

User Manual

Ikargo2 Transmitter

Remote Control



Revision history

Table of revisions

Date	Changed	Rev
July 2024	Updated safety, technical description, maintenance information, and maintenance sections	0301
February 2021	Changed name Ikargo10 to Ikargo2	0201
July 2019	Rebranded to Danfoss.	0101

Contents

Safety instructions

FCC rules.....	4
General safety.....	4
Safety warnings.....	5

Technical description

Ikargo2 Dimensions.....	6
Ikargo2 Start-up.....	7
Ikargo2 Detailed Description.....	8
Multikey.....	9
Additional Transmitter Features.....	9

Maintenance

Ikargo2 Maintenance Recommendations.....	10
Troubleshooting (400-900 MHz).....	10
Troubleshooting 2.4 GHz.....	11

Charger and battery

Charger and battery.....	12
BC70K and BT11K specifications.....	12
BC70K Battery Charger Set-up.....	12
BC70K Charger LEDs Status	14
Battery Charging Recommendations.....	14
BC70K Battery Charger Dimensions.....	15

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.
-

Ikargo2 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 (electrostatic 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

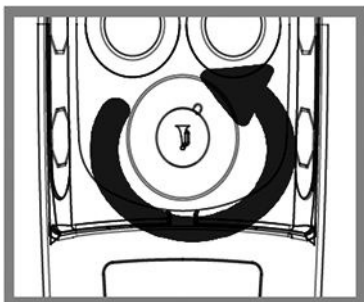
⚠ Warning

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.

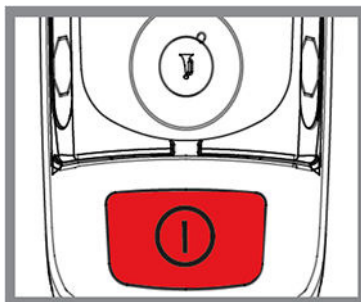
Ikargo2 Safety Quick Guide

Follow the Safety Quick Guidelines below to reduce risk of injury to the operator or the product.

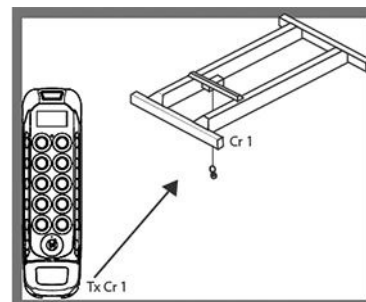
Changes or modifications not approved by Danfoss can void the user's authority to operate this product.



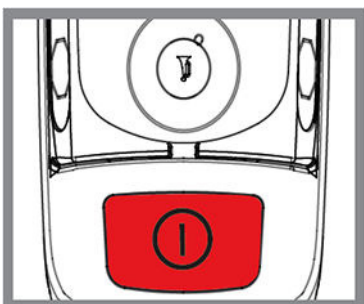
Remove the transmitter key only when the set is not in use or to deny the access.



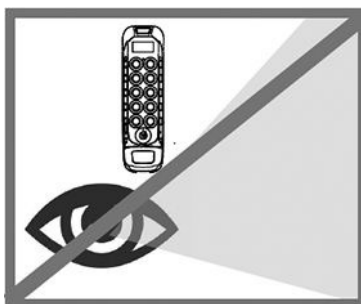
When in doubt, press the STOP button.



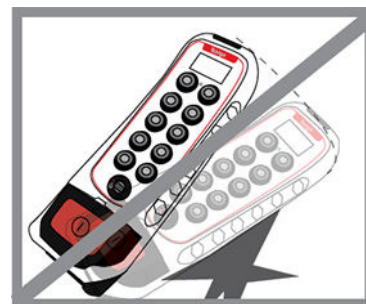
Make sure the transmitter works with the machine to be handled.



After use, press the STOP button and remove the Multikey.



Do not use the set when visibility is limited.

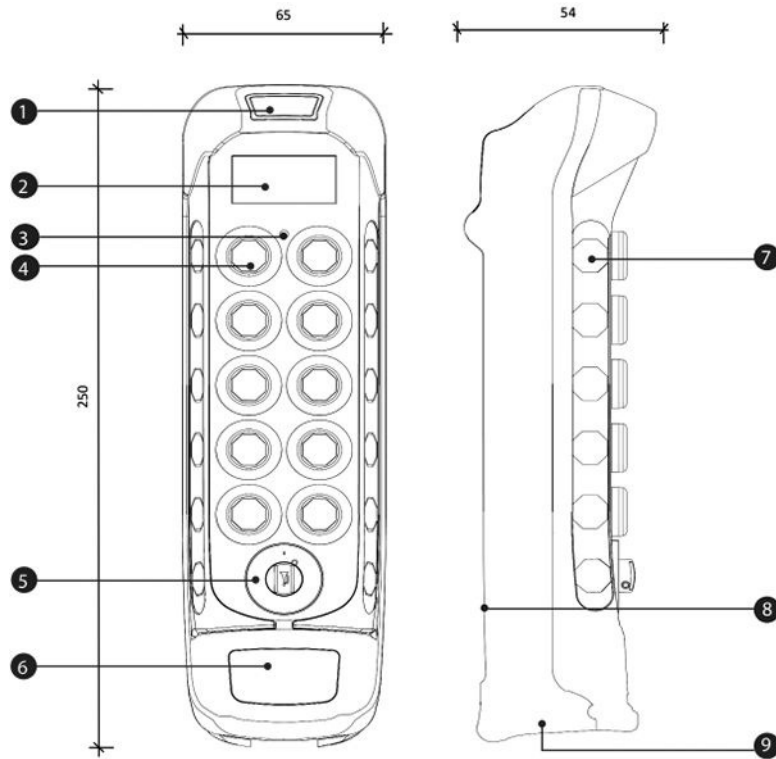


Avoid knocking or dropping the set.

Technical description

Ikargo2 Dimensions

Dimensions (mm)



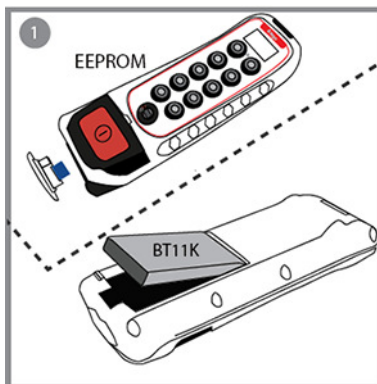
1. Range limiter infrared sensor
2. RGB display
3. Status LED
4. Maneuver push button (2 steps)
5. Multikey/START
6. STOP button
7. Movement pictogram housing
8. BT11K battery housing
9. Extractable EEPROM housing

Technical description

Ikargo2 Start-up

In order to turn the transmitter on - **OPERATION mode**, follow the steps bellow:

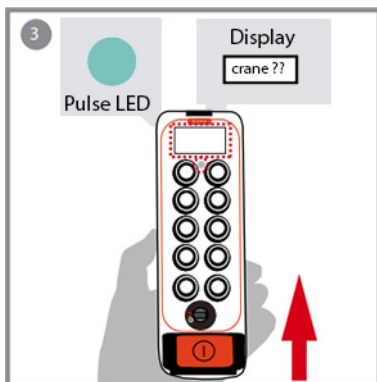
1. Insert the charged BT11K battery model in the transmitter and ensure the EEPROM module is in place.
The battery must be charged according to the Battery charging instruction manual.



2. Turn the multikey from the position 0 to the 1 position.
The multikey cannot be removed while in the 1 position.



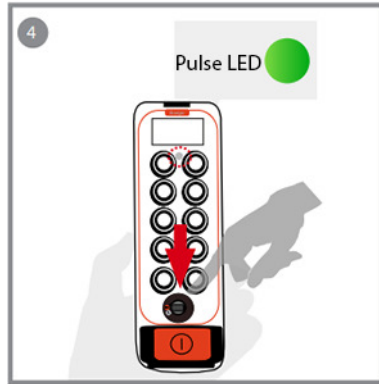
3. Push and pull out the stop button.



The LED will blink in green color and the battery level will appear on the display. It is recommended to introduce the machine identifier (example: EOT crane number).

Technical description

- Press START with the multi-key until the radio link is performed.



The LED color will turn green to indicate that the transmitter and receiver link is confirmed.

- After confirmation, press the maneuver buttons to verify corresponding movements.

Ikargo2 Detailed Description

Technical Data

Specification	Value
Stop function (400 - 900 MHz)	Cat. 3-PLd
Stop function (2.4 GHz)	Cat. 3-PLe
Ingress Protection	IP65/NEMA4
Anti-condensation system	N/A
Frequency bands - 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 20dBm/100mW
Range Line of sight (guaranteed)	100m
Main mechanisms	Pushbutton (10) + Multikey(1) + STOP
Auxiliary mechanisms	N/A
Removable EEPROM	External
Battery model	BT11K
Battery life	8 hours (100% duty cycle)
Response Time	100ms
Operating temperature	-20° to 70° C (-4° 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)	450g
Dimensions LxWxH mm	252x68x60
Harness	Hand/shoulder strap
Display	Yes
Options	
Cable connection	N/A
Range limiter	Yes

Technical description

Technical Data (continued)

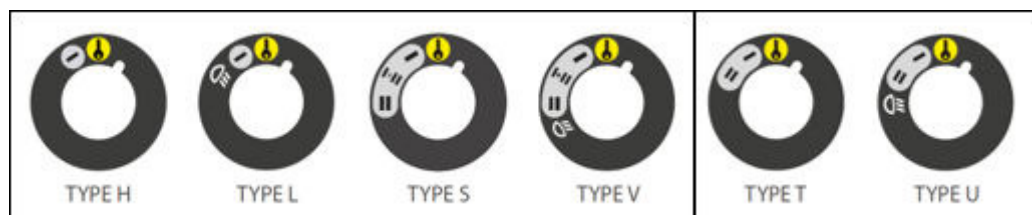
Specification	Value
Associated receivers (400 - 900 MHz)	R06, R13 B, R13 F, R70
Associated receivers (2.4 GHz)	R13F, R70, MPCAN, MP08A, MP20A

Multikey

The Multikey is a device connected to the Transmitter via RFID. It does engulf the following features:

Extractable Key (RFID) + START Pushbutton + Up to 5 position Selector switch.

There are different options for the Multikey, being the most common:



Type H multikey is the Basic Key, having the single position and START pushbutton.

Type T multikey is the key with 2 position selector that could as an example duplicate functions (shift key) depending on the position of the multikey and the button being pressed.

Type S or V multikeys are thought for single and dual operation either on the same receiver or when using 2 Receivers to work on a "tandem" operation.

The Multikey gives a wide variety of options regarding configuration and system behavior depending on the multikey being used on the same Transmitter.

New Multikey configurations may be released upon demand.

Additional Transmitter Features

Handheld and Console Box Transmitters do have the following Features and Options:

Frequency management (400-900 MHz)
Display and Feedback information
Range Limiter
Multi System Configuration

To get further information please do follow the Link to obtain the related manuals:

[PLUS+1® remote controls | Danfoss](#)

Maintenance

Ikargo2 Maintenance Recommendations

This product is designed for use in an industrial environment that may shorten the product's lifespan. Use these recommendations 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
- If the push buttons show signs of deterioration, contact the Authorized Technical Service for repair.
- Check the battery contacts are clean and battery is inserted correctly.
- Be sure to recharge or replace battery regularly.

Maintenance tips quick reference



Troubleshooting (400-900 MHz)



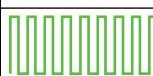
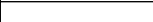
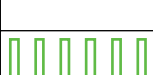





The transmitter has status monitoring LED's which help identify irregularities. The most common signals are contained in the table below:

Color and frequency	Pulse frequency	Description	Action
Green continuous		Working	Operate
Green slow pulses		Standby; no action has been taken for some time	Press START to return to operation mode
		Status Rx on Tx Function: Receiver No Link	The Receiver has lost connection with Transmitter. Press START to link again
Green fast pulses		Transmitter Reading New EEPROM	Wait until finished
		Status Rx on Tx and Autoconnect Functions: Transmitter trying to link with Rx (START being Transmitted)	Once Receiver connected will turn into solid Green.
Red slow pulses		Battery Low signal	Replace or recharge battery
Red fast pulses		EEPROM module missing or corrupt	Check EEPROM and reprogram if necessary
Red double pulses		An order is active at transmitter start up process; may indicate hardware damage if no order is active	Release the order or replace transmitter if necessary
Red continuous		General hardware failure	Replace transmitter

Maintenance

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 START to enter Operation mode.
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		STANDBY mode. If transmitter is 4 minutes ON and no action has been taken.	Press START 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.

BC70K and BT11K specifications

BC70K battery charger

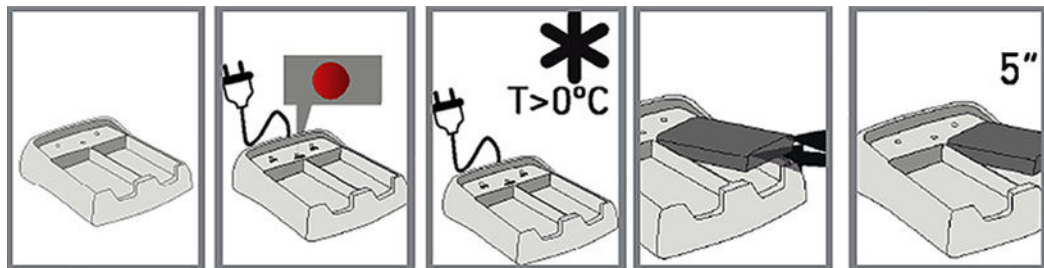
Specification	Value
AC power supply	110 – 230 V, 50/60 Hz, ± 10%, automatic switching
DC power supply, nominal	12 – 24 V

BT11K battery

Specification	Value
Voltage	3.7 V
Capacity	1130 mAh Li-Ion
Charging temperature	0°C to 45°C
Discharge temperature	-20°C to 60°C
Charging mode	Fast (<2.5 h) and intelligent
Weight	23 g

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.



Charger and battery

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

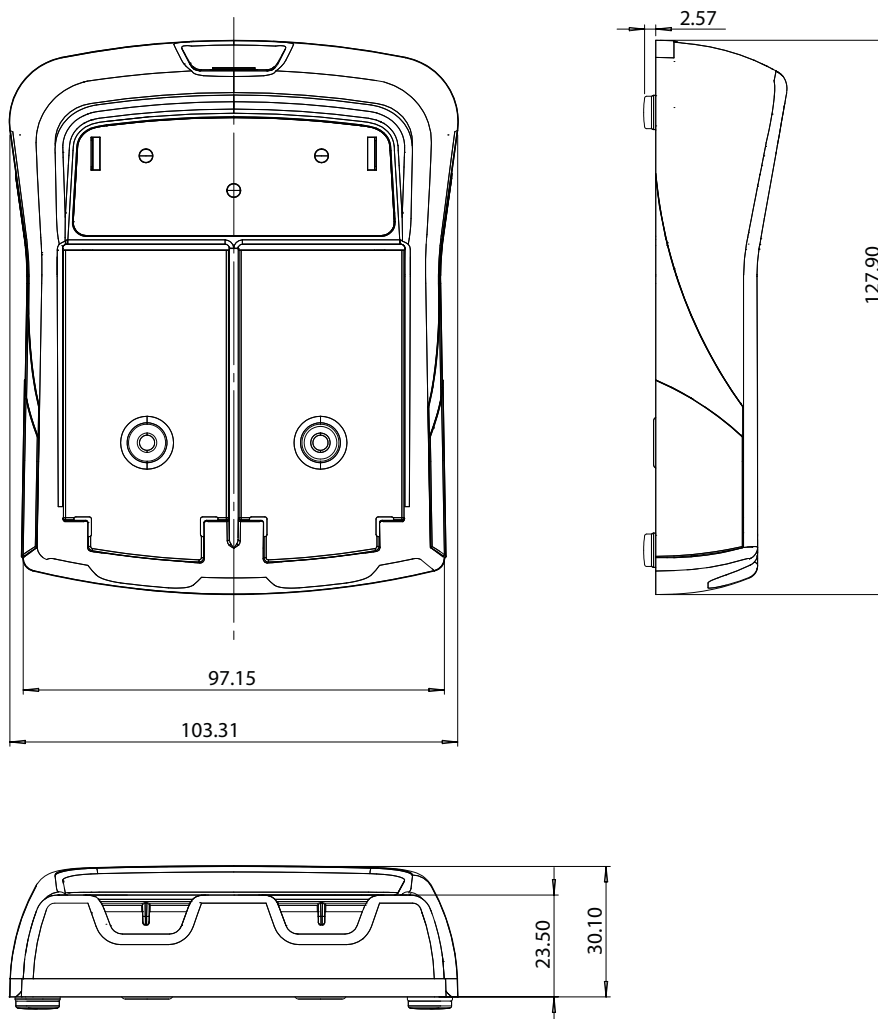
The battery lifespan is estimated to 500 recharging cycles and is largely dependent on the conditions of use. To maximize the lifespan of the batteries and battery charger, follow these recommendations:

- 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)



Products we offer:

- Cartridge valves
- 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
- PLUS+1® displays
- PLUS+1® joysticks and pedals
- PLUS+1® operator interfaces
- PLUS+1® sensors
- PLUS+1® software
- PLUS+1® software services, support and training
- Position controls and sensors
- PVG proportional valves
- Steering components and systems
- Telematics

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www.daikin-sauer-danfoss.com

**Danfoss
Power Solutions (US) Company**
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

**Danfoss
Power Solutions GmbH & Co. OHG**
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

**Danfoss
Power Solutions ApS**
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

**Danfoss
Power Solutions Trading
(Shanghai) Co., Ltd.**
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 2080 6201

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