ENGINEERING
TOMORROW

User Manual

Remote Control
IK1 Transmitter

www.danfoss.com

Revision history

Table of revisions

Date	Changed	Rev
January 2026	Updated Safety and Maintenance information	0201
June 2024	Updated cover art, ingress protection rating	0102
March 2024	Initial Release	0101

Contents

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.

IK1-G 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 miss use.

- **Danfoss recommends the use of ESD PPEs (electrostactic discharge personal protection equipment).**
- Strictly adhere to the installation instructions contained in this document.
- Make sure that professional and competent personnel carry out the installation.
- Ensure that all on site and prevailing safety regulations are fully respected.
- The Electrical Installation where it may be connected, The receiver may be connected through an automatic magneto thermic switch (with omnipolar cut capacitance: F+N) and differential with characteristics according to the Low Voltage Recommendations.
- 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 transmitter key when the set is not in use.
- Check each working day the STOP button and other safety features. 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 does have one).
- Service the equipment periodically.
- Avoid High Pressure water Spraying to Receivers while cleaning the machine
- When carrying out repairs, use spare parts supplied by Danfoss only.

Safety instructions

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.

IK1 Safety Warnings

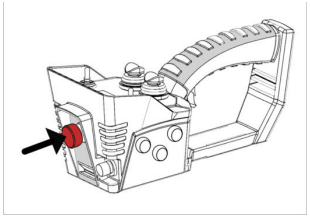
Potential damage to operator and product.
Follow the guidelines below to reduce risk of injury to the operator and the product.

Neodimium Magnet on Handle lower Part.
Beware Users with Pacemakers to avoid approaching the device to the chest.

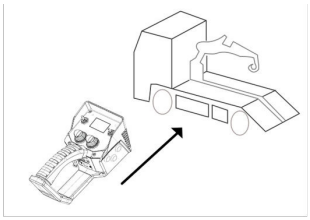
- Use the device with the manufacturer's battery and battery charger (if applicable).
- Only allow qualified personnel to operate the equipment.
- Always set the STOP button in the off position when not in use.
- Always press STOP before plugging in tether cable (if applicable).
- Remove the Tether connection 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.

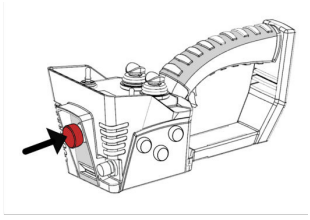
Quick reference precautions



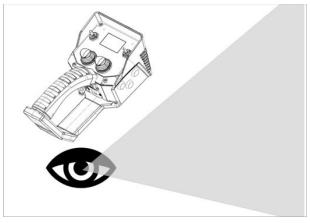
Press the STOP button when transmitter is not being used



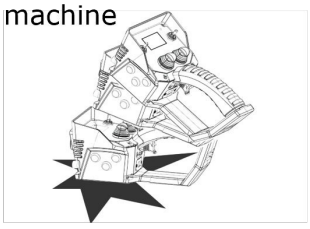
Make sure the transmitter Works with the desired machine



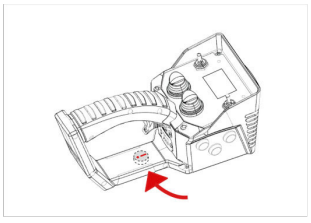
After use, press the STOP Button



Do not use the Device when visibility is limited



Avoid Knocking or Dropping the Device



Careful. Magnet on the Handle Lower part.

Data Encryption

In alignment with **Commission Delegated Regulation (EU) 2022/30**, supplementing the **Radio Equipment Directive (RED) 2014/53/EU**, we are introducing **encryption for radio communication** in TM80 2.4 GHz platform. This measure is designed to:

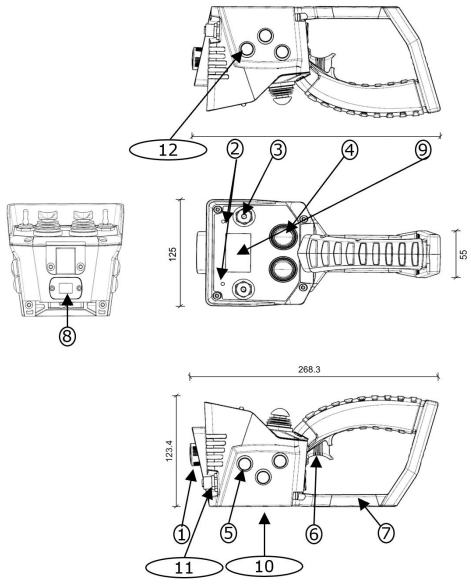
Safety instructions

- Protect the integrity and confidentiality of transmitted data
- Prevent unauthorized access and misuse of network resources

Technical description

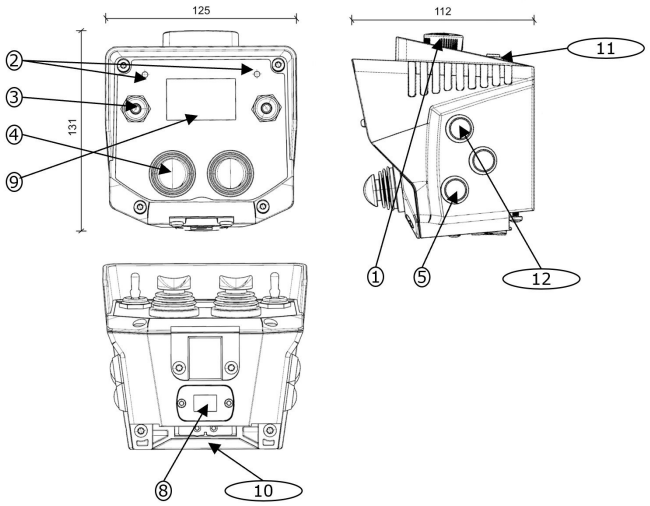
IK1 Dimensions and Identification

The illustration below details dimensions and features of the IK1-G transmitter.



Dimensions in mm.

The illustration below details dimensions and features of the IK1 transmitter.



1.- STOP Button

2. Status LEDs (2)

3. Toggle Switches

4. Thumb Joysticks

5. Side Pushbuttons (up to 5)

6. Proportional Trigger

7. Internal Magnet

Technical description

8. External and extractable EEPROM module
9. LCD Display
10. Alkaline Battery Pack (4xAA) or Rechargeable BT11K Battery
11. Tether Connector
12. START Button

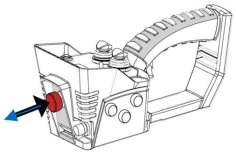
IK1 Transmitter Start up

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

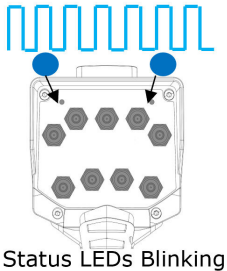
Start up the device

1. Place a charged LiIon battery or Alkaline Battery Pack (4xAA Batteries) on the transmitter.
   Li Ion Batteries BT11K must be charged following the instructions of the Battery Charger.
2. Push and pull out the **STOP** button.

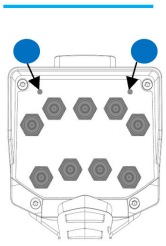
   LED status (blue)



Press and Release the STOP button.



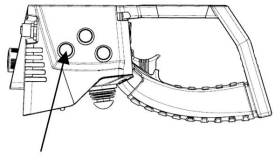
Status LEDs Blinking BLUE



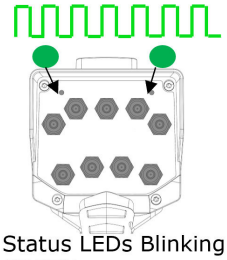
Status LEDs solid BLUE

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

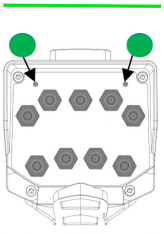
   LED status (green)



Press START Button



Status LEDs Blinking GREEN



Status LEDs solid 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.
4. Press any of the transmitter's maneuver buttons and its corresponding relay will be activated.
5. 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

IK1 Detailed description

Description	Value	
Stop Function (2.4 GHz)	Cat3 - PLe	
Ingress Protection rating	IP66/NEMA4	
Anti-condensation system	Goretex Film	
Frequency band - ERP	2405MHz to 2475MHz ; ERP 20dBm/100mW	
Range Line of sight (guaranteed)	100m	
Main mechanisms (maximum number)	Thumb Joysticks (2)	
Auxiliary mechanisms	up to 9 toggle switches	
Side Buttons	up to 6 buttons	
Trigger (with Pistol Grip)	Proportional Trigger	
Removable EEPROM	External	
Battery model	Alkaline Battery Pack (4xAA Batteries)	BT11K
Battery life	15 - 24 hours	7 - 11 hours
Response Time	100ms	
Operating temperature range	-20 °C to 70 °C (-4 °F to 158 °F)	
Storage Temperature Range (24h)	-25ºC to 75ºC (-13ºF to 167ºF)	
Storage Temperature Range (long periods)	-25ºC to 55ºC (-13ºF to 131ºF)	
Relative Humidity	max. 95% without condensation	
Weight (with battery)	800 grams	
Dimensions LxWxH mm	268.3 x 125 x 123.4	
Harness	magnets on grip to stick on metallic surfaces	
Fast Teleteaching	Yes	
Buzzer	N/A	
Vibration	N/A	
Free Fall Detection	N/A	
Tilt Switch	N/A	
Available Options		
Display	128x64 Graphic LCD	
LED Panel	na	
Tether connector	Yes (M12 Connector)	
Range limiter	na	
Link Quuality Indication (2.4GHz + Display)	YES	
RFID User Validation	N/A	
Associated receivers (2.4GHz)	MP08, MPCAN, MP20, R11, R13F	

IK1 Model code creation

The model code generation is based on a model code:

1. Family: IK1
2. Variant: G Pistol Grip, B Console Box
3. Power Supply: 1: Alkaline Batteries, 2: NiMH Rechargeable Batteries, 3: Li-Ion Rechargeable Batteries
4. Charging Type: N: No Charger, D: Docking Station, C: Battery Charge

   Example:

Technical description

IK1 - G1N (with Pistol Grip, alkaline batteries and no charger)

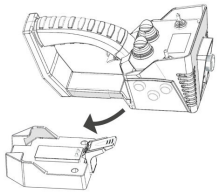
IK1 - G3C (with Pistol Grip, Li-Ion battery and BC70 charger)

IK1 - G3D (with Pistol Grip, Li-Ion battery and Docking station)

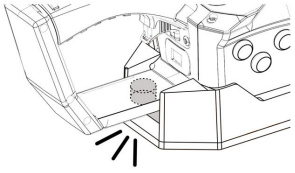
IK1 – B1N (console Box Style, alkaline batteries and no charger)

Pistol Grip Docking Station

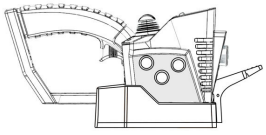
As an option there is the possibility of adding a Pistol Grip Docking Station. The way to lock and unlock the Pistol grip is as follows:



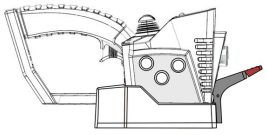
1.- Slide Pistol Grip into Docking Station



2.- The Pistol Grip magnet locks with the docking base.



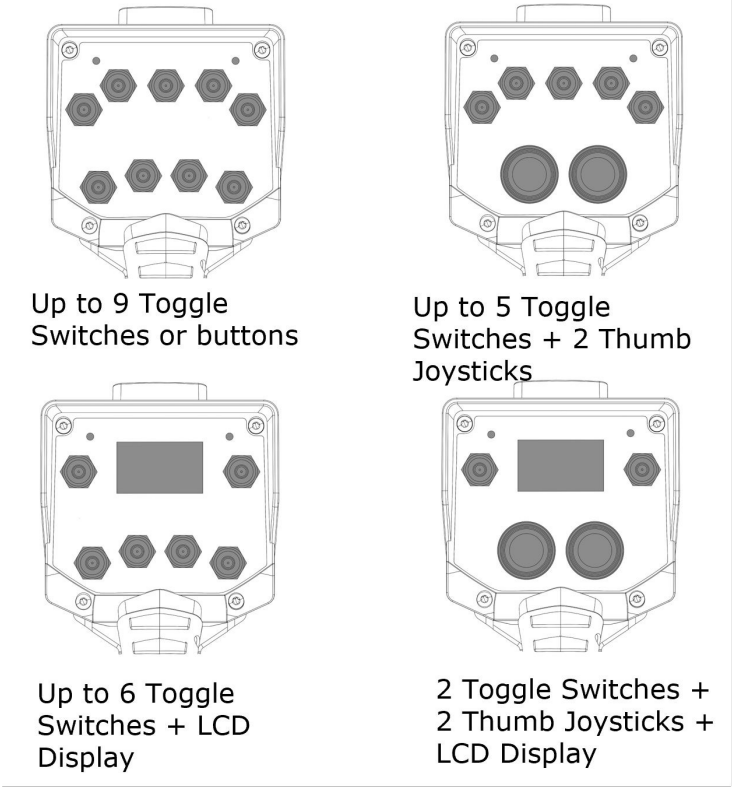
3.-Locked Position



4.- To unlock the Pistol Grip Press the tab.

Technical description

Default IK1 Layouts



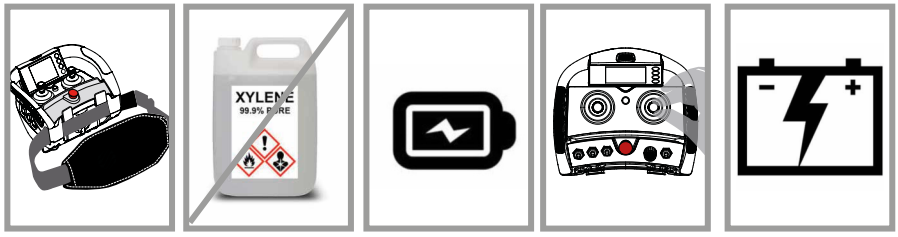
Maintenance

IK1-G 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/Shoulder strap/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 it.
- If the Mechanisms show signs of deterioration, contact the Authorized Technical Service for repair.
- Check the battery contacts are clean and battery is inserted correctly.
- Ensure that the product is supplied with Rechargeable batteries.
- Be sure to recharge or replace battery regularly.

Maintenance tips quick reference



Troubleshooting 2.4GHz

Status LED (on all Transmitters)		Display Message	Description	Action
Color and frequency	Pulse frequency			
Blue | fast pulses		Danfoss Logo	Starting the system; establishing communications with radio and EEPROM	Wait
Blue | continuous		Label - Press start to link	Standby mode. Set up system, waiting user's action	Press START to enter operation mode
Green | fast pulses		Connecting..	Attempting to link with the receiver and waiting its answer	Wait
Green | continuous		Label or Feedback information	Working	Operate
Green | slow pulses		Blank Display	Standby; no action has been taken for some time	Press START to return to operation mode
Green | very fast pulses			Near Link Lost. The link may drop	Check Distance or RF interference
Red | slow pulses		ERROR EEPROM	EEPROM module missing or corrupt	Check EEPROM and reprogram if necessary
Red | double pulses		ERROR RADIO	Radio error; radio communications error	Replace transmitter
Red | 3 pulses		ERROR DISPLAY	Display Error. Display communication Error	Replace Display or Transmitter
Red | 4 pulses		ERROR MULTIKEY	Multikey Error. Multikey not in ON position or Broken.	Check Multikey or Replace it.
Red | 5 pulses		ERROR CAN	CAN Error	
Red | 6 pulses		FREE FALL	FREE FALL has been detected.	Reset the transmitter

Maintenance

Status LED (on all Transmitters)		Display Message	Description	Action
Color and frequency	**Pulse frequency**			
Red | 7 pulses			Display and EEPROM settings do not Match	Check files and reprogram EEPROM and/or Display
Red | Long + Short pulse		ERROR RFID	RFID Signature Check Error	Use a correct RFID card and/or configuration
Red | 1 Long + 2 short pulses		ERROR PAIRING	Pairing Error	Check the Tether connection and Receiver is ON.
Red | 1 Long + 3 short pulses			User validation process aborted. More than one card or card removed before the validation process is completed.	Start the process again
Red | 1 Long + 4 short pulses			User validation invalid UID. The PLC does not accept this UID	Start the process again, with another UID card
Red | continuous		ERROR	General hardware failure	Replace transmitter
Orange | slow pulses			Critical battery signal	Replace batteries with charged ones
Orange | double pulses		LABEL	Activated Order	Release Order
Orange | 3 pulses			Hall effect interference. Some mechanisms are disabled	Wait until interference disappears
Orange | 4 pulses			Range Limiter warning. Out of Range	Check Range Limier is ON with the correct ID.
Orange | 5 pulses			Wrong Selector Position	Press Start to link in this position, or return to the original position.
Orange | 6 pulses			Release Function: Release Button + START Pressed	The transmitter will switch off after release is done.
Orange | 7 pulses			Tilt Warning. Transmitter is tilted more than the number of degrees set up in the EEPROM configuration for Pitch and Roll axis	Bring the transmitter to normal position
Pink | 1 pulse			Display Value Settings Menu	Perform the Display settings
Pink | Continuous		EEPROM copy - Replace EEPROM	EEPROM copy mode	Press related button to perform the copy
Pink | Fast pulses		EEPROM copy - Writing EEPROM	EEPROM being copied	Wait until solid pink
Pink | 3 pulses			Saving in Pairing Mode	Wait until saved
Blue + Pink | 3 pulses			RFID User Validation Waiting UID Validation	Wait until UID approved or denied
Blue + Pink | 1 pulse			RFID User Validation waiting User	Please place UID close to RFID reader

Charger and battery

Transmitter Power supply

Ikore, IK1 have 2 different models depending on the power supply

Transmitters with NO Suffix (Ikore, IK1-x1) use AA or AAA Alkaline Batteries

Transmitters with Suffix B (IkoreB, IK1-x2) use Li Ion Rechargeable Batteries BT11K

Alkaline Battery Recommendations

Transmitters that do use AA Battery Pack or AAA Batteries, it is highly recommended to use ALKALINE Batteries.

The use of Non Alkaline Batteries may diminish the Transmitter working hours.

Working hours that do appear on the Detailed description are always using Alkaline batteries.

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.

BC70K Battery Charger and BT11K specifications

BC70K battery charger

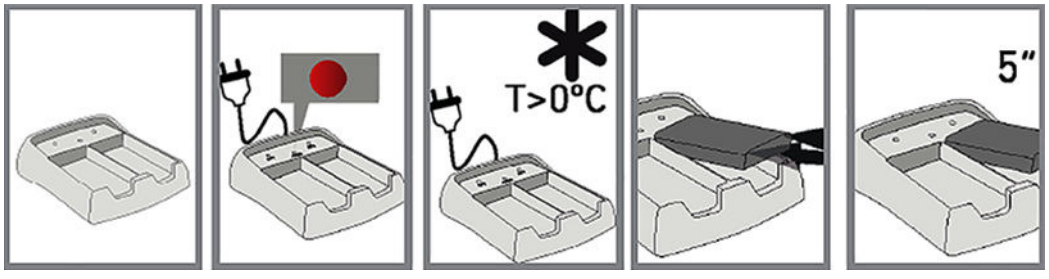
Specification	Value
AC power supply	110-230V, 50/60Hz, ± 10%, automatic switching
DC power supply, nominal	12-24V

BT11K battery

Specification	Value
Voltage	3.7V
Capacity	1130 mAh Li-ion
Charging temperature	0°C to 45°C
Discharge temperature	-20°C to 60°C
Full Charge	4h +- 30 min
Weight	23g

BC70K Battery Charger Set-up

The battery charger has two charging compartments that can simultaneously charge two BT11K batteries. Use the information below to set up the BC70K battery charger.



1. Connect the charger to a power source using the provided power supply.

   The red LED will switch on if the charger is properly connected.
2. Place the batteries on the charger.
3. Optional: When charging two batteries, wait at least five seconds before inserting the second battery into the compartment.

Warning

Possible damage to battery.
The Battery Charger must be installed in a dry/interior environment. Make sure to charge batteries in environments with temperatures over 0°C.

Charger and battery

BC70K Charger LEDs Status

The BC70K charger has a LED for each compartment (**BAT 1** and **BAT 2**) and a common indicator (**POWER**).

LED color / frequency	Description
Green LED / pulsing (BAT 1, BAT 2)	The battery is being charged
Green LED / continuous (BAT 1, BAT 2)	The battery is completely charged
Red LED / pulsing or continuous (BAT 1, BAT 2)	The battery charger fault
Red LED / continuous (POWER)	The charger is properly connected to power source

Battery Charging Recommendations

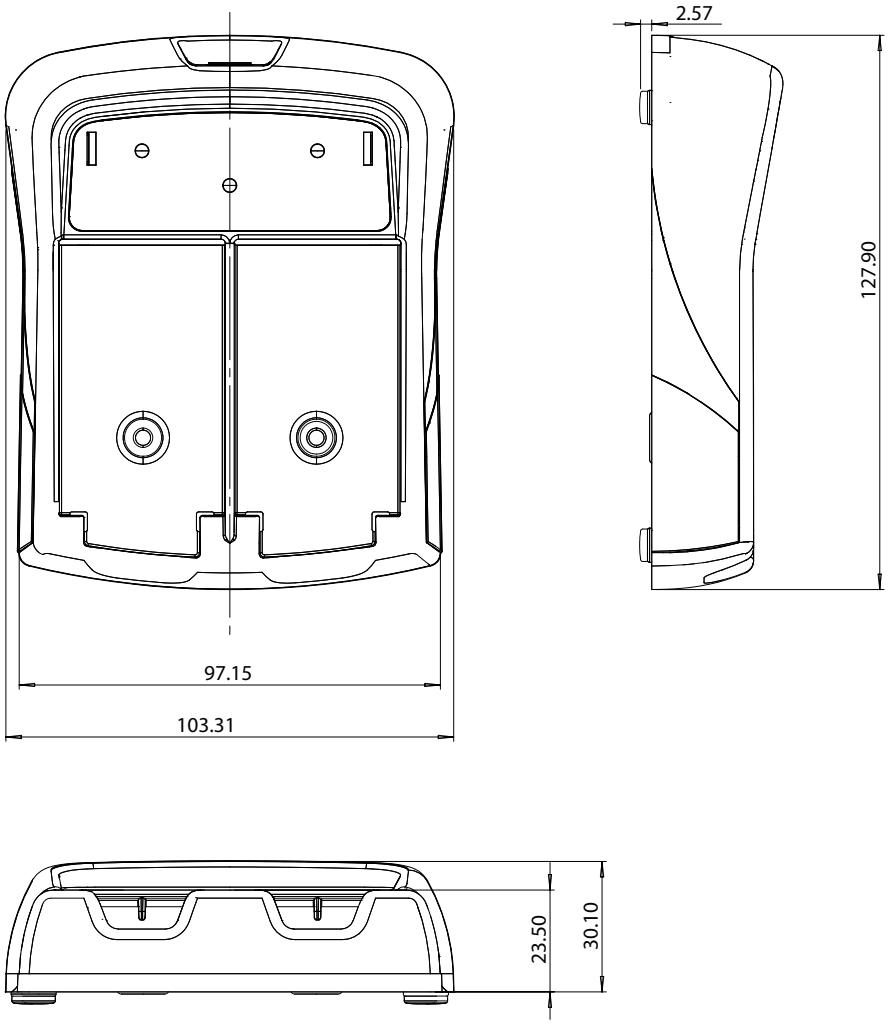
Charge the battery fully before use. This ensures that the battery's full capacity will be available. The battery lifespan is estimated to 500 recharging cycles and is largely dependent on the conditions of use. To maximize the lifespan of the batteries and battery charger, follow these recommendations:

- 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 three months
- Make the charge of at least 40% of the full charge.
- Ideal Battery storage temperature should be between 15°C and 25°C.
- 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

BC70K Battery Charger Dimensions

Dimensions (mm)



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