mR900-30-TX

MATEKSYS mLRS 868 MHz TX Kit
mLRS transmitter module for RC link and MAVLink telemetry



Read the entire manual carefully before first use, in particular the safety instructions and Chapter 3 on permitted frequencies and transmit power. Keep this manual for future reference.

Importer: Rotorama, s.r.o. · www.rotorama.com · info@rotorama.cz

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1. Safety instructions

1.1 Before you start

The Matek mR900-30-TX is a radio control and telemetry transmitter module for model aircraft, multicopters and other unmanned vehicles. Incorrect settings or loss of the link may lead to loss of control of the model, a crash, damage to property or injury to persons.

- Install and configure the module only if you have basic knowledge of RC equipment, radio firmware (EdgeTX) and flight controllers (FC). The product is not intended for children.
- Carry out all configuration, binding and tests with the model **without propellers** or with the propulsion disconnected.
- Before every flight, check the link, the failsafe function and the correct response of the model to commands from the radio.
- Do not tamper with the module or make modifications not described by the manufacturer. The importer is not liable for damage caused by improper intervention.

1.2 Radio transmission and antenna

- **Never power on the module without an antenna connected.** Transmitting without an antenna or into an incorrectly connected antenna may damage the transmitter stage.
- Pay attention to the difference between **SMA** and **RP-SMA** connectors. An RP-SMA antenna can be screwed onto an SMA connector, but the centre conductor will not connect – the module does not transmit into the antenna and may be damaged. This is why both adapter cables are included.
- Use only an antenna designed for the 868 MHz band.
- Do not touch the antenna while transmitting and do not point it at persons at close range. Keep the antenna as far away from your body as possible.
- The selected transmit power must comply with the regulations of the country of operation – see Chapter 3.

1.3 Power supply, heat and operating environment

- Power the module only within the range of **5–13 V DC** via the VIN pin of the JR bay (JR_PIN3), or via USB-C during configuration and firmware updates.
- The module heats up at higher power levels. Always connect the supplied fan and operate the module in a case with free air flow. Do not cover the ventilation openings.
- The printed circuit board is sensitive to electrostatic discharge. Do not touch the components when handling it and work on an antistatic mat.

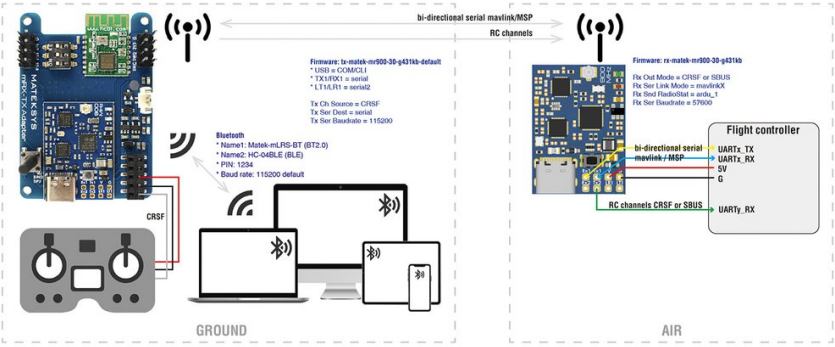
- Protect the module from moisture, dust, rain and direct sunlight. Do not use it in damp conditions or when water condenses.
- Do not insert the module into or remove it from the radio while the radio is switched on.

2. Product description

2.1 Intended use

The Matek mR900-30-TX is a transmitter module for the **mLRS** system (MAVLink Long Range System) in the 868 MHz band. mLRS is an open-source project that combines an RC link and bidirectional MAVLink telemetry in a single radio link. It is particularly suitable for long-range flights with multicopters and model aircraft running ArduPilot or INAV firmware.

The kit consists of the **mR900-30** module and the **mRx-TX Adapter**. The adapter adds a built-in HC-04 Bluetooth module for a wireless connection to a ground station (computer, tablet, phone), fan control, pins for the JR bay of the radio, status LEDs and a 5–13 V power input. The module comes pre-flashed with mLRS firmware.



Typical setup: radio with the mR900-30-TX module and a ground station via Bluetooth (left), mLRS receiver connected to the flight controller (right). Source: Matek Systems.

※ Matek mLRS 900 MHz modules (SX126x chip) are NOT compatible with ELRS 900 MHz or FrSky R9 (SX127x chips) – they will not bind with each other. Devices with SX126x, STM32WLE5 and LR1121 chips are compatible.

2.2 Package contents

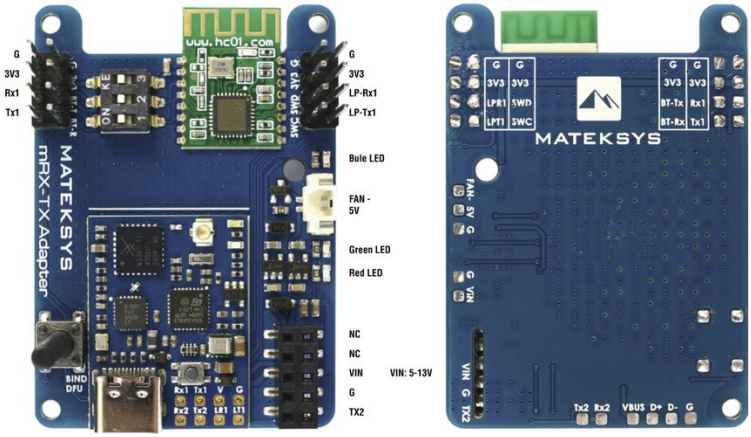
Qty	Item
1	mR900-30-TX – mR900-30 module mounted on the mRx-TX Adapter
1	IPEX MHF1 → SMA adapter cable, 5 cm
1	IPEX MHF1 → RP-SMA adapter cable, 5 cm
1	5 V fan, 25 × 25 × 10 mm
1	set of screws

Not included: SMA / RP-SMA antenna, module case (3D print models can be downloaded from the manufacturer's website), receiver or radio.



Package contents. Source: Matek Systems.

2.3 Parts description



mRx-TX Adapter with the mR900-30 module – front (left) and back side (right). Source: Matek Systems.

Label	Meaning
G / 3V3 / Rx1 / Tx1 (left header)	UART1 (T1/R1) – for an external Bluetooth or Wi-Fi module; referred to as port “wbridge” in the software. Usable with the DIP switches set to OFF.
G / 3V3 / LP-Rx1 / LP-Tx1 (right header)	serial port LPT1/LPR2 – referred to as port “serial” in the software (e.g. for a wired ground station connection via a USB-TTL adapter).
DIP 1 / 2 / 3	connection of UART1 to the HC-04 Bluetooth module and its power supply – see Chapter 2.6

Label	Meaning
Bule LED (blue)	Bluetooth status
FAN – 5V	fan connector
Green LED / Red LED	mLRS link status – see Chapter 2.5
BIND / DFU	button for binding and for DFU mode (firmware flashing)
USB-C	connection to a computer (CLI, firmware); referred to as port “com” in the software
NC / NC / VIN / G / TX2	JR bay pins: VIN = 5–13 V power, G = ground, TX2 = RC data input from the radio (CRSF), NC = not connected

2.4 Specifications

Data provided by the manufacturer Matek Systems.

Model	mR900-30-TX (mR900-30 module + mRx-TX Adapter)
Processor	STM32G431KB
Radio chip	LoRa SX1262 with TCXO
Firmware	mLRS, target tx-matek-mr900-30-g431kb-default
Frequency band	868 MHz (EU); optionally 915 MHz FCC – do not use in the EU (Chapter 3.2)
Transmit power 868 MHz	levels 24 dBm (min.) / 27 dBm / 30 dBm (1000 mW)
mLRS modes	19 Hz, 31 Hz, FSK (50 Hz)
Antenna connector	IPEX MHF-1 on the module, adapter to SMA or RP-SMA
Bluetooth	built-in HC-04 module, default PIN 1234
RC data input	TX2 – CRSF (JR bay pin)
Fan	5 V, 25 × 25 × 10 mm; controlled, runs at power ≥ 500 mW
Power supply	5–13 V DC at JR_PIN3 (VIN)
Controls	1 button (Bind / DFU)
Indication	red and green LED (mLRS status), blue LED (Bluetooth)

The manufacturer does not state the dimensions or weight of the module.

2.5 LED indication

LED	Meaning
red flashing at 2 Hz	module is on, link with the receiver not established
green flashing at 1 Hz	link with the receiver established
red and green alternately (≈ 2.5 Hz)	binding mode
LEDs not flashing (after connecting USB with the button pressed)	DFU mode for firmware flashing
blue	Bluetooth module status

2.6 DIP switches

The three DIP switches next to the Bluetooth module determine what UART1 is used for. Switch 1 connects Tx1 to BT Rx, switch 2 connects Rx1 to BT Tx and switch 3 switches on the power supply of the Bluetooth module.

Setting	Function
1, 2, 3 ON	built-in HC-04 Bluetooth communicates with UART1 – **default choice for Bluetooth**
3 ON, 1 and 2 OFF	configuration of the HC-04 with AT commands via a USB-TTL adapter connected to G / 3V3 / BT-T / BT-R
1, 2, 3 OFF	another Bluetooth or Wi-Fi module can be connected to G / 3V3 / Rx1 / Tx1

The ON position is on the left when looking at the front of the module with the antenna connector pointing up. Set the switches before placing the module in the case.

3. Legal conditions of operation in the Czech Republic and the EU

3.1 The law of the country of operation applies

Radio equipment and the operation of unmanned aircraft are governed by European Union regulations, but national regulations differ from country to country – in particular permitted frequency bands, maximum transmit power, duty cycle, operator registration and flight rules. The information in this chapter describes the situation in the Czech Republic. If you operate the module in another country, **you must comply with the regulations of the country in which you operate it**.

3.2 Frequencies and transmit power in the Czech Republic

In the Czech Republic, short-range devices in the 863–870 MHz band are operated under the general authorisation of the Czech Telecommunication Office (ČTÚ) **VO-R/10**, and Bluetooth in the 2.4 GHz band under the general authorisation **VO-R/12**. Selected limits:

Frequencies	Max. power	Duty cycle	Note
863–870 MHz	25 mW e.r.p.	≤ 0.1 %	FHSS (VO-R/10)
868.0–868.6 MHz	25 mW e.r.p.	≤ 1 %	VO-R/10
869.4–869.65 MHz	500 mW e.r.p.	≤ 10 %	VO-R/10
902–928 MHz (915 MHz FCC)	—	—	not permitted for these devices in the Czech Republic*
2400–2483.5 MHz	100 mW e.i.r.p.	—	Bluetooth (VO-R/12)

** Around 915 MHz, VO-R/10 permits only the 915–919.4 MHz range with a power of up to 25 mW e.r.p. Status as of November 2026; the current wording is available at www.ctu.cz.*

- Always select the **868 MHz** band in the module settings. The 915 MHz FCC band is intended for the USA and must not be used in the Czech Republic or the EU.
- The adjustable power levels of the module (24, 27 and 30 dBm) are higher than the general limit of 25 mW e.r.p. VO-R/10 permits power above 25 mW only in the 869.4–869.65 MHz range, at a maximum of 500 mW e.r.p. with a duty cycle of up to 10 %. The 30 dBm (1000 mW) level exceeds even this limit.
- The e.r.p. value also includes the antenna gain – an antenna with gain increases the radiated power.
- The **user** is responsible for the choice of band, power and antenna and for compliance with the conditions of the general authorisation. Equipment operated under a general authorisation must not cause harmful interference and is not entitled to protection from interference.

- Outside the Czech Republic, the frequencies and limits of the respective country apply (in Europe they are based on CEPT Recommendation ERC/REC 70-03, but individual countries need not adopt it in full).

3.3 Operation of models and drones

The module is part of the control system of an unmanned aircraft or model. In the EU, the operation of the aircraft is governed by Implementing Regulation (EU) 2019/947 and national regulations – including operator registration, pilot competency, maximum height, visual line of sight and geographical zones. Long-range flights beyond visual line of sight (BVLOS) are not permitted in the open category. Details are given in the manual of your aircraft and, in the Czech Republic, by the Civil Aviation Authority (www.caa.gov.cz).

4. Installation

4.1 What else you need

- **A radio with a JR bay** (JR / “full size”) running **EdgeTX** or OpenTX firmware; for the Lua script we recommend a current version of EdgeTX.
- **A compatible mLRS receiver** for the 868 MHz band – e.g. Matek mR900-30 or mR900-30C, or another mLRS receiver with an SX126x, STM32WLE5 or LR1121 chip.
- **An 868 MHz antenna** with an SMA or RP-SMA connector.
- **A case** for the JR bay – a 3D print model (STL) can be downloaded from the manufacturer's website (www.mateksys.com, product mR900-30-TX, *Downloads* section).
- For configuration and updates: a computer, a USB-C cable and a Chromium-based browser (Chrome, Edge) for the mLRS Web Flasher app.
- Optionally a ground station (Mission Planner, QGroundControl) on a computer, tablet or phone with Bluetooth.

4.2 Case and fan

① If you are going to use the built-in Bluetooth, set all three DIP switches to ON (Chapter 2.6).

② Fix the fan in the case with the supplied screws and plug its cable into the *FAN – 5V* connector.

③ Snap the adapter cable (SMA or RP-SMA according to your antenna) with its IPEX connector onto the module and secure the SMA connector in the case.

④ Place the board in the case and screw it together. The cables must not obstruct the rotation of the fan.



Module in a case 3D printed from the manufacturer's model. The case is not included. Source: Matek Systems.

The fan is controlled automatically by the adapter – it runs only at a selected power of 500 mW and higher. At lower power it is normal for the fan to stand still.

4.3 Antenna

Screw the antenna onto the connector before powering on the module for the first time. Check that the antenna type (SMA / RP-SMA) matches the adapter cable used (Chapter 1.2). The IPEX connector is fragile – do not subject the adapter cable to pulling or bending.

4.4 Inserting into the radio and EdgeTX setup

① Switch off the radio and carefully slide the module into the JR bay. Make sure the pins are correctly aligned and do not use force.

② Switch on the radio and open *MDL* → *MODEL SETUP*, external RF module, in the model.

③ Select **CRSF** as the protocol and **400k** as the baud rate. The 400k baud rate is supported by all mLRS firmware versions; newer firmware also supports 921k and 1.87M.

④ The module now flashes red at 2 Hz (waiting for the receiver). When the bound receiver is switched on, it starts flashing green at 1 Hz.

The *Tx Ch Source* parameter in the module must be set to “crsf”. This is the factory default; if it has been changed, set it via the CLI (Chapter 5.5).

5. Configuration and binding

5.1 mLRS Configurator Lua script

The most convenient way to configure the module and the connected receiver is the **mLRS Configurator** Lua script directly on the radio.

① Install the script via the *Lua Script* page in the mLRS Web Flasher app (recommended), or manually: copy the file *mLRS.lua* (colour screen) or *mLRS-bw.lua* (black-and-white screen) from the mLRS repository to the *SCRIPTS/TOOLS* folder on the radio's SD card.

② Start the script in the *SYS → TOOLS* menu with the *mLRS Configurator* item.

③ Select a parameter, confirm, choose a value and confirm again.

④ Changes are stored permanently only by selecting **Save**.



mLRS Configurator Lua script – main page and Edit Tx page. The manufacturer's illustration shows the 915 MHz FCC band; in the EU select 868 MHz. Source: Matek Systems.

5.2 Basic parameters

Parameter	Meaning and recommendation
RF Band	frequency band – in the EU always **868 MHz**
Bind Phrase	6 characters (a–z, 0–9, _, #, -, .); default “mlrs.0”
Mode	link mode (19 Hz, 31 Hz, FSK)
Tx Power	transmit power of the module – see Chapters 3.2 and 6.3
Tx Power Sw Ch	radio channel used to switch the power during operation
Tx Ser Port	where the module sends MAVLink data: “wbridge” = HC-04 Bluetooth / UART1, “serial” = right header, “com” = USB-C
Rx Power, Rx FailSafe Mode	receiver parameters – adjustable only when the receiver is connected

The parameters *Bind Phrase*, *Mode* and *RF Band* are common – they must be the same in the module and in the receiver, otherwise the link will not be established. After changing them, save them (Save) with the receiver switched on and connected, and check that the receiver reconnects.

5.3 Binding with the receiver

A freshly flashed module and a receiver with default settings (phrase “mlrs.0”, default mode and band) are usually already bound and connect immediately. Otherwise proceed as follows:

① Put the module into binding mode: hold the **BIND** button for about 4 s, or select *Bind* in the Lua script, or enter the *bind;* command in the CLI.

② Put the receiver into binding mode: hold its bind button for about 4 s, or power it on and off quickly three times in a row (wait until the LEDs flash three times) – on the fourth power-up it enters binding mode.

③ The order of steps ① and ② does not matter. In binding mode the red and green LEDs flash alternately (≈ 2.5 Hz).

④ After binding, both the module and the receiver flash green at 1 Hz.

5.4 Ground station via Bluetooth

① DIP switches 1, 2 and 3 must be in the ON position (Chapter 2.6).

② In the module, set the parameter *Tx Ser Port* = “wbridge” (Lua script or CLI) and save. mLRS configures the HC-04 module automatically.

③ On the computer, tablet or phone, search for a Bluetooth device with “mLRS” in its name and pair it (PIN **1234**).

④ In Mission Planner, connect to the COM port assigned by the system to the Bluetooth connection; in QGroundControl, create a Bluetooth link (*Application Settings* → *Comm Links* → *Add*).

※ In Windows 11 the module may not be visible until you switch Bluetooth device discovery to *Advanced* in the *Bluetooth & devices* settings.

5.5 Configuration via CLI

The CLI (command line interface) is an alternative way of configuration. It is available via USB-C – most easily in the mLRS Web Flasher app, or in a serial terminal (115200 baud, 8N1). Enter commands in lower case and terminate them with a semicolon.

Command	Function
v;	device name and firmware version of the module (and of the receiver, if connected)
pl;	list of all parameters
p tx_power = 0;	change of a parameter (replace spaces in the name with underscores)
pstore;	permanent storage of parameters in the module and the connected receiver
bind;	start binding (module only)

Command	Function
stats;	continuous link statistics (LQ, RSSI, SNR)
hc04 getpin;	display the PIN of the Bluetooth module

Without the *pstore;* command, changes are lost after power-off. Many parameters take effect only after a power cycle.

5.6 Firmware update

The module is supplied pre-flashed with mLRS firmware. We recommend updating if you need a bug fix or a new feature; the module and the receiver should run **the same firmware version**. Settings are normally retained during an update unless you erase the entire memory.

① Remove the module from the radio. Hold the **BIND / DFU** button and, with the button pressed, connect the USB-C cable to the computer. The module enters DFU mode (LEDs not flashing).

② In Chrome or Edge, open www.olliw.eu/mlrsflasher and follow the instructions of the app. Firmware target:
tx-matek-mr900-30-g431kb-default

③ After flashing, disconnect and reconnect the USB. A flashing red LED (2 Hz) means that the module is waiting for the receiver.

The manufacturer also describes an alternative procedure using STM32CubeProgrammer (connection via USB in DFU mode, erasing and programming). It requires the STM DFU driver to be installed.

5.7 Further guides

Official EdgeTX website (radio, model and external module setup): edgetx.org

- Manufacturer's product page: www.mateksys.com/?portfolio=mr900-30-tx
- mLRS documentation: github.com/olliw42/mLRS-docu (quick start, parameters, binding, troubleshooting)
- mLRS Web Flasher app: www.olliw.eu/mlrsflasher

6. Operation

6.1 Test before the first flight

- Remove the propellers and switch on the radio and the model. Check by the LEDs that the module and the receiver have connected (green at 1 Hz).
- In the Lua script or CLI, set *Tx Power* and *Rx Power* to the lowest level.
- Start the ground station and check that the parameters download and the correct data are displayed (attitude, GPS, battery voltage).
- Check flight mode switching and Arm (motors enabled) / Disarm (motors disabled) from the radio.
- Perform a ground range test – walk away from the model with the radio and monitor the link quality.
- Before flying, set the power back to a level that complies with the regulations and suits the planned flight (Chapter 3.2).

6.2 Failsafe

Configure and test the behaviour on loss of link (failsafe) **before** a loss of link occurs in flight. The receiver's response is determined by the *Rx FailSafe Mode* parameter; for RC failsafe the “no sig” option is recommended (the receiver stops outputting a signal). Set the actual response of the aircraft (return to home, landing) in the flight controller (FC) – in ArduPilot as radio failsafe and, if required, telemetry failsafe.

※ RC control and telemetry travel over the same radio link, but loss of control may occur at a slightly different distance than loss of telemetry. A loss-of-link message in the ground station therefore need not coincide with the moment the flight controller triggers failsafe.

6.3 Choosing the transmit power

- Set only the power that is necessary for the flight and permitted in the country of operation (Chapter 3.2).
- The power can also be switched during operation with a radio channel (parameter *Tx Power Sw Ch*).
- At a power of 500 mW and higher the fan switches on automatically – it must not be blocked.

7. Maintenance and troubleshooting

7.1 Maintenance and storage

- Regularly check the antenna, the adapter cable and the IPEX connector. Replace a damaged cable or antenna.
- Keep the fan and the ventilation openings of the case clean.
- Check the JR bay pins – a bent pin may interrupt the power supply or RC data.
- Store the module in a dry place, out of direct sunlight, in an antistatic bag.

7.2 Troubleshooting

Problem	Possible cause and solution
Red LED flashes at 2 Hz, the link is not established	receiver is off or not bound; Bind Phrase, Mode or RF Band differ; a receiver with an SX127x chip (ELRS 900, R9) is incompatible. Perform binding (Chapter 5.3).
Lua script does not communicate with the module	external module in EdgeTX not set to CRSF; Tx Ch Source parameter is not “crsf”; outdated version of EdgeTX or of the script.
Bluetooth not visible	DIP switches are not all ON; Tx Ser Port is not “wbridge”; in Windows 11 enable advanced device discovery.
Fan not running	normal at power below 500 mW; otherwise check the connection to the FAN – 5V connector.
Short range	wrong antenna or SMA / RP-SMA mix-up; antenna not for 868 MHz; low power; different band.
Firmware cannot be flashed	module not in DFU mode (hold the button already when connecting USB); use Chrome or Edge; in Windows install the DFU driver.

Further advice can be found on the *Troubleshooting* page of the mLRS documentation. If problems persist, contact the retailer (Chapter 8.1).

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

8.2 Product conformity

CE

- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorama.cz.
- **Product identification:** the type designation (mR900-30-TX) is given on the product packaging, and the manufacturer and model are also marked on the printed circuit board; the firmware version is shown by the *mLRS Configurator* Lua script or by the *v;* command in the CLI.

8.3 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

9. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 8.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.