linking transmitter to a receiver)”, page 84.
	“Application”	Set the application of the transmitter (model and versions)	Only with transmitter logged out	“Setting the application of the transmitter”, page 86.
“Transmit power”	“Transmitter”	Set the transmission power of the transmitter	With transmitter logged out or logged in	“Setting the transmission power of transmitter and receiver”, page 77.
	“Receiver”	Set the transmission power of the receiver	Only with transmitter logged in	“Setting the transmission power of transmitter and receiver”, page 77.
“Operating hours”	“Transmitter”	Display operating hours counter of the transmitter	With transmitter logged out or logged in	“Show operating hours of transmitter and receiver”, page 79.
	“Receiver”		Only with transmitter logged in	“Show operating hours of transmitter and receiver”, page 79.
“Waiting time”		Set the waiting time after the logging in and the release signal for powering up the crane control	Only with transmitter logged in	“Setting the waiting time”, page 80.
“Set PIN”		Set PIN for transmitter PIN code and activate and set protected functions	With transmitter logged out or logged in	“Setting PIN for transmitter PIN code and special functions”, page 81.
“Deactivate PIN”		Switch off all PIN levels for transmitter PIN code and protected functions	With transmitter logged out or logged in	“Switching off all PIN levels”, page 83.

2. Installing and connecting

This section applies to anyone who works on the crane prior to its use

The end user of the crane is responsible for the proper qualifications of the commissioning personnel.

> ***Danger to persons!***
> Persons can be injured if the crane is incorrectly put into operation.
>
> If personnel other than that of the ABUS company are employed to perform the crane commissioning, it is the end user's responsibility to ensure that these persons are adequately qualified. Follow the procedures described here precisely.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

ABUS assumes no liability for damage due to incorrectly performed commissioning work done by unqualified personnel.

ABUS recommends having the commissioning work performed by the ABUS assembly team.

2.1 Checking the requirements

The following requirements must be met in order to install the radio remote control:

- A warning device (e.g. horn) must be available.
- The crane and trolley must feature a travel limit switch with a braking function and shut down function.

2.2 Planning the installation on the crane

➔ Prior to installation, plan where and how to install the receiver on the crane.

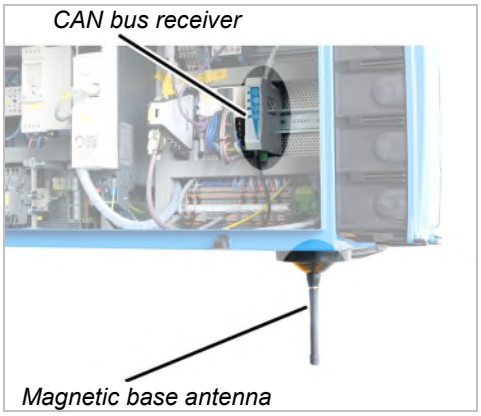
Planning the receiver attachment

For a wireless connection that is as stable as possible:

- The receiver must be positioned so that it can transmit freely in all directions. The receiver may therefore not be blocked by metal parts in its direct vicinity.
- The minimum clearance between the receiver and metal parts in any direction is 1 m.
- Plan the position of the receiver so that it can be connected to the crane panel using the connection cable supplied.
- The receiver must be positioned vertically and the connection cable must be guided downward out of the receiver.
- The receiver must be positioned so that the LEDs point toward the midpoint of the crane and are easy to read in the operating range of the crane.

Only with CAN bus receiver

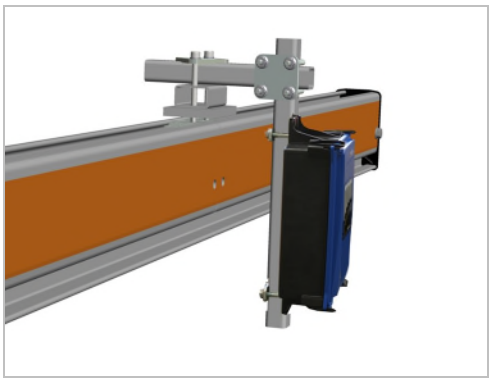
Example for the installation of the CAN bus receiver:



- The CAN bus receiver is installed in the crane panel. To provide a wireless connection that is as stable as possible, an external magnetic base antenna is connected and guided out of the crane panel.
- The instructions stated above apply to the installation of the magnetic base antenna.
- Attach the magnetic base antenna so that nothing becomes caught during crane travel or trolley travel.

Planning the receiver position

- Single girder travelling crane: The receiver should be fastened on the end carriage as shown in the illustration. The receiver should protrude downward under the main girder in order to be able to transmit freely in all directions.
- Double girder travelling crane: The receiver should be fastened between the two main girders as shown in the illustration. The receiver should protrude downward under the main girders in order to be able to transmit freely in all directions.
- Wall travelling crane: The receiver should be fastened on the middle end carriage as shown in the illustration. The receiver should hang at about the height of the lower end carriage of the wall travelling crane.



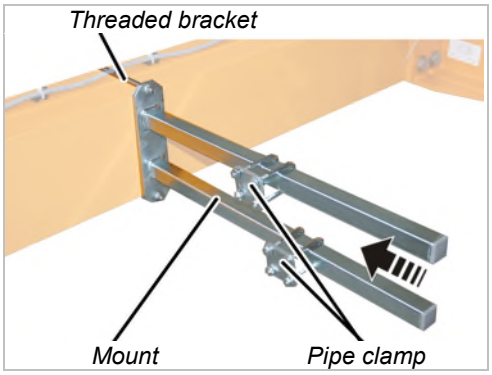
- HB system: The receiver should be fastened as shown in the illustration with a clamping unit in the profile head on the crane girder.

- Underslung travelling crane: The receiver should be fastened as shown in the illustration with clamping claws on the upper flange on the main girder.
- Jib crane: The receiver should be fastened as shown in the illustration with clamping claws on the upper flange on the jib arm.

2.3 Installing the receiver on the crane

The illustrations show the installation of the receiver on the end carriage of a single girder travelling crane. The installation on other overhead travelling cranes does not essentially differ.

Mount for installing the receiver



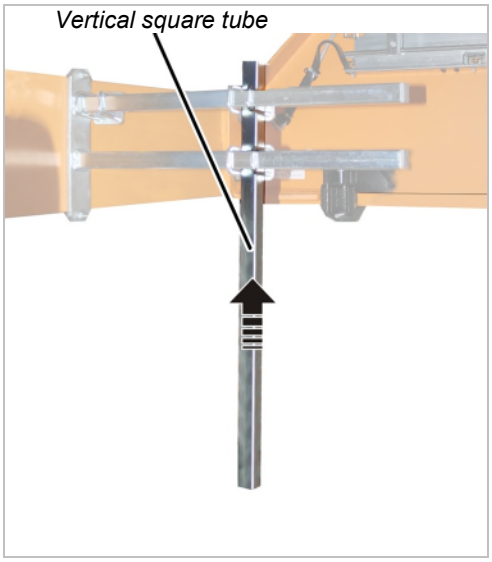
→ Attach the mount to the end carriage on which the crane panel is installed.

→ Bolt the mount onto the threaded bracket.

Threaded bracket	Tightening torque
M8	25 Nm
M10	50 Nm
M12	75 Nm

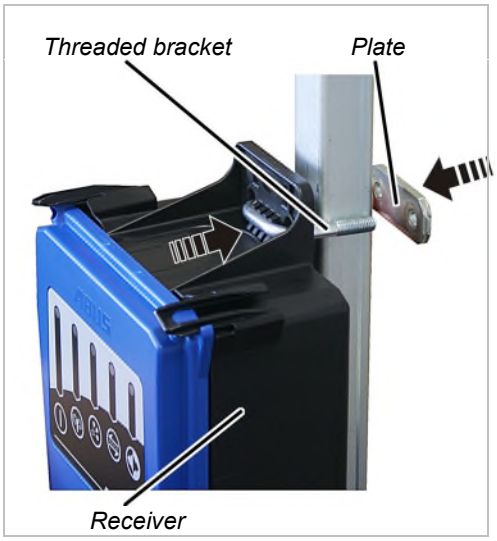
→ Slide on the pipe clamps (2x) and secure them.

Installing the square tube onto the mount



→ Screw the vertical square tube onto the mount using pipe clamps (2x). 15 Nm.

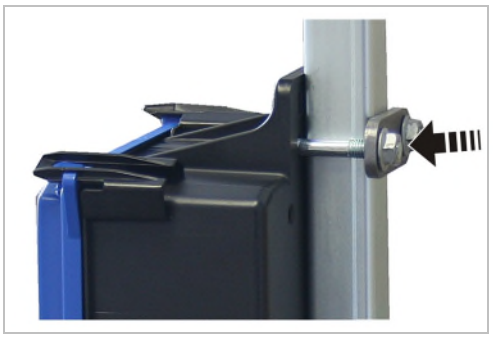
Installing the receiver on the square tube



→ Hold the receiver on the square tube.

→ Insert one threaded bracket each through the top and bottom of the housing.

→ Insert one plate onto each threaded bracket from the rear side.



➔ Tighten the threaded bracket with the rib nuts M8 (2 x per threaded bracket). 15 Nm.

2.4 Connecting the receiver on the crane

➔ Lay the connection cable to the crane panel.

➔ Fasten the connection cable in place using cable ties.

➔ Insert the connector in the socket X2 on the crane panel.

➔ Do not lay the CAN bus line and connection cable of the magnetic base antenna with kinks or bends of a small radius.

2.5 Installing the receiver on the chain hoist

For chain hoists for which only lifting and lowering as well as optional trolley travel is to be controlled, the radio remote control ABURemote AC is used. A compact receiver is then directly mounted on the chain hoist.

Checking the chain hoist control

The receiver for ABURemote AC can only be used on chain hoists with electronic control. Chain hoists with direct control cannot be controlled remotely using ABURemote AC.

Destruction of the receiver!
If the receiver for ABURemote AC is connected to a chain hoist with direct control by mistake, the receiver will be destroyed. Check the control carefully.

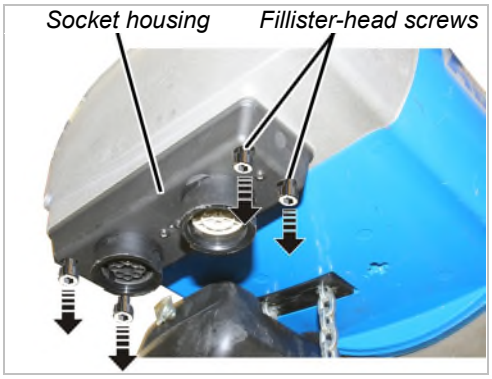
Pendant control direct control *Pendant control electronic control*

➔ Check whether the pendant control has a flat bottom part of housing for electronic control.

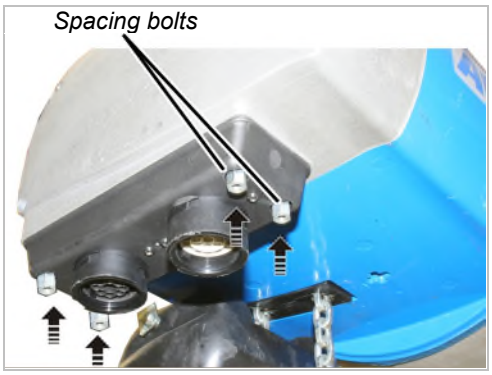
➔ Only put the receiver into operation if the bottom part of the housing of the pendant control is flat.

Mounting spacing bolts

If necessary:

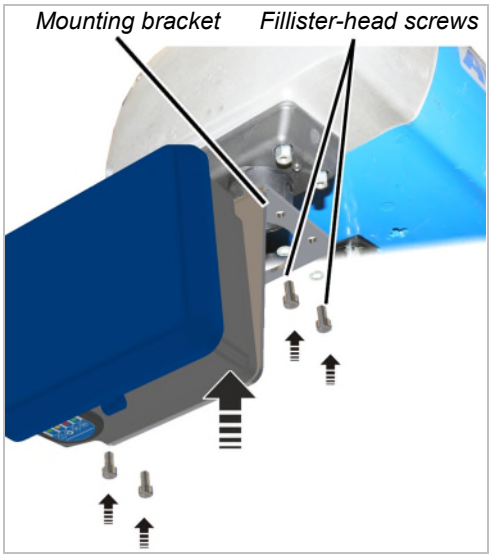


➔ Unscrew the fillister-head screws M5 x 16 (4x) from the socket housing.



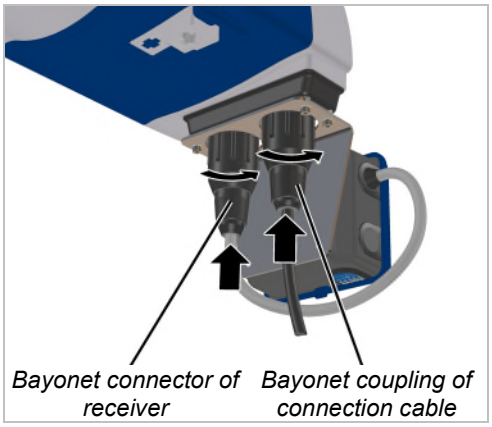
➔ Screw the spacing bolts (4x) into the socket housing in place of the fillister-head screws. Screw until hand-tight.

Installing the receiver



➔ Hold the mounting bracket of the receiver under the spacing bolts.

➔ Screw the mounting bracket in place with the fillister-head screws M5x16 and washers (4x) until hand-tight.



➔ Insert the bayonet coupling of the connection cable and the bayonet connector from the receiver. Due to a notch, the plug-in connections will only fit together in one position.

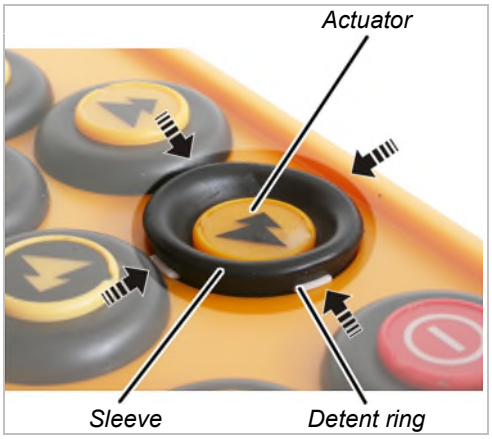
➔ Slide on and tighten the bayonet nuts.

2.6 Replacing the push-button caps

The mounted push-button caps can be replaced with push-button caps with different symbols as required. This is necessary, for example, if the transmitter is to be used for a jib crane (replace push-button caps with the symbol for forward and backward crane travel with push-button caps with the symbol for slewing to the right and left) or if push-button caps with individual symbols are to be used.

The transmitter does not require disassembly to exchange the caps.

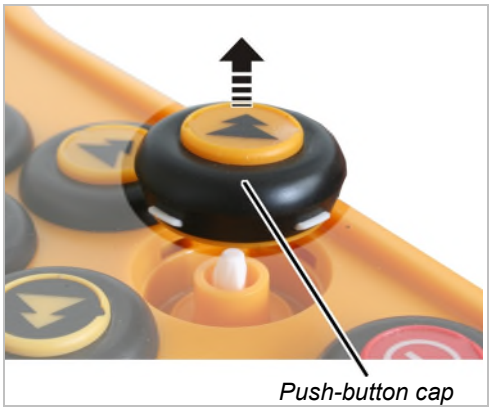
Removing the push-button cap



➔ Fully press down the actuator and hold it.

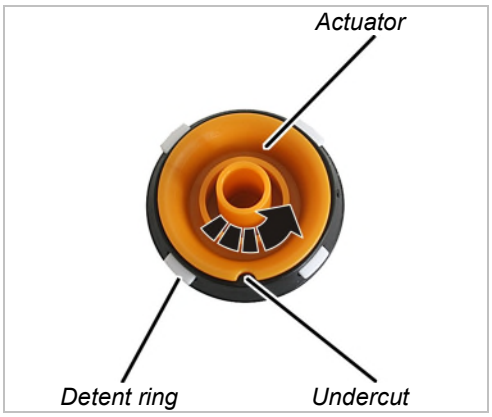
➔ Using a blunt instrument, pry out the white catches of the detent ring at the top, bottom, left and right on the sleeve.

- The push-button cap now only lies loosely on top of the transmitter.

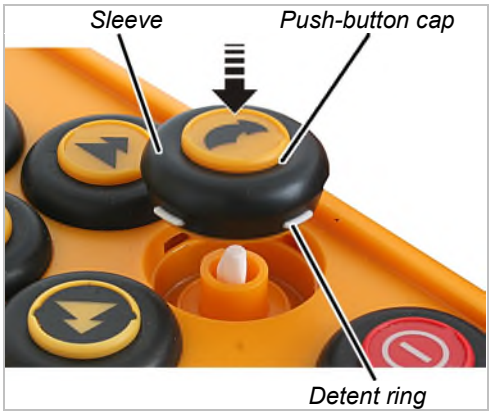


➔ Take off the push-button cap.

Installing the new push-button cap



➔ Turn the actuator of the new push-button cap so that the undercut lies precisely between two catches.



➔ Attach the new push-button cap. The undercut ensures that the cap fits in only a single position.

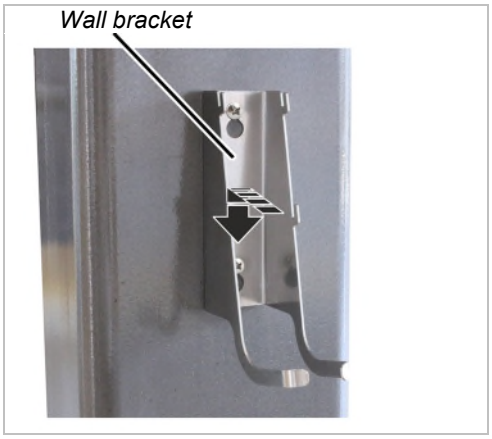
➔ Press in the sleeve around the circumference until the detent ring latches.

2.7 Mounting the charging cradle on the wall

The charging cradle can be positioned lying flat (e.g. on a desk or workbench) or suspended with the wall bracket. The corresponding screws for mounting in the wall bracket are provided.

Mounting the wall bracket

Danger to persons with heart pacemakers!
The charging cradle contains several strong permanent magnets. These can affect implants located nearby. Determine the position for the charging cradle accordingly and take the on-site risks into account.

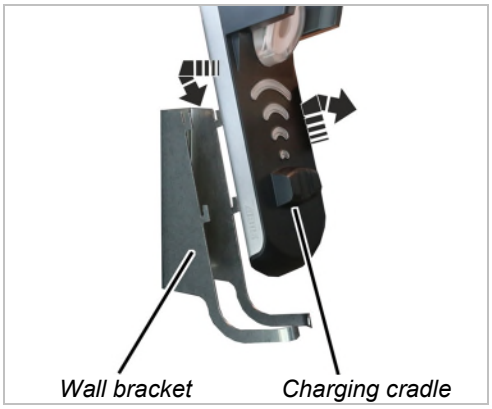


➔ Fasten the wall bracket with the enclosed screws and dowels.

Spacing of screws: 100 mm

2.8 Fastening or removing the charging cradle on the wall bracket

The charging cradle can be removed from the wall bracket at any time.



➔ To remove: push charging cradle upward and take it out of the wall bracket.

➔ To fasten: insert charging cradle on the hook of the wall bracket and press downward.

2.9 Testing after substantial changes

➔ If the ABURemote is being retrofitted to an existing crane: Observe the local regulations and conduct the “Test after substantial changes”.

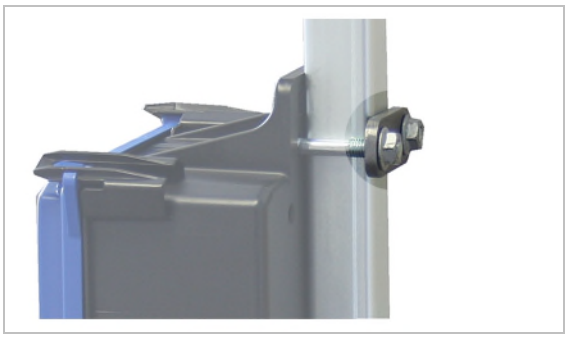
2.10 Registering the radio remote control

ABURemote does not require registration and is exempt from fees in most countries.

➔ Check and observe the country-specific regulations.

2.11 Overview of screw tightening torques

Receiver



- Threaded bracket and M8 rib nut
- 2x per receiver
- 15 Nm.

3. Operation

This section applies to anyone who lifts loads using the crane or works nearby.

Be sure to read and observe the product manual of the entire crane! The instructions given here apply in addition to the other product manuals.

3.1 Emergency stop

On/Stop button

In dangerous situations with the crane:

➔ Press the On/Stop button.

- The display shows “Stop”.
- The transmitter sends a stop signal to the receiver.
- The ready signal, which usually keeps transmitting a signal to the receiver, is interrupted.
- The receiver receives the stop signal and stops receiving any ready signals from the transmitter.
- The receiver activates the emergency stop on the crane.
- The crane brakes immediately and comes to a standstill.

When the danger has been eliminated:

➔ Press ENTER to acknowledge the message.

- The transmitter logs in to the receiver.
- If the transmitter is protected by a PIN: The window “Enter PIN” appears on the display.

➔ Enter the set PIN for the desired function. See “Entering the code or PIN”, page 16.

➔ Press ENTER.

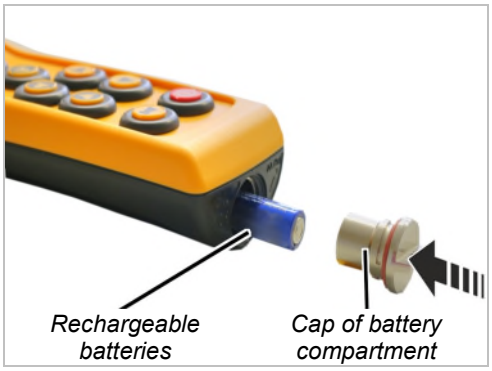
- The display shows “Release”.

➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

3.2 Inserting rechargeable batteries

If no rechargeable batteries have been inserted:



➔ Unscrew the cap of the battery compartment.

➔ Insert the rechargeable batteries (3x, type AA) into the battery compartment with the plus pole at the top.

Use only high-quality rechargeable batteries with a capacity of at least 2500 mAh.

Do not insert rechargeable batteries together with single-use batteries. Single-use batteries could otherwise leak and damage the transmitter.

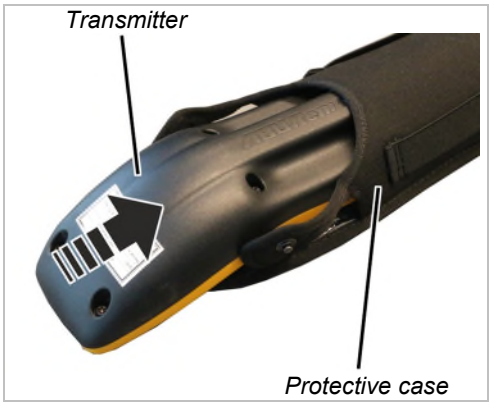
Do not insert batteries with different capacities. This would damage them.

Do not insert any disposable batteries if the transmitter is to be charged on the charging cradle. If disposable batteries are loaded, they can become hot and release toxic substances and also damage the transmitter.

➔ Screw the cap of the battery compartment closed.

3.3 Carrying and holding the transmitter

Placing the transmitter in the protective case

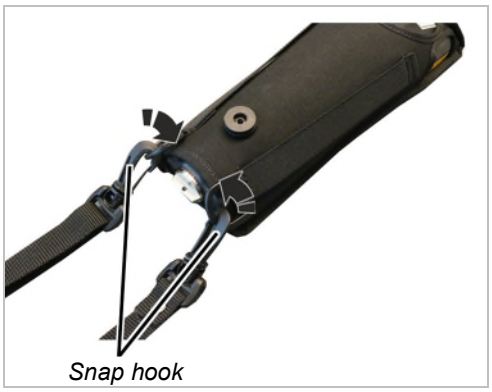


➔ Place the transmitter in the protective case.

➔ Zip the protective case closed.

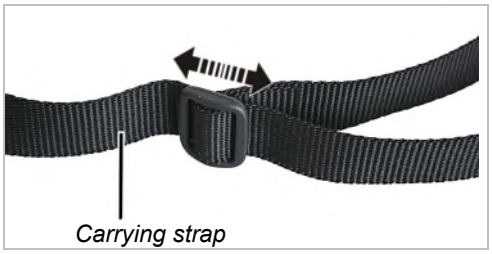
➔ Close the flap on the protective case with the snap-fasteners.

Fastening the carrying strap on the protective case



➔ Hook the snap hook of the carrying strap onto the protective case.

Adjusting the carrying strap



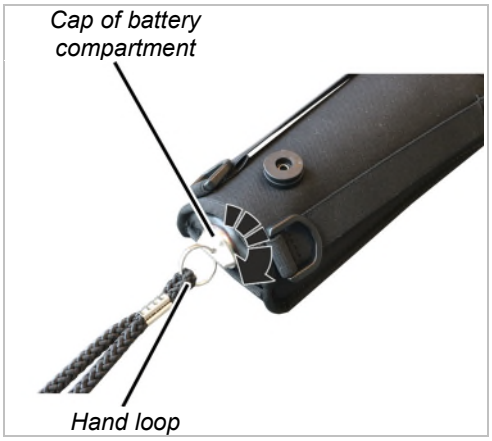
➔ Adjust the length of the carrying strap.

➔ Insert transmitter with carrying strap.

Holding the transmitter

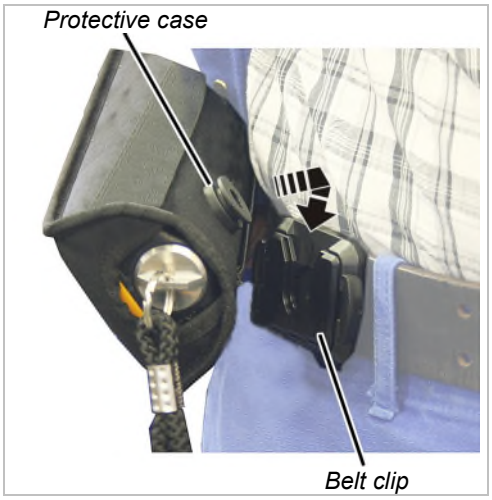
➔ Hold the protective case by the back with your hand in both holding straps.

Fastening the hand loop



➔ Fasten the ring of the hand loop on the cap of the battery compartment.

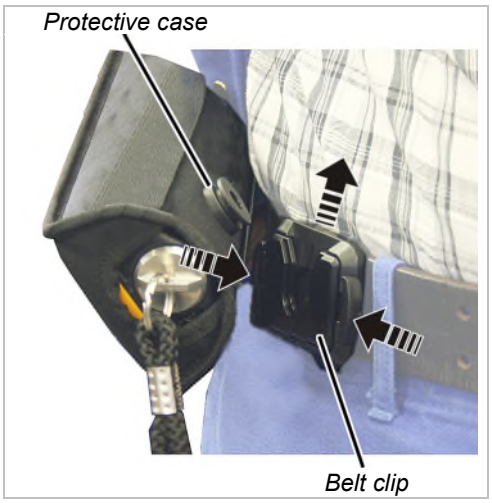
Inserting the transmitter in the belt clip



➔ Attach the belt clip to the belt with the opening facing up.

➔ If needed, insert the protective case from above into the belt clip and allow it to latch in place.

Removing the transmitter from the belt clip



➔ Press and hold the left and right buttons on the belt clip simultaneously.

➔ Pull the protective case up to remove it from the belt clip.

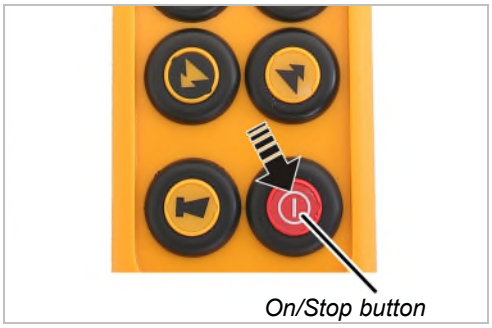
3.4 Checking, switching on and releasing prior to beginning work

Check the following points before starting work with the crane using ABURemote. If there is any damage or problems arise, do not work with the crane; inform coworkers and supervisors.

Checking the outside of the transmitter

- Are any parts on the transmitter broken or out-of-order?
- Are the push-button caps cracked or heavily soiled?

Switching on


On/Stop button

➔ If necessary: Switch on the entire crane using the mains switch.

- The crane and the receiver are switched on.
- The receiver is waiting for the corresponding transmitter.

➔ Fully press down the On/Stop button and hold it.

- The transmitter switches on and the display lights up.
- The display shows “Stop check”.

➔ Release the On/Stop button.

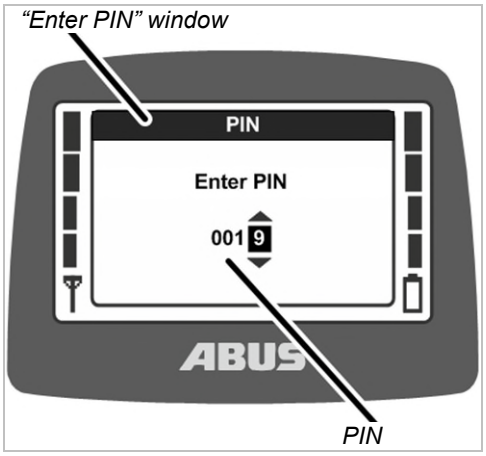
- With an automatic search for a radio channel: The transmitter automatically searches for a free radio channel and occupies it.

➔ When the transmitter is within range of the receiver, the receiver connects with the transmitter.

Only with activated PIN

Entering the PIN

If the transmitter or a certain function is protected by a PIN:



- The “Enter PIN” window is shown in the display.

➔ Enter the previously defined PIN for the desired protected function. See “Entering the code or PIN”, page 16.

➔ Press ENTER.

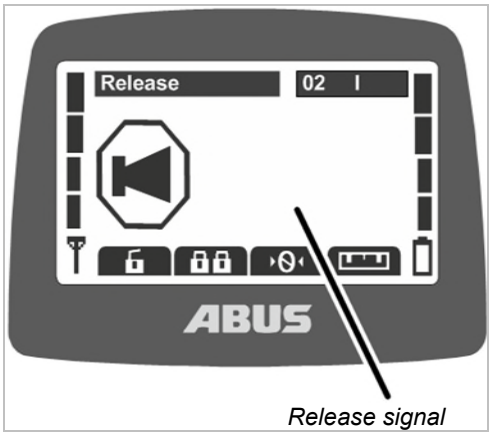
- The transmitter is switched on and the protected function matching the entered PIN is enabled.

There are up to four different PIN levels, each with their respective PIN:

- Level 0: Transmitter PIN code (transmitter can only be switched on with correct PIN).
- Level 1: Protected function “Override travel limit switch” (The function “Override travel limit switch” can only be selected if the correct PIN has been entered).
- Level 2: Protected load limiting system (The load limiting system is switched off when the correct PIN is entered).
- Level 3: Combination of PIN level 1 and PIN level 2.

Overview of functions and instructions for setting PIN and protected functions: See “Setting PIN for transmitter PIN code and special functions”, page 81.

Releasing the transmitter



Release signal

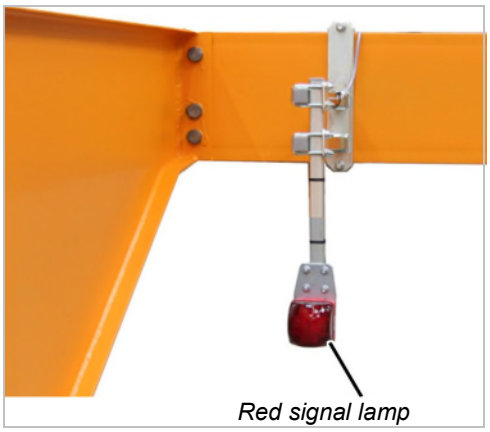
- The transmitter automatically logs back in to same the receiver it was logged in to when it was switched off.
- The display shows “Release”.

➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

Only with signal lamps for radio remote control

Once the transmitter is released:



Red signal lamp

- The red signal lamp lights up.

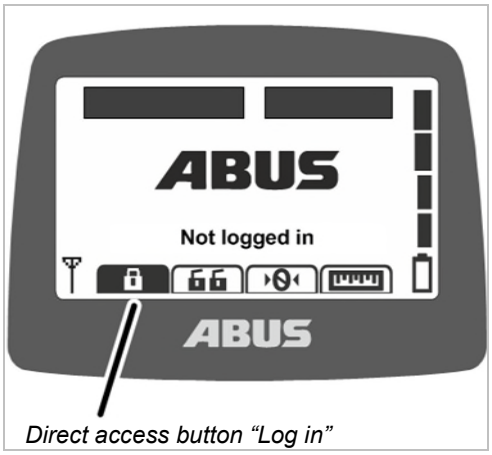
  Persons nearby thus know that a transmitter is logged in to the crane and the crane can move at any time.

Logging in the transmitter

In some situations, the transmitter does not automatically log back in to the receiver:

- The transmitter was not logged in at the time of being switched off.
- The crane is not within range of the transmitter.
- The crane was switched off in the meantime.
- The crane has since been restarted.
- Another transmitter is logged in to the crane.
- The transmitter was manually logged out beforehand.
- An automatic login was previously cancelled.

If the transmitter does not log back in automatically:



Direct access button “Log in”

➔ Either:

Press the direct access button “Log in” (closed padlock).

Or:

Open the main menu with the MENU button,

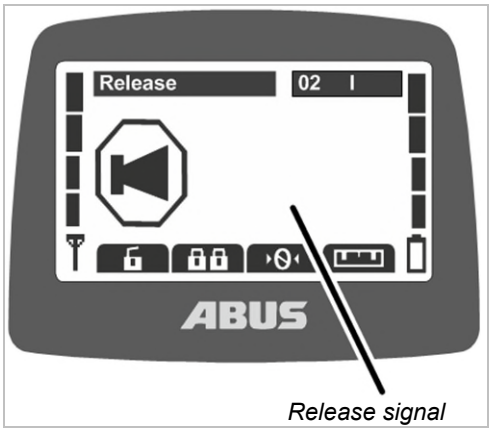
open the menu “Crane operation”,

open the menu item “Log in”.

- If the transmitter or a function is protected by a PIN: The window “Enter PIN” appears on the display.

➔ Enter PIN. See “Entering the code or PIN”, page 16.

- The transmitter logs in to the receiver.



Release signal

- The display shows “Release”.

➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

Checking the On/Stop button

Test the following before beginning work:

➔ Fully press down the LIFT button.

- The load hook moves up.

➔ Press the On/Stop button.

- The display shows “Stop”.
- The load hook halts.

➔ Press ENTER to acknowledge the message.

- The transmitter logs in to the receiver.
- If the transmitter is protected by a PIN: The window “Enter PIN” appears on the display.

➔ Enter the set PIN for the desired function. See “Entering the code or PIN”, page 16.

➔ Press ENTER.

- The display shows “Release”.

➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

3.5 Operating the crane

Lifting and lowering, trolley travel, crane travel

Danger due to suspended load!
If the crane operator does not have an unobstructed view of the load, persons could be hit by the load and be killed or injured.

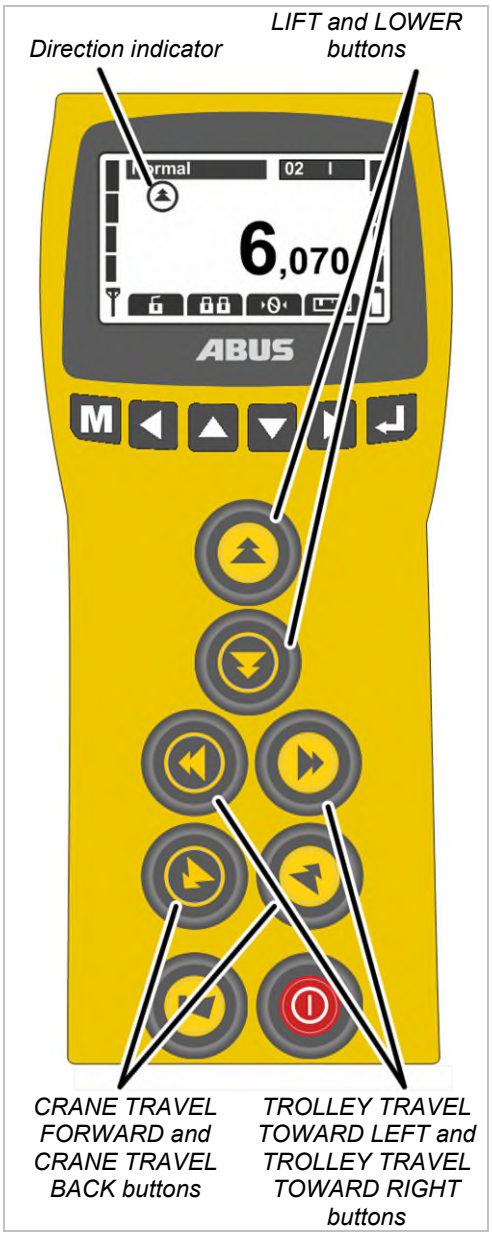
Only operate the crane when the load, crane and operating range can be seen in full, or when working together with a banksman.

Danger due to suspended load!
If the crane operator stumbles or falls, the transmitter may be unintentionally activated. As a result of this, persons could be killed or injured.

Only operate the crane from a safe position with secure footing.

Danger due to careless handling of the transmitter!
If the transmitter is handled carelessly (e.g. thrown, used to strike things, etc.) it will be damaged, no longer function properly and can send unintended signals to the crane. As a result of this, persons could be killed or injured.

Lay the transmitter aside with care and do not use it as a substitute for a tool.



➔ To control the crane, press the following buttons either fully down or halfway down: LIFT, LOWER, TROLLEY TRAVEL TOWARD LEFT, TROLLEY TRAVEL TOWARD RIGHT, CRANE TRAVEL FORWARD and CRANE TRAVEL BACK.

- The direction of the crane, trolley and load hook appears on the display.

Operating a crane with two trolleys: See “Operating a crane with two trolleys”, page 56.

For a crane with one trolley, you can also switch between the displays for “I” or “II” on the transmitter, but only trolley I will be controlled.

Operating two cranes in tandem operation: See “Operating cranes in tandem operation”, page 58.

3.6 Horns

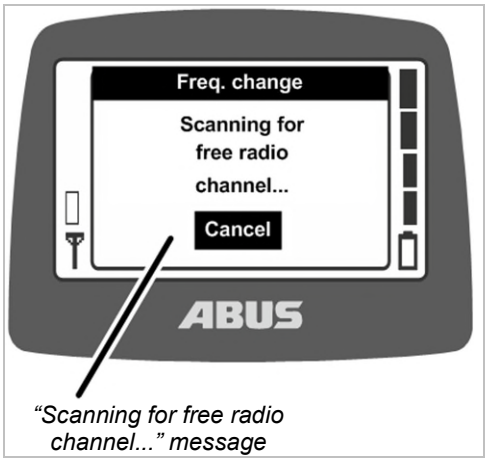
To warn other persons of danger:

➔ Press the HORN button fully down.

- The sound of the horn can be heard at the transmitter and at the crane.

3.7 Changing the radio channel

Should malfunctions occur (connection is cut off or signal quality declines):



“Scanning for free radio channel...” message

➔ Either:

Press the direct access button “Freq. change” (arrow with hash key).

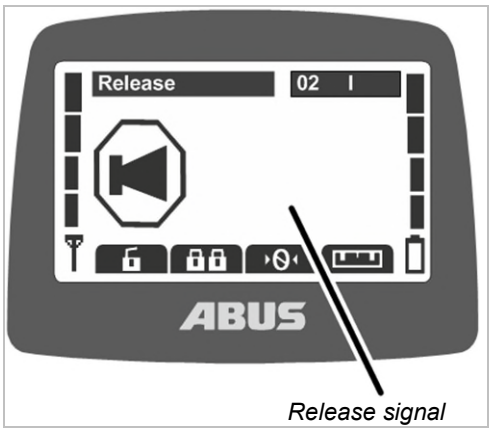
Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Freq. change”.

- The transmitter disconnects the connection to the receiver.
- The receiver is waiting for the corresponding transmitter.
- The message “Scanning for free radio channel...” appears on the display.
- For wireless technology XR2: The transmitter scans the 433 MHz frequency range and evaluates the current radio situation in its surroundings. Based on this, the transmitter selects the most optimal radio channel for the connection.
- Only for wireless technology XR0: The transmitter automatically searches for a new free radio channel, and occupies it.
- The receiver finds the transmitter.



Release signal

- The display shows “Release”.

➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

The radio channel can only be changed when the transmitter has not been set to a fixed radio channel. To set the transmitter to a fixed radio channel: See “Setting the radio channel”, page 74.

Only with wireless technology XR2

In the case of a channel change, the transmitter evaluates the current radio situation in its surroundings. If the radio situation changes during running operation, the radio channel is not automatically changed.

Should malfunctions occur (e.g. connection is cut off or signal quality declines), the channel should be changed on the transmitter. The radio situation in the vicinity of the transmitter is then re-evaluated.

If a channel change is made multiple times in brief succession:

- The radio situation is re-evaluated each time and the radio channel is changed as previously described.
- If the radio situation has not changed since the last channel change, (e.g. because the transmitter is at the same position):
  The transmitter will still change the radio channel.

  Also if the evaluation of the local radio situation gives the same result as with the last channel change, the radio channel that is used is still changed. In this case, the next best radio channel is used.

  In this way you can switch between the five best radio channels.

3.8 Avoiding radio interference

If the radio channel used by ABURemote is interfered with by other devices, this can lead to the connection being lost (e.g. fault 101).

ABURemote has a range of more than 100 metres, depending on, for example, the walls and objects between the transmitter and receiver. Additional factors which can limit the range include other devices with wireless technology, and ambient conditions such as weather and humidity.

Observe these tips to avoid radio interference:

- Optimise the installation site of the magnetic base antenna of the receiver. See “Planning the installation on the crane”, page 25.
- Observe the minimum distance when multiple transmitters are in use. See “Observing the minimum distance with multiple transmitters”, page 41.
- Change radio channel manually. See “Changing the radio channel”, page 40.
- Instead of automatic changing of the radio channel and additional manual changing of the radio channel, a radio channel can be fixedly set. See “Setting the radio channel”, page 74.

  In this connection, a comprehensive frequency management plan should be set up for the entire hall area.
- If multiple transmitters are used in close proximity to each other, it is recommended to reduce the transmission power of all transmitters. See “Setting the transmission power of transmitter and receiver”, page 77.
- If multiple receivers are used in close proximity to each other, it is recommended to reduce the transmission power of all receivers. See “Setting the transmission power of transmitter and receiver”, page 77.

3.9 Observing the minimum distance with multiple transmitters

If multiple transmitters are operated too closely to one another, occasional radio interference could occur.

The quality of the wireless connection depends on many factors, such as the radio channel, the distance to the receiver and to other transmitters, the number of transmitters in the surroundings, other devices with wireless connections, the set transmission power, etc.

Should malfunctions occur (connection is cut off or signal quality declines):

➔ Maintain a distance of several metres to other transmitters.

➔ Reduce the transmission power of all transmitters in the nearby surroundings. See “Setting the transmission power of transmitter and receiver”, page 77.

A lower transmission power of all transmitters in the surroundings reduces the intensity of the entire radio field, which in turn reduces the mutual interference.

3.10 Standby

If no button is pressed on the transmitter within a certain time, the transmitter switches to “Standby” operating mode. This occurs both on a transmitter which is logged in and one which is logged out.

The ‘“Standby” operating mode allows the transmitter to save power and makes it safer if it has been put aside and forgotten.

The time which elapses before the transmitter changes to “Standby” can be set. See “Setting standby”, page 65.

To switch the transmitter back on:

➔ Either:

Press the On/Stop button.

Or:

Press the HORN button.

➔ Press ENTER to acknowledge the message.

- The transmitter logs in to the receiver.
- If the transmitter is protected by a PIN: The window “Enter PIN” appears on the display.

➔ Enter the set PIN for the desired function. See “Entering the code or PIN”, page 16.

➔ Press ENTER.

- The display shows “Release”.

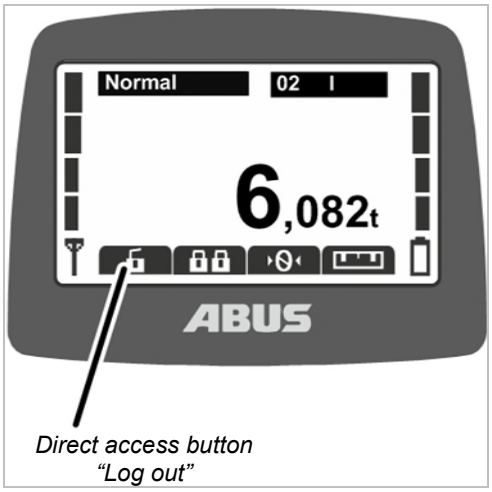
➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

3.11 Logging out and switching off the transmitter

Logging out the transmitter

– With tandem control system: To allow another transmitter to operate the crane in tandem operation, the transmitter must be logged out. Simply switching off a logged-in transmitter or waiting until it changes to “Standby” operating mode will not suffice.



Direct access button “Log out”

➔ Either:

Press the direct access button “Log out” (opened padlock).

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Log out”.

- The transmitter logs out at the crane and reverts to the “Not logged in” operating mode.
- With tandem control system: Another transmitter can now operate the crane in tandem operation.

Logging out the transmitter from the receiver

The transmitter can also be logged out of the receiver. This is particularly useful when a transmitter is to be logged out, but is currently unavailable (e.g. locked away).

➔ Switch off the crane at the mains switch.

- The entire crane, including the receiver, is switched off.

➔ Wait at least 30 seconds.

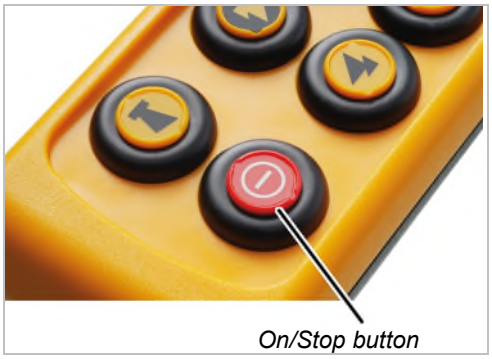
- The receiver loses the information as to which transmitter was logged in.
- If the transmitter is switched on: Message 101 “Receiver disconnected” appears on the display and the transmitter logs out.

➔ Switch on the crane at the mains switch.

- Another transmitter can now log in to this crane.

Switching off the transmitter

To switch off the transmitter:



➔ Press down the On/Stop button and hold it.

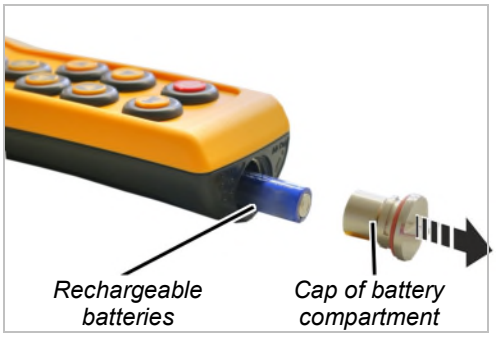
- The transmitter goes out.
- The transmitter is however still consuming a small amount power.

Tip:

➔ The transmitter can be laid in the charging cradle after use.

The transmitter is thereby automatically charged and is easy to find when working with it again.

In the event of extended downtimes:



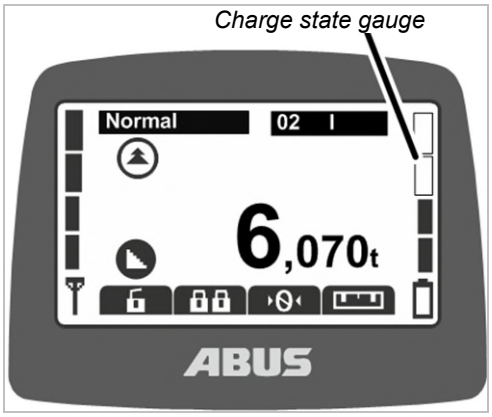
➔ Unscrew the cap from the battery compartment.

➔ Remove the rechargeable batteries.

➔ Screw the cap of the battery compartment closed.

3.12 Capacity indicator for rechargeable batteries

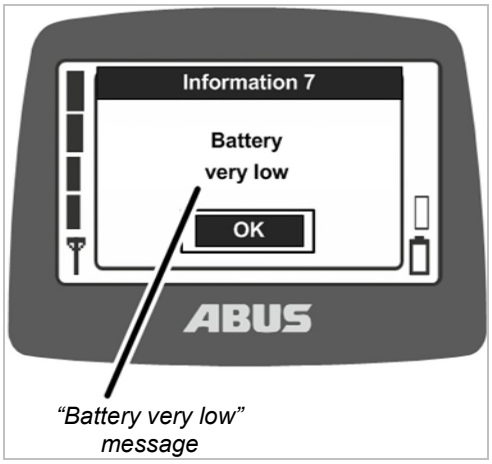
When performing normal work with the radio remote control:



- The bar at the right-hand edge of the display shows the battery capacity remaining.

  Four full bars indicate a full battery; four empty bars indicate an empty battery.

Once the preset remaining battery time reaches the alarm threshold:



- The message "Battery very low" appears on the display.

  The remaining battery time at which the message should appear can be set. See "Displaying the remaining battery time and setting the alarm" on page 66.

- If one of the buttons for crane travel, trolley travel or lifting/lowering is pressed: A horn sound can be heard at the transmitter.

➔ Press ENTER.

➔ Set down the load.

➔ Change the batteries.

Tip:

➔ The transmitter can be laid in the charging cradle after use.

The transmitter is thereby automatically charged and is easy to find when working with it again.

3.13 Charging the transmitter in the charging cradle

The charging cradle is a safe and designated storage location for the transmitter when not working with the crane.

Danger to persons with heart pacemakers!
The charging cradle contains several strong permanent magnets. These can affect implants located nearby. Determine the position for the charging cradle accordingly and take the on-site risks into account.

Changing the connector on the power pack

➔ Compare the specifications on the type plate with the local mains supply.

➔ Press the button on the rear of the power pack.

➔ Push the connector upwards and remove it.

➔ Push on the connector required so it audibly clicks into place.

Connecting the charging cradle

➔ Insert the power pack on the micro-USB connection on the charging cradle.

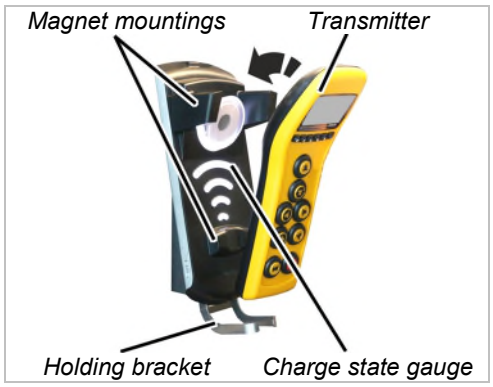
➔ Plug the power pack into the socket.

- The charging cradle is switched on.
- The charge state gauge of the charging cradle lights up white.

Charging the transmitter

Danger due to charging of disposable batteries!
If a transmitter with disposable batteries is placed in the charging cradle, the batteries heat up and could burst and leak. Toxic substances could thereby be released and damage the transmitter.

Check carefully that no disposable batteries are inserted before placing the transmitter in the charging cradle.



➔ Place the transmitter on the holding bracket and tip it into the charging cradle.

The transmitter does not need to be taken out of the protective case. It can be laid in the charging cradle with the protective case and charged.

Do not place any electrically conductive objects between the transmitter and the charging cradle!

- The transmitter is magnetically locked on the charging cradle.
- The batteries are charged.

The batteries are charged each time the transmitter is laid in the charging cradle for 10 hours. The charging current is very low, which prevents damage to batteries which are already fully or partially charged.

- The charge state gauge lights up red.

During the entire charging process, the charge state gauge lights up red. Information on the already charged capacity is not given.

- The transmitter switches to “Standby” operating mode.
- An animated charge state gauge is shown on the display.

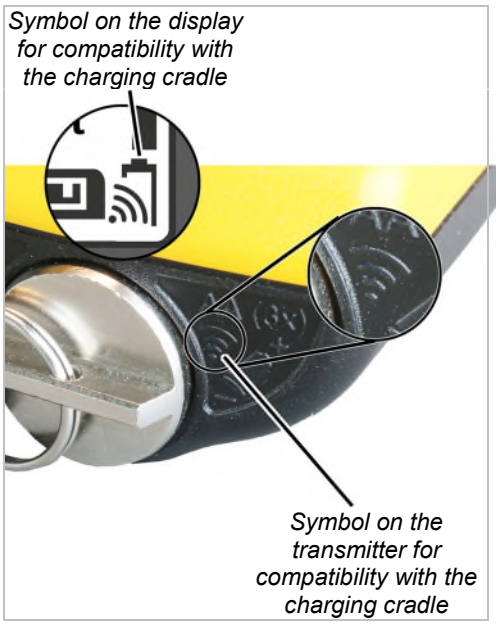
When the charge state gauge lights up green:

- The transmitter is fully charged.
- The charging cradle switches over to trickle charging.

This ensures the batteries in the transmitter are continuously charged and remain fully charged. This does not damage the batteries or diminish their capacity.

➔ If necessary: Remove the transmitter from the charging cradle.

If the charge state gauge remains white when the transmitter is inserted:



➔ Check whether the transmitter is compatible with the charging cradle. This is indicated by a symbol next to the battery compartment.

➔ Check whether another error is present. See “Fault indicators of charging cradle”, page96.

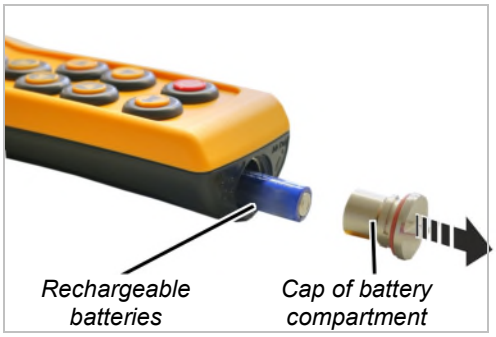
If the charge state gauge flashes red:

- A fault has occurred during the charging process.

  See “Fault indicators of charging cradle”, page96.

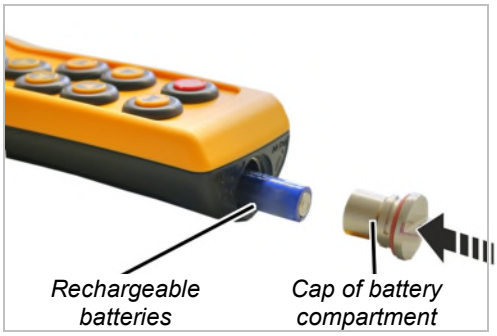
3.14 Changing the batteries

If necessary (e.g. if the transmitter is continuously in use in three-shift operation), the batteries can be exchanged instead of charging them in the charging cradle.



➔ Unscrew the cap from the battery compartment.

➔ Remove the rechargeable batteries.



➔ Take the charged batteries out of the battery charger.

➔ Insert the rechargeable batteries (3x, type AA) into the battery compartment with the plus pole at the top.

Use only high-quality rechargeable batteries with a capacity of at least 2500 mAh.

Do not insert rechargeable batteries together with single-use batteries. Single-use batteries could otherwise leak and damage the transmitter.

Do not insert batteries with different capacities. This would damage them.

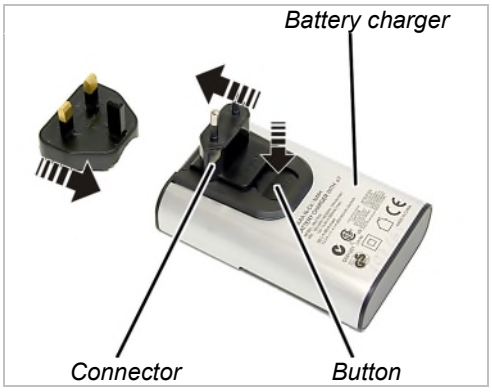
Do not insert any disposable batteries if the transmitter is to be charged on the charging cradle. If disposable batteries are loaded, they can become hot and release toxic substances and also damage the transmitter.

➔ Screw the cap of the battery compartment closed.

3.15 Charging the batteries separately in the battery charger

The battery charger can be adapted to the local mains supply using the exchangeable connectors.

Changing the connector on the battery charger



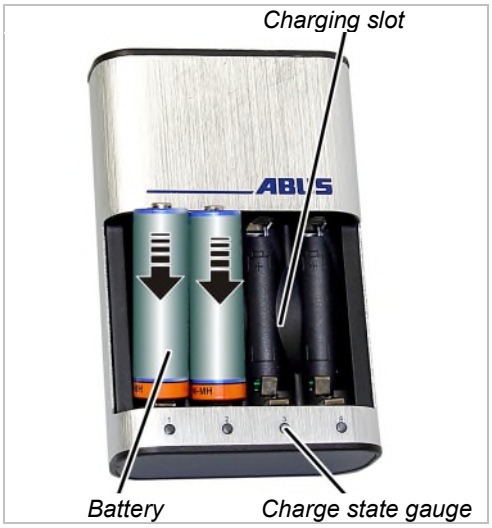
➔ Compare the specifications on the type plate with the local mains supply.

➔ Press the button on the rear of the battery charger.

➔ Push the connector upwards and remove it.

➔ Push on the connector required so it audibly clicks into place.

Charging batteries



➔ Observe the polarity and insert the batteries into the battery charger.

➔ Plug the battery charger into the socket.

- The charge state gauge of the battery slot concerned will flash slowly.
- The batteries will warm up.

If the charge state gauge flashes red:

- The battery is defective or a disposable battery has been inserted.

➔ Remove the battery and dispose of it.

➔ Do not dispose of rechargeable batteries with the household waste. Dispose of them in accordance with the locally applicable regulations.

After charging

The charge state gauge lights up continuously:

- The battery is fully charged.
- The battery charger switches over to trickle charging.

  This ensures the batteries are recharged automatically as needed, remaining fully charged. This does not damage the batteries or diminish their capacity.

➔ When required: Remove the batteries from the charging slot.

3.16 Cleaning the transmitter

➔ Clean the transmitter with a cloth using a mild detergent solution.

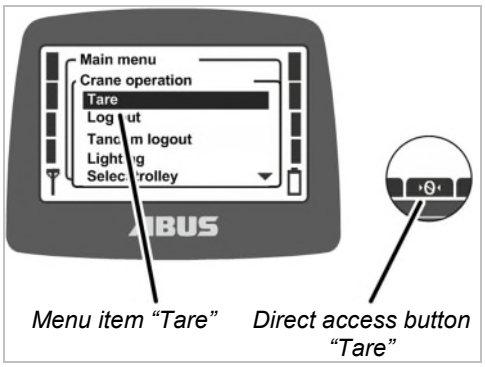
3.17 Tare

Only with cranes with load display

Tare

The load display of the crane can be reset to zero using “Tare”. This allows a differential measurement to be made, e.g. in order not to include the weight of a crosshead.

This function can be opened in the menu or using a direct access button.



➔ Either:

Press the direct access button “Tare” (zero with two arrows).

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Tare”.

➔ Press and hold the direct access button or ENTER in the menu for about 3 seconds.

- The display of the suspended load is set to zero.

To reset the tare:

➔ Press the direct access button “Tare” (zero with two arrows) or open the menu item “Tare”.

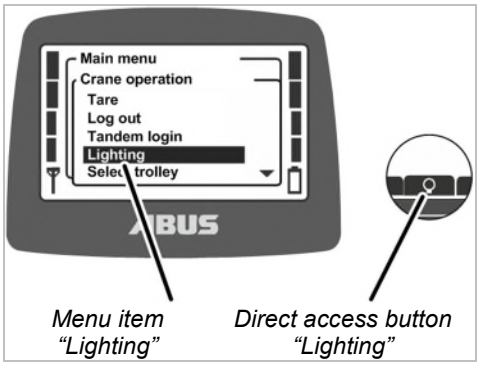
➔ The display of the slung load shows the original value again.

3.18 Switching the crane lighting on and off

Only with crane lighting

The function “Lighting” can be used to switch the crane lighting on and off.

This function can be opened in the menu or using a direct access button.



➔ Either:

Press the direct access button “Lighting” (light bulb).

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Lighting”.

- The crane lighting is switched on.

➔ To switch the crane lighting back off, press the direct access button “Lighting” again, or call up the “Lighting” menu item again in the “Crane operation” menu.

3.19 Switching sway control on and off

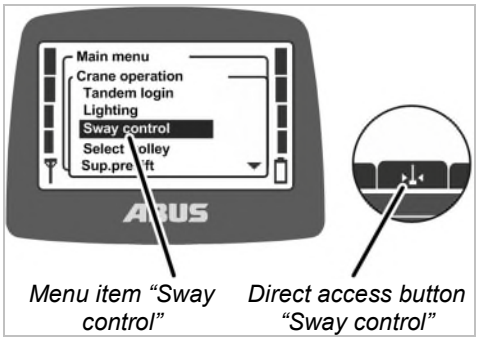
Only with ABUControl with sway control

The “Sway control” function considerably reduces the swinging movement of the load hook during trolley and crane travel on a crane with ABUControl. See the “ABUControl” product manual.

This function can be opened in the menu or using a direct access button.

Switch sway control on:

The sway control initially functions only with a crane with a single trolley or with a crane with several trolleys, providing the unused trolley is in the parking position.
During the joint operation of several trolleys or in tandem operation, the sway control must be separately enabled. See the ABUControl Product Manual.



➔ Either:

Press the direct access button “Sway control on” (pendulum with two arrows).

Or:

Open the main menu with the MENU button,

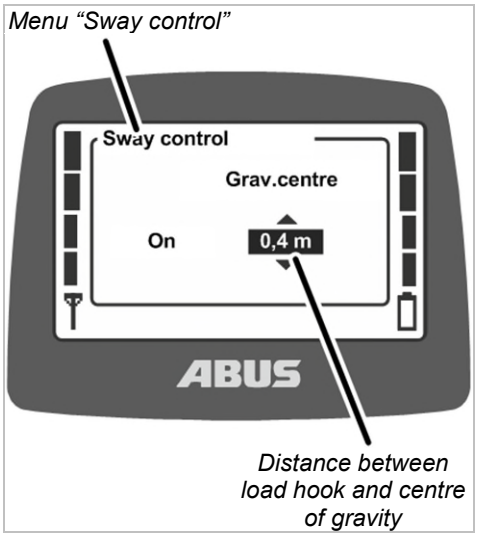
open the menu “Crane operation”,

open the menu item “Sway control”.

ABUControl must know the length of the load lifting attachment in order for the sway control to function properly.

Danger due to swaying load!
If the length of the load lifting attachment is set incorrectly, the load can experience heavy swings!

Set the length of the load lifting attachment each time after slinging.



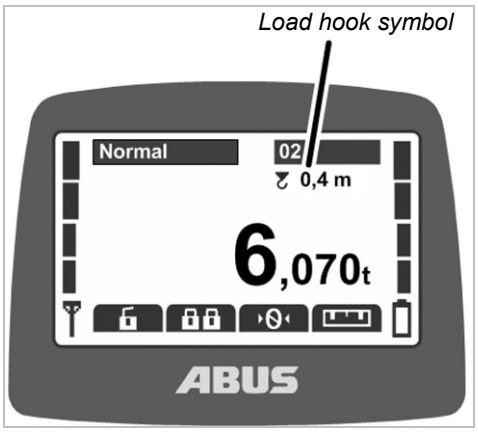
- The “Sway control” window is shown in the display.
- The last set distance is displayed.

➔ Estimate the distance between the load hook and the centre of gravity.

➔ Set the distance.

The distance can be set in increments of 0.2 m.

➔ Confirm the input with ENTER.



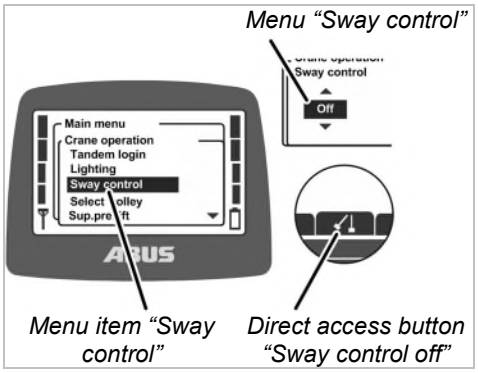
- A load hook symbol and the set distance are shown under the crane number.

Crane and trolley travel with sway control:

➔ Operate the crane as usual.

- ABUControl uses the travel speeds of crane and trolley, the hook position and the length of the load lifting attachment to calculate how much the load would normally sway, and accelerates and brakes the travel motors in such a way that the swinging movement is reduced.
- The acceleration and braking distances are not substantially altered.
- The function does not compensate for external influences such as wind, impacts against the load or load hook, or manual movements.

Switch sway control off:



➔ Either:

Press the direct access button “Sway control off” (two pendulums).

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

select the value “off” in the menu item “Sway control”,

confirm by pressing ENTER.

- The sway control is switched off.

The sway control is automatically switched off when switching between several hoists (e.g. between two trolleys on one crane).

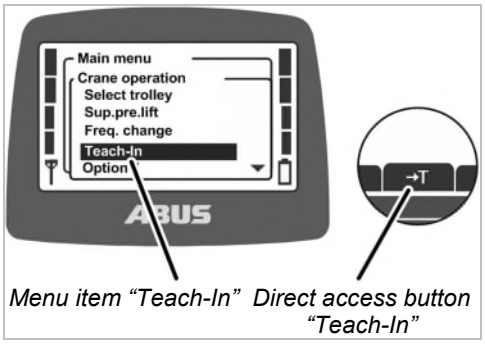
However, the sway control can be switched back on again depending on the selected setting in ABUControl (with corrected length of the load lifting attachment).

3.20 Performing teach-in with an electronic hoist limit switch

Only with chain hoists with an electronic hoist limit switch

With a chain hoist with electronic hoist limit switch, the “Teach-In” function can be used to set the switching point of the hoist limit switch. See the “Hoist limit switch” documentation.

This function can be opened in the menu or using a direct access button.



Menu item “Teach-In” *Direct access button “Teach-In”*

➔ Either:

Press and hold the direct access button “Teach-In” (T with arrow) until the position is saved.

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Teach-In” and press and hold ENTER until the position is saved.

- The current position of the load hook is saved.

3.21 Overriding travel limit switch of a bypass control

Only with override travel limit switch

Using the “Limit switch” function, the travel limit switch of a bypass control (e.g. for tall machines which the crane is usually not allowed to travel over) can be overridden. The crane can then be moved into the blocked area at a slow speed (e.g. to set up the machine).

This function can only be opened using a direct access button.

Only with protected function “Override travel limit switch”

The function “Override travel limit switch” is protected by a PIN.

Unlocking and locking protected functions

To unlock a protected function:

➔ When switching on or logging in the transmitter, enter the correct PIN for PIN level 1 or PIN level 3. See “Entering the PIN”, page 36.

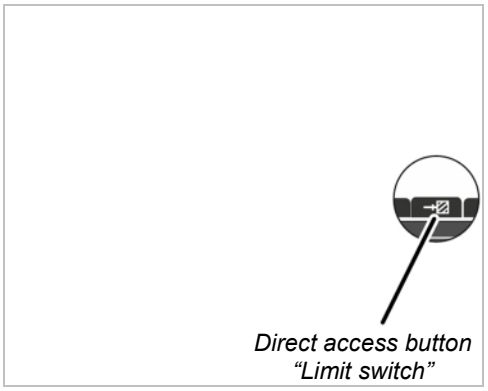
- The protected function is unlocked.
- The direct access button has a black background. The protected function “Override travel limit switch” can now be used.

To lock a protected function:

➔ Log out or switch off the transmitter. When switching on or logging in, the correct PIN for PIN level 1 or PIN level 3 must be entered again. See “Entering the PIN”, page 36.

- The protected function is locked.
- The direct access button has a white background. The protected function “Override travel limit switch” is now unavailable.

Override travel limit switch



Direct access button “Limit switch”

➔ Allow the crane to travel right up to the blocked area.

- The crane halts.

➔ Press and hold the direct access button “Limit switch” (hatched wall with arrow).

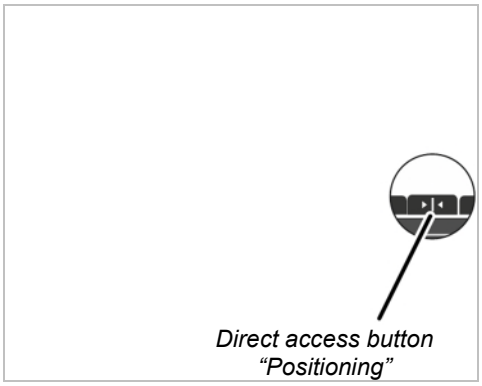
➔ While pressing the direct access button “Limit switch”, move the crane into the blocked area.

3.22 Positioning

Only with positioning control

The positioning control enables crane and trolley to halt at previously specified positions within the traversing range.

This function can only be opened using a direct access button.



Direct access button “Positioning”

➔ Move crane or trolley up to the point just in front of the desired position.

➔ Press the direct access button “Positioning” (vertical line with arrows) and hold it.

- Now move the crane or trolley only at low speed.

➔ Continue moving the crane with the “Positioning” direct access button pressed.

- As soon as the position is reached, the crane or trolley halts.
- The “Position reached” signal lamp lights up.

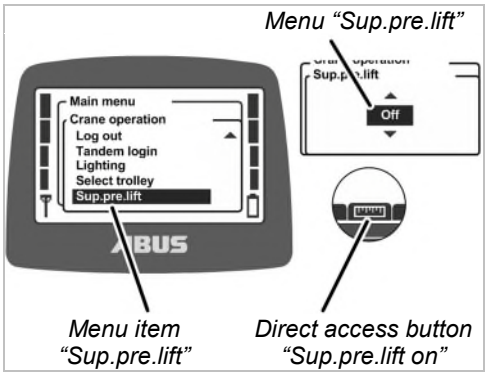
3.23 Switching super-precision lifting on and off

Only with super-precision lifting

The function “Sup.pre.lift” switches the super-precision lifting on the hoist on and off. In super-precision lifting, the 12-pin winding unit of the dual-speed hoist motor is controlled. The maximum lifting speed in this mode is very low, enabling an extremely accurate positioning of the load.

This function can be opened in the menu or using a direct access button.

Switching on super-precision lifting:



➔ Let go of all buttons and wait until the crane halts.

➔ Either:

Press the direct access button “Sup.pre.lift on” (ruler with detailed scale).

Or:

Open the main menu with the MENU button,

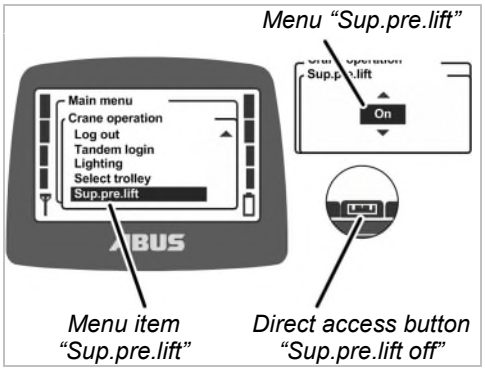
open the menu “Crane operation”,

select the value “on” in the menu item “Sup.pre.lift”,

confirm by pressing ENTER.

- The super-precision lifting is switched on. The hoist can now be used for super-precision lifting.

Switching off super-precision lifting:



➔ Let go of all buttons and wait until the crane halts.

➔ Either:

Press the direct access button “Sup.pre.lift off” (ruler with detailed scale).

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

select the value “off” in the menu item “Sup.pre.lift”,

confirm by pressing ENTER.

- Super-precision lifting is switched off. The hoist can now be used for normal lifting. The hoist can now be used for super-precision lifting.

When there are two trolleys on the crane: The super-precision lifting is always switched on and off for the trolleys which are currently being operated using the transmitter.

3.24 Switching load limiting system on and off

Only with protected load limiting system

The crane features a load limiting system. This only enables the crane to lift with the maximum load capacity if the load limiting system is switched off. Otherwise (with the load limiting system switched on), only working with reduced maximum load capacity is enabled.

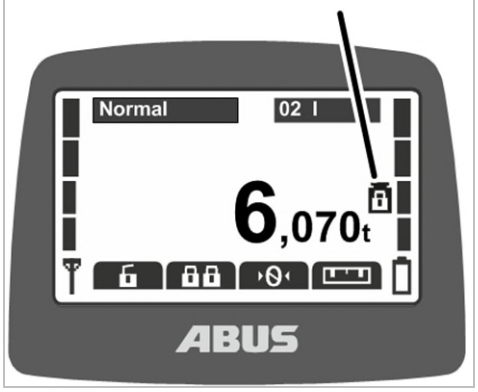
The load limiting system is protected by a PIN.

Operating the crane with load limiting system switched on:

➔ When switching on or logging in the transmitter, enter the correct PIN for PIN level 0 or PIN level 1. See “Entering the PIN”, page 36.

- The load limiting system is switched on. The crane can now only lift with a reduced maximum load capacity.

Symbol “Load limiting system is switched on”



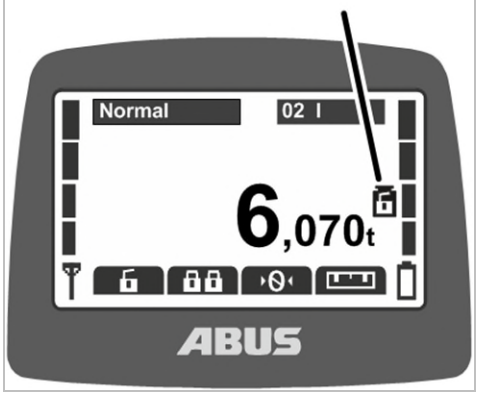
- A symbol (weight with closed padlock) is shown on the display to indicate the load limiting system is switched on.

Switching load limiting system off:

When switching on or logging in the transmitter, enter the correct PIN for PIN level 2 or PIN level 3. See “Entering the PIN”, page 36.

- The load limiting system is switched off. The crane can now lift with maximum load capacity.

Symbol “Load limiting system is switched off”



- A symbol (weight with opened padlock) is shown on the display to indicate the load limiting system is switched off.

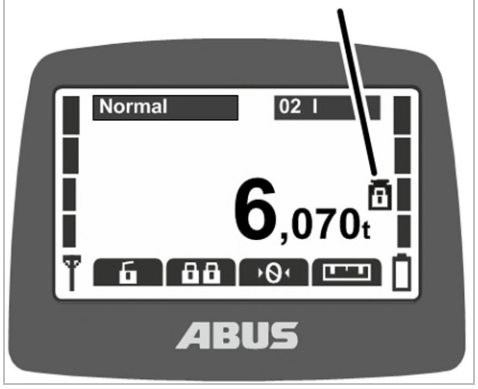
Switching load limiting system on:

➔ Log out or switch off the transmitter, or press the stop button.

If the transmitter is not logged out or switched off, the load limiting system is automatically switched on after elapse of the standby time.

- The load limiting system is switched on. The crane can now only lift with a reduced maximum load capacity.

Symbol "Load limiting system is switched on"



- At the next use of the transmitter without input of a correct PIN for PIN level 2 or 3: A symbol (weight with closed padlock) is shown on the display to indicate the load limiting system is switched on.

3.25 Using additional functions on the crane with direct access buttons

Only with cranes with additional functions via direct access buttons

Individual additional functions on the crane can be called up via direct access buttons or opened in the menu.

Danger due to button assignment with two-hand operation!

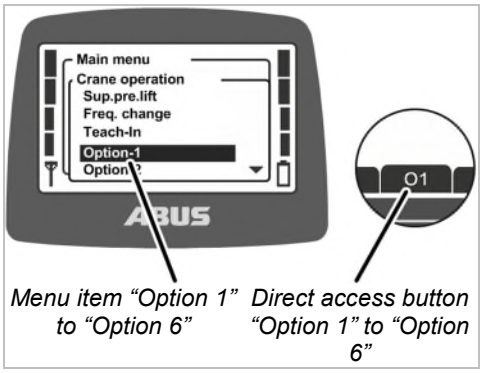
If the functions for releasing the load in two-hand operation lie on two direct access buttons, it can happen that instead of just one, both buttons are directly pressed. The load could then be released unintentionally, killing or injuring people.

Do not use direct access buttons for functions with two-hand operation!

Danger due to missing button labels!

The direct access buttons for the additional functions are labelled with "O1" to "O6" and cannot be individually labelled. Thus, other persons do not know which functions are controlled by these direct access buttons.

Carefully instruct crane operators!



Menu item “Option 1” to “Option 6” *Direct access button “Option 1” to “Option 6”*

➔ Either:

Press direct access button “Option 1” to “Option 6” (O1 to O6).

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Option 1” to “Option 6”.

- The additional function is activated.

3.26 Operating a crane with two trolleys

Danger from falling suspended load!

If the suspension of a load is shared by both trolleys and one trolley is moved on its own, the load may no longer be securely suspended from the load hook, and could fall. Work with particular caution. Observe the end user's hazard analysis!

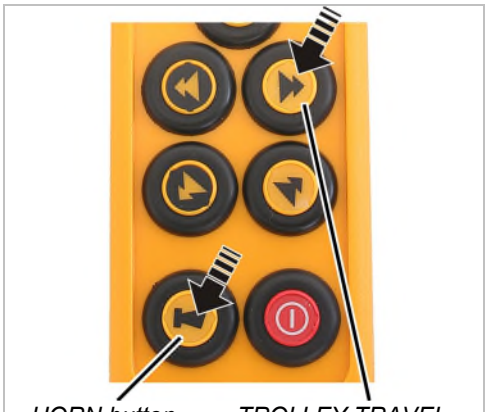
Only with two trolleys

Switching between trolley I and trolley II

With two trolleys on one crane, it is possible to switch back and forth between trolley I and trolley II.

After switching on the crane, the trolley is selected that was also selected when switching off.

For a crane with one trolley, you can also switch between the displays for “I” or “II” on the transmitter, but only trolley I will be controlled.



HORN button *TROLLEY TRAVEL TOWARD RIGHT button*

➔ Either:

Press and hold the HORN button pressed halfway.

Press the TROLLEY TRAVEL TOWARD RIGHT button to select trolley II, or press the TROLLEY TRAVEL TOWARD LEFT button to select trolley I.

Release the HORN button.

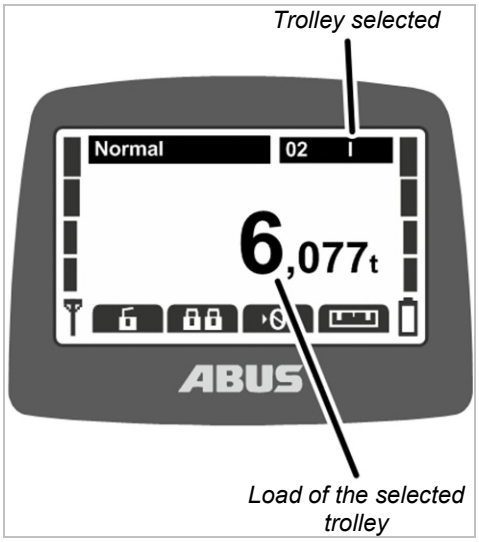
Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

select the desired trolley in the menu item “Select trolley”,

confirm by pressing ENTER.

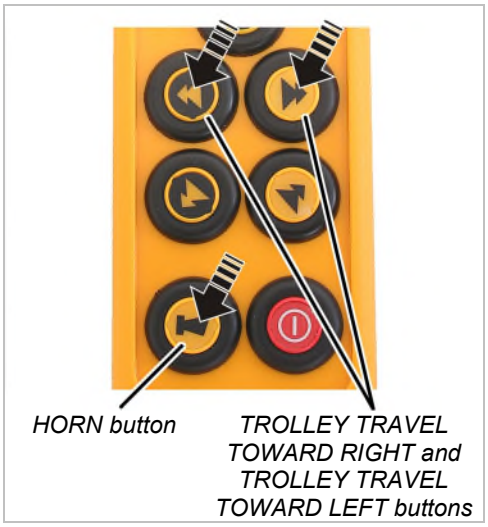


- The selected trolley is shown on the display.
- The load of the selected trolley is indicated on the display.
- Press the button to control the selected trolley.

Only with joint operation

Switching over to joint operation

On a crane with joint operation, it is also possible to switch back and forth between trolley I and trolley II in joint operation of both trolleys.



➔ Either:

Press and hold the HORN button pressed halfway.

Simultaneously press the TROLLEY TRAVEL TOWARD LEFT and TROLLEY TRAVEL TOWARD RIGHT buttons to select both trolleys for joint operation.

Release the HORN button.

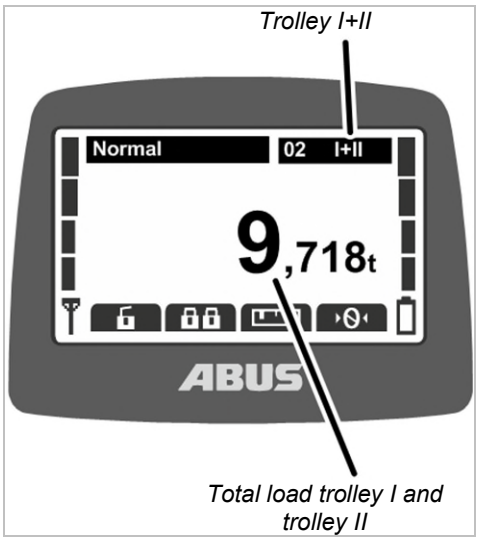
Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

select the value “I+II” in the menu item “Select trolley”,

confirm by pressing ENTER.



- Trolley I+II appears on the display.
- The total load on trolley I and II appears on the display.

➔ Press the buttons to operate trolley I and II at the same time.

3.27 Operating cranes in tandem operation

With ABURemote, two cranes can be controlled jointly in tandem operation as well as in individual operation, for example, to attach a load on one crane while the other crane is blocked to prevent it being accidentally used by another crane operator.

For cranes with two trolleys in tandem operation: All functions concerning two trolleys function exactly the same way as described previously. See “Operating a crane with two trolleys”, page 56.

Only with tandem operation

Activating tandem operation

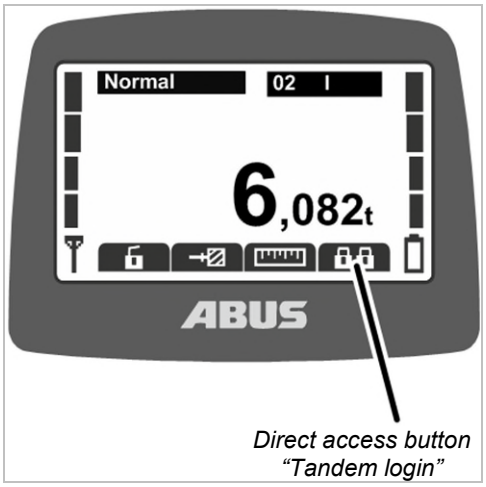
To allow cranes to be operated in tandem operation:

– The transmitter must be logged in to the crane. See “Checking, switching on and releasing prior to beginning work”, page 36.

– A transmitter may not be logged in to the second crane being operated in tandem operation. See “Logging out and switching off the transmitter”, page 42.

Logging in to the second crane

First, the transmitter must be logged in to the second crane.



➔ Either:

Press the direct access button “Tandem login”.

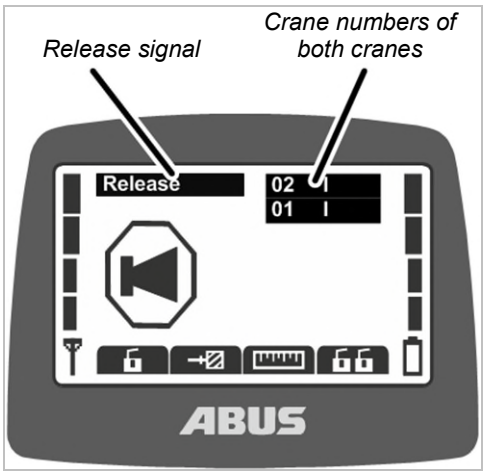
Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Tandem login”.

- If the transmitter is within range of the second receiver, the second receiver will find the transmitter.
- The transmitter logs in to the second receiver.



- The numbers of both cranes appear on the display.
- The display shows “Release”.

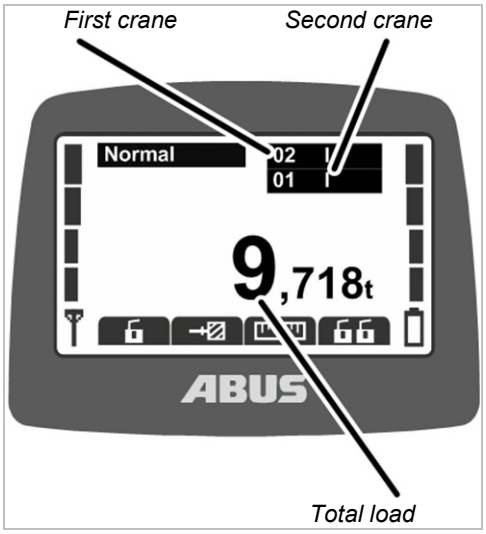
➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

Operating the cranes jointly and displaying the load

After the tandem login, both cranes are automatically selected for tandem operation.

To operate the first and second crane together:



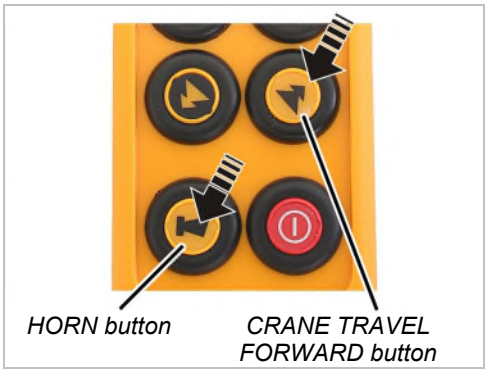
- The crane numbers of the first and second cranes appear on the display below each other with black backlighting.
- The total load of the first crane and second crane appear on the display.

➔ Press the buttons to operate the first crane and the second crane at the same time.

Switching between first and second crane in individual operation and displaying the load

With tandem operation switched on, it is possible to switch back and forth between the cranes in individual operation, for example, to attach a load.

Switching over to individual operation for the first crane:



➔ Either:

Press and hold the HORN button pressed halfway.

Press the CRANE TRAVEL FORWARD button to select the first crane.

Release the HORN button.

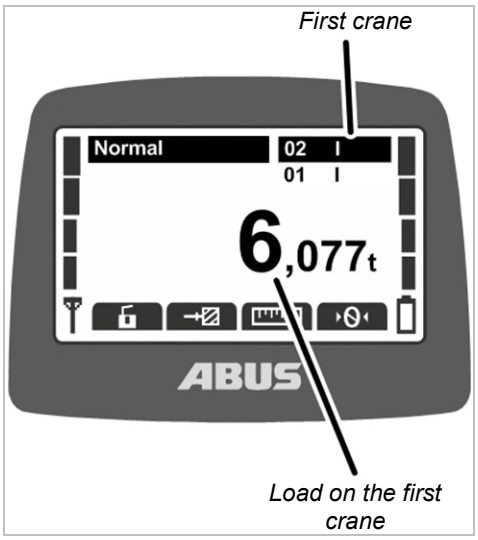
Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

select the crane number of the first crane in the menu item “Select crane”,

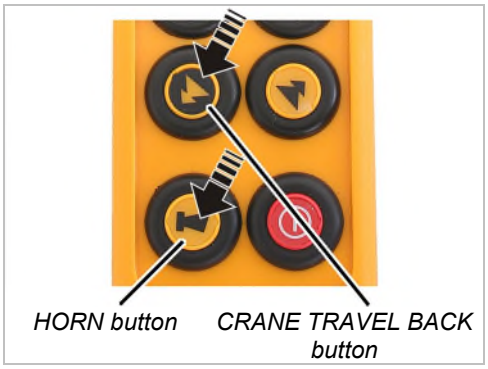
confirm by pressing ENTER.



- The number of the first crane appears on the display with black backlighting.
- The load on the first crane appears on the display.

➔ Press the buttons to operate only the first crane.

Switching over to individual operation for the second crane:



➔ Either:

Press and hold the HORN button pressed halfway.

Press the CRANE TRAVEL BACK button to select the second crane.

Release the HORN button.

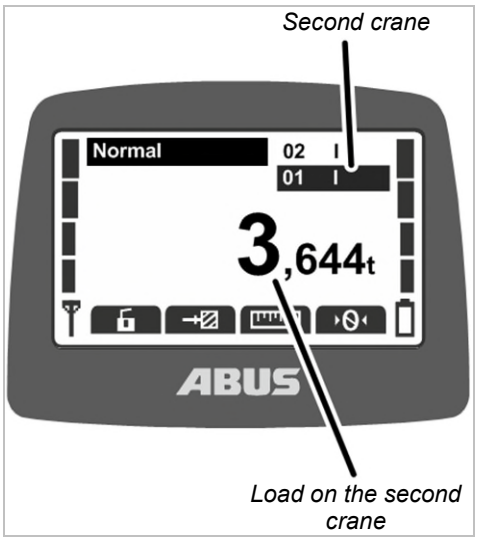
Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

select the crane number of the second crane in the menu item “Select crane”,

confirm by pressing ENTER.

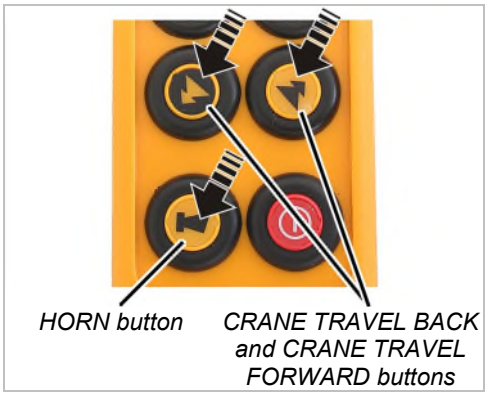


- The number of the second crane appears on the display with black backlighting.
- The load on the second crane appears in the display.

➔ Press the buttons to operate only the second crane.

Switching back to tandem operation

To operate the first and second crane jointly:



➔ Either:

Press and hold the HORN button pressed halfway.

Simultaneously press the CRANE TRAVEL FORWARD and CRANE TRAVEL BACK buttons to select both cranes again.

Release the HORN button.

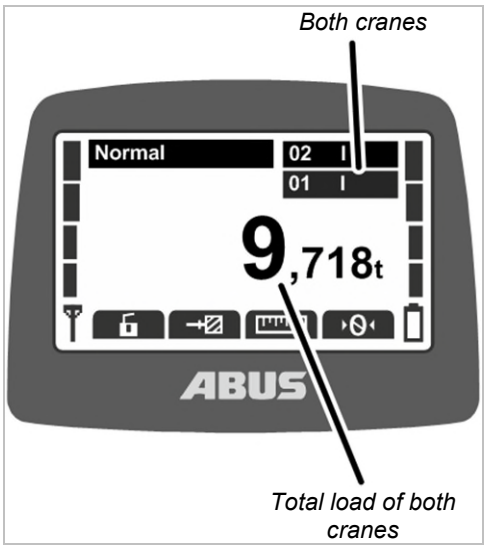
Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

select the crane numbers of both cranes in the menu item “Select crane”,

confirm by pressing ENTER.

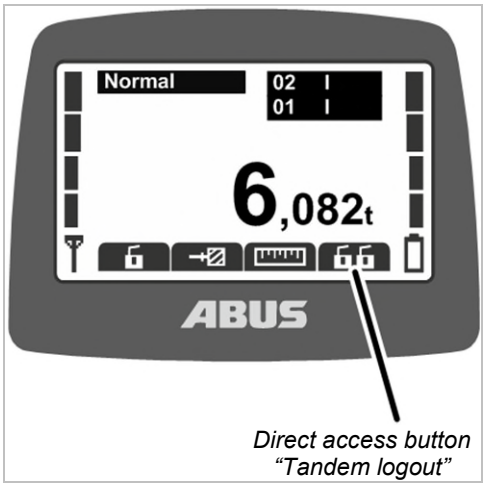


- The crane numbers of the first and second cranes appear on the display below each other with black backlighting.
- The total load of the first crane and second crane appear on the display.

➔ Press the buttons to operate the first crane and the second crane at the same time.

Logging out from the second crane

To end tandem operation, the second crane must be logged out of the transmitter. The second crane can then also be used again by another transmitter.



Direct access button "Tandem logout"

➔ Either:

Press the direct access button “Tandem logout”.

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Tandem logout”.

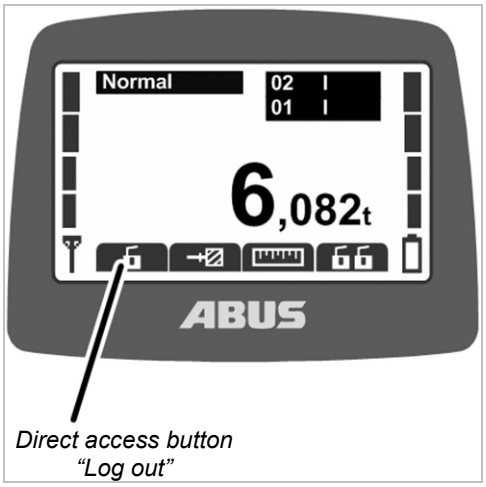
- The transmitter logs out from the second receiver.

- The display shows “Release”.

➔ Press the HORN button and let it go.

- The sound of the horn can be heard at the transmitter and at the crane.
- The crane is ready for use.

Logging out from both cranes



Direct access button "Log out"

➔ Either:

Press the direct access button “Log out”.

Or:

Open the main menu with the MENU button,

open the menu “Crane operation”,

open the menu item “Log out”.

- The transmitter logs out from the second receiver.
- The transmitter logs out from the first receiver.
- The transmitter switches to the operating mode “Not logged in”.

4. Maintenance

This section applies to anyone who maintains, repairs or modifies the crane.

The end user of the crane is responsible for the selection and proper qualifications of the maintenance personnel.

> ***Danger to persons!***
> Persons can be injured if the crane is incorrectly serviced.
>
> If personnel other than that of the ABUS company are employed to perform maintenance on the crane, it is the end user's responsibility to ensure that these persons are adequately qualified. Follow the procedures described here precisely.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

ABUS assumes no liability for damage due to incorrectly performed maintenance work done by unqualified personnel.

ABUS recommends having the maintenance work performed by ABUS Service.

Use only original ABUS replacement parts. Otherwise, all warranty claims will be rendered invalid.

Transmitters and receivers are maintenance-free!

There are no components in the transmitter or receiver which need to be checked or replaced.

4.1 Instructions regarding safety when performing maintenance work

Observe the following safety instructions when doing any maintenance work on the crane with ABURemote:

- Switch off the mains switch. Secure the switch to ensure it cannot be turned back on accidentally.
- Unplug the mains disconnector plug from the socket on the crane panel. Secure the socket with a padlock to ensure it is not plugged back in accidentally.
- Use suitable lifting platforms and fall protection equipment.
- Adequately cordon off the operating range around the lifting platform.
- Switch off any other cranes using the same crane track or cranes working above or below the crane undergoing maintenance. Secure the switches to ensure they cannot be turned back on accidentally. Otherwise, other cranes could overturn the hoisting platform or crash into the crane undergoing maintenance.
- Notify personnel in the area that maintenance work will be performed.
- Only trained electricians should work on the crane electrical system!
- Even after the emergency stop button has been pressed, life-threatening high voltages are still present in the panels.

These safety instructions apply specifically to ABURemote:

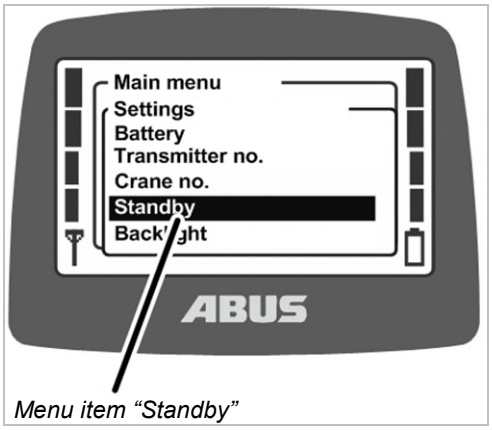
- Voltages of up to 400 V can occur in the receiver housing. An electric shock can therefore occur. Do not open the receiver housing when it is under live voltage.
- If the transmitter is left unattended in the hall during maintenance work, the crane could be accidentally operated with it. Take the transmitter with you onto the lifting platform. Switch off the mains switch, if possible. Press the stop button.

4.2 Setting standby

The number of minutes which elapse before the transmitter switches to “Standby” mode when not being used is set here.

The operating mode “Standby” can also be switched off here. See “Standby”, page 42.

Opening the menu item “Standby”



Menu item “Standby”

➔ Open the main menu with the MENU button.

➔ Open the “Settings” menu.

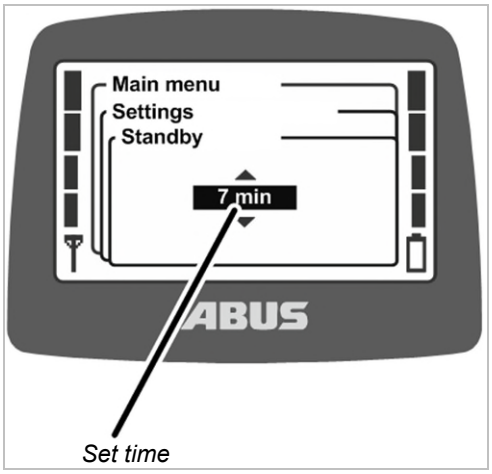
➔ Enter the code for the “Settings” menu.

See “Entering the code or PIN”, page 16.

The code for the menu is “0005”.

➔ Open menu item “Standby”.

Setting standby



Set time

- The display shows the currently set time until the transmitter switches to the operating mode “Standby”.

➔ Set the required value.

If “Off” is selected here, the operating mode “Standby” is switched off.

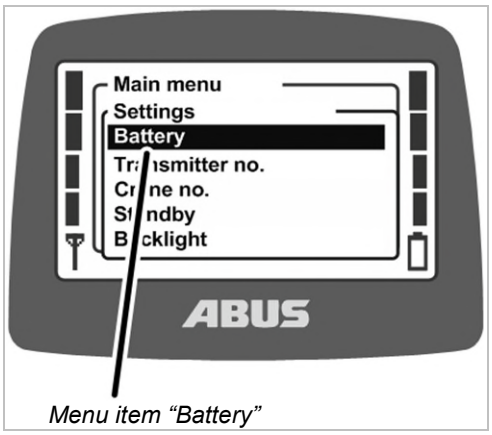
The value “Off” is sorted in the list in front of the value “1 min” and can be reached by scrolling multiple times.

➔ Confirm the input with ENTER.

4.3 Displaying the remaining battery time and setting the alarm

The time remaining until the batteries are discharged is displayed here. Furthermore, the amount of battery time remaining before an alarm is displayed can be selected here.

Opening the menu item “Battery”



Menu item “Battery”

➔ Open the main menu with the MENU button.

➔ Open the “Settings” menu.

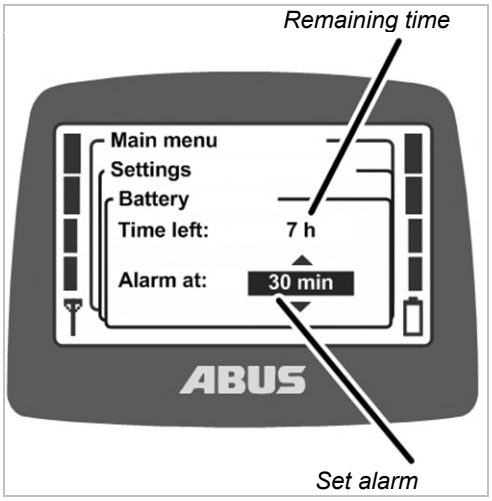
➔ Enter the code for the “Settings” menu.

See “Entering the code or PIN”, page 16.

The code for the menu is “0005”.

➔ Open the menu item “Battery”.

Displaying and setting the remaining time



- The estimated battery time remaining is shown on the display.
- The alarm currently set for the battery time appears on the display.

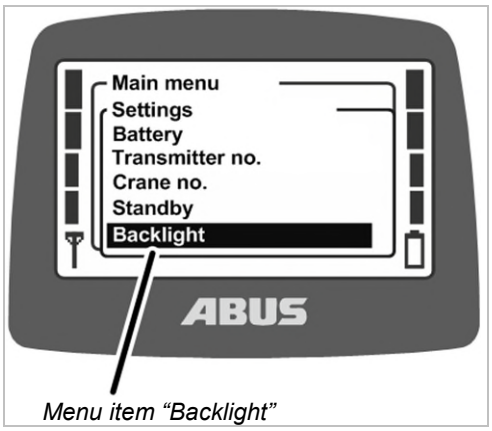
➔ Select whether the alarm should be displayed for 10 minutes, 20 minutes or 30 minutes of remaining battery time.

➔ Confirm the input with ENTER.

4.4 Setting the display light

Here you select when the display light should light up and how long it should remain illuminated.

Opening the menu item “Backlight”



Menu item “Backlight”

➔ Open the main menu with the MENU button.

➔ Open the “Settings” menu.

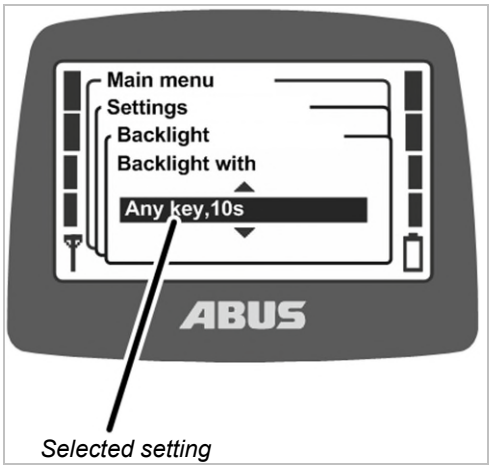
➔ Enter the code for the “Settings” menu.

See “Entering the code or PIN”, page 16.

The code for the menu is “0005”.

➔ Open the menu item “Backlight”

Setting the display light



Selected setting

- The setting which has been selected for the display light appears in the display.

➔ Select when the display light should light up and how long it should remain illuminated.

The less time the display remains lit, the longer the operating time from one battery charge.

– “Backlight with any key, 5s”: The display lights up when any button is pressed and remains lit for 5 seconds after it is released.

– “Backlight with any key, 10s”: The display lights up when any button is pressed and remains lit for 10 seconds after it is released.

– “Backlight with Horn key, 5s”: The display lights up only when HORN is pressed and remains lit for 5 seconds after it is released.

– “Backlight with Horn key, 10s”: The display lights up only when HORN is pressed and remains lit for 10 seconds after it is released.

– “Backlight with any menu key, 5s”: The display lights up when MENU, ENTER or an arrow button/direct access button is pressed and remains lit for 5 seconds after it is released.

– “Backlight with any menu key, 10s”: The display lights up when MENU, ENTER or an arrow button/direct access button is pressed and remains lit for 10 seconds after it is released.

– Confirm using ENTER.

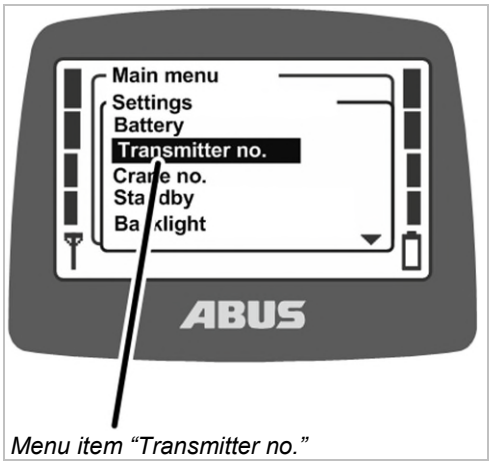
4.5 Setting the transmitter no. and crane no.

The transmitter no. and crane no. are set here. These numbers are used to uniquely identify and assign the crane and transmitter. They have no technical significance or function in ABURemote, but are displayed exclusively for the crane operator at various points.

Transmitter no. and crane no. are displayed in “Standby” operating mode and the crane no. is displayed in “Normal” operating mode in the top right corner.

Transmitter no. and crane no. can be attached to the crane and transmitter by means of adhesive labels. Special adhesive labels can be obtained from ABUS. See “ABUS Service”, page 93.

Opening the menu item “Transmitter no.”



Menu item “Transmitter no.”

➔ Open the main menu with the MENU button.

➔ Open the “Settings” menu.

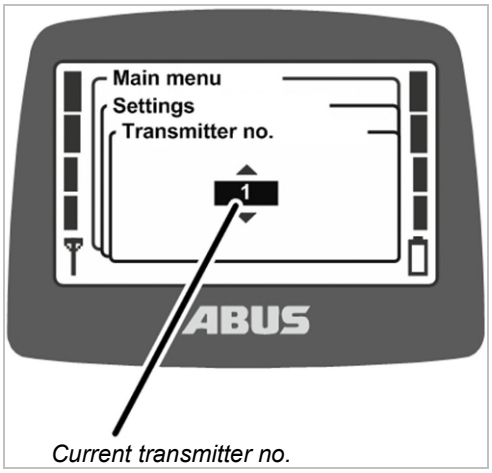
➔ Enter the code for the “Settings” menu.

See “Entering the code or PIN”, page 16.

The code for the menu is “0005”.

➔ Open the “Transmitter no.” menu item.

Setting the transmitter no.



Current transmitter no.

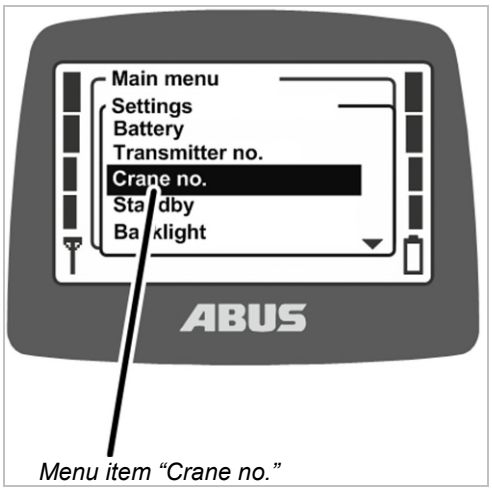
- The display shows the current transmitter no.

➔ Set the required transmitter no.

➔ Confirm using ENTER.

- The transmitter no. is saved.

Opening the menu item “Crane no.”



Menu item “Crane no.”

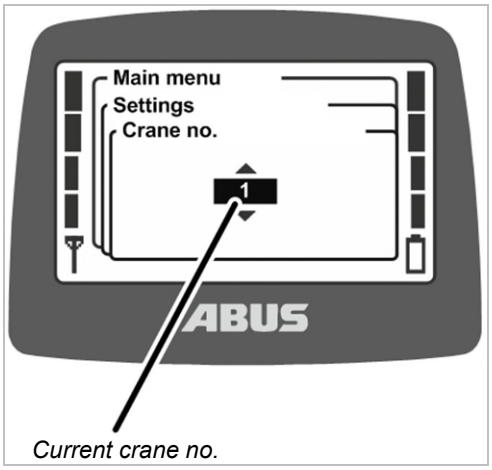
➔ Open the main menu with the MENU button.

➔ Open the “Settings” menu.

➔ Open the “Crane no.” menu item.

The menu item can only be opened with the transmitter logged in.

Setting the crane no.



Current crane no.

- The display shows the current crane no.

➔ Set the required crane no.

➔ Confirm using ENTER.

- The crane no. is saved.
- The message “Receiver: number has been changed” is displayed.

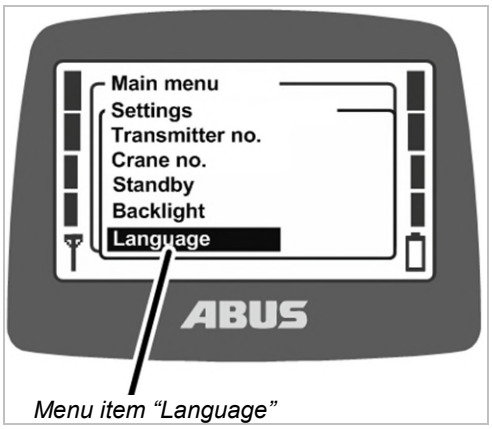
➔ Confirm using ENTER.

➔ Log out the transmitter and then log it back in.

4.6 Setting the language

The language used for the display and the messages is selected here.

Opening the menu item “Language”



Menu item “Language”

➔ Open the main menu with the MENU button.

➔ Open the “Settings” menu.

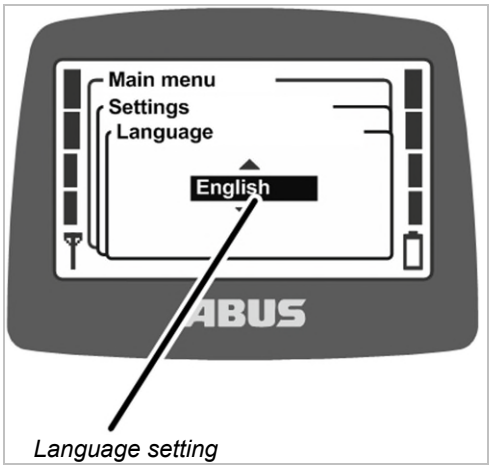
➔ Enter the code for the “Settings” menu.

See “Entering the code or PIN”, page 16.

The code for the menu is “0005”.

➔ Open the menu item “Language”.

Setting the language



Language setting

- The set language appears on the display.

➔ Select the required language.

➔ Confirm using ENTER.

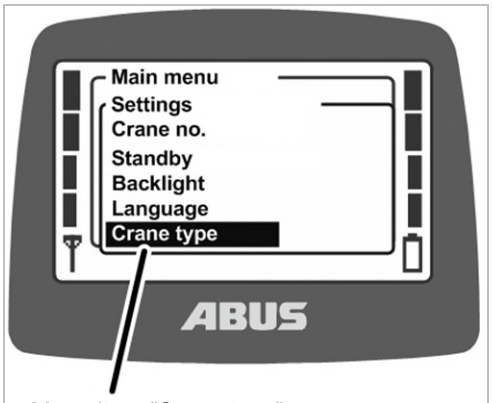
4.7 Setting the crane type for display symbols

The crane type for the display symbols is set here. During operation of the crane in “Normal” operating mode, symbols for the direction of crane, trolley and load hook are displayed.

If the transmitter is used on a jib crane, the displayed symbols can be changed so that the symbols for slewing left and right are shown instead of the symbols for crane travel forward and back.

In addition, the button caps can be exchanged so that the symbols matching the crane type are also used there. See “Replacing the push-button caps”, page 30.

Opening the menu item “Crane type”



Menu item “Crane type”

➔ Open the main menu with the MENU button.

➔ Open the “Settings” menu.

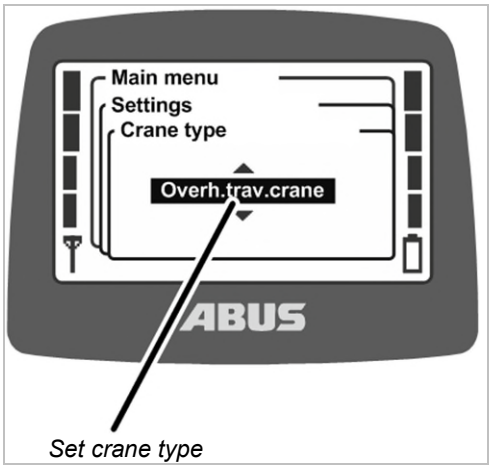
➔ Enter the code for the “Settings” menu.

See “Entering the code or PIN”, page 16.

The code for the menu is “0005”.

➔ Open the menu item “Crane type”.

Setting the crane type



Set crane type

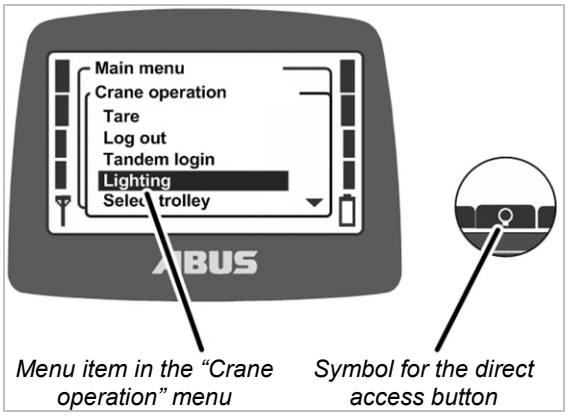
- The selected crane type is shown on the display.

➔ Select the required crane type (overhead travelling crane or jib crane).

➔ Confirm using ENTER.

4.8 Setting the direct access buttons

– **The four arrow buttons under the** display can be allocated functions as direct access buttons in “Normal” operating mode (e.g. tare, super-precision lifting, etc.).



Menu item in the “Crane operation” menu

Symbol for the direct access button

These functions can then either be opened using the corresponding menu items in the “Crane operation” menu on the transmitter, or they can be called up with one of the direct access buttons. Using the direct access buttons, the functions can be opened quickly and easily in “Normal” operating mode without having to open the menu beforehand. This is useful for the most frequently used functions.

Seldom-used functions are best operated using the menu to allow the direct access buttons to remain free for the most frequently used functions.

A number of functions can only be operated using the direct access buttons and cannot be opened using menu items in the menu.

The allocation of the four direct access buttons appears at the lower edge of the display.

Meaning of the symbols

– Symbol with black backlighting: The function is available and can be selected.

– Symbol with white backlighting: The function is currently unavailable.

– Symbol completely white: No function has been selected for this direct access button.

Available functions:

Symbol	Description	Function
	Zero with two arrows	“Tare”
	Light bulb	“Lighting”
	Hatched wall with arrow	“Limit switch”
	Closed padlock	“Log in” Crane is logged out. Press “Log in”.
	Open padlock	“Log out” Crane is logged in. Press “Log out”.
	Closed double padlock	“Tandem login” Crane is not logged in in tandem operation. Press “Tandem login”.
	Open double padlock	“Tandem logout” Crane is logged in in tandem operation. Press “Tandem logout”.
	Ruler with detailed scale	“Sup.pre.lift on” Super-precision lifting is switched off. Press to switch on.
	Ruler with coarse scale	“Sup.pre.lift off” Super-precision lifting is switched on. Press to switch off.
	'T' with arrow	“Teach-In”
	Line with two arrows	“Positioning”
	'O' with numbers 1 to 6	“Option” 1 to 6
	Suspended load at rest with two arrows	“Sway control on” Sway control is switched off. Press to switch on.
	Swaying load	“Sway control off” Sway control is switched on. Press to switch off.
	Arrow with hash key	“Freq. change”

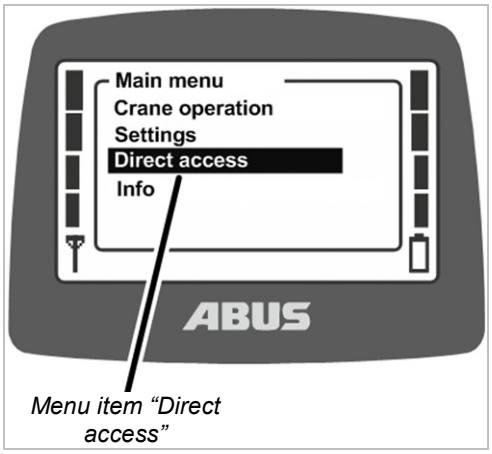
Danger due to button assignment with two-hand operation!
If the functions for releasing the load in two-hand operation lie on two direct access buttons, it can happen that instead of just one, both buttons are directly pressed. The load could then be released unintentionally, killing or injuring people.

Do not use direct access buttons for functions with two-hand operation!

Danger due to missing button labels!
The direct access buttons for the additional functions are labelled with “O1” to “O6” and cannot be individually labelled. Thus, other persons do not know which functions are controlled by these direct access buttons.

Carefully instruct crane operators!

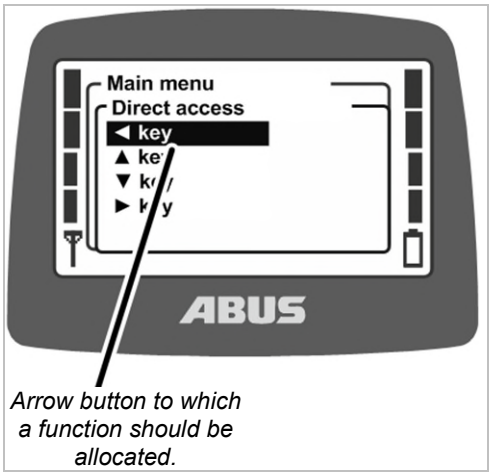
Allocating direct access buttons



Menu item “Direct access”

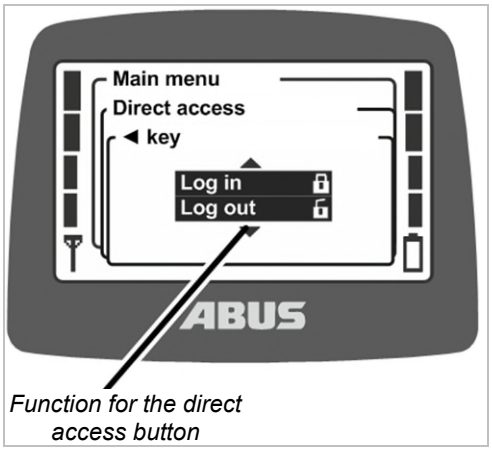
➔ Open the main menu with the MENU button.

➔ Open the “Direct access” menu.



Arrow button to which a function should be allocated.

➔ Select the arrow button which is to be allocated a function.



Function for the direct access button

➔ Select the required function.

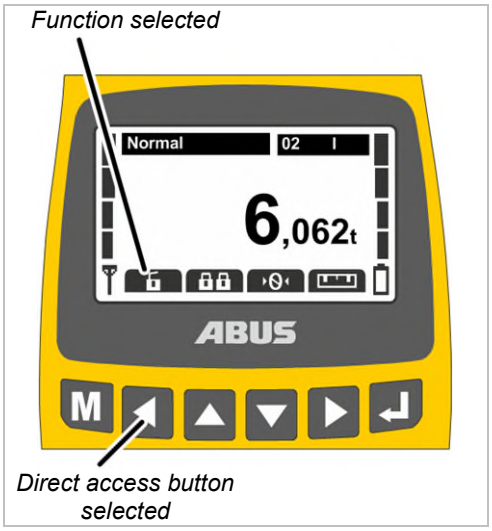
➔ Confirm using ENTER.

If this function was already allocated to another direct access button:

- The message “Change direct access keys?” appears on the display.

➔ Select the “OK” button and confirm.

➔ Quit the menu.

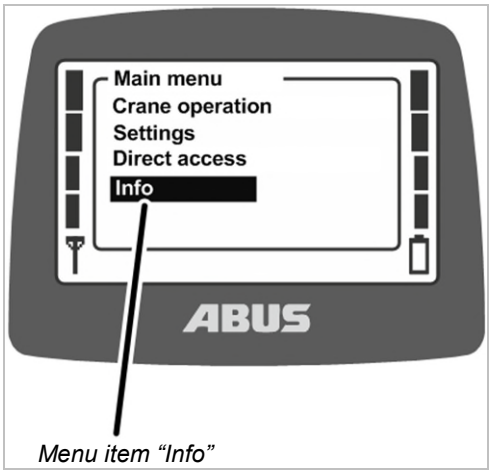


- The function is saved.
- The required function appears in the display in the ‘Normal’ operating mode above the direct access button selected.

4.9 Displaying transmitter information

An electronic type plate can be displayed in the main menu. This will show various information on ABURemote.

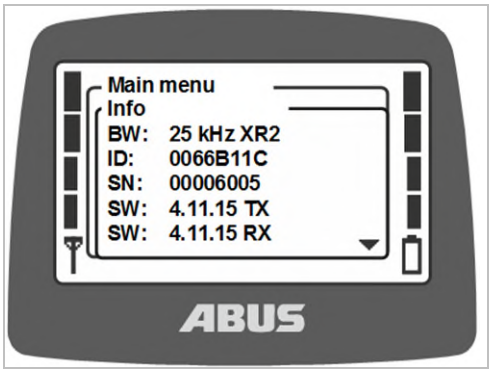
Opening the menu item “Info”



➔ Open the main menu with the MENU button.

➔ Open the menu item “Info”.

Displaying transmitter information



- Information on the transmitter appears in the display.

– BW:

  Bandwidth of the radio channel (e.g. 25 kHz)

  Wireless technology (Without further specification: XR0, with specification “XR2”: XR2 wireless technology)

– ID: Set address of the receiver on the transmitter.

– SN: Serial no. of the transmitter

– SW: Software version Tx (transmitter)

– SW: Software version Rx (receiver)

– AP: Application Tx (transmitter)

– AP: Application Rx (receiver)

➔ Scroll through the information list with the UP and DOWN arrow buttons.

4.10 Setting the radio channel

This setting regulates whether the transmitter automatically searches for a free radio channel or transmits exclusively via a fixed radio channel.

If a fixed radio channel is set, the function “channel change” is disabled. The radio channel can then only be set using the function in the service menu described here.

Setting a fixed radio channel can be an advantage in order to avoid interference on other devices or by other devices. On the other hand, defining fixed radio channels could be a disadvantage in connection with other systems which have an automatic radio channel search function.

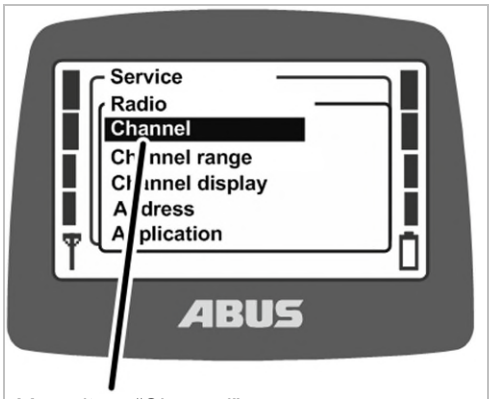
If the radio channel used by ABURemote is interfered with by other devices, this can lead to the connection being lost (e.g. fault 101).

A comprehensive frequency management plan should therefore be set up for the entire hall area.

- For this, create a list of all devices which operate with a radio transmission frequency in the 433 MHz range.
- For all devices with manually adjustable radio channels, specify and set the respective devices according to the list. In doing so, allow as much bandwidth as possible between the channels.

Opening the menu item “Channel”

The menu item can be opened with the transmitter logged out or with it logged in.



Menu item “Channel”

➔ Hold MENU depressed (5 seconds).

● The code query appears on the display.

➔ Enter the code for the service menu.

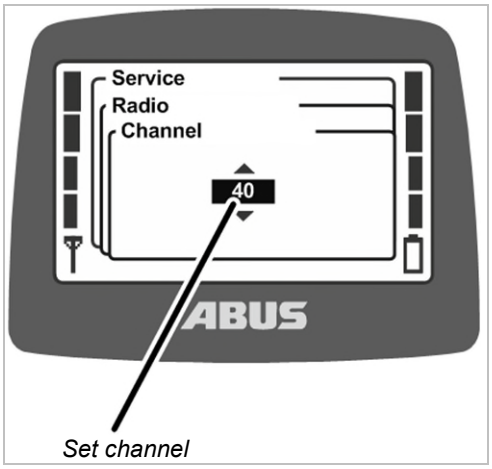
See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the “Radio” menu.

➔ Open the menu item “Channel”.

Reading off and setting the radio channel



- The display shows the currently set value.
  - Value between 1 and 69: The radio channel is permanently set to the corresponding value
  - Auto: The automatic search for a radio channel is activated.

➔ Set the radio channel required or “Auto”.

The value “Auto” is sorted in the list in front of radio channel 1 and can be reached by scrolling multiple times.

➔ Confirm the input with ENTER.

- The setting is automatically adopted by the receiver and does not need to be set separately there.

Channel and frequency assignment:

Radio channel	Frequency (MHz)	Radio channel	Frequency (MHz)
1	433,075	36	433,950
2	433,100	37	433,975
3	433,125	38	434,000
4	433,150	39	434,025
5	433,175	40	434,050
6	433,200	41	434,075
7	433,225	42	434,100
8	433,250	43	434,125
9	433,275	44	434,150
10	433,300	45	434,175
11	433,325	46	434,200
12	433,350	47	434,225
13	433,375	48	434,250
14	433,400	49	434,275
15	433,425	50	434,300
16	433,450	51	434,325
17	433,475	52	434,350
18	433,500	53	434,375
19	433,525	54	434,400
20	433,550	55	434,425
21	433,575	56	434,450
22	433,600	57	434,475
23	433,625	58	434,500
24	433,650	59	434,525
25	433,675	60	434,550
26	433,700	61	434,575
27	433,725	62	434,600
28	433,750	63	434,625
29	433,775	64	434,650
30	433,800	65	434,675
31	433,825	66	434,700
32	433,850	67	434,725
33	433,875	68	434,750
34	433,900	69	434,775
35	433,925		

4.11 Setting the channel range

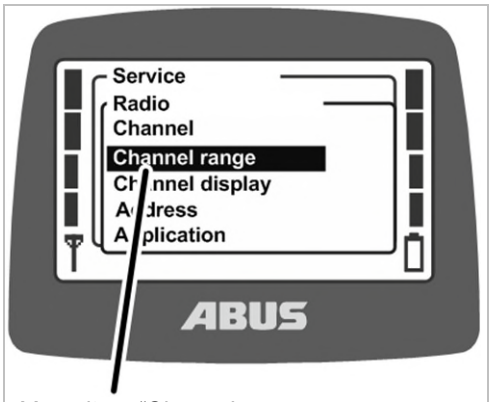
Whether the transmitter should use all radio channels (1 through 69) during the automatic search, or only the radio channels 40 through 69, is set here. This is important for the operation in certain countries with special regulations.

ABURemote generally operates with a duty cycle of 100% with regard to the transmission duration on a radio channel. The duty cycle determines how much time within a certain time interval ABURemote uses the radio channel or takes a break. A duty cycle of 100% means that ABURemote completely occupies the radio channel and transmits continuously.

In certain countries, only the radio channels 40 through 69 are permitted to be used with a duty cycle of 100%. In these countries the radio channels 1 through 39 must therefore be blocked for ABURemote and/or the transmission power reduced.

Opening menu item “Channel range”

The menu item can only be opened with the transmitter logged out.



Menu item “Channel range”

➔ Hold MENU depressed (5 seconds).

- The code query appears on the display.

➔ Enter the code for the service menu.

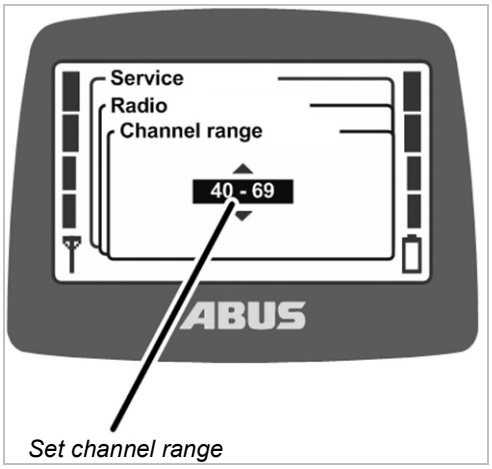
See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the “Radio” menu.

➔ Open menu item “Channel range”.

Reading off and setting the channel range



Set channel range

- The currently set channel range is shown on the display.

– 1 – 69: ABURemote uses all radio channels 1 through 69 in the automatic search for a radio channel and in the case of fixed settings. The radio channels are occupied with a 100% duty cycle.

– 40 – 69: ABURemote uses only radio channels 40 through 69 in the automatic search for a radio channel and in the case of fixed settings. The radio channels are occupied with a 100% duty cycle.

4.12 Setting the transmission power of transmitter and receiver

This setting defines whether the transmitter and the receiver should transmit at full transmission power or whether the transmission power should be reduced.

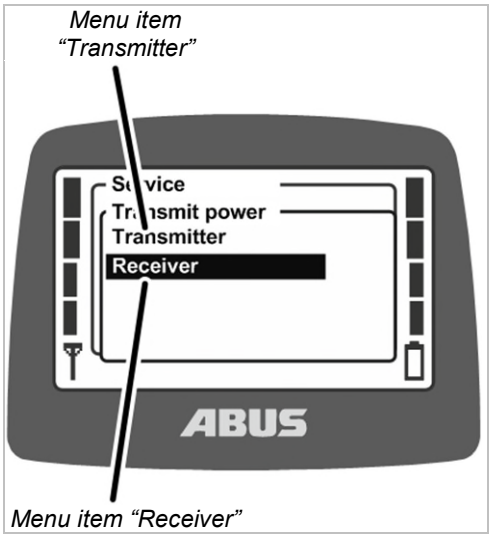
If several radio systems (radio remote control for cranes, but also other systems with wireless connection) are operated in close proximity to one another, the signals of one radio system (particularly if the radio partner is located at a great distance) can be overshadowed by the adjacent range of a different radio system (especially if the radio partner of the other radio system is located close to the ABURemote transmitter or receiver).

In these cases it may make sense to reduce the transmission power of individual systems or even of all systems. If multiple transmitters are operated in small spaces, it is usually useful to reduce the transmission power of all transmitters. Adapting the transmission power of receivers is only recommended in exceptional cases.

Opening the menu item “Transmission power”

The menu item “Transmitter” can be opened with the transmitter either logged out or logged in.

The menu item “Receiver” can only be opened with the transmitter logged in.



➔ Hold MENU depressed (5 seconds).

- The code query appears on the display.

➔ Enter the code for the service menu.

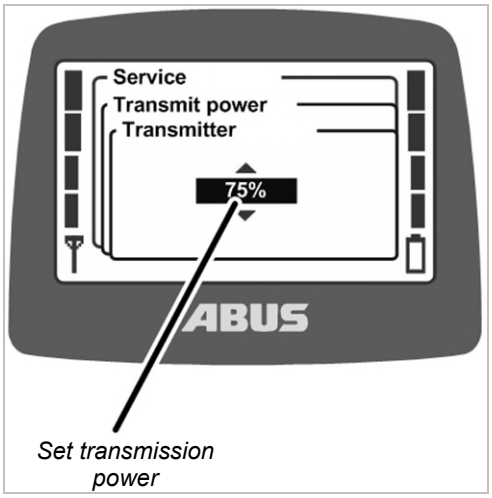
See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the menu item “Transmission power”.

➔ Open the menu item “Transmitter” or “Receiver”.

Reading off and setting the transmission power



Set transmission power

- The transmission power currently set on the transmitter or receiver is shown on the display.

➔ Set the required value.

The transmission power can be set to 100%, 75%, 50%, 25% and 12%.

➔ Confirm the input with ENTER.

4.13 Setting the channel display

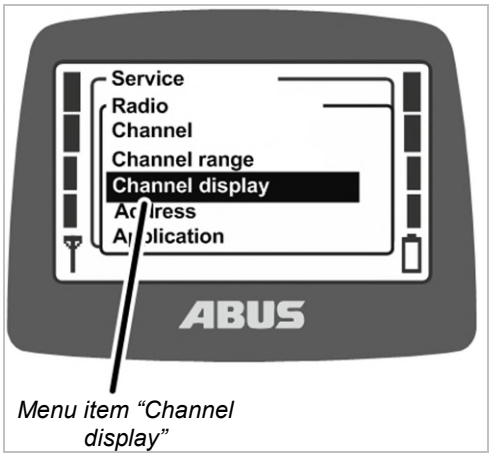
Whether or not the current radio channel is to be shown on the display in “Normal” operating mode is set here.

This can be helpful if problems occur with the automatic selection of the radio channel.

If the channel display is switched on in “Normal” operating mode, the current radio channel is displayed at the bottom left instead of the antenna symbol.

Opening the menu item “Channel display”

The menu item can be opened with the transmitter logged out or with it logged in.



Menu item “Channel display”

➔ Hold MENU depressed (5 seconds).

- The code query appears on the display.

➔ Enter the code for the service menu.

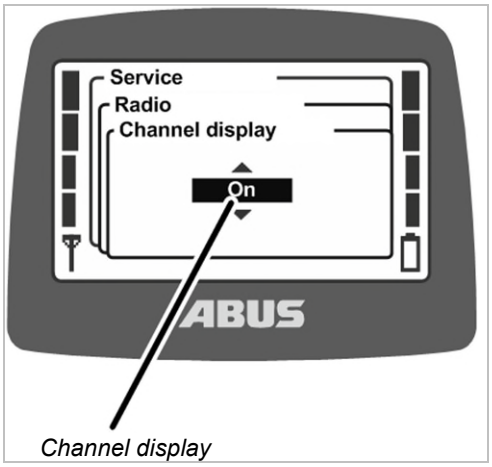
See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the “Radio” menu.

➔ Open the menu item “Channel display”.

Switching channel display on and off



Channel display

- The display indicates whether the channel display is currently switched on or off.

➔ Switch the channel display on or off.

➔ Confirm using ENTER.

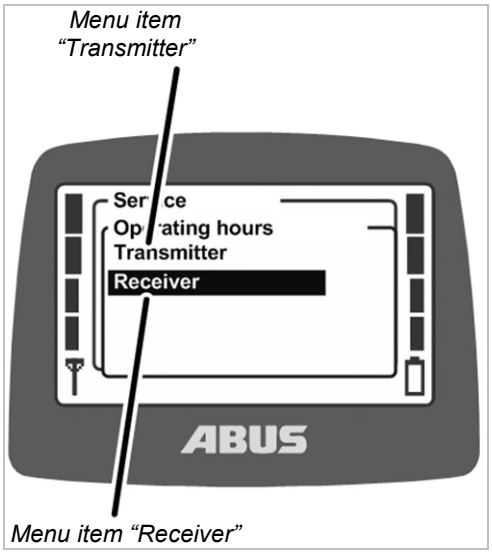
4.14 Show operating hours of transmitter and receiver

This shows how long the transmitter and receiver have been in operation. The operating hours counter counts upwardly minute-by-minute and is saved when the crane/transmitter is switched off.

Opening the menu item “Operating hours”

The menu item “Transmitter” can be opened with the transmitter either logged out or logged in.

The menu item “Receiver” can only be opened with the transmitter logged in.



➔ Hold MENU depressed (5 seconds).

- The code query appears on the display.

➔ Enter the code for the service menu.

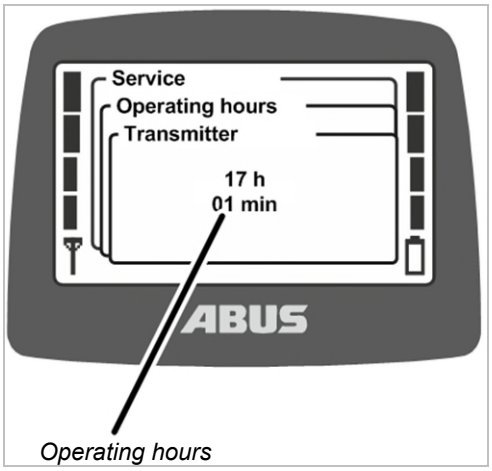
See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the menu item “Operating hours”.

➔ Open the menu item “Transmitter” or “Receiver”.

Showing operating hours



- The operating hours of the transmitter or receiver are shown on the display.

4.15 Setting the waiting time

How long the transmitter should wait after login and release before the crane can be controlled is set here.

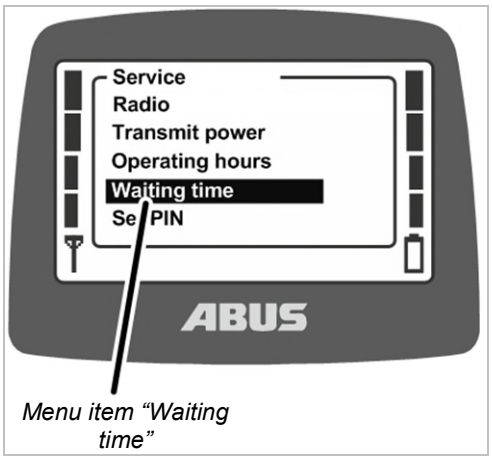
The waiting time makes sense particularly with cranes with ABULiner frequency converter or with ABUControl.

The waiting time is shown in the form of a progress bar on the display and conveys to the crane operator that the control is currently being started up.

With ABUControl, the waiting time is fixedly specified via the PLC of the control.

Opening the menu item “Waiting time”

The menu item can only be opened with the transmitter logged in.



Menu item “Waiting time”

➔ Hold MENU depressed (5 seconds).

- The code query appears on the display.

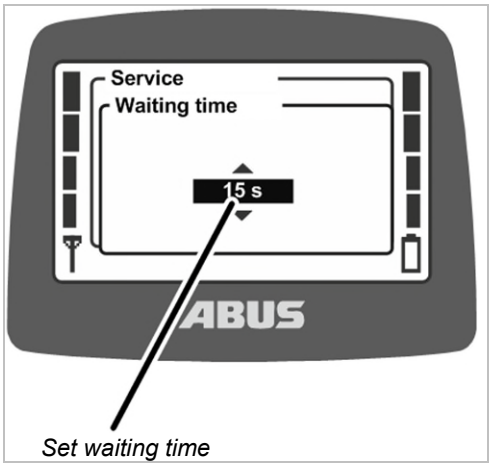
➔ Enter the code for the service menu.

See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the menu item “Waiting time”.

Setting and displaying the waiting time



Set waiting time

- The waiting time currently set is shown on the display.

➔ Set the required value.

The waiting time can be set in 5-second steps between 5 and 30 seconds, or switched off.

The value “Off” is sorted in the list in front of the value “5 s” and can be reached by scrolling multiple times.

➔ Confirm using ENTER.

4.16 Setting PIN for transmitter PIN code and special functions

The transmitter PIN code protects the transmitter so that only authorised persons can use it.

Furthermore, certain functions can also be protected by a PIN so that only authorised persons can use them.

The menu item “Set PIN” is used to activate the various PIN levels of the transmitter and set the various PINs.

Overview of the PIN levels:

- Level 0: Transmitter PIN code. If PIN level 0 is activated on the transmitter, the transmitter can only be switched on if the corresponding correct PIN is entered when switching on the transmitter.

  When switching on or logging in the transmitter, the PIN prompt appears if any of the PIN levels in the transmitter are activated. If the PIN for PIN level 0 is entered, the transmitter can then be switched on or logged in.

  Pin level 0 is only saved in the transmitter. This means that the corresponding PIN prompt appears no matter which receiver the transmitter is logged into.

- Level 1: Override travel limit switch. On the receiver, the function “Override travel limit switch” is protected by a PIN. The travel limit switch can only be overridden if PIN level 1 is additionally activated on the transmitter and the corresponding correct PIN has been entered during switching on or logging in of the transmitter. PIN level 1 automatically also contains PIN level 0.

  When switching on or logging in the transmitter, the PIN prompt only appears if one of the PIN levels in the transmitter is activated. If the PIN for PIN level 0 is entered, the transmitter can be logged in, but the protected function “Override travel limit switch” will remain locked. If the PIN for PIN level 1 is entered at the PIN prompt, the transmitter can be logged in and the direct access button “Override travel limit switch” can be pressed.

- Level 2: Switching off the load limiting system. On the receiver, the function “Switch off load limiting system” is protected by a PIN. The load limiting system can only be switched off if PIN level 2 is additionally activated on the transmitter and the corresponding correct PIN has been entered during switching on or logging in of the transmitter. PIN level 2 automatically also contains PIN level 0.

  When switching on or logging in the transmitter, the PIN prompt only appears if one of the PIN levels in the transmitter is activated. If the PIN for PIN level 0 is entered, the transmitter can be switched on, but the load limiting system remains switched on and the crane can be operated with reduced maximum load capacity. If the PIN for PIN level 2 is entered at the PIN prompt, the load limiting system is switched off and the crane can lift with maximum load capacity.

– Level 3: Combination of level 2 and 3. On the receiver, the functions “Override travel limit switch” and “Switch off load limiting system” are protected by a PIN. The travel limit switch can only be overridden and the load limiting system can only be switched off if PIN level 3 is additionally activated on the transmitter and the corresponding correct PIN has been entered during switching on or logging in of the transmitter. PIN level 3 automatically also contains PIN levels 0, 1 and 2.

  When switching on or logging in the transmitter, the PIN prompt only appears if one of the PIN levels in the transmitter is activated. If the PIN for PIN level 0 is entered, the transmitter can be logged in. If the PIN for PIN level 3 is entered, the transmitter can be logged in, the direct access button “Override travel limit switch” can be pressed, and lifting can be performed with the maximum load capacity.

The protected functions in the receiver are configured and administered at the factory.

Thus, the functions are protected no matter which transmitter is logged into the receiver (e.g. in the case of a replacement transmitter). However, the PIN required for unlocking is saved in the transmitter, and can thus be set specifically for the transmitter in question.

The protected functions can only be operated if the respective PIN level has been configured in the receiver at the factory and the same PIN level is activated on the transmitter. If the correct PIN for the PIN level is then entered when switching on or logging in the transmitter, unlocking is possible. The configuration in the receiver cannot be adapted. For the transmitter, the PIN levels can be activated in the “Settings” menu.

If a crane with protected functions in the receiver is operated with a transmitter without activated PIN levels, the protected functions cannot be unlocked.

PIN level 0 is however saved in the transmitter. This means that the PIN is prompted on this transmitter no matter which receiver the transmitter is logged into. Conversely, the crane can be operated without entry of a PIN if a transmitter with no activated PIN levels is connected to the receiver.

Note regarding safety:

The menu item “Set PIN” is accessible in the service menu, which can be opened with the service menu code “0055”. The menu item has no further protections. This means that the PINs for the PIN levels cannot be accidentally changed since they lie in the protected service menu, however there is no absolute protection against misuse, deactivation of the PIN levels or changing of the PIN.

4.17 Switching off all PIN levels

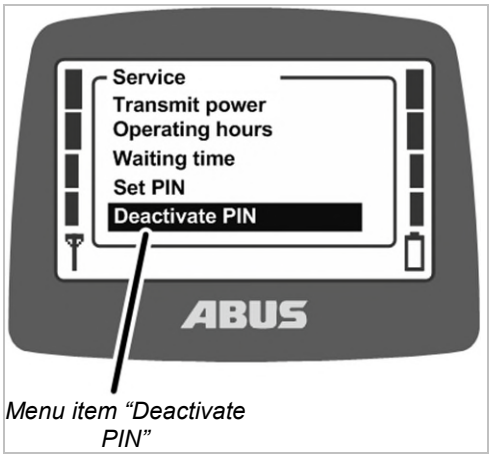
All PIN levels can be switched off simultaneously here.

If PIN levels are deactivated, they are only deactivated in the transmitter. The factory configuration of the receiver is not affected by this. This means that the protected functions (“Override travel limit switch” and “Switch off load limiting system”) are then unavailable.

Only Pin level 0 is completely deactivated by this, since it is only saved in the transmitter. The transmitter can afterwards be switched on or logged in without having to enter a PIN.

Opening the menu item “Deactivate PIN”

The menu item can be opened with the transmitter logged out or with it logged in.



Menu item “Deactivate PIN”

➔ Hold MENU depressed (5 seconds).

- The code query appears on the display.

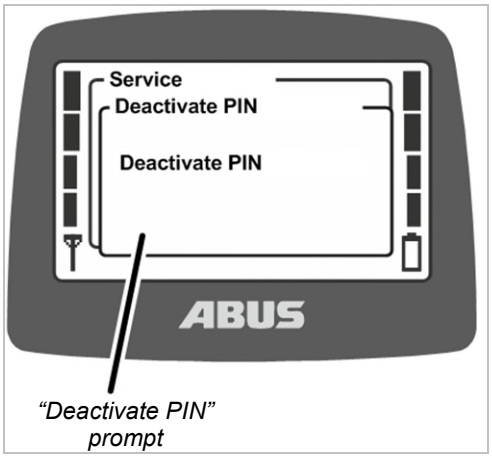
➔ Enter the code for the service menu.

See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the menu item “Deactivate PIN”.

Switching off PIN levels



“Deactivate PIN” prompt

- The display shows the “Deactivate PIN” prompt.

➔ Confirm using ENTER.

4.18 Setting the address (linking transmitter to a receiver)

Danger due to setting the wrong address!
If the transmitter's address is changed, the transmitter is no longer assigned to the receiver and another crane can be controlled with this transmitter. This can result in accidents with the crane.

Make sure that the wrong crane is not being controlled by the transmitter by mistake e.g. inform the employees affected and match the labelling of the transmitter and the crane.

Danger due to different transmitters!
If a non-identical transmitter is set with a new address, the control commands might not correlate with the labelling. This can result in accidents with the crane.

Only use identical transmitters.

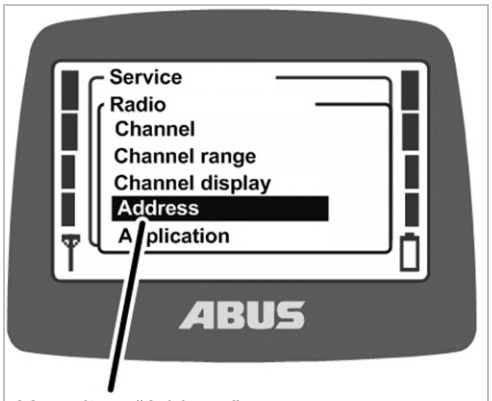
The address of the receiver in the transmitter is set here. Transmitter and receiver must be set to the same address so that they can communicate with each other.

The address in the receiver is fixed and cannot be changed. In the transmitter, the address of the receiver to which the transmitter is to be connected can be set in the service menu.

In other words, the address defines which transmitter can communicate with which receiver. Transmitters and receivers can only communicate with one another when the address of the receiver is set in the transmitter.

Opening the menu item "Address"

The menu item can only be opened with the transmitter logged out.



Menu item "Address"

➔ Hold MENU depressed (5 seconds).

● The code query appears on the display.

➔ Enter the code for the service menu.

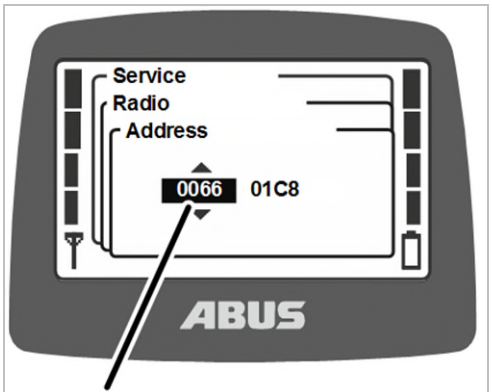
See "Entering the code or PIN", page 16.

The code for the service menu is "0055".

➔ Open the "Radio" menu.

➔ Open the menu item "Address".

Displaying and setting the address



Address block (total of 8 characters for XR2, 6 characters for XR0)

- The address currently set is shown on the display.

➔ Set the new address.

The address can be entered in several blocks. With wireless technology XR2, the address is comprised of eight characters, with wireless technology XR0 it has six characters.

➔ Confirm the input with ENTER.

➔ Switch the transmitter off, remove the rechargeable batteries briefly and then reinsert them, switch the transmitter back on again.

4.19 Putting the replacement transmitter into operation

A replacement transmitter is delivered for one or several cranes and can be used if the original transmitter is defective.

In order to put a replacement transmitter into operation, the address of the faulty transmitter must be entered in the replacement transmitter.

Danger due to different transmitters!
If a non-identical transmitter is used as a replacement, the control commands might not correlate with the labelling. This can result in accidents with the crane.

Only use identical transmitters as a replacement.

Identifying wireless technology XR0 or XR2

The wireless technologies XR0 and XR2 are available for ABURemote.

- Transmitter and receiver must both use the same wireless technology (both XR0 or both XR2). A transmitter with wireless technology XR0 cannot be used with a receiver with XR2 and a transmitter with wireless technology XR2 cannot be used with a receiver with XR0.
- Several radio remote controls (combination of transmitter and receiver) with wireless technology XR0 and XR2 can be operated in parallel without any problems, e.g. within a building.
- A radio remote control (combination of transmitter and receiver) with wireless technology XR0 can generally be exchanged for a radio remote control with wireless technology XR2.

➔ To find out which wireless technology is used on the radio remote control:

– Observe the type plate on the transmitter or the receiver:
Without further specification: wireless technology XR0
With specification “XR2”: wireless technology XR2

– Or read the wireless technology in the menu item “Info”. See “Displaying transmitter information”, page 73.

➔ Log out the defective transmitter from the receiver.

– Log out the transmitter either per menu or direct access button. See “Logging out and switching off the transmitter”, page 42.

– Or, if the transmitter is no longer available for example, switch off the crane and then switch it back on again. This switches off the receiver and the transmitter is automatically logged out.

➔ Find out the address that was set on the defective transmitter.

– Read off the address in the menu item “Info” on the defective transmitter. See “Displaying transmitter information”, page 73.

– Or, if the transmitter is no longer is available for example, read off the address from the type plate of the receiver.

➔ Set the same address on the replacement transmitter that was set on the defective transmitter. See “Setting the address (linking transmitter to a receiver)”, page 84.

➔ Switch the transmitter off, remove the rechargeable batteries briefly and then reinsert them, switch the transmitter back on again.

● The replacement transmitter can now be used.

4.20 Setting the application of the transmitter

The application of the transmitter is set here. The application is a number which represents the model and specific version of transmitters. The set application must match the model of the transmitter while also matching the connected receiver.

The application defines these variants:

– Model of the transmitter (ABURemote Button or Joystick)

– Transmitter version (standard transmitter or transmitter with three joysticks)

– Versions of the joystick (two-stage or proportional joystick)

– Model of the receiver (receiver with relay or CAN bus receiver)

Sometimes it can be necessary to change the application of the transmitter, for example, if a transmitter that has previously been used with a receiver with relay is then to be used on a crane with CAN bus receiver.

The application currently set is shown in the menu item “Info”. See “Displaying transmitter information”, page 73.

Identifying wireless technology XR0 or XR2

The wireless technologies XR0 and XR2 are available for ABURemote.

– Transmitter and receiver must both use the same wireless technology (both XR0 or both XR2). A transmitter with wireless technology XR0 cannot be used with a receiver with XR2 and a transmitter with wireless technology XR2 cannot be used with a receiver with XR0.

– Several radio remote controls (combination of transmitter and receiver) with wireless technology XR0 and XR2 can be operated in parallel without any problems, e.g. within a building.

– A radio remote control (combination of transmitter and receiver) with wireless technology XR0 can generally be exchanged for a radio remote control with wireless technology XR2.

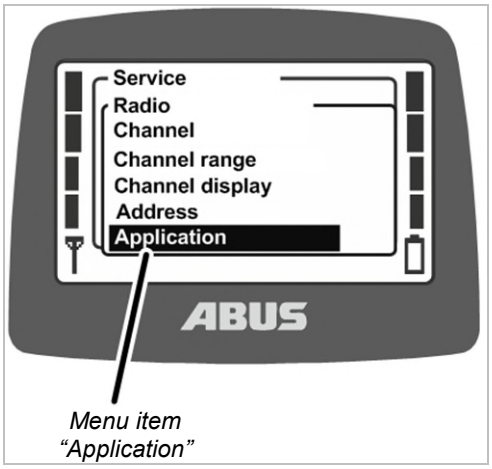
➔ To find out which wireless technology is used on the radio remote control:

– Observe the type plate on the transmitter or the receiver:
Without further specification: wireless technology XR0
With specification “XR2”: wireless technology XR2

– Or read the wireless technology in the menu item “Info”. See “Displaying transmitter information”, page 73.

Opening the menu item “Application”

The menu item can only be opened with the transmitter logged out.



Menu item “Application”

➔ Hold MENU depressed (5 seconds).

● The code query appears on the display.

➔ Enter the code for the service menu.

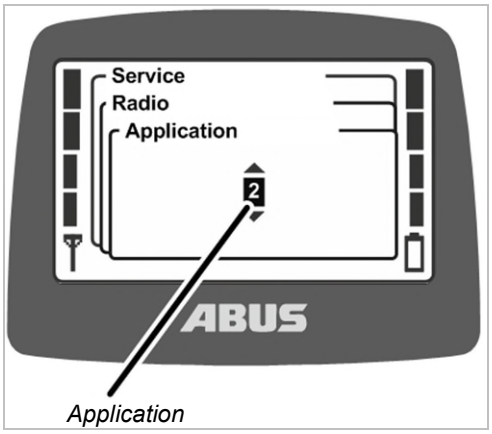
See “Entering the code or PIN”, page 16.

The code for the service menu is “0055”.

➔ Open the “Radio” menu.

➔ Open the menu item “Application”.

Setting the application



Application

● The application currently set is shown on the display.

➔ Set the application.

Applications for receivers with relay:

Transmitter	Application Wireless technology XR0	Application Wireless technology XR2
ABURemote Button	2	31
ABURemote Joystick with two joysticks, two-stage	18	31
ABURemote Joystick with three joysticks, two-stage	18	31

In rare cases, other applications must be set for the operation of older receivers.

Applications for CAN bus receivers:

Transmitter	Application Wireless technology XR0	Application Wireless technology XR2
ABURemote Button	3	31
ABURemote Joystick with two joysticks, two-stage	21	31
ABURemote Joystick with three joysticks, two-stage	23	33
ABURemote Joystick with two joysticks, proportional	19	32
ABURemote Joystick with three joysticks, proportional	22	34

➔ Confirm using ENTER.

4.21 Opening and closing the receiver

In the case of repairs or replacement, the receiver must be opened.

Danger from electric shock!
The housing contains some parts with live voltage which could lead to electric shock.

Before opening the receiver, completely switch off the receiver or the entire crane.

Opening the housing

➔ Remove the semi-round head screws (4x) from the cover.

➔ Lightly push the two clip fasteners at the top outwards.

➔ At the same time, pull the upper part of the cover away from the housing.

Lower clip fasteners

➔ Tilt the cover downwards until it is almost horizontal.

- The cover will be automatically released from the lower clip fasteners when it is tilted.

➔ Lay the cover aside.

Closing the receiver

➔ Place all four corners of the cover onto the housing.

➔ Clip the cover into all four clip fasteners at the same time.

➔ Screw the cover into place using semi-round M3.5x14 head screws. 0.5 Nm.

4.22 Replacing the receiver

If the receiver is defective, it must be replaced. If the receiver needs to be replaced, the connection cable can be disconnected from the receiver. This ensures a new cable does not have to be laid from the panel to the receiver.

In the case of repairs or replacement, the receiver must be opened.

> ***Danger from electric shock!***
> The housing contains some parts with live voltage which could lead to electric shock.
>
> Before opening the receiver, completely switch off the receiver or the entire crane.

Identifying wireless technology XR0 or XR2

The wireless technologies XR0 and XR2 are available for ABURemote.

- Transmitter and receiver must both use the same wireless technology (both XR0 or both XR2). A transmitter with wireless technology XR0 cannot be used with a receiver with XR2 and a transmitter with wireless technology XR2 cannot be used with a receiver with XR0.
- Several radio remote controls (combination of transmitter and receiver) with wireless technology XR0 and XR2 can be operated in parallel without any problems, e.g. within a building.
- A radio remote control (combination of transmitter and receiver) with wireless technology XR0 can generally be exchanged for a radio remote control with wireless technology XR2.

➔ To find out which wireless technology is used on the radio remote control:

- Observe the type plate on the transmitter or the receiver:
  Without further specification: wireless technology XR0
  With specification “XR2”: wireless technology XR2

– Or read the wireless technology in the menu item “Info”. See “Displaying transmitter information”, page 73.

Removing the old receiver

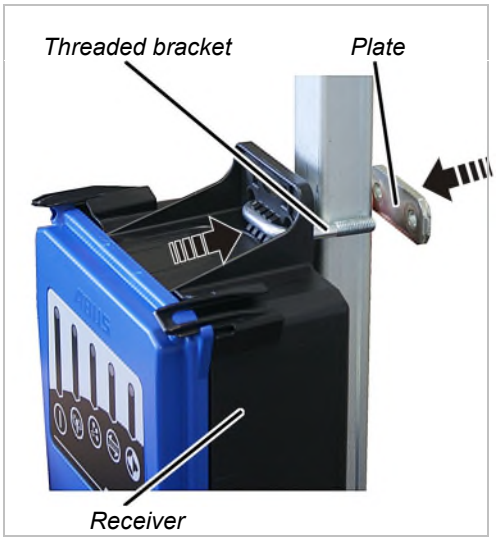
➔ Open the cover. See “Opening the housing”, page 88.

➔ Pull the cable bushing for the connection cable out of the housing.

➔ Detach the connection cable coupler plugs from the receiver.

➔ Undo the threaded bracket on the receiver and pull off the receiver.

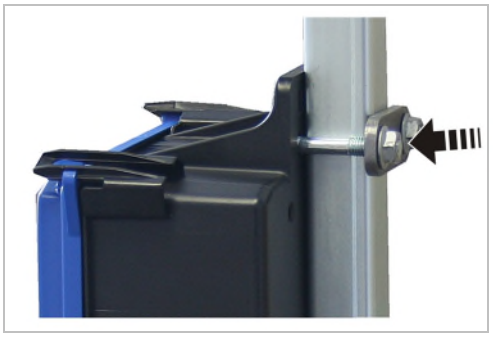
Installing a new receiver



➔ Hold the receiver on the square tube.

➔ Insert one threaded bracket each through the top and bottom of the housing.

➔ Insert one plate onto each threaded bracket from the rear side.

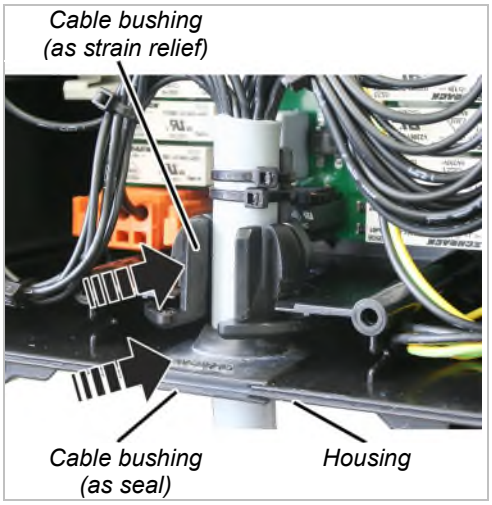


➔ Tighten the threaded bracket with the rib nuts M8 (2 x per threaded bracket). 15 Nm.

Connecting the receiver

➔ Insert the coupler plugs for the connection cable on the pin multipoint connector on the circuit board.

The coupler plugs and the pin multipoint connectors have coding pins. This ensures the coupler plugs cannot be interchanged.



➔ Push the connection cable with the two cable bushings into the housing.

Insert the rubber lips of the cable bushing (seal) so that they lay flat against the housing both inside and outside.

Insert the cable bushing (strain relief) into the housing as shown in the figure.

➔ Close the cover. See “Closing the receiver” on page 89.

Setting the address on the transmitter

To put a replacement receiver into operation, the address of the new receiver must be set on the transmitter(s) which are to control the crane with the new receiver.

➔ Read off the address of the replacement receiver on the receiver's type plate.

➔ Set the address on the transmitter. See "Setting the address (linking transmitter to a receiver)", page 84.

➔ Switch the transmitter off, remove the rechargeable batteries briefly and then reinsert them, switch the transmitter back on again.

4.23 Welding on the crane

When performing any welding work on the crane, detach the connection cable from the receiver and remove the receiver!

When performing welding work on the crane, the receiver could sustain damage due to the high voltages produced by the welding equipment.

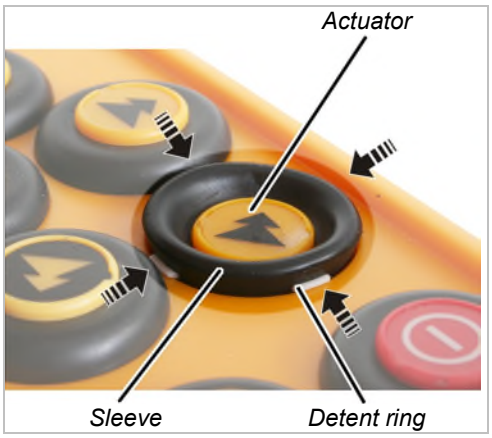
Detach the connection cable from the receiver.

4.24 Replacing the push-button caps

If a sleeve on a button is damaged (e.g. torn), the push-button cap must be replaced.

The transmitter does not require disassembly to exchange the caps.

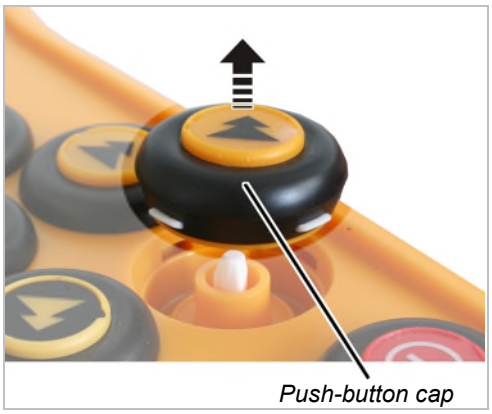
Removing the push-button cap



➔ Fully press down the actuator and hold it.

➔ Using a blunt instrument, pry out the white catches of the detent ring at the top, bottom, left and right on the sleeve.

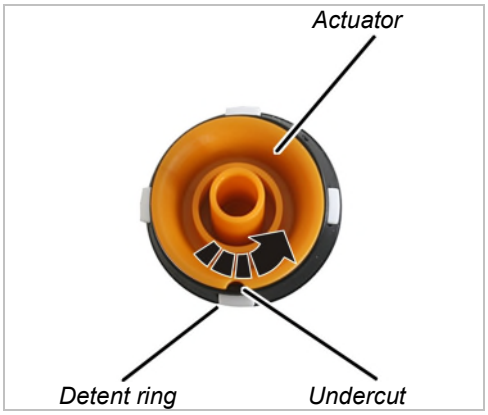
- The push-button cap now only lies loosely on top of the transmitter.



➔ Take off the push-button cap.

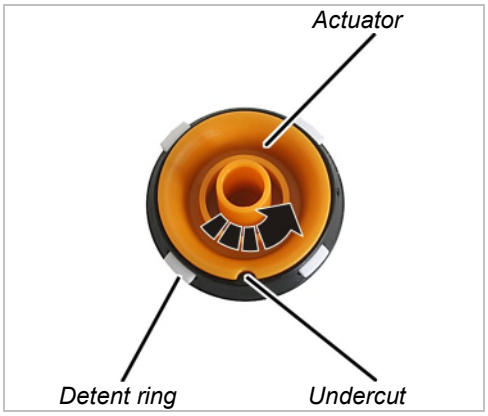
Installing the new push-button cap

Only with push-button cap for lifting/lowering and trolley travel

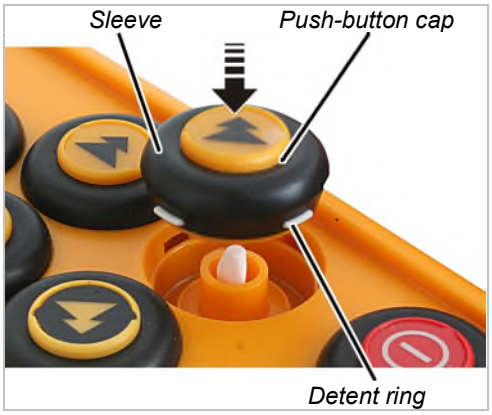


➔ Turn the actuator of the new push-button cap so that the undercut lies precisely against one of the catches.

Only with push-button cap for slewing and crane travel



➔ Turn the actuator of the new push-button cap so that the undercut lies precisely between two catches.



➔ Attach the new push-button cap. The undercut ensures that the cap fits in only a single position.

➔ Press in the sleeve around the circumference until the detent ring latches.

4.25 ABUS Service

Only in Germany

➔ If available, have the product number, serial number and customer number handy.

➔ Call the ABUS Service Centre:

– Phone: +49-2261-37-237

➔ If calling outside the usual business hours, leave a message on the answering machine.

- ABUS Service will return your call promptly.

➔ If necessary, send a description of the problem by fax or e-mail:

– Fax: +49-2261-37-265

– E-mail: service@abus-kransysteme.de

Only outside Germany

➔ Call the local ABUS branch or crane service partner.

Your local ABUS branch or crane service partner will provide details of contact data, contacts and availability.

4.26 Eliminating faults on the ABURemote

If the crane does not function with ABURemote, or does not function as expected, a fault in the ABURemote may be the cause.

Resetting after a malfunction

Depending on the fault, the transmitters and receivers have to be reset differently.

In the event of transmitter faults:

- A message appears on the display.

➔ Confirm using the “OK” button.

In the event of severe transmitter faults:

- A message appears on the display.

  There is no button available.

➔ Unscrew the cover cap from the battery compartment, wait several seconds, then screw the cover back on and log in.

If the fault persists: Contact ABUS Service. See “ABUS Service” on page 93.

In the event of receiver faults:

- A message appears on the display which begins with “Receiver”.

➔ Switch off the crane at the mains switch.

➔ Wait at least 60 seconds.

- Message 101 “Receiver disconnected” appears on the display.

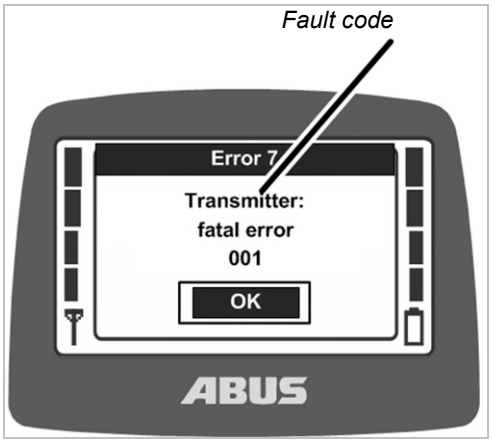
➔ Switch on the crane at the mains switch.

➔ Log in the transmitter.

If the fault persists: Contact ABUS Service. See “ABUS Service” on page 93.

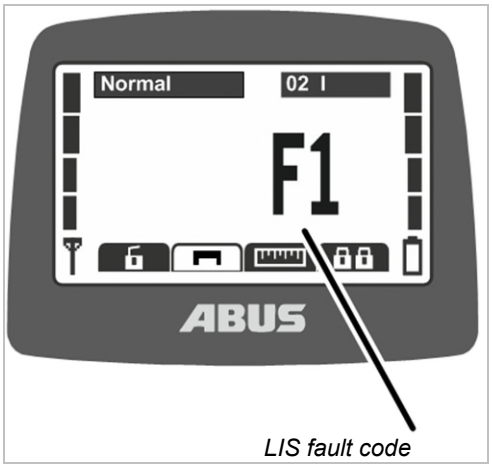
ABURemote fault codes

In the event of ABURemote faults:



- A message with the fault code appears on the display.

In the event of LIS-SV faults:



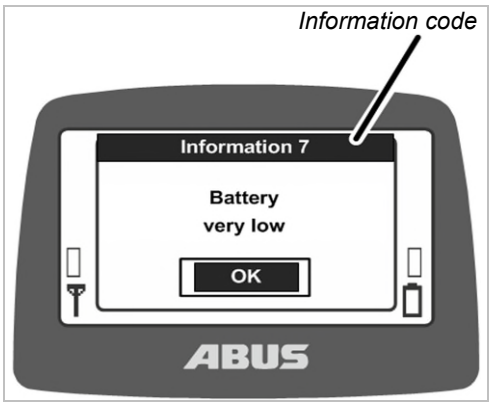
- The fault from the LIS-SV appears on the display in the same place as where the load is usually shown.

  See the LIS-SV product manual.

Code	Fault	Possible cause	Eliminating the fault
	Transmitter does not switch on when batteries are inserted.	The transmitter was switched off when the batteries were removed.	Switch on the transmitter. See “Checking, switching on and releasing prior to beginning work”, page 36.
	The transmitter cannot be switched on.	Batteries are discharged. The display may also show the battery symbol with the inscription “0%”.	Charge the batteries. See “Charging the transmitter in the charging cradle”, page 44.
		No batteries inserted.	Insert charged batteries. See “Inserting rechargeable batteries” on page 34.
		The On/Stop button is defective.	Contact ABUS Service. See “ABUS Service”, page 93.
	The transmitter does not log in (no message appears on the display)	Exit the transmitter/receiver range.	Reenter the transmitter/receiver range and log in again.
		The receiver was switched off.	Switch the receiver on again.
		Radio interference	Identify and eliminate the cause of the interference.
			Change the radio channel. See “Changing the radio channel”, page 40.
		Another transmitter is logged in to the crane in tandem operation.	Log the other transmitter out from tandem operation. See “Operating cranes in tandem operation”, page 58.
207 208 209 210	“Receiver: emergency stop relays faulty”	The relay for the emergency stop function is faulty.	Switch the crane off and back on again. If the fault appears again, contact ABUS Service. See “ABUS Service”, page 93.
		The relay for the emergency stop function does not switch on although the receiver switches the signal (e.g. because the hoist limit switch has been activated on the hoist).	Eliminate the cause for the main contactor of the crane switching off.
105	“Wrong key! To switch on: press On/Stop button only”	A button was pressed when switching on.	Press ENTER, release all buttons, and switch on again.
		Button is defective.	Contact ABUS Service. See “ABUS Service”, page 93.
101	“Receiver disconnected”	The receiver was switched off.	Switch the receiver on again.
		Radio interference	Identify and eliminate the cause of the interference.
			Change the radio channel. See “Changing the radio channel”, page 40.

ABURemote information codes

For ABURemote messages:



- A message with the information code appears on the display.

ABURemote information codes

Code	Information	Cause	Measure
7	“Battery very low”	The batteries are almost empty.	Charge the batteries. See “Charging the transmitter in the charging cradle”, page 44.
8	“Wrong code”	The code entered is incorrect.	Press ENTER, and enter the code again.
9	“Scanning for free radio channel...”	The CHANNEL CHANGE button was pressed.	Wait until the transmitter has found a free radio channel.
	“On/Stop button activated! Press ENTER for release”	The On/Stop button was pressed.	Press ENTER to unlock. See “Emergency stop” on page 33.

Fault indicators of charging cradle

Charge state gauge	Possible cause	Measure
Flashes red	Transmitter does not lie properly in the charging cradle	Remove the transmitter from the charging cradle and reinsert it
	Ambient temperature above 55°C (e.g. due to sunlight)	Relocate the charging cradle to a different place
Does not switch to red with the transmitter laid on it	Transmitter does not lie properly in the charging cradle	Remove the transmitter from the charging cradle and reinsert it
	Transmitter is not compatible with the charging cradle. See “Charging the transmitter in the charging cradle”, page 44.	Charge the batteries in a standard battery charger.
	Batteries defective	Insert new batteries. See “Changing the batteries”, page 46.
	No batteries inserted	Insert new batteries. See “Inserting rechargeable batteries”, page 34.
Alternating between red and white	Transmitter does not lie properly in the charging cradle	Remove the transmitter from the charging cradle and reinsert it
	Batteries defective	Insert new batteries. See “Changing the batteries”, page 46.
	No batteries inserted	Insert new batteries. See “Inserting rechargeable batteries”, page 34.

4.27 Declaration of Incorporation

This declaration is applicable as a Declaration of Incorporation as described in Machine Directive Annex II 1B in the event that ABURemote is installed or retrofitted in a crane. Starting operation of the crane is then prohibited until it has been ascertained that the crane installation into which the ABURemote has been installed meets all requirements of the EU directive versions applicable at the time of issuance. If ABURemote is delivered together with a complete crane installation, the Declaration of Conformity for the crane installation applies. This Declaration of Incorporation is thereby made irrelevant.

Manufacturer	ABUS Kransysteme GmbH Sonnenweg 1 51647 Gummersbach, Germany
Product	**ABUS Radio Remote Control ABURemote Button in series design**
Year of construction	From 2012
Order number	See title page
Person responsible for putting together the special technical documentation	Michael Müller Technical Documentation Department manager ABUS Kransysteme GmbH Sonnenweg 1 51647 Gummersbach, Germany

We hereby declare than the product specified above complies with all requirements in the EU directives listed here in the version applicable at the time of issuance.	2006/42/EC	Machinery
	2014/35/EU	Low-voltage
	2014/30/EU	Electromagnetic compatibility
	2014/53/EU	Radio and telecommunications terminal equipment
In particular, the harmonised standards and national standards, directives and specifications and any other applicable standards have been applied.	EN 13849-1	Safety of machinery
	EN 13557	Cranes – Controls and control stations
	EN 60204-32	Electrical equipment of machines, hoisting equipment
	EN 61000-6-4	Electromagnetic compatibility; Emission standard for industrial environments
	EN 61000-6-2	Electromagnetic compatibility; Immunity for industrial environments
	EN 60529	Degrees of protection provided by enclosures (IP code)
	EN 300220-2	Electromagnetic compatibility and Radio spectrum Matters (ERM) – Short Range Devices (SRD)
	EN 301489-3	Electromagnetic compatibility and Radio spectrum Matters (ERM) – Electromagnetic Compatibility (EMC) standard for radio equipment and services

Technical documentation is available in full.

The corresponding operating manuals are available in the national language of the user.

With our department for “Technical Documentation”, we have committed ourselves to submitting the specific documentation for the incomplete machine in response to a reasoned request by the market surveillance authorities.

Gummersbach, 4 March, 2021

Head of the Electronics Development department

Willi Dick

Signature of the authorised person

The content of this declaration complies with EN ISO 17050.

ABUS Kransysteme GmbH supports a quality management system in accordance with DIN EN ISO 9001.