

ROBOTICS

RX CONTROLLER



Operating instructions

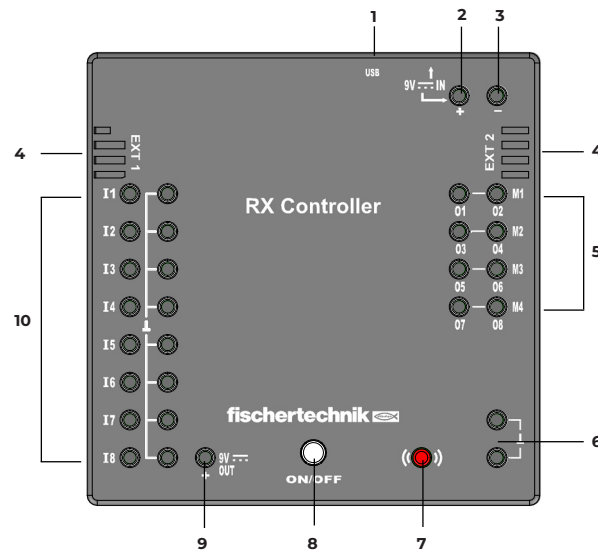
RX CONTROLLER

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RX CONTROLLER

OVERVIEW OF CONNECTIONS



- 1 mini-USB socket
The mini-USB connection establishes the connection to the PC.
- 2 9V IN, DC socket (3.45mm, positive pole inside)
The power supply unit from the Power Set is connected here (not included in the scope of delivery)
- 3 9V IN, battery / battery pack connection
This connection enables a mobile power supply via a fischertechnik battery holder or rechargeable battery pack.
- 4 EXT 1 and EXT 2 connections for I2C sensors
fischertechnik I2C sensors can be connected via these 6-pin pin headers
- 5 Outputs M1-M4 or O1-O8
4 motors can be connected to these outputs. Alternatively 8 LEDs or solenoid valves, the second pole of which is connected to an earth connection .
- 6 2 connections for earth (negative pole)
- 7 Bluetooth button
Red button for activating the Bluetooth connection
- 8 ON/OFF button
For switching the RX Controller on and off. Indication of different operating states via different color and flashing codes of the integrated LED
- 9 9V Out
Supplies sensors with the required 9V operating voltage, e.g. track sensor, ultrasonic sensor
- 10 Universal inputs I1-I8
Inputs for various sensors. They can be set via software for
 - Digital sensors (push-buttons, reed contacts, phototransistors) - Digital 5 k Ω
 - Analogue sensors 0-5k Ω (NTC resistors, photoresistors, potentiometers)
 - Analogue sensors 0-10V (color sensors). Display of the value in mV (millivolts)
 - Ultrasonic distance sensors. Display of the value in cm

RX CONTROLLER

SAFETY INSTRUCTIONS

- Check the charger regularly for damage..
- If the charger is damaged, it must not be used until it has been fully repaired.
- Do not insert wires into the socket!
- Non-rechargeable batteries must not be charged!
- Remove rechargeable batteries from the battery compartment before charging!
- Only charge rechargeable batteries under adult supervision!
- Insert batteries with the correct polarity!
- Connection terminals must not be short-circuited!
- The RX Controller may only be used with a fischertechnik power supply such as z. e.g. battery holder 9V art. no. 193745 or Accu Pack 35537!
- Observe the following when connecting a battery or battery pack to the controller:
 - Connect the positive pole of the „9 V IN“ connection to the positive pole (+) of the Accu Pack!
 - Connect the negative pole of the „9 V IN“ connection to the negative pole (-) of the Accu Pack!
 - Operating temperature Maximum 40 °C

INTENDED USE

The controller may only be used to operate and control fischertechnik models.

LIABILITY

Liability on the part of fischertechnik GmbH for damage resulting from the controller not being used in accordance with its intended use is excluded.

ELECTROMAGNETIC INTERFERENCE


If the device is disturbed by external electromagnetic influences, it can continue to be used as intended after the disturbance has ended. It may be necessary to briefly disconnect the power supply and restart the device.

RX CONTROLLER


THIS CAN BE CONNECTED TO THE CONTROLLER

ACTUATORS


9V, 250 mA


- > Engine 


- > Compressor 


- > LED 


SENSOREN


- > Minitaster 


- > Reed contact 


- > NTC resistor 


- > Photoresistor 


- > Phototransistor 


- > Ultrasonic distance sensor 

- > Optical color sensor 

- > IR track sensor 

- > RGB gesture sensor 

- > Environmental sensor 

- > Combi Sensor 

RX CONTROLLER

SOFTWARE REQUIREMENTS

- fischertechnik programming environment ROBO Pro Coding (Windows / Mac OS / Linux / iOS / Android) Available via the respective app store.
- MicroPython

INTERFACES

The RX Controller can be connected to other devices, e.g. PC, tablet or smartphone, via USB or Bluetooth.

SWITCH ON / SWITCH OFF THE RX CONTROLLER

Connect the controller to a voltage source (9V IN connections).
 To switch on, press and hold the ON/OFF button until the LED lights up. To switch off, press and hold the ON/OFF button until the LED no longer lights up.

OPERATING THE RX CONTROLLER - MEANING OF THE COLOR AND FLASHING CODES

The ON/OFF button on the RX Controller contains an LED that lights up or flashes in different colors. This indicates the current operating status of the RX Controller.

What happens when the ON/OFF button and the red Bluetooth button are pressed?

Press and hold the ON/OFF button	Switching the RX Controller on/off
Press the ON/OFF button briefly	Program that has been transferred to the RX Controller is started or stopped.
Press the red Bluetooth button	Bluetooth pairing is activated. Important: USB must not be connected

RX CONTROLLER

LED coding if the RX Controller has no USB or Bluetooth connection:

LED off	RX Controller is switched off.
LED lights up red	RX Controller is switched on.
LED lights up green	Program transferred to the RX Controller is being executed (offline without connection to the programming environment (e.g. ROBO Pro Coding).
LED flashes briefly 3 times	When starting the program on the RX Controller (briefly press the ON/OFF button) if no program is loaded.

LED coding when a USB connection is established:

Important: USB has priority over Bluetooth.

LED flashes white slowly	RX Controller is connected to a device via USB, programming environment ROBO Pro Coding has not yet been connected.
LED flashes white quickly	RX Controller is connected via USB and to the ROBO Pro Coding programming environment.
LED lights up permanently white	RX Controller is connected via USB and ROBO Pro Coding is executing a program.

LED coding when the Bluetooth connection is activated:

Important: USB must not be connected.

LED flashes blue slowly	Pairing via Bluetooth has been activated using the red button. No device is connected yet.
LED flashes blue quickly	RX Controller is connected to the ROBO Pro Coding programming environment via Bluetooth.
LED lights up blue permanently	RX Controller is connected via Bluetooth and ROBO Pro Coding is executing a program.

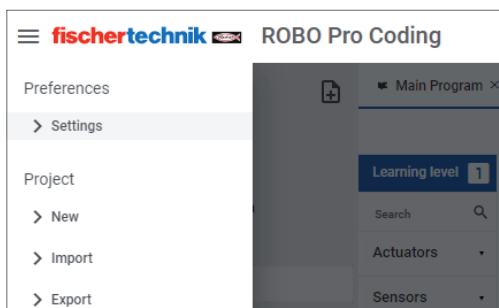
RX CONTROLLER

PAIRING THE RX CONTROLLER VIA BLUETOOTH

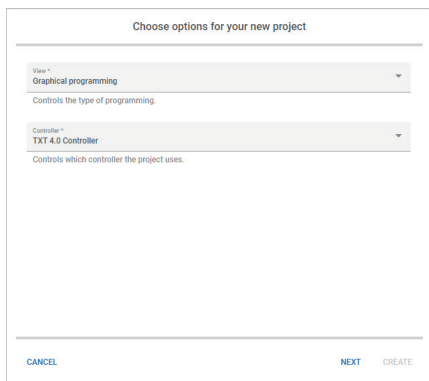
The RX Controller is connected to an end device (PC, tablet, smartphone) directly in the programming environment (e.g. ROBO Pro Coding). A separate connection of the RX Controller via the respective operating system is not required.

Connection with ROBO Pro Coding:

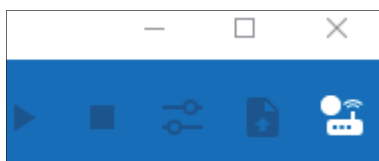
- ROBO Pro Coding must be installed on the end device.
- Start ROBO Pro Coding.
- Create a new project (Project - New)



- Select RX Controller

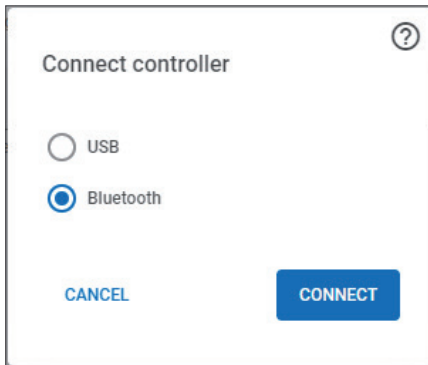


- Click on the connection icon

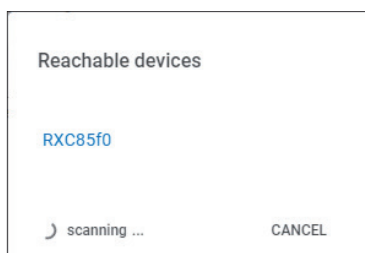


RX CONTROLLER

- Select Bluetooth and click on „Connect“



- Press the red Bluetooth button on the RX Controller, RX Controller is displayed and can be selected. There must be no USB connection!



Note: the displayed designation of the RX controller (e.g. RXC85f0) corresponds to the designation on the white label on the side of the controller. This allows the controller to be clearly identified.

- The connection is established, the connection icon lights up green



The LED on the RX Controller flashes rapidly in blue

SHORT-CIRCUIT PROTECTION

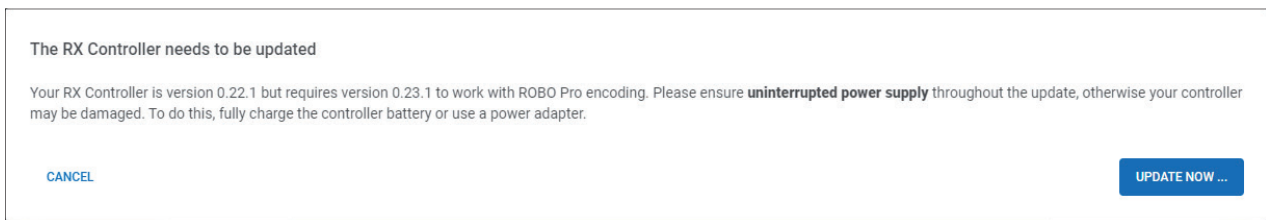
All connections of the RX Controller are protected against short circuits. If there is a short circuit at a motor output, it is switched off. As soon as the short circuit has been eliminated, the motor can be switched on again. If there is a short circuit at the „9V Out“ connection, the RX Controller is switched off. As soon as the short circuit has been eliminated, the device can be switched on again.

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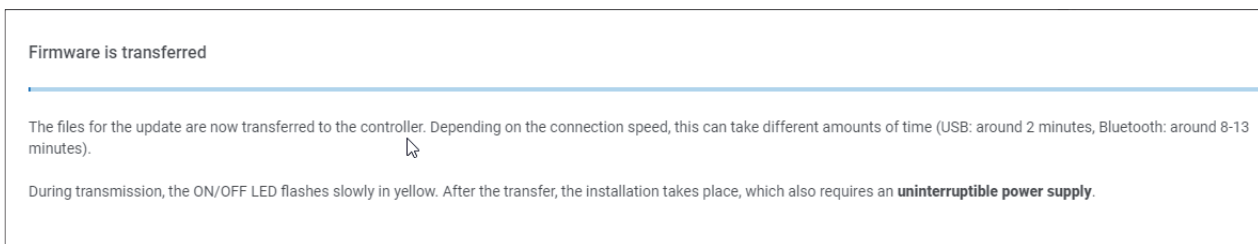
FIRMWARE UPDATE

A firmware update can be carried out directly with the ROBO Pro Coding app. An internet connection must be available on the device on which ROBO Pro Coding is running.

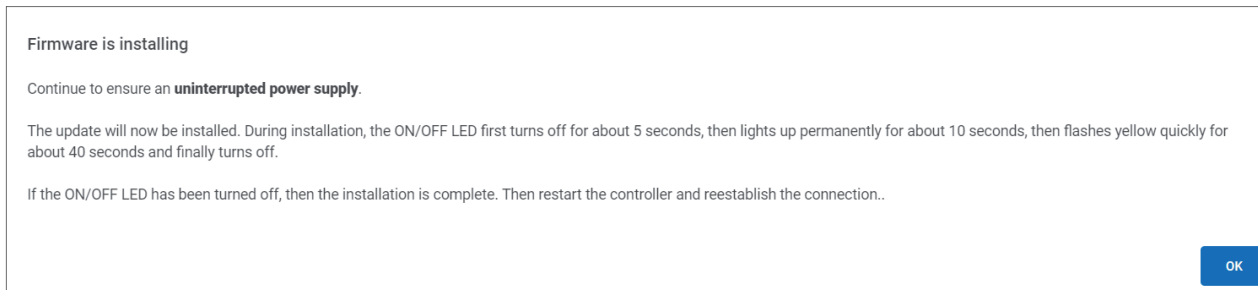
If a firmware update is required, a message is displayed in ROBO Pro Coding as soon as the controller is connected. The power supply must not be interrupted during the update.



Start update via „Update now“ button. The firmware is transferred to the RX Controller.



After transfer and installation, the RX Controller must be switched on again.



The update process via USB takes about 3 minutes and via Bluetooth about 15 minutes.

During the firmware update, the LED lights up as follows:

LED yellow, slow blinking	Firmware is being transferred
LED yellow, fast blinking	Firmware is being updated
LED off	Update has been completed, controller needs to be powered on again
Press the ON/OFF button and the red Bluetooth button simultaneously, then connect the power supply	Firmware is being repaired