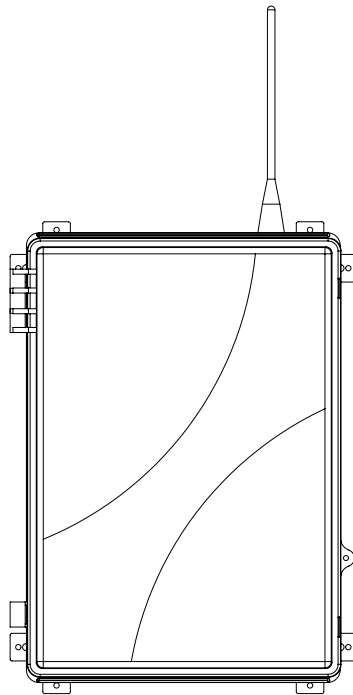


User Manual

# Remote Control

## R70 PLUS Receiver



**Revision history**

*Table of revisions*

<b>Date</b>	<b>Changed</b>	<b>Rev</b>
January 2019	Rebranded to Danfoss Power Solutions	0101

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## Safety instructions

### R70 PLUS general safety

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

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Potential damage to operator and product.

Do not use this product on machines in potentially explosive atmospheres unless the model is ATEX/RATEX certified to do so.

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- 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 transmission key when the set is not in use.
- On starting each working day, check to make sure that the STOP button and other safety measures are working.
- 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, only use spare parts from Danfoss.

### R70 PLUS safety warnings

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Potential damage to operator and product.

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

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- 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).
- 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.

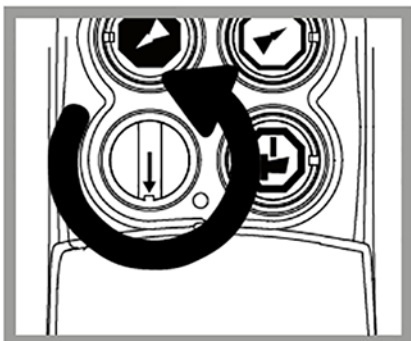
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Changes or modifications not approved by Danfoss can void the user's authority to operate this product.

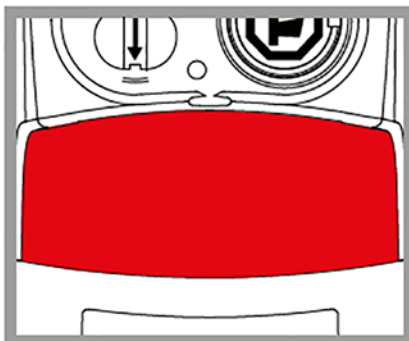
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**Safety instructions**

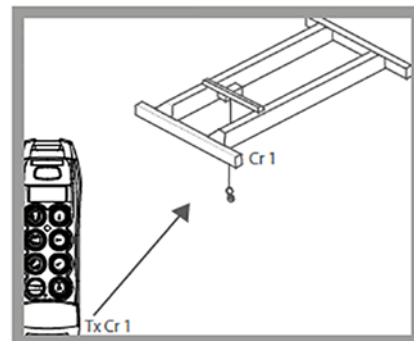
*Quick reference precautions*



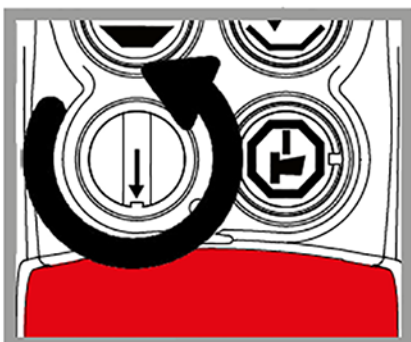
Remove the transmission key only when the set is not in use or to deny the access



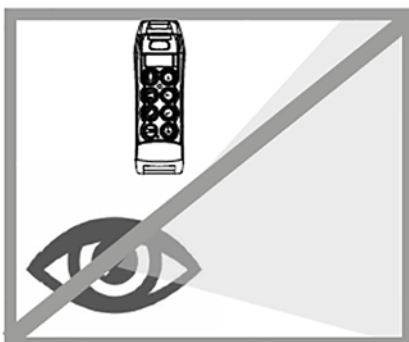
When in doubt, press the STOP button



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

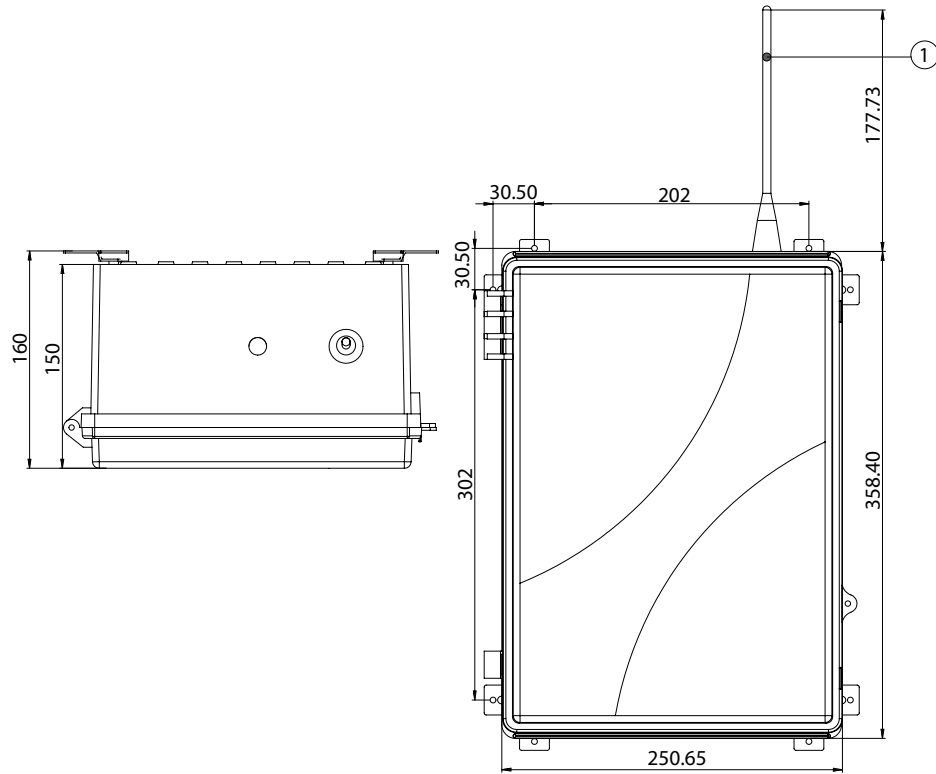


Avoid knocking or dropping the set

**Technical description**

**R70 PLUS dimensions**

*Dimensions in mm*



1. External antenna A60 (433) or A70 (870)

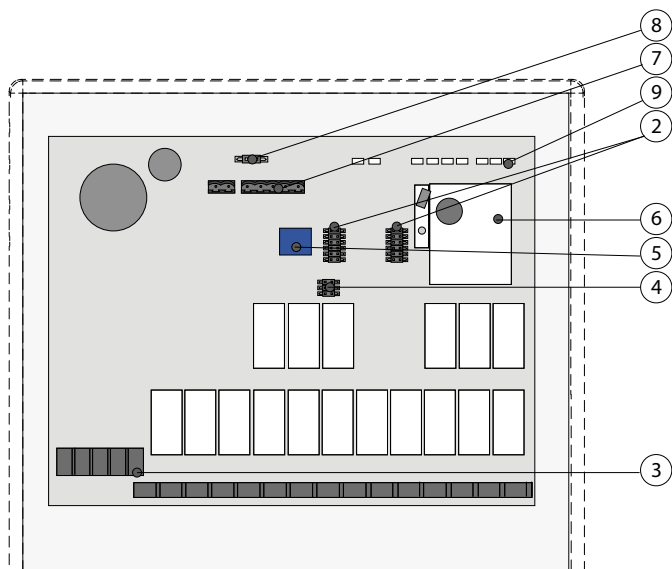
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[See next page for receiver board description.](#)

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## Technical description

### R70 PLUS hardware description



- 2. RS232/RS485 socket
- 3. Power supply
- 4. INXXX card socket
- 5. Internal removable EEPROM
- 6. TR800-CE MCX radio
- 7. CAN connection
- 8. BUS termination CAN
- 9. Signaling intern LEDs
- 10. Wiring connection

## Installation

### R70 PLUS receiver installation

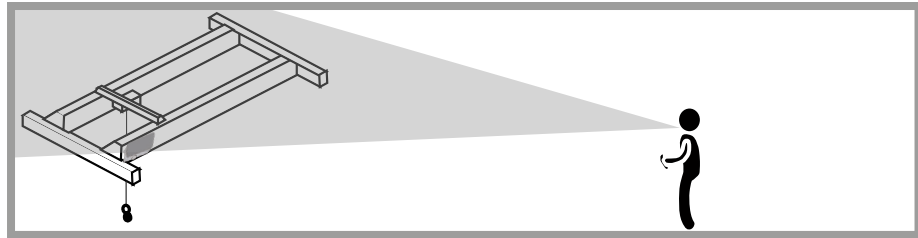
The below information describes hazards to be aware of during installation and steps to locate the receiver.

#### Risk of shock

Completely shut down the machine when installing the receiver.

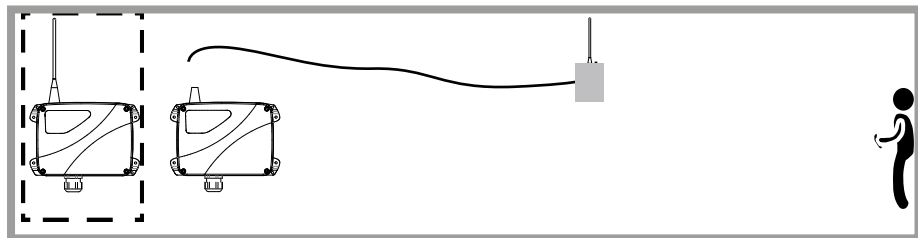
Check the power supply and shut off the main switch to disconnect the interface cable between the receiver and the machine's electrical box.

1. Find an easily accessible and clear location with a direct vision between the receiver's antenna and the transmitter's working area.

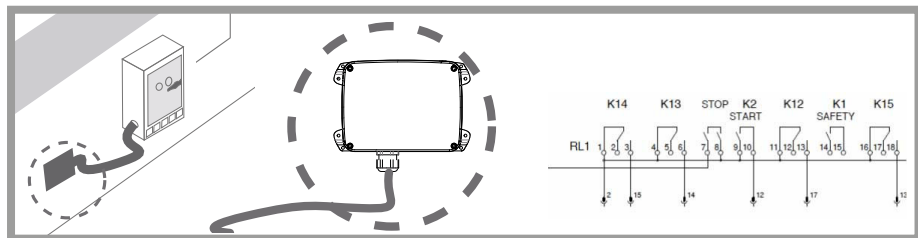


2. Optional: If it is difficult to achieve direct vision between the receiver's antenna and the transmitter's working area, it is recommended to use an extended antenna in a clear location (only for models that allow an antenna).

In areas of high vibration, the use of dampers is advised.



3. Proceed to connect the power supply. Use the connection block diagram provided with the system, where the correspondence between the transmitter maneuvers and the receiver's outputs are detailed.



4. Check if the electrical installation and verify if there's an option to connect the neutral or the ground cable. In that case, don't forget to connect the ground cable.

The use of fireproof or flame retardant cables are recommended for the connection.



## Installation

### R70 PLUS expansion cards

The R70 PLUS receiver box can be used when there is not enough space for the expansion cards configuration.

The R70 PLUS is set up with the LR72 electronic card and a power supply, if necessary to connect more than two expansion cards.

The software allows to include in the same box up to 53 relays or up to 10 analogue outputs.

The maximum number of expansion cards permitted is detailed in the table below:

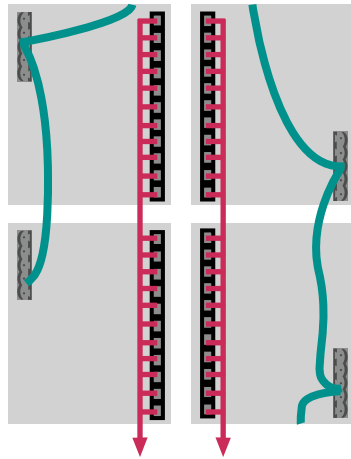
Expansion card	Slot size	Max. number of expansions
R8CAN	1/2	5
A1P4RCAN	1/2	5
INCAN	1/2	5
IN 0-10V	Direct assembly in LR72 or INCAN cards	-
IN 0-45P	Direct assembly in LR72 or INCAN cards	-
IN4D	Direct assembly in LR72 or INCAN cards	-
A2ICAN	1/4	5
A2VCAN	1/4	5

## Installation

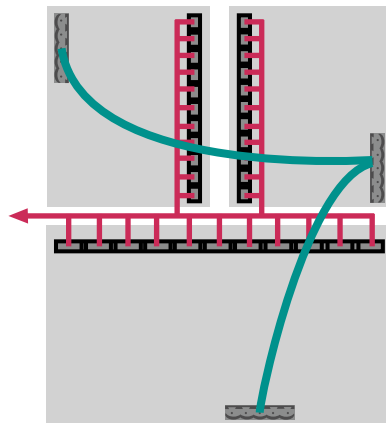
### R70 PLUS internal wiring

The power cables must be wired and guided from the center of the slot. The rest of the CAN bus wiring can be placed without any restriction.

*Upper slot*



*Bottom slot*



**Green wire**

CAN bus wiring

**Red wire**

Power wiring

## Troubleshooting

### R70 PLUS troubleshooting

LED	Characteristic	Description	Action
POWER	Green; pulsing	Receiver is starting up	Wait until start-up process is finished
HARDOK	Green; continuous	Receiver hardware OK	Operate
	Red; pulsing	EEPROM error; data corruption; CAN bus error (if CANERR activates)	Reprogram EEPROM
	Red; other	Electronic board hardware breakdown	Replace electronic board
SIGNAL	LED off	No radio signal detected	-
	LED on + transmitter switched off	Radio channel occupied	Change transmitter's frequency channel
	LED on + DATA switched off	Radio channel occupied by non Danfoss system	Change transmitter's frequency channel
DATA	LED off + SIGNAL LED on	Radio error	Replace radio
	Green; pulsing	Receiving good frames	OK
ID	LED off + DATA LED on	No valid ID; Danfoss system nearby	If channel not occupied, check chosen ID in the transmitter or reset the receiver
	LED on + SIGNAL LED on + DATA LED on	Valid frames received from the transmitter; correct link	OK
RELAY	Green	STOP relay activated	-
ORDER	Green	-	-
CAN_RUN	Green; switched on	Operational state	OK
	Green; pulsing	Activating operational state	-
CAN_ERR	Red; switched on	CAN bus error	Check CAN connection
	Red; pulsing	No bus connection	Check bus termination resistance
	LED off	Correct communication	OK

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