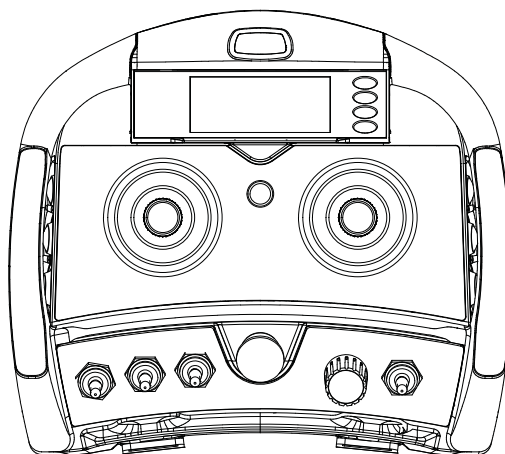


User Manual

# Remote Controls

## IK3 Transmitters



**Revision history***Table of revisions*

| Date          | Changed  | Rev  |
|---------------|--|------|
| May 2021      | Added trouble shooting and start-up information for TR2400 | 0201 |
| February 2019 | Rebranded to Danfoss Power Solutions                       | 0101 |

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## Safety instructions

### FCC rules

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

Changes or modifications not expressly approved by the manufacturer can void the user's authority to operate the equipment.

To comply with FCC RF exposure compliance requirements, this device and its antenna must not be collocated with, or operating in conjunction with, any other antenna or transmitter, may not cause harmful interference, and must accept any interference received, including interference that may cause undesired operation.

The limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### **Warning**

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.

### IK3 General Safety

The following safety instructions must be read carefully to install and use the product properly, and to keep it in perfect working condition, and to reduce the risk of misuse.

- Strictly adhere to the installation instructions contained in this document.
- Make sure that professional and competent personnel carry out the installation.
- Ensure that all site and prevailing safety regulations are fully respected.
- Make sure that this document is permanently available to the operator and maintenance personnel.
- Keep the transmitter out of reach of non-authorized personnel.
- Remove the transmission key when the set is not in use.
- Check each working day the STOP button and other safety measures. When in doubt, press the STOP button.
- Whenever several sets have been installed, make sure the transmitter is the right one. Identify the machine controlled on the label for this purpose on the transmitter or by using the display (in case it has one).
- Service the equipment periodically.
- When carrying out repairs, use spare parts supplied by Danfoss only.

#### **Warning**

**Potential damage to the operator or the product.** Do not use this product on machines in potentially explosive atmospheres unless the model is ATEX/RATEX certified to work in such conditions.

## Safety instructions

### IK3 Safety Warnings

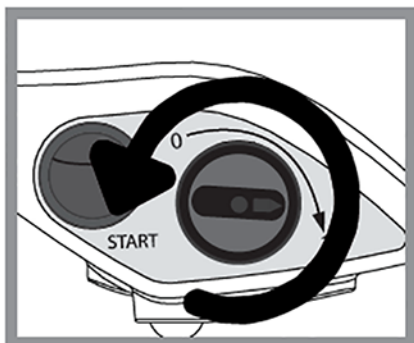
Potential damage to operator and product.

Follow the guidelines below to reduce risk of injury to the operator and the product.

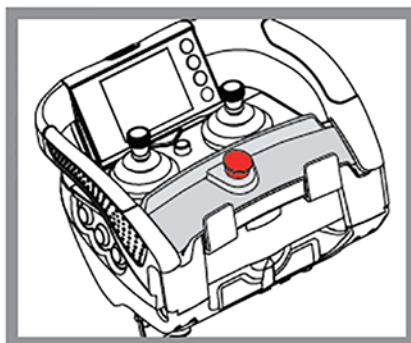
- Use the device with the manufacturer's battery and battery charger (if applicable).
- Only allow qualified personnel to operate the equipment.
- Always set the STOP button in the off position when not in use.
- Always press STOP before plugging in tether cable (if applicable).
- Remove the Tether connection on the transmitter First (if applicable).
- Do not operate product when visibility is limited.
- Make sure product is compatible with the machine.
- Avoid knocking or dropping the product.
- Do not use the product if a failure is detected.

Changes or modifications not approved by Danfoss can void the user's authority to operate this product.

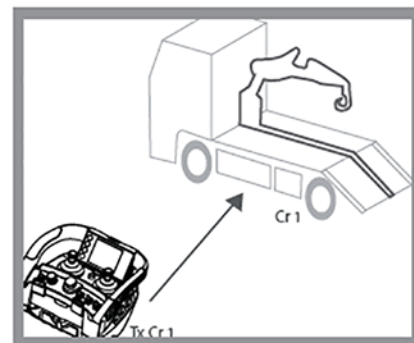
#### Quick reference precautions



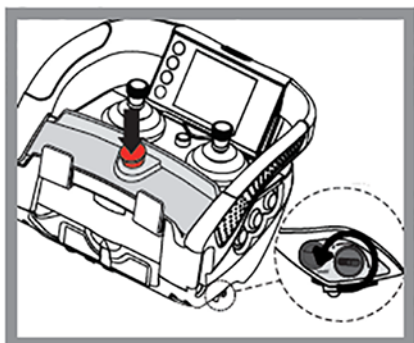
Remove the transmission key only when the set is not in use or to deny the access



When in doubt, press the STOP button



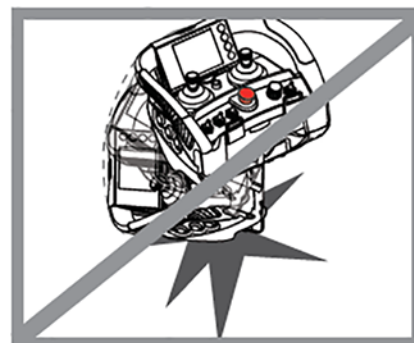
Make sure the transmitter works with the machine to be handled



After use set the contact key and the STOP button



Do not use the set when visibility is limited



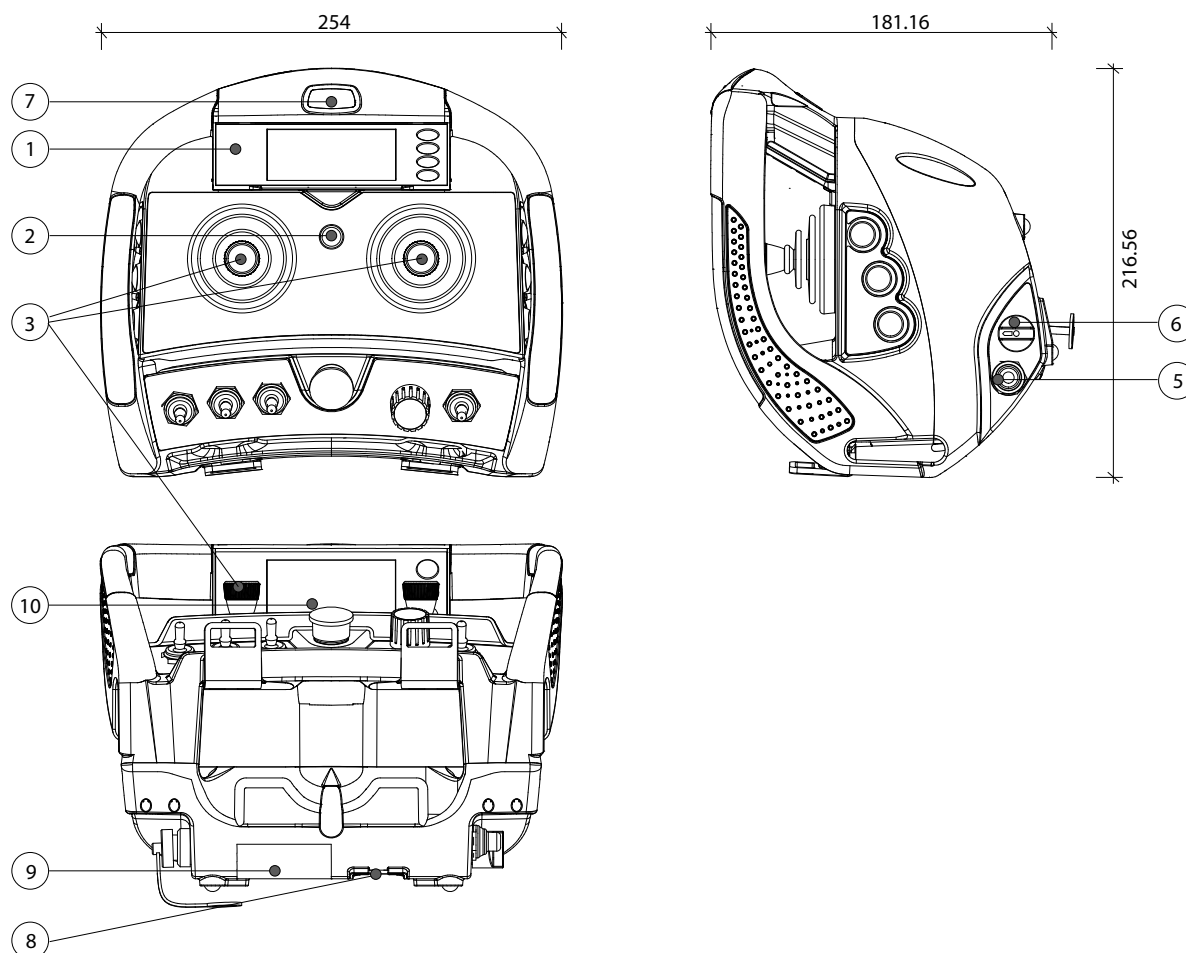
Avoid knocking or dropping the set

## Technical description

### IK3 dimensions and identification

The illustration below details dimensions and features of the IK3 transmitter.

Dimensions in mm



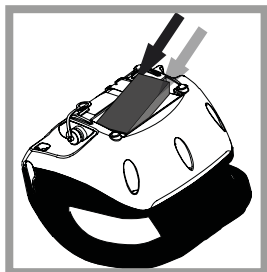
1. Label for crane identification
2. LED
3. Maneuver elements
4. Contact key
5. Start push button
6. STOP button
7. Optional: Range limiter
8. External and extractable EEPROM module
9. Battery
10. 3.5 in TFT display
11. Lateral push buttons

## Technical description

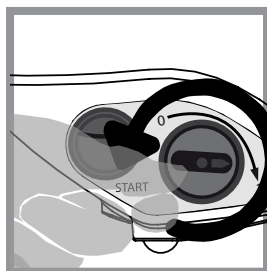
### IK Transmitters Start up (400-900Mhz)

Use the information below to properly turn the transmitter ON (OPERATION mode).

1. Place a charged battery in the transmitter. The charge must be done following the instructions of the Battery Chargers' Manual.

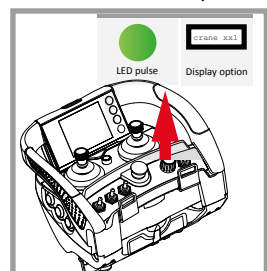


2. Turn the contact key.

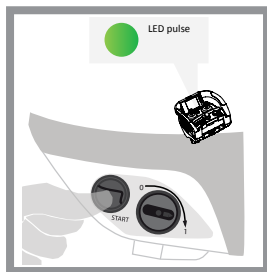


3. Push and pull out the STOP button.

LED will flash orange-green pulse. If the transmitter has LCD, it displays the identification of the machine and battery level (only if it has been pre-programmed).



4. Press the start button. The green LED will now light to indicate the transmitter is transmitting. Once the Tx is connected, press any maneuver button and its corresponding relay will be activated. Check to make sure all other maneuvers work in a coherent way with the expected movements.

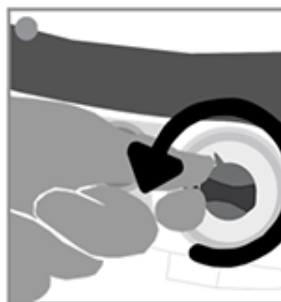


### IK Transmitters Start up (2.4 GHz)

In order to turn the transmitter ON (OPERATION mode), please follow these steps:

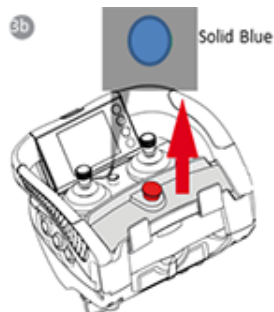
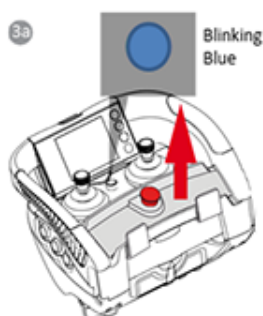
## Technical description

### Start up the device



1. Place a charged battery in the transmitter.  
The battery must be charged following the instructions of the Battery Charger Manual.
2. Turn the contact key or Multikey to the position "I." It is not necessary to switch the contact key off after use, however, it may be removed in order to deny access to the transmitter.
3. Push and pull out the **STOP** button.

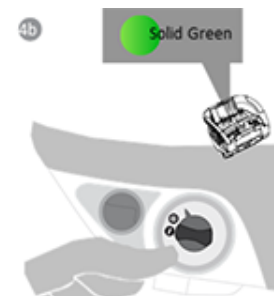
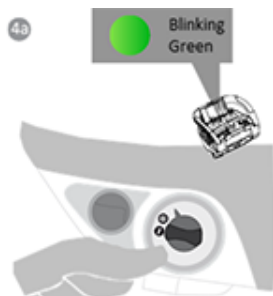
### LED status (blue)



LED will flash, blinking blue until it reaches the Stand-by mode (fixed blue). If the transmitter includes a Display, it will display the identification of the machine, as well as the battery level, if it has been pre-programmed.

4. Press the **START** button, and wait for the status LED to turn to fixed green.

### LED status (green)



The status LED will start blinking green, meaning the transmitter is trying to connect with the receiver. Once the Tx is linked, LED will turn to fixed green.

5. Press any of the transmitter's maneuver buttons and its corresponding relay will be activated.
6. Check to make sure all the maneuvers work in a coherent way with the expected movements by checking the supplied production sheet, included with the system.



## Technical description

### IK3 Detailed description

| Description                              | Value                                  |
|--|--|
| Stop function (400 - 900 MHz)            | Cat. 3-PLd                             |
| Stop Function (2.4 GHz)                  | Cat3 - PLe                             |
| Ingress Protection rating                | IP65/NEMA4                             |
| Anti-condensation system                 | Goretex Film                           |
| Frequency band - ERP                     | 433.050 to 434.040 MHz; ERP<1 mW       |
|  | 434.040 to 434.790 MHz; ERP<10mW       |
|  | 869.700 to 870.000 MHz; ERP<5 mW       |
|  | 902.000 to 928.000 MHz; ERP<1mW        |
|  | 2405MHz to 2475MHz; ERP 20dBm/100mW    |
| Range (normal conditions)                | 100m                                   |
| Main mechanisms (maximum number)         | Joystick (3) or Paddle (6)             |
| Auxiliary mechanisms                     | Pushbutton, toggle and rotary switches |
| Removable EEPROM                         | External                               |
| Battery model                            | BT27IK                                 |
| Battery life                             | 10 hours                               |
| Response Time                            | 100ms                                  |
| Operating temperature range              | -20 °C to 70 °C (-4 °F to 158 °F)      |
| Storage Temperature Range (24h)          | -25°C to 75°C (-13°F to 167°F)         |
| Storage Temperature Range (long periods) | -25°C to 55°C (-13°F to 131°F)         |
| Relative Humidity                        | max. 95% without condensation          |
| Weight (with battery)                    | 1780 grams                             |
| Dimensions LxWxH mm                      | 245,04x216,56x181,16                   |
| Harness                                  | Belt/shoulder strap                    |
| <b>Available Options</b>                 |  |
| Display                                  | 3.5-inch color TFT                     |
| LED Panel                                | Yes ( up to 12 LEDs)                   |
| Cable connector                          | Yes (M12 Connector)                    |
| Range limiter                            | Yes                                    |
| Associated receivers                     | R06, R13, R70, R70 PLUS, MPCAN, MP20   |

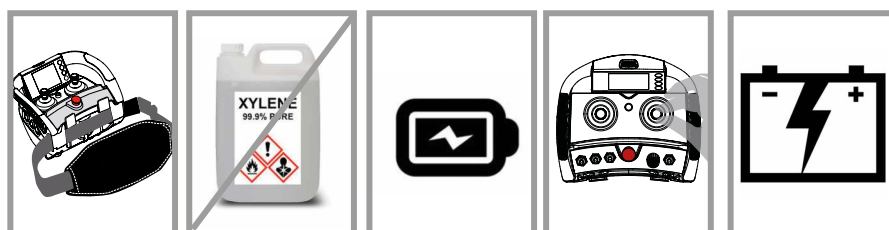
## Maintenance

### IK3 maintenance tips

This product is designed for use in an industrial environment that may shorten the product's lifespan. Use these tips to maximize the lifespan of the product.

- Use the hook/belt provided with the transmitter to prevent the transmitter from falling
- Do not clean the transmitter with solvents or pressurized water; use a damp cloth or soft brush for cleaning
- If the push buttons show signs of deterioration, contact the Authorized Technical Service for repair
- Check if the battery contacts are correct, otherwise replace them.
- Ensure that the product is supplied with AAA alkaline batteries or has a rechargeable battery
- Be sure to recharge or replace battery regularly

### Maintenance tips quick reference



### Troubleshooting (400-900 MHz)

The transmitter has status monitoring LED's which help identify irregularities. The most common signals are contained in the table below:




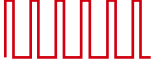




| Color and frequency | Pulse frequency | Description   | Action   |
|---------------------|-----------------|---|--|
| Green   continuous  |                 | Working   | Operate  |
| Green   slow pulses |                 | Latency; no action has been taken for some time   | Press START to return to operation mode              |
| Red   slow pulses   |                 | Low battery signal  | Replace or recharge battery                          |
| Red   fast pulses   |                 | EEPROM module missing or corrupt  | Check EEPROM and reprogram if necessary              |
| Red   double pulses |                 | A maneuver is activated at transmitter start up process; may indicate hardware damage if no order is active | Release maneuver or replace transmitter if necessary |
| Red   continuous    |                 | General hardware failure  | Replace transmitter                                  |

### Troubleshooting 2.4 GHz

The transmitter has status monitoring LED's which help identify irregularities. The most common signals are in the table below:

| LED color   Frequency | Pulse Frequency | Description  | Action                                      |
|-----------------------|-----------------|--|---|
| Blue / fast pulses    |                 | Starting the system, establishing communication with radio and EEPROM. | Wait  |
| Blue   continuous     |                 | Stand-by. Set up system, waiting user's action.                        | Press <b>START</b> to enter Operation mode. |

## Maintenance

| LED color   Frequency  | Pulse Frequency   | Description   | Action  |
|------------------------|---|---|---|
| Green / fast pulses    |  | Trying to link with the receiver and waiting its answer.                          | Wait  |
| Green   continuous     |  | The transmitter works properly. Operation mode is OK.                             | No action needed.                                     |
| Green   slow pulses    |  | <b>STANDBY</b> mode. If transmitter is 4 minutes ON and no action has been taken. | Press <b>START</b> to return to Operation mode.       |
| Red   slow pulses      |  | EEPROM Error. EEPROM module is missing or corrupted.                              | Check EEPROM module or reprogram if necessary.        |
| Red   double pulses    |  | Radio Error. Radio communication error.   | Replace transmitter                                   |
| Red   continuous       |  | Hardware failure or damage.   | Replace transmitter                                   |
| Orange   slow pulses   |  | Battery signal is critical.   | Replace batteries with charged ones.                  |
| Orange   double pulses |  | A maneuver is activated.  | Release maneuver or replace transmitter if necessary. |

## Charger and battery

### Charger and battery



#### Disposal note:

This symbol on the product indicates that it may not be disposed of as household waste. It must be handed over to the applicable take-back scheme for the recycling of electrical equipment.

- Dispose of the product through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

## CB70 and BT27IK specifications

### CB70 battery charger

| Specification            | Value                 |
|--------------------------|-----------------------|
| Standard AC power supply | 230 Vca $\pm$ 10%, 50 |
| Optional AC power supply | 115 Vca, 60 Hz        |
| DC power supply          | From 10.5 V to 35 V   |

### BT27IK battery

| Specification         | Value                                    |
|-----------------------|--|
| Voltage               | 4.8 V                                    |
| Capacity              | 2700 mAh NiMH                            |
| Charging temperature  | From 0° C to 45° C                       |
| Discharge temperature | From -20° C to 50° C                     |
| Autonomy              | From 8 to 15 h (configuration dependant) |
| Charging mode         | 7h and intelligent                       |
| Weight                | 156.3 g                                  |

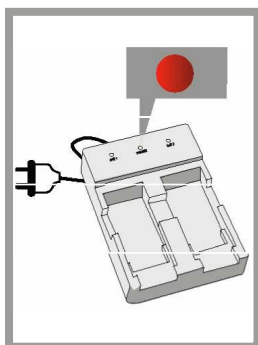
## Setting up the CB70 battery charger

Use the information below to properly set up the CB70 batter charger.

The battery charger has two charging compartments that can simultaneously charge two batteries.

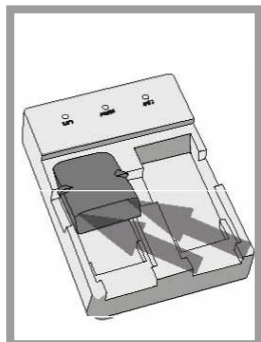
1. Connect the charger to a power source using the cable supplied.

The red LED will switch.



## Charger and battery

2. Place the batteries in the compartments of the battery charger.



3. Optional: If charging multiple batteries, wait at least 5 seconds before placing the second battery in the other compartment.

Possible damage to battery!

Be sure to charge batteries in environments with temperatures over 0° C.

## CB70 status LEDs

Each battery compartment has an LED that indicates the status of the batteries' charge.

|                              |                                      |
|------------------------------|--------------------------------------|
| <b>Green LED; pulsing</b>    | Battery is excessively depleted      |
| <b>Green LED; continuous</b> | Normal charging operation mode       |
| <b>Green LED; off</b>        | Battery charging process is complete |

The battery charger must be placed and used out of the danger area.

## Battery Charging Recommendations

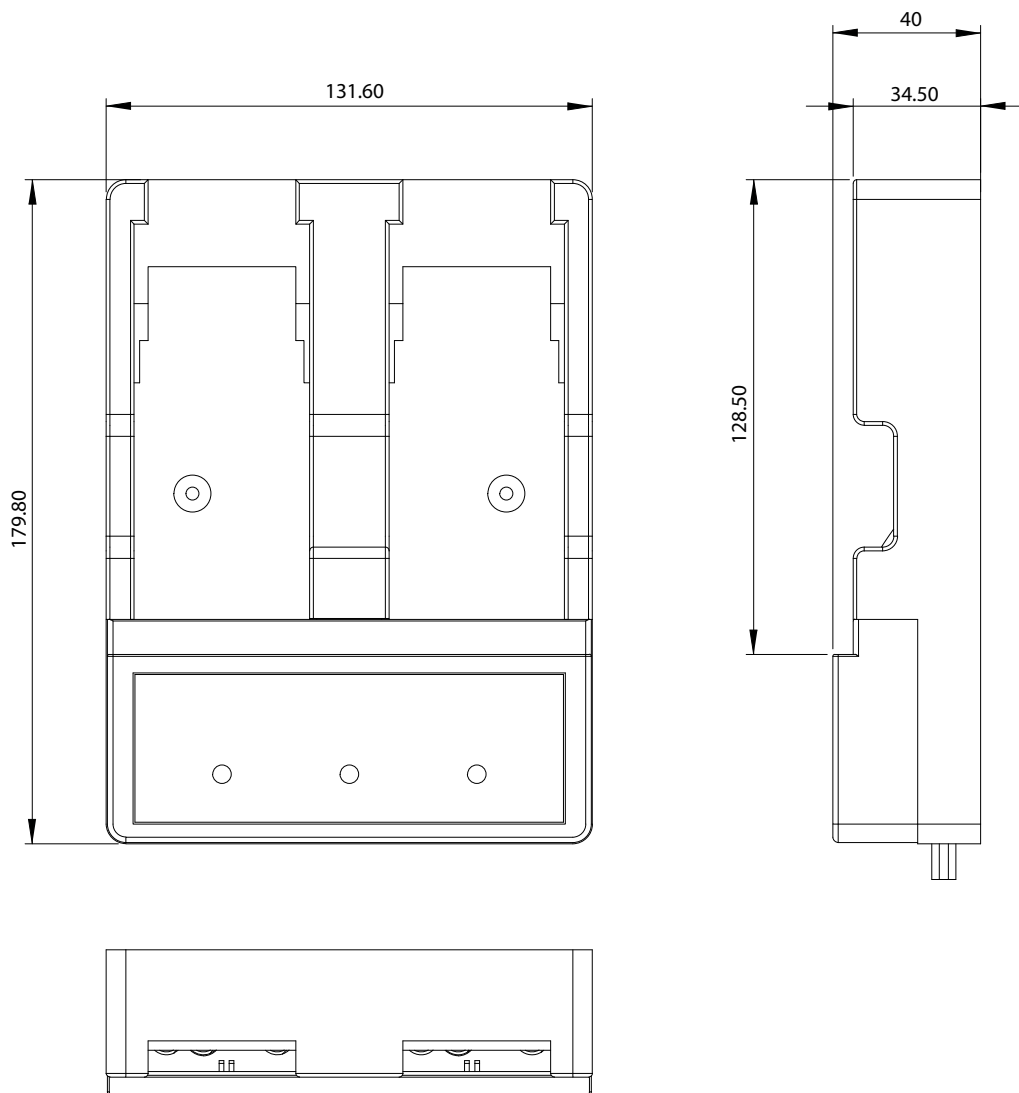
The battery lifespan is estimated to 500 recharging cycles and is largely dependent on the conditions of use. To maximize the lifespan of the batteries and battery charger, follow these recommendations:

- Do not recharge the battery until it is completely flat, as shown with red LED slow pulse on the transmitter
- Always charge the batteries at temperatures between 0° and 45°C (the batteries will not become fully charged at temperatures exceeding 45°C)
- Do not leave the battery charger or batteries in a direct sunlight
- Charge batteries at least once every six months
- Avoid short circuits between the battery contacts; do not carry charged batteries in toolboxes or next to other metal objects (keys, coins, etc.)
- Always keep contacts clean
- Caution! Risk of Explosion if Battery is Replaced by an incorrect type. Non Danfoss Battery use may void warranty

## Charger and battery

### CB70 battery charger dimensions

*Dimensions in mm*



**Products we offer:**

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- DCV directional control valves
- Electric converters
- Electric machines
- Electric motors
- Gear motors
- Gear pumps
- Hydraulic integrated circuits (HICs)
- Hydrostatic motors
- Hydrostatic pumps
- Orbital motors
- PLUS+1® controllers
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