



Operating Instructions

Original Operating Instructions

technos A

YOT100U0





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Attachments: System specific views, circuit diagrams and / or output wiring.

Pictographs



Danger due to electrical voltage. Touching live parts inside the unit can be fatal or cause serious injuries.



Instructions for occupational health and safety. Not following these instructions can lead to accidents that can cause damage, serious injuries or even death.



Important information about the operation of the radio system.

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Safety Instructions

Read these operating instructions carefully before working with the radio system. This applies in particular to the installation, commissioning and maintenance of the radio system.

The operating instructions are a constituent part of the radio control system and must always be kept close at hand for the responsible personnel.

The term 'machine' is used in the operating instructions for the different possible uses of the radio system.

Intended Use

- The radio system is used for the control of machines and for data transfer. Observe the occupational safety and accident prevention regulations applicable to each application.
- The intended use also includes reading the operating instructions and adhering to all safety information contained therein.
- The radio system must not be used in areas where there is a risk of explosion, nor for the control of machines used to convey persons, unless it is explicitly approved for these uses by the manufacturer.
- Modifications to the radio system may only be carried out by specialist personnel who have been trained and authorized by HBC-radiomatic. All modifications must be documented at the factory in the radio control master file.
- The safety devices of the radio control system must not be modified, removed or bypassed. In particular, modifications to any part of the radio system's complete E-STOP system are not allowed.

Safety Instructions for Installation and Operation

- The electrical connection according to the enclosed output wiring diagram must be established by a qualified electrician exclusively.
- The receiver may only be opened by trained personnel. Components inside the receiver can be energized at life-threatening voltages. The supply voltage for the machine must be disconnected before the receiver is opened.
- Please also note that, with radio systems, the presence of persons in the danger zone – in particular beneath the load (cranes!) – is prohibited in all cases.
- Select a safe location for radio control, from which you have a good and complete view of the working movements of the machine, the load movements and the surrounding working conditions.
- It is not permissible to leave a radio transmitter unattended when it is activated. Always switch off the radio transmitter when it is not required. This applies in particular if you change location, when working without radio control, during breaks and at the end of work. Always protect the radio transmitter against use by unauthorized persons, for example by locking it away.
- In the event of an emergency and with all faults, switch off the radio transmitter immediately by pressing the STOP switch.
- Only operate the radio system when it is in perfect working order. Faults and defects that could influence safety must be rectified by specialists who have been trained and authorized by HBC-radiomatic before the system is put back into operation.
- Note that the operational directions of the operating elements may appear inverted depending on location and viewing angle to the machine. This applies in particular to rotary cranes if your location changes from inside to outside the radius of the crane. The operator must make himself familiar with the directional markings on the machine before starting to work.
- Repairs may only be carried out by specialist personnel who have been trained and authorized by HBC-radiomatic. Use original replacement parts and accessories (e.g. rechargeable batteries) exclusively; otherwise it is possible that the equipment safety can no longer be guaranteed and our extended warranty will be voided.
- Remain vigilant when working with the radio system and familiarize yourself with its functions. This applies in particular if you are working with it for the first time or if you work with it only occasionally.
- Before starting to work, examine the STOP switch for mechanical ease of motion and electronic function at least once a day:

When you press the STOP switch with the transmitter on, the display of the transmitter has to go out. If the display does not go out then you have to disable the radio control system immediately.

Remove the battery and the radiomatic® iLOG from the transmitter and inform a service technician.



FCC Notes

Part 15.21 Statement

Changes or modifications made to this equipment not expressly approved by HBC-radiomatic GmbH may void the FCC authorization to operate this equipment.

Part 15.105 Statement

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

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

RF Exposure Statement

Radiofrequency radiation exposure information

The radiated output power of the device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

IC Notes

RSS-GEN – User Manual Statements (English/French)

Licence exempt

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. this device may not cause interference, and
2. this device must accept any interference received, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**Note:**

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network, protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together.

This precaution may be particularly important in rural areas.

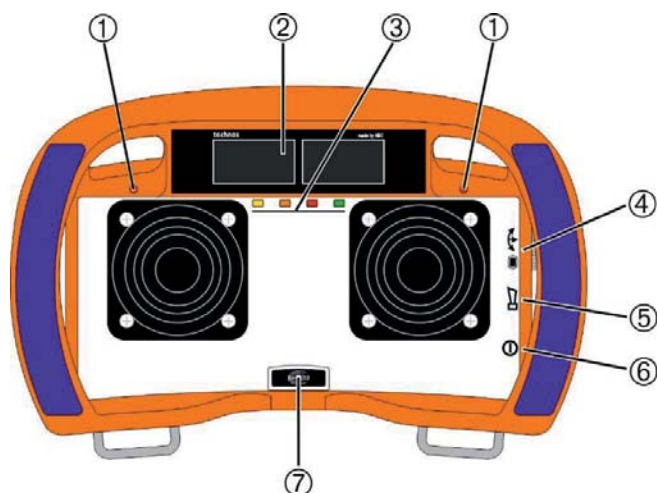
**Note:**

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate. This product meets the applicable Industry Canada technical specifications.

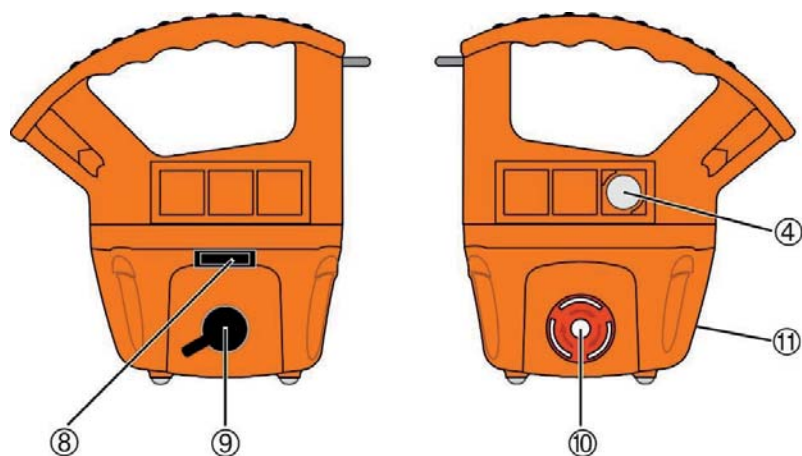
Safety Instructions

In customer related documents of the end product like instruction manuals, installation guides etc. appropriate safety instructions have to be included. The supplier of the complete system is responsible for these safety instructions.

Transmitter Equipment



- | | |
|---|--------------------------------|
| ① radiomatic® infrakey (optional) | ⑦ Front panel lighting |
| ② 1.77" color TFT displays | ⑧ radiomatic® iLOG |
| ③ RGB feedback LEDs (optional) | ⑨ Connection for cable control |
| ④ Multifunctional switch radiomatic® iCON | ⑩ STOP switch |
| ⑤ Horn | ⑪ Integrated LED flashlight |
| ⑥ Start button | |



Operation

The transmitter is equipped with an electronic radiomatic® iLOG key. radiomatic® iLOG contains all the data required for operating the transmitter. Operation is not possible without radiomatic® iLOG! Depending on the version the radiomatic® iLOG can also be used for operation of replacement transmitters of identical construction.

When activating the transmitter and if the radio connection is interrupted (e.g. if the connection is lost or the transmission range is exceeded), the transmitter reacts with the so-called enforced zero-position. Release all operating elements so they can return to the zero-position and actuate the start button. The machine will not react if the operating elements are not in zero-position. This prevents uncontrolled machine movements after the radio connection has been interrupted.

Activating the Transmitter

With start sequence

1. Insert a charged battery into the battery compartment.
2. Turn the STOP switch to unlock. The display shows **Enter start sequence**.
3. Shortly press the start button and then release. The transmitter will switch off if the button is pressed for longer than half a second!
4. Press the start button again until the display shows the customized start screen and the status indication  blinks green. Then release the button. The transmitter is now ready for operation.
5. Depending on the application, you must press the start button again before movement commands can be carried out.



Note:

The transmitter switches off if

- the start button is pressed for longer than half a second in step 3 of the start sequence.
- the start sequence (steps 3 and 4) takes over 5 seconds.
- another button is pressed during the start sequence.

You must then repeat steps 3 and 4 or 3 to 5.



Caution:

Before starting work always trigger the acoustic signal. This warns all colleagues that the machine is about to move.

With merlin® TUC

1. Insert a charged battery into the battery compartment.
2. Turn the STOP switch to unlock. The display shows **Apply merlin® TUC**.
3. Hold the merlin® TUC to the position on the transmitter marked with this symbol  (cf. illustration).
The transmitter vibrates and an acoustic signal sounds.
When the status indication  blinks green, the transmitter is ready to operate.
4. Depending on the application, you must press the start button before movement commands can be carried out.



Note:

The transmitter can only be activated with a valid merlin® TUC. If you use a card that does not match the respective transmitter or is not approved for this transmitter, the transmitter vibrates 3 times. At the same time an acoustic signal sounds. The transmitter is automatically shut down after 2 seconds. Please contact your superior in such cases.

The transmitter also shuts down if the start sequence is not completed within 10 seconds.
In this case press the start button and repeat the procedure!



Caution:

Before starting work always trigger the acoustic signal. This warns all colleagues that the machine is about to move.

Deactivating the Transmitter

Press the STOP switch.



Note:

The battery needs to be replaced if there is an acoustic signal, if the transmitter vibrates and a respective notification appears in the display. Otherwise, the transmitter will switch off in a few minutes.
Recharge the empty battery in the respective charger.

Automatic Power Off (APO) Function

The transmitter is equipped with an automatic power off (APO) function and will automatically shut off after a preset time after the last command input.

The automatic power off serves to increase safety and also saves battery power.



Note:

The default APO time is set to 15 minutes. To change the APO time, proceed as described in the chapter "Display Content and Functions" under "Safety functions". If you wish to de-activate the APO function, please contact your HBC service partner.

After an automatic power off, the transmitter must be reactivated as described in the chapter "Operation".



Caution:

The automatic power off does not relieve the operator of the responsibility to turn off the transmitter with the STOP switch when not in use.

Automatic Movement Off (AMO) Function

After a defined time after the last movement command / Si 2 command has been operated, the transmitter switches into the AMO operating mode and no more movement commands / Si 2 commands can be executed. Si 1 commands, such as horn, can still be executed.

You can leave the AMO operating mode by pressing the start button for one second. All operating elements for movement commands / Si 2 commands must be in zero position during this operation. This prevents unintended machine movements when the AMO operating mode is exited.



Display in AMO operating mode



Note:

The default AMO time is set to 5 minutes. To change the AMO time and de-activate the AMO function, proceed as described in the chapter "Display Content and Functions" under "Safety functions".

Integrated LED Flashlight

The integrated LED flashlight is activated and de-activated by means of a switch on the transmitter or a Softkey in the display.



Caution:

In order to avoid blinding, never look directly into the beam of light and do not point the flashlight in the eyes of humans or animals. Irritations from blinding may result in dangerous situations, such as overlooking obstacles or other dangerous areas.

To activate / de-activate the LED flashlight via Softkey:

1. Switch on the transmitter as described in the chapter "Activating the Transmitter".
2. Navigate with the radiomatic® iCON (see also chapter "Navigation") to the Softkey  on the start page and press the radiomatic® iCON.
3. To de-activate the LED flashlight, navigate with the radiomatic® iCON to the Softkey  on the start page and press the radiomatic® iCON.

Front Panel Lighting

With the front panel lighting potential dangers resulting from incorrect operation, based on poor visibility, can be prevented. The operator switches on multiple LEDs, which illuminate the front panel, with a switch or button on the transmitter or with a Softkey in the display.

To activate / de-activate the front panel lighting via Softkey:

1. Switch on the transmitter as described in the chapter "Activating the Transmitter".
2. Navigate with the radiomatic® iCON (see also chapter "Navigation") to the Softkey  on the start page and press the radiomatic® iCON.
3. To de-activate the front panel lighting, navigate with the radiomatic® iCON to the Softkey  on the start page and press the radiomatic® iCON.

Display Content and Functions

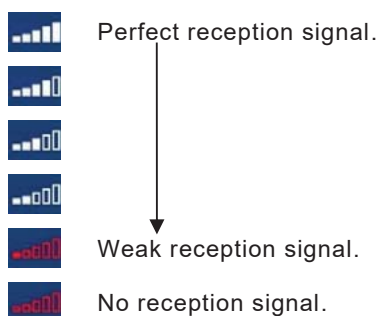
Status bar

The upper edge of the display is reserved for the HBC status bar. It shows the field strength, the battery status as well as the page title and time (if applicable). In addition, the status bar can show additional symbols, e.g. for cable operation.

Field strength

The field strength indication provides information about the quality of the radio connection. With an optimum connection, all 5 bars are displayed. The field strength indication is always visible when the transmitter is in radio operation.

Field strength is indicated in the following degrees:



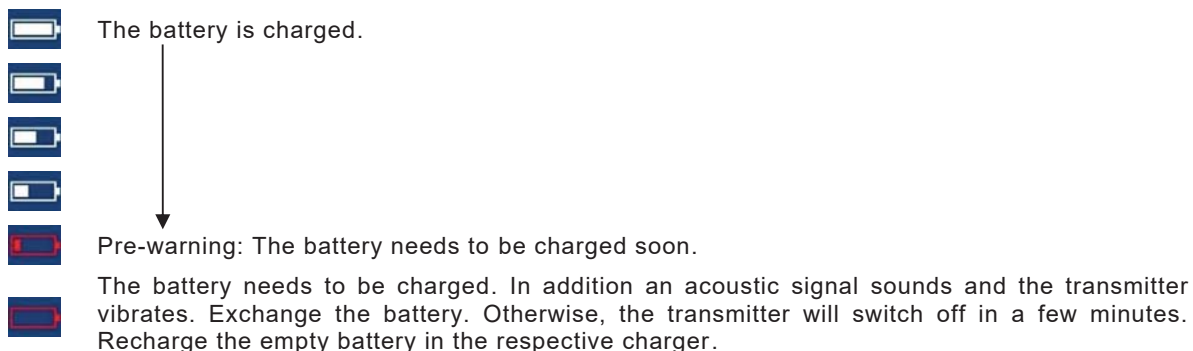
Note:

If the symbol  is displayed, the risk of the radio connection being interrupted is imminent. Ensure that the radio connection is not impaired by an obstacle (e.g. a building) and ensure that you are within the range of the radio system. It may be necessary to change the working position.

Battery

The battery indication provides information about the current condition of the battery. It is always visible when the transmitter is turned on.

The battery status is displayed as follows:



Navigation

The multifunctional switch radiomatic® iCON (turn forward = away from the operator / turn backward = to the operator; perspective with hip belt) with integrated selection button is used for display navigation.

By pressing the selection button, the operator can:

- show and select menus and Softkeys for selections,
- activate objects for input,
- save input / settings,
- select functions with Softkeys.

Navigation between the two displays

By turning the radiomatic® iCON, one page of the display is always navigated first. If the radiomatic® iCON is turned further forward or backward, buttons of the current display and then the other display are selected.

Menus

The display content is divided up into three menus:

- Start menu
- Customer menu
- HBC menu

Start menu

The first page of the Start menu shows how the transmitter can be activated. After successful activation of the transmitter, customized content, such as the company logo or service address, are shown. Then the operator sees the first page of the customer menu.

Customer menu

The configuration of the customer menu is customized. Depending on the application, different content can be defined.



Note:

A detailed description of the customer menu has to be part of the operating manual of the specific machine in use. All instructions the operator has to follow in connection with the feedback information have to be written there as well.

HBC menu

The HBC menu is a fixed part of the display and cannot be changed.

In this menu, warnings and system information can be shown and settings can be performed.

To access the HBC menu:

You are in the **Customer menu**.

1. Navigate with the radiomatic® iCON to the navigation bar in the lower edge of the display and select it by clicking the radiomatic® iCON.
2. Navigate to the **HBC menu**  by turning the radiomatic® iCON and select it by clicking the radiomatic® iCON. The HBC menu is accessed.

HBC Menu

Symbol	Label	Description
	HBC menu	In this menu, system, connection and safety settings can be configured and information items can be shown.
	Warnings	This submenu shows warnings.
	Information	This submenu shows system information.
	Service address	This menu item accesses the phone number and Email address of the service hotline.
	Working hours	This menu item shows the current operating hours.
	Software / config	This menu item shows the current software version and the current configuration of the display.
	Information text	This menu item shows the current info text.
	Back	This Softkey returns one menu level.
	Power info	This submenu shows information concerning the battery status.
	Battery level	This menu item shows the current battery level.
	Back	This Softkey returns one menu level.
	Personalize	Configure different customized system settings in this submenu.
	Language	This menu item allows you to select the language for the display content.
	Backlight	This menu item allows you to set the display brightness.
	Back	This Softkey returns one menu level.
	Connections	Configure the connections in this submenu.
	Display configuration	In this menu item, a connection to a computer can be configured (additional software required).
	RF connection	In this menu item, an RF interface can be selected.
	Back	This Softkey returns one menu level.
	Settings	Configure the device settings in this submenu.
	Set information text	In this menu item, an info text can be entered.
	Master level	In this menu item, the access to the master level can be (de-)activated.
	Back	This Softkey returns one menu level.
	Safety functions	Configure the safety settings in this submenu.
	Safety features	In this menu item, the sensitivity of the safety features radiomatic® zero-g and radiomatic® shock-off are configured.
	inclination switch	In this menu item, the safety feature radiomatic® inclination switch can be configured.
	APO / AMO	In this menu item, the safety featurea APO and AMO can be configured.
	Manage PIN	In this menu item, the current PIN can be modified.
	Reset PIN	In this menu item, the PIN can be reset.
	Back	This Softkey returns one menu level.
	Home	Return to the home page of the customer menu with this Softkey.

Warnings

In the menu item **Warnings**, warnings and error notifications are shown.

If a warning is triggered, a yellow warning triangle is shown in the upper edge of the display and an acoustic signal sounds.

To access the warnings and error notifications:

You are in the **HBC menu**.

1. Navigate to the submenu **Warnings** and select it.
Current warnings and error notifications are shown here.
2. Browse through notifications by turning the radiomatic® iCON.
Exit the submenu **Warnings** with the Softkey .

To dismiss warnings and error notifications:

- Press the Start button for 2 seconds. The indication in the display disappears and the acoustic signal stops.



Note:

The cause / error underlying the error notification must be removed.
Depending on the severity of the error, the safety circuits **Si 1** and **Si 2** may be blocked and the functioning of the transmitter is de-activated.

Information

Diverse system information are shown in this submenu.

To access the submenu Information:

You are in the **HBC menu**.

- Navigate to the submenu **Information** and select it.
Exit the submenu Information with the Softkey .

Service address

To access the menu item Service address:

You are in the **HBC menu**.

1. Navigate to the submenu **Information** and select it.
2. Navigate to the menu item **Service Address** and select it.
The phone number and Email address of the HBC-radiomatic service hotline or a service partner are shown.
Exit the menu item **Service Address** with the Softkey .

Working hours

To access the menu item Working hours:

You are in the **HBC menu**.

1. Navigate to the submenu **Information** and select it.
2. Navigate to the menu item **Working hours** and select it.
The current total hours of operation are shown.
Exit the menu item **Working hours** with the Softkey .

Software / config

To access the menu item Software / config:

You are in the **HBC menu**.

1. Navigate to the submenu **Information** and select it.
2. Navigate to the menu item **Software / config** and select it.
The software version and the display configuration are shown here.
Exit the menu item **Software / config** with the Softkey .

Information text

The info text (e.g. crane number) is shown below the logo in the display when the transmitter is activated. It serves to uniquely identify the transmitter and the machine if the transmitter is used in a location with several transmitters. The info text can be entered / changed in the menu item **Set information text** in the submenu **Settings**.

To access the menu item Information text:

You are in the **HBC menu**.

1. Navigate to the submenu **Information** and select it.
2. Navigate to the menu item **Information text** and select it.
The current info text is shown here.
Exit the menu item **Information text** with the Softkey .

Power info

To access the menu item Battery level:

You are in the **HBC menu**.

1. Navigate to the submenu **Power info** and select it.
2. Navigate to the menu item **Battery level** and select it.
The current battery level is shown in a graphic and in percent.
Exit the menu item **Battery level** with the Softkey .

Personalize

In the submenu **Personalize** diverse settings can be performed. For example, you can select the language for the display contents and adjust the display brightness.

To access the submenu Personalize:

You are in the **HBC menu**.

- Navigate to the submenu **Personalize** and select it.
Exit the submenu **Personalize** with the Softkey .

Language

To access the menu item Language:

You are in the **HBC menu**.

1. Navigate to the submenu **Personalize** and select it.
 2. Navigate to the menu item **Language** and select it.
The language for display contents can be selected here.
- Exit the menu item **Language** with the Softkey .

To change the language for the display contents:

You are in the menu item **Language**.

1. Mark the flag with the radiomatic® iCON and press the radiomatic® iCON.
 2. Turn and press the radiomatic® iCON to select the language flag.
 3. Confirm your selection with the Softkey 
The new language is set and is immediately loaded.
- Exit the menu item **Language** with the Softkey .

Backlight

In this menu item, the display brightness can be adjusted in 5% increments.

To access the menu item Backlight:

You are in the **HBC menu**.

1. Navigate to the submenu **Personalize** and select it.
 2. Navigate to the menu item **Backlight** and select it.
The display brightness can be adjusted here.
- Exit the menu item **Backlight** with the Softkey .

To adjust the display brightness:

You are in the menu item **Backlight**.

1. Navigate to the yellow settings bar and select it.
 2. To adjust the brightness, turn the radiomatic® iCON to the desired value.
 3. To leave the yellow settings bar, press the radiomatic® iCON.
 4. Confirm your selection with the Softkey 
The adjusted brightness is loaded immediately.
- Exit the menu item **Backlight** with the Softkey .

Connections

The display configuration and the RF interface can be configured in this submenu.

To access the submenu **Connections**:

You are in the **HBC menu**.

- Navigate to the submenu **Connections** and select it.
Exit the submenu **Connections** with the Softkey .

To (de-)activate the display configuration:



Note:

Additional software is required for this function.

You are in the submenu **Connections**.

1. Navigate to the menu item **Display configuration** and select it.
2. To access the display configuration, enter your PIN by turning and pressing the radiomatic® iCON.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

To change the RF connection:

You are in the submenu **Connections**.

1. Navigate to the menu item **RF connection** and select it.
2. To access the configuration of the RF interface, enter your PIN by turning and pressing the radiomatic® iCON.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

3. Navigate to the currently set interface and select it.



Caution:

Before changing the preset RF interface, ensure that your receiver supports another RF interface because otherwise no radio connection can be established.

4. If needed, select another RF interface from the list.
5. Confirm your selection with the Softkey .
- Exit the menu item **RF connection** with the Softkey .

Settings

In this menu item you can enter and change an info text as well as (de-)activate the access to the Master level.

To access the submenu **Settings**:

You are in the **HBC** menu.

- Navigate to the submenu **Settings** and select it.
Exit the submenu **Settings** with the Softkey .

Set information text

To enter the information text:

You are in the submenu **Settings**.

1. Navigate to the menu item **Set information text** and select it.
2. Enter your PIN by turning and pressing the radiomatic® iCON.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

3. Navigate to the input area under **Set information text** and enter the info text by turning and pressing the radiomatic® iCON.
4. Confirm your selection with the Softkey .
- Exit the menu item **Set information text** with the Softkey .

Master level

The Master level allows access to functions that may only be carried out by authorized personnel. The access to can be (de-)activated in the menu item **Master level**.

To (de-)activate the access to the Master level:

You are in the submenu **Settings**.

1. Navigate to the menu item **Master level**.
2. To access the access settings for the Master level, enter your PIN by turning and pressing the radiomatic® iCON.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

3. To activate the access to the Master level, select the Softkey **ON**.



Note:

Access to the Master level is deactivated in the factory settings.

4. To deactivate the access to the Master level, select the Softkey **OFF**.
5. Confirm your selection with the Softkey .
- Exit the menu item **Master level** with the Softkey .

Safety functions

The transmitter is equipped with different safety features.
These safety features can be individually configured in the submenu **Safety functions**.

To access the submenu **Safety functions**:

You are in the **HBC menu**.

- Navigate to the submenu **Safety functions** and select it.
Exit the submenu **Safety functions** with the Softkey .

Safety features

This menu item allows you to adjust the sensitivity of the safety features **radiomatic® zero-g** and **radiomatic® shock-off**.

The following settings are possible:

- Inactive
- High sensitivity
- Medium sensitivity
- Low sensitivity

To adjust the sensitivity of **radiomatic® zero-g** and **radiomatic® shock-off**:

You are in the submenu **Safety functions**.

1. Navigate to the menu item **Safety features** and select it.
2. Enter your PIN by turning and pressing the **radiomatic® iCON**.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

3. Select the function **radiomatic® zero-g** or **radiomatic® shock-off** by turning and pressing the **radiomatic® iCON**.
 4. Navigate to the setting area for sensitivity and select the desired setting by turning and pressing the **radiomatic® iCON**.
 5. Confirm your selection with the Softkey .
- Exit the menu item **Safety features** with the Softkey .

inclination switch

In this menu item you can (de-)activate the safety feature **radiomatic® inclination switch** and adjust the trigger time and angle.

To adjust the safety feature radiomatic® inclination switch:

You are in the submenu **Safety functions**.

1. Navigate to the menu item **inclination switch**.
2. Enter your PIN by turning and pressing the radiomatic® iCON.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

Activate radiomatic® inclination switch

1. Navigate to the Softkey **OFF** and select it.
2. Set the Softkey to **ON** by turning and pressing the radiomatic® iCON.
3. Confirm your selection with the Softkey .

Adjust the angle

1. Navigate to **Angle** and select the preset angle.
2. To adjust the angle, turn the radiomatic® iCON to the desired value.
3. To leave the field, press the radiomatic® iCON.
4. Confirm your selection with the Softkey .

Adjust the trigger time

1. Navigate to **Action time** and select the preset trigger time.
2. To adjust the trigger time, turn the radiomatic® iCON to the desired value.
3. To leave the field, press the radiomatic® iCON.
4. Confirm your selection with the Softkey .

Adjust the start angle for the inclination sensor

1. Navigate to the Softkey .
2. Hold the transmitter in the desired angle.
3. Press the radiomatic® iCON.
The current angle is set as the start angle for the inclination sensor.
4. Confirm your selection with the Softkey .

APO / AMO

In this menu item you can configure the safety features **APO** (Auto Power Off) and **AMO** (Auto Movement Off).

To set the safety feature APO:

You are in the submenu **Safety functions**.

1. Navigate to the menu item **APO / AMO** and select it.
2. Enter your PIN by turning and pressing the radiomatic® iCON.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

3. Navigate to the APO settings and select the preset time.
 4. Turn the radiomatic® iCON to set the new time.
 5. To leave the field, press the radiomatic® iCON.
 6. Confirm your selection with the Softkey .
The new time is configured.
- Exit the menu item **APO / AMO** with the Softkey .

To set the safety feature AMO:

You are in the submenu **Safety functions**.

1. Navigate to the menu item **APO / AMO** and select it.
2. Enter your PIN by turning and pressing the radiomatic® iCON.



Note:

The factory PIN is **149**. To change the PIN, refer to the section **Manage PIN** in the chapter **Safety functions**.

3. Navigate to the AMO settings and select the Softkey .
 4. Turn the radiomatic® iCON and set the Softkey to .
The AMO function is now activated. Now you can set the time for the AMO function.
 5. Navigate to the preset time and select it.
 6. Turn the radiomatic® iCON to set the new time.
 7. To leave the field, press the radiomatic® iCON.
 8. Confirm your selection with the Softkey .
The new time is configured.
- Exit the menu item **APO / AMO** with the Softkey .

Manage PIN

In this menu item you can change your current PIN.

To change your current PIN:

You are in the submenu **Safety functions**.

1. Navigate to the menu item Manage PIN and select it.
2. Enter your current PIN by turning and pressing the radiomatic® iCON.
3. Now enter the new PIN by turning and pressing the radiomatic® iCON.
4. Confirm your input with the Softkey .

Reset PIN

If you enter the wrong PIN three times in a row, access to all levels that require a PIN is locked. To unblock, the PIN has to be reset. Please contact your HBC service partner.

Battery and Battery Charger

Li-ion Battery

The battery capacity (= the amount of electric current that can be stored) and the battery charge (= the actual amount of stored current) depend on the age of the battery and the environment temperature. If the temperatures are below 0 °C (32 °F) or above 40 °C (104 °F), less current can be retrieved.

Please adhere to the following safety notifications in all cases. When the Li-ion battery is improperly handled, there is the risk of explosion and of fire. This could lead to life-threatening injuries that might result in death under specific circumstances.



Safety instructions:

- Use the batteries only in connection with the designated devices.
- Never use or charge damaged or faulty batteries.
- Do not throw the batteries into fire, short-circuit, damage or open them.
- Use only the associated charger by HBC-radiomatic to charge the battery.
- Charge the battery at an ambient temperature of 0 – 45 °C (32 – 113 °F).
- Do not expose the batteries to direct sunlight.
- The batteries have to be recycled or disposed of properly.



Notes:

- In all cases, charge the batteries completely before initial use. This ensures that the batteries have their full capacity in use.
- A battery charge of 30 – 50 % is ideal for storing Li-ion batteries. This charge is reached after charging an empty battery for approx. 1 hour.
- Store the batteries at -15 – +35 °C (5 – 95 °F).
- When storing Li-ion batteries, recharge them after a maximum time of 3 months and adapt the charging time correspondingly.

When handled properly, Li-ion batteries by HBC-radiomatic can reach up to 500 charging cycles. Even after that, your batteries can be used for some time with a slightly decreased capacity.

DC battery charger

The scope of delivery of the battery charger includes a DC connection cable with a suitable wall plug and an AC wall plug transformer.

Please adhere to the following safety notifications in all cases. When the charger is improperly handled, there is the risk of fire and of electrical shock. This could lead to life-threatening injuries that might result in death under specific circumstances.



Safety instructions:

- Use this charger only to charge the batteries specified on the type plate.
- The charger may not be used in hazardous areas or in the vicinity of flammable materials.
- The charger has to be operated with the voltage indicated on the back.
- The charger has to be used in vehicles or indoors only.
- Use the charger only within the specified temperature range of 0 – 45 °C (32 – 113 °F).
- Protect the charger against heat, dust and humidity.
- Do not cover the charger while it is in use.
- Disconnect the charger from the power supply when it is not in use.
- In case of any fault of the charger or the connecting cable disconnect it immediately and put it out of operation.
- Do not make technical changes to the charger or the connecting cable.



Maintenance and servicing:

- Disconnect the plug before cleaning the charger.
- Make sure that the contacts of the charger and the battery pack are free from dirt in order to ensure a faultless functioning of the charger.

Charging the Battery

1. Connect the charger to the power supply via the connecting cable or the wall plug transformer.
2. Insert the battery into the compartment.
Charging will start automatically.

A duo LED indicates the current operating state of the battery.

-  The battery is charged
-  The battery is charging
-  The battery is defective
-  The battery temperature is below 0 °C (32 °F) or above 45 °C (113 °F). The battery is not charged in this case.

Technical Data QD405000	
Operating voltage	10 – 30 V DC
Charging time	< 5 h
Operating temperature	0 – 45 °C (32 °F – 113 °F)
Housing material	Plastic
Protection class	II
Charging method	CC/CV
End-of-charge voltage	4.2 V

Technical Data PA006040	
Operating voltage	100 – 240 V AC
Input current	1.5 A
Output voltage	12 V DC
Output current	3 A

Options

The availability of the following functions depends on the design and configuration of your radio control system.

Safety Features

radiomatic® shock-off / zero-g / inclination switch

In specific emergency situations, these safety features can prevent unintended movement commands from being given to the machine, protecting the operator as well as other personnel in close proximity to the machine in use.

radiomatic® shock-off can react if the transmitter receives a hard impact.

radiomatic® zero-g can react if the transmitter is falling down or being thrown.

radiomatic® inclination switch can activate if the transmitter exceeds a certain angle of inclination for a specified time and/or is positioned upside down.

Depending on the ordered version the features can operate in three different ways:

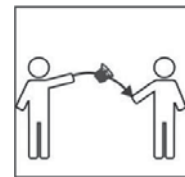
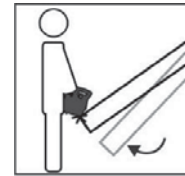
- The complete radio system is shut down.
- Safety-relevant functions are deactivated.
- A previously defined function (e. g. crane horn) is activated.

In addition the symbol for the safety feature is shown in the display, an acoustic signal sounds and the transmitter vibrates.

To de-activate the safety feature, press the Start button for 2 seconds. Then the transmitter is ready for operation again.



The safety features do not relieve the operator of his responsibility to turn off the transmitter with the STOP switch when not in use.



radiomatic® report – User Identification with merlin® TUC

The user identification function enables the management of access rights to your machines and protects them from unauthorized use. The login card merlin® TUC (Transmitter User Card) serves as a key to activate the control (see the description in the chapter “Activation with merlin® TUC”). In addition, the card can be configured individually. In connection with an HBC data logger, which is connected to the radio receiver, a user-based collection and detailed evaluation of diverse operational data of the radio system is possible.

Enabling Switch

The two-step enabling switch provides enhanced safety during maintenance and service work on or in the machine as well as for applications with multiple users. In order to transmit control commands to the machine, the operator has to keep the switch pushed into the first step. Only then are the other operating elements activated. If the operator releases the button or pushes it into the second step (e.g. as the result of a cramp), all machine functions are immediately stopped. With this, the operator is protected from dangerous unintended movements of the machine in case he should lose consciousness or no longer has control over the transmitter.

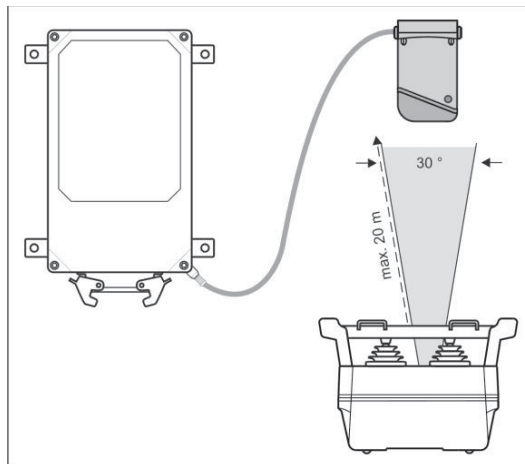
If an application is controlled by more than one operator, movement commands can only be performed if all operators keep the enabling switch pushed into the first step.

radiomatic® infrakey

The radio system can only be activated via an infrared link between the transmitter and the receiver. This increases the safety of operation, i.e. the machine can not become inadvertently enabled.

radiomatic® infrakey operates either with an infrared module in the receiver housing (radiomatic® infrakey internal) or with the offset infrared antenna focus I (radiomatic® infrakey external).

To activate radiomatic® infrakey, actuate the start button on the transmitter.



Function of radiomatic® infrakey with focus I



Notes:

- The range of the infrared beam is max. 20 m (66 ft).
- The angle of radiation is 30°.
- The front panel of the receiver must be visible (only radiomatic® infrakey internal).

Micro Drive

With the micro drive function the speed of the machine is limited to a preselected level. Even at full movement of the joystick/linear lever, the operator can not exceed this speed limit. In this manner demanding drive maneuvers can be managed and inexperienced users can be protected from potential dangers that can result from “speeding”.

Orthogonal Drive (Electronic Cross Gate)

With the orthogonal drive function dangerous situations, caused by unintentional diagonal movements are being prevented. The operator will have to return the joystick back to zero position before another directional command can be activated. This function is suitable for example for situations where the operator has to make precision commands in confined areas. Diagonal movements are not possible.

Shut-off on Implausible Control Commands

The automatic shut-off will activate after a sequence of multiple questionable movement commands, for example if the operator moves the joystick successively in different directions in an irregular manner. This function protects the operator and the whole work environment from potential dangers as well as the machine from wear resulting from rapid and erratic movements.

Depending on the ordered version this function can operate in three different ways:

- The complete radio system is shut down.
- Safety-relevant functions are deactivated.
- A previously defined function (e. g. crane horn) is activated.

To deactivate the function, press the start button until the status LED flashes green. Then the transmitter is ready to operate again.

Frequency Management

Fixed Frequency

If the identification plate in the battery compartment of the transmitter shows a frequency value (e.g. 433,500 MHz), the transmitter operates with a fixed frequency.

Please contact your service department if the frequency has to be changed because the radio channel is already assigned to another user.

Manual Frequency Switching

If the identification plate in the battery compartment of the transmitter shows the label **man**, the transmitter features manual frequency switching.

This function can be used to change the radio channel during radio operation.

Depending on the version move the cursor to the corresponding softkey and press the radiomatic® iCON  until an acoustic signal sounds. Then release the radiomatic® iCON. Or press the  button until an acoustic signal sounds. Then release the button.

Please contact your service department if all available frequencies are occupied.

radiomatic® AFS

If the identification plate in the battery compartment of the transmitter shows the label **AFS**, the transmitter is equipped with radiomatic® AFS (Automatic Frequency Selection).

When activating the transmitter radiomatic® AFS will check if the present radio channel is free. If the radio channel is occupied, the system automatically finds and saves a free radio channel.

If the radio channel currently in use is occupied by another radio control system, you must switch the transmitter off and on again in order to allow radiomatic® AFS to switch to a free radio channel.

The radiomatic® AFS option also includes the manual frequency switching function.



Note:

If radiomatic® AFS is to perform optimally, all the other radio systems in the immediate working environment (e.g. the factory hall or building site) should be switched on before starting to use the radio system for the first time. This allows radiomatic® AFS to detect automatically which radio channels are already being used in the working area, and thereby to choose a suitable free channel for its own use.

In addition, when switching the radio system on for the first time, the user should make sure that his distance from the radio receiver and from the machine is a realistic reflection of the working situation.

2.4 GHz technology

2.4 GHz technology works with automatic frequency coordination and thus ensures interruption-free working in areas with many radio users. Manual frequency coordination is not necessary. With the worldwide frequency band, 2.4 GHz technology can be used all over the world.

DECT

DECT technology is an extremely convenient method for uninterrupted radio control without frequency conflicts. The operator always works on a free radio channel and does not need to make manual settings.

Catch-Release

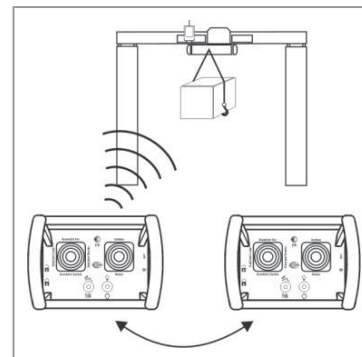
Via the Catch-Release option two or more transmitters can control a machine alternately.

When the receiver is switched on, the machine can initially be controlled via any associated transmitter. Once the receiver is taken over by one transmitter, the other transmitters no longer have access.

Take over machine

1. Switch the transmitter on.
2. Enter the "Catch" command on the transmitter and actuate the start button.

The access rights for the machine remain with that transmitter until the "Release" command is issued by that transmitter.



Release machine

1. Enter the "Release" command on the transmitter.
2. Switch the transmitter off.

The access rights for the machine are cancelled. Machine control can be taken over by another transmitter.

Operating Example:

Transmitter 1 has taken over the machine. Transmitter 2 is to be given control.

1. Enter the "Release" command on transmitter 1.
2. Switch transmitter 1 off.
3. Switch transmitter 2 on.
4. Enter the "Catch" command on transmitter 2 and actuate the start button.

Transmitter 2 now has sole access to all machine functions.

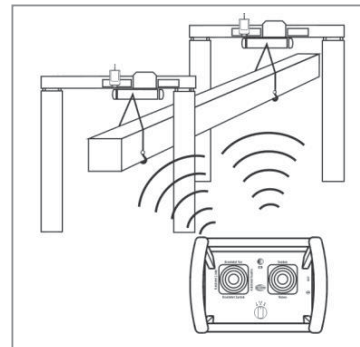
Tandem Operation

Tandem Operation T1

The radio system consists of 1 transmitter and 2 receivers for 2 machines. The transmitter can control the machines individually or in parallel.

The machines are selected at the transmitter via a rotary switch:

- A** only machine A
- A+B** machine A + machine B
- B** only machine B



Tandem Operation T2

The radio system consists of 2 transmitters and 2 receivers for 2 machines. Both transmitters are master transmitters and can control the machines individually or in parallel.

During normal operation transmitter 1 controls machine A and transmitter 2 controls machine B. In order to be able to switch to machine B or A+B at transmitter 1, for example, the key must be removed from transmitter 2 and inserted in transmitter 1.

The machines are selected at the transmitter via a rotary switch:

- A** only machine A
- A+B** machine A + machine B
- B** only machine B

Operating Example: Control of machine A + B via transmitter 1.

1. Switch transmitter 1 and 2 off and remove the key from transmitter 2.
2. Insert the key from transmitter 2 in transmitter 1.
Machine selection via transmitter 1 is activated.
3. Turn the rotary switch of transmitter 1 to A+B.
4. Switch transmitter 1 on and actuate the start button.

The radio system now operates in tandem mode.

Tandem Operation TM/TS

The radio system consists of 2 transmitters and 2 receivers for 2 machines. One transmitter is a master transmitter and can control the machines individually or in parallel. The other transmitter is a slave transmitter and can only control machine B.

In order to be able to switch to machine B or A+B at the master transmitter, the key must be removed from the slave transmitter and inserted in the master transmitter.

The machines are selected at the transmitter via a rotary switch:

- A** only machine A
- A+B** machine A + machine B
- B** only machine B

Operating Example: Control of machine A + B via master transmitter.

1. Switch master and slave transmitter off and remove the key from slave transmitter.
2. Insert the key from slave transmitter in master transmitter.
Machine selection via master transmitter is activated.
3. Turn the rotary switch of master transmitter to A+B.
4. Switch master transmitter on and actuate the start button.

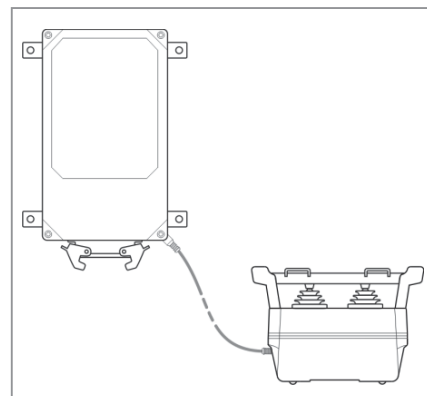
The radio system now operates in tandem mode.

Pre-selection of Trolley or Hoist

The operator is able to select the trolley or hoist that he wishes to control. It is also possible to simultaneously control both trolleys/hoists, for example in order to transport particularly long or wide loads.

Cable Control

With a cable you can generate a direct data connection between the transmitter and receiver. The radio transmission is disabled. At the same time, the power supply of the transmitter is provided through the cable, as well.



Connecting the cable

1. Switch the transmitter off.
2. Remove the screw lock on the transmitter and receiver.
3. Connect the transmitter and the receiver with the cable. Ensure that the connector is locked.
4. Switch the transmitter on.



Notes:

- If you connect the cable while working with the system, the transmitter will switch off automatically. Activate the transmitter as describe in the chapter "Operation" to switch to cable operation.
- When the system is in cable mode the transmitter will receive the supply voltage from the receiver, i.e. the transmitter can be used without the battery.
- If you disconnect the cable from the transmitter and receiver, the system will switch off automatically. Activate the transmitter as describe in the chapter "Operation" to switch to radio operation.

radiomatic® CPS

With radiomatic® CPS (= Continuous Power Supply), the battery of the radio control can be changed without interrupting power. For this, the transmitter has an additional, built-in battery. This function is ideal if long and interruption-free crane or machine operations are required.

The current operating status is shown in the display's status bar:

Indication	Meaning
	The internal battery is operational. The transmitter is operated with the external battery.
	The transmitter is operated with the internal battery. The external battery is empty or not inserted. After 25 minutes an acoustic signal sounds and the transmitter vibrates. After 30 minutes the transmitter will switch off.
	The internal battery is charged. The transmitter is operated with the external battery.
	The transmitter is operated with the external battery. Operation with the internal battery is not possible. The battery is empty or defect.



illuminates



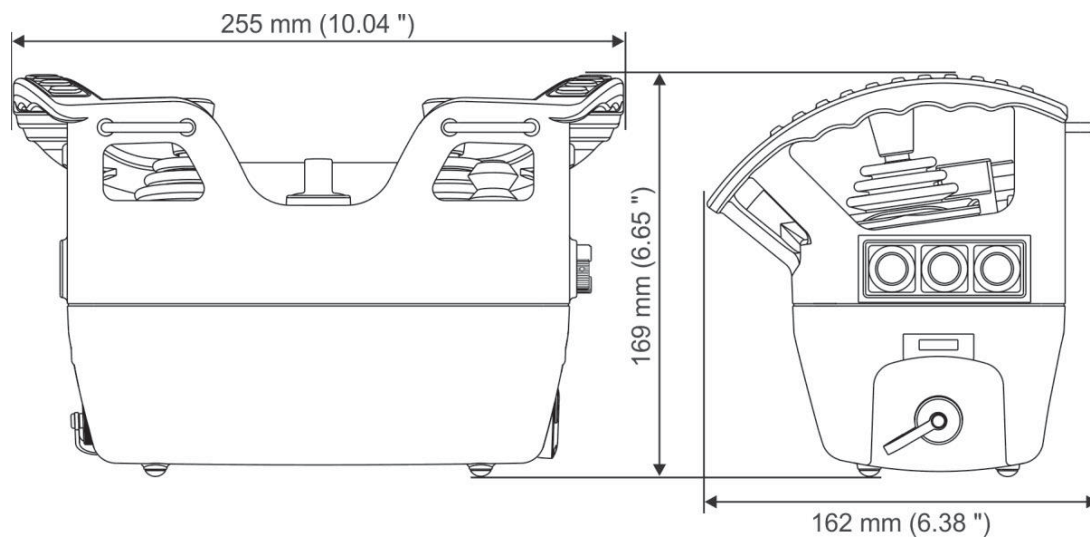
blinks

Technical Data

Max. number of control commands	-
Unique system addresses	Over 1.000.000 combinations
Supply voltage	3.7 V
Safety function	E-STOP: Performance Level d, category 3 according to EN ISO 13849-1:2015
Frequency ranges	405 – 475 MHz ¹ , 865 – 870 MHz, 902 – 928 MHz, 1210 – 1258 MHz ¹ 2.4 GHz: 2402 – 2480 MHz DECT: 1790 – 1930 MHz
Channel spacing	12,5 / 20 / 25 / 50 / 250 kHz 2.4 GHz: 1 MHz DECT: 1,728 MHz
Antenna	Internal
Battery type	BA405_ _ _ (Li-ion)
Battery capacity	6 Ah
Continuous operating time	Approx. 20 h
Operating temperature range	-20 °C ... +70 °C (-4 °F ... +158 °F)
Housing material	Glass-fiber reinforced plastic / PA6 GF30
Dimensions	255 x 162 x 169 mm (10.04 x 6.38 x 6.65 inches)
Weight (incl. battery)	Approx. 1.8 kg (4.0 lbs.)
Protection class	IP65

¹ Not all frequency ranges available.

Dimensions



Troubleshooting



Note:

Please check the functions using the cabin or cable controls first!

Problem	Possible Cause	Remedy
Transmitter does not react when switched on.	– No power.	– Check battery contacts for damage or contamination. – Insert a fully charged battery into the battery compartment. – Recharge battery.
Low-power indication after minimal operating time.	– Battery contacts are contaminated or damaged. – Battery not charged. – Battery defective.	– Check battery contacts for damage or contamination. – Recharge battery. – Ensure that recharging process runs correctly. – Check transmitter functions using a fully charged or replacement battery.
The display in the transmitter illuminates but it is not possible to effect control commands.	– Receiver has no voltage. – No radio communication.	– Check the connecting cable to the receiver. – Check the functions via the LEDs in the radio status panel of the receiver.
Some commands are not carried out.	– Receiver defective. – Interruption in the connecting cable to the machine.	– Check if all connecting cables and cable junctions are tight.

If none of the measures mentioned resolve the problem, then please contact your service technician, dealer or HBC-radiomatic.

Maintenance

The radio control system is virtually maintenance-free. Please observe the following points:

- Check the STOP switch functionality at regular intervals. Dirt deposits on the switch can hinder the mechanism and impair the function.
- Check the rubber bellows or rubber seals of the operating elements at regular intervals for leak-tightness. Replace immediately if cracks appear since the penetration of dirt and humidity may damage the function of the operating elements.
- Never use a high-pressure cleaner or sharp or pointed objects to clean the transmitter.
- Charge and discharge transmitter batteries regularly.

In the Event of a Fault



Warning:

Never operate a machine with a faulty or defective radio control system!

- Never try to repair the electronics of the radio control system! Opening the transmitter or receiver housing terminates the manufacturer guarantee.
 - Send any defective or faulty equipment to your local distributor or to HBC-radiomatic, Inc. They are experts and have the necessary know-how and OEM spare parts.
 - Always send both transmitter and receiver and enclose a detailed description of the problem.
 - Do not forget to enclose your address and telephone number so that we can get in touch with you quickly if necessary.
- To avoid damage during transport, use the original packing supplied with the transmitter and receiver, otherwise pack securely. Send the consignment to your distributor or to the following address:

HBC-radiomatic, Inc.
1017 Petersburg Road
Hebron, KY 41048, USA
Telephone: +1 800 410-4562
Fax: +1 866 266-7227
- Should you decide to personally return a defective radio system to your distributor or HBC-radiomatic, Inc., then please make an appointment first.

For an overview of our worldwide service and sales contacts, please visit our website www.hbc-radiomatic.com under "Contact".