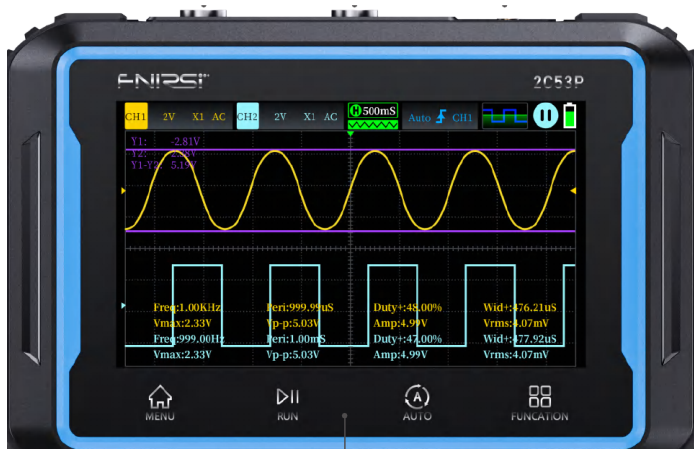




FNIRSI-2C53P

Three-in-one dual-channel tablet oscilloscope
50 MHz oscilloscope · digital multimeter · signal
generator



Read this manual carefully before first use and keep it for future reference. The instrument measures voltages up to 1000 V DC / 750 V AC - improper use may cause electric shock.

User manual in English · published by the importer Rotorama, s.r.o.

Contents

Notice to users

1. Product Introduction

2. Panel Description

3. Overall Machine Parameters

4. Key Functions and Interface Operations

4.1 Oscilloscope Interface

4.2 Oscilloscope Menu Section

4.3 Oscilloscope Parameters

4.4 Signal Generator Interface

4.5 Signal Generator Parameters

4.6 Digital Multimeter Interface

4.7 Gear Introduction

4.8 Multimeter Parameters

4.9 Settings Interface

5. Firmware Upgrade

6. Precautions

7. Production Information

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

8.2 Product conformity

8.3 Disposal of electrical equipment and batteries

9. Warranty and rights arising from defective performance

Notice to users

- This manual provides detailed instructions on how to use the product and important precautions. Please read this manual carefully and follow the instructions to ensure optimal performance of the product.
- Do not use the instrument in flammable or explosive environments.
- Disposed batteries and obsolete instruments should not be treated as household waste; please follow the relevant national or local laws for proper disposal (see Chapter 8.3).
- If there are any quality issues with the instrument or if you have any questions regarding its use, please contact us promptly, and we will address your concerns in a timely manner.

1. Product Introduction

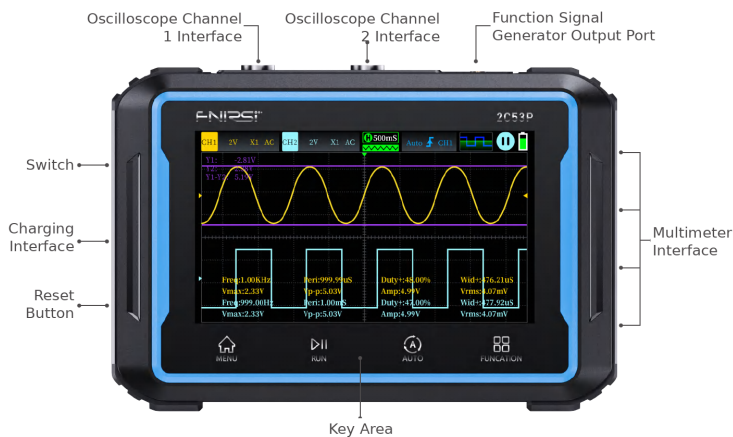
The FNIRSI-2C53P is a three-in-one dual-channel digital oscilloscope launched by FNIRSI, with comprehensive functionality and high practicality, designed for the repair and research industries. The device combines an oscilloscope, multimeter, and signal generator.

The oscilloscope features an FPGA+MCU+ADC hardware architecture with a sampling rate of 250MS/s, a 50MHz analog bandwidth, built-in high-voltage protection module, and support for peak voltage measurements up to $\pm 400V$. It also supports waveform capture, saving, and viewing for secondary analysis.

The multimeter function includes a 4.5 digit 19999-count true RMS measurement, supporting AC/DC voltage and current measurements, as well as capacitance, resistance, diode, continuity, temperature, and other measurements. It is suitable for professionals, factories, schools, enthusiasts, and household use as an ideal multifunctional instrument.

The built-in DDS function signal generator can output 12 types of function signals, with a maximum output of 10MHz and adjustable frequency, amplitude, and duty cycle in steps of 1Hz. It features a 4.3-inch 480*272 resolution touchscreen display, built-in 4000mAh rechargeable lithium battery with a standby time of up to 4 hours. Despite its compact size, it offers users more powerful and practical functions while being highly portable.

2. Panel Description



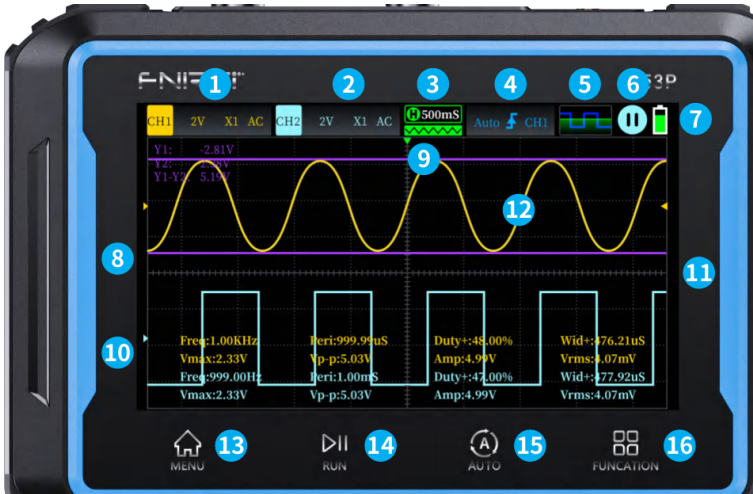
Layout of the connectors and controls

3. Overall Machine Parameters

Screen Material	Surface tempered glass + touch screen made of glass (GLASS) + IPS color screen
Backlight	Backlight brightness can be set
Power Supply	TYPE-C (5V/2A)
Battery	4000mAh lithium battery
Language	Chinese, English, Russian, Japanese, Spanish, Portuguese, German, Korean
Product Dimensions	≈ 145 × 98 × 35 mm
Device Weight	≈ 360 g

4. Key Functions and Interface Operations

4.1 Oscilloscope Interface



Oscilloscope interface with the controls labelled

- 1 Channel 1 settings:** channel on/off, vertical voltage, probe ratio, coupling type, and 20M bandwidth limit can be set.
- 2 Channel 2 settings:** channel on/off, vertical voltage, probe ratio, coupling type, and 20M bandwidth limit can be set.
- 3 System time base:** refers to a large grid in the horizontal direction representing the length of time; the sampling rate determines it.
- 4 Trigger settings:** you can set the trigger mode, trigger edge, and trigger channel.
- 5 Function signal generator indication:** highlight means the function signal generator is on, grey means it is not on.
- 6 Run/Pause:** click this button to switch between running and pausing.
- 7 Power indicator:** indicates the system power.
- 8 Channel 1 waveform:** the waveform signal captured by channel 1.
- 9 Trigger X position indicator arrow:** refers to this as the trigger point.
- 10 Channel 2 waveform:** waveform signal captured by channel 2.
- 11 Trigger voltage indicator icon:** trigger threshold.
- 12 Cursor operations**
- 13 Home touch button (MENU)**
- 14 Run/Stop button (RUN)**
- 15 Auto measure button (AUTO)**
- 16 Menu button (FUNCTION)**

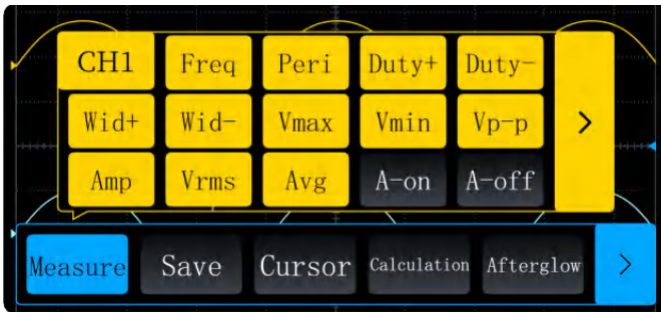
4.2 Oscilloscope Menu Section

The menu items are shown on the display in English. The overview below explains the meaning of the individual items.

Item	Meaning
Measure	Measurement - selection of the displayed measurement parameters
Save	Saving a screenshot
Cursor	Cursors
Calculation	Mathematical operations on waveforms
Afterglow	Afterglow (persistence) of the display
X-Y	X-Y display mode
Correction	Calibration
Image	Viewer of the saved screenshots
50%	Automatic adjustment to the right position
Micro	Switching between fine and coarse adjustment

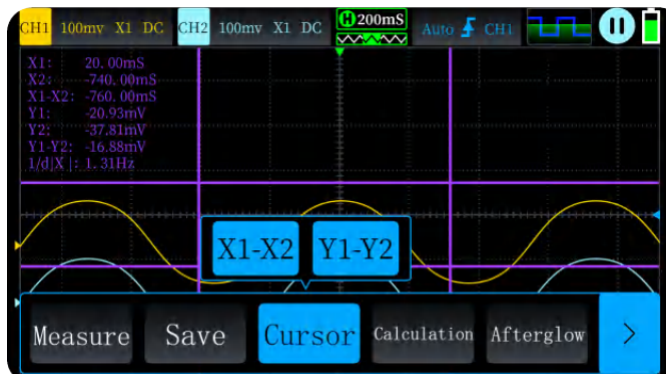
► Measure

Click on **Measurement** to select the value of the measurement parameter to be displayed. This is shown in the figure.



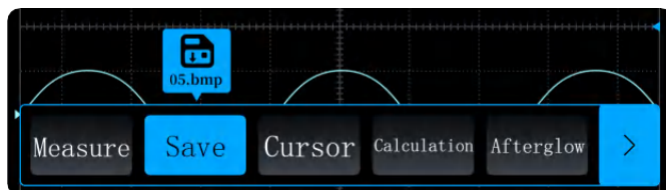
► Cursor

Click on the **Cursor** to select X1-X2, Y1-Y2 display.



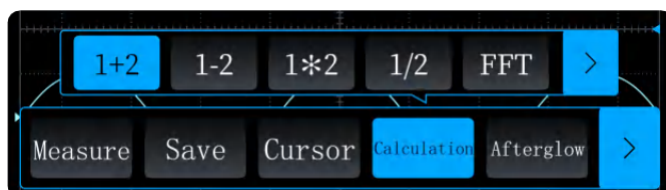
► Save

Clicking **Save** will store the measurement page oscilloscope as a BMP format in the *Screenshot file* folder on the machine's USB memory stick. The name of the image will be displayed when saving.



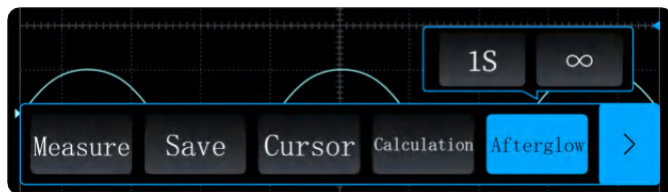
► Calculation

Can choose to display $1+2$, $1-2$, $1*2$, $1/2$, FFT, -1 , -2 , $|1|$, $|2|$.



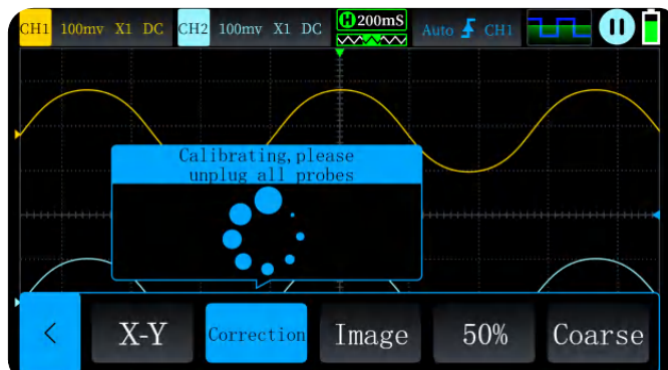
► Afterglow

Click **Afterglow** to select 1S or unlimited display.



► Correction

Click **Correction**, remove all probes, and then enter calibration.



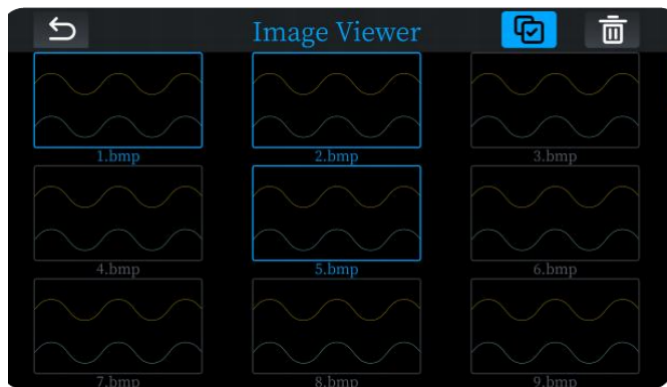
► X-Y

Click **X-Y** to enter the X-Y display. At this time, measurement, cursors, operations, and afterglow are all useless.



► Image

Click on the **Image** to enter the picture viewing interface.



► 50% and Micro

- **50%** – click 50% to automatically adjust the bias voltage, trigger voltage etc. to the right position.
- **Micro** – click on fine/coarse adjustment to adjust the speed of moving waveforms.

4.3 Oscilloscope Parameters

Channel	dual channel	Band Width	50 MHz
Real-time sampling rate	250 MSa/s	Storage Depth	up to 64 kByte
Time base range	10 ns/div - 10 s/div	Vertical Sensitivity	10 mV/div - 10 V/div
Waveform Display Mode	YT / XY / scroll	Vertical Resolution	8 bits
Input Impedance	1 MΩ	Bandwidth limit	support 20 MHz limit
Probe Attenuation Coefficient	1× / 10×	Input Coupling	AC/DC
Trigger Type	rising / falling edge	Peak Voltage	±400 V
Trigger Level Range	8 cells (positive/negative)	Trigger Mode	Auto / Normal / Single
Storage Space	13 M	Measured Data	period, frequency, peak-to-peak value, maximum value, minimum value, average value, effective value, amplitude, duty cycle, pulse width

4.4 Signal Generator Interface



Signal generator interface

- 1 Signal type selection:** there are 12 types of waveforms to choose from, including sinusoidal wave, square wave, sawtooth wave, half wave, full wave, positive step wave, negative step wave, DC signal, exponential rise, exponential fall, multi-audio, and sync pulse.
- 2 Waveform selection paging:** clicking on [Previous] or [Next] can switch to display other waveforms for selection.
- 3 Run/Pause:** clicking on this button can switch between signal running and pausing.
- 4 Frequency:** specific parameters can be set by inputting values with the buttons, with a maximum of [10 000 000]. Clicking on [Confirm] is required for the settings to take effect.
- 5 Amplitude:** clicking on this can set specific parameters by inputting values, with a maximum of [3.0 V]. Clicking on [Confirm] is required for the settings to take effect, and adjustment can also be made by sliding on the right.
- 6 Duty cycle:** clicking on this can set specific parameters by inputting values, with a maximum of [100 %]. Clicking on [Confirm] is required for the settings to take effect, and adjustment can also be made by sliding on the right.
- 7 Value input area:** selecting [Frequency], [Amplitude], or [Duty cycle] allows for inputting specific values, which will take effect after clicking on [Confirm].

4.5 Signal Generator Parameters

Different Waveform Output Frequencies	sine wave: 10 MHz, other waveforms 5 MHz
Waveform Frequency	0-10 MHz
Waveform Amplitude	0.1 V - 3.0 V
Square Wave Duty Cycle	0-100 %

4.6 Digital Multimeter Interface



Digital multimeter interface

- 1 Mode switch:** switch to other modes.
- 2 DC/AC switch:** if the selected mode is V (voltage), mA (milliampere current), A (current), you can switch between DC and AC by clicking on the DC/AC button.
- 3 Measurement parameters:** display the current measurement mode and the measured parameters.
- 4 Data saving:** click to save the current measurement parameters. You can save up to five parameters, and exceeding five will replace the earliest saved parameters.
- 5 Max/Min value display:** the maximum and minimum values of the measured parameters will be displayed in a table, and a curve will represent the variation of the measurement values over time.
- 6 Run/Pause:** you can stop or resume the measurement process while using the multimeter.
- 7 Connection guide:** selection of a mode will provide prompts for the corresponding connection points.

4.7 Gear Introduction

► High current measurement

Connect the red probe to the 10A jack, and the black probe to the COM jack.

*** Note: measuring currents greater than 10 A will blow the fuse. Please evaluate the current before measurement.**

► Low current measurement

Connect the red probe to the mA jack, and the black probe to the COM jack.

*** Note: measuring currents greater than 1 A will blow the fuse. Please evaluate the current before measurement, and if unsure, measure on the high current setting first.**

► Auto, voltage, resistance, capacitance, temperature, diode/continuity measurement

Connect the red probe to the first hole, and the black probe to COM. Switch to the appropriate function setting depending on the parameter being measured.

► Auto range

Can only automatically detect voltage and resistance. When measuring voltage, it will automatically detect AC/DC voltage.

► Diode/continuity range

When measuring continuity, if the resistance value is $< 50 \Omega$, the buzzer will sound. When measuring a diode, the screen will display forward bias. If the test lead polarity is opposite to the diode polarity, or if the diode is damaged, the screen will display "OL".

4.8 Multimeter Parameters

Function	Range	Accuracy
DC Voltage	1.9999 V / 19.999 V / 199.99 V / 1000.0 V	$\pm(0.5 \% + 3)$
AC Voltage	1.9999 V / 19.999 V / 199.99 V / 750.0 V	$\pm(1 \% + 3)$
DC Current	19.999 mA / 199.99 mA / 1.9999 A / 9.999 A	$\pm(1.2 \% + 3)$
AC Current	19.999 mA / 199.99 mA / 1.9999 A / 9.999 A	$\pm(1.5 \% + 3)$
Resistance	19.999 M Ω / 1.9999 M Ω / 199.99 k Ω / 19.999 k Ω	$\pm(1.5 \% + 3)$
	1.9999 k Ω / 199.99 Ω	$\pm(0.5 \% + 3)$
Capacitance	999.9 μ F / 99.99 μ F / 9.999 μ F / 999.9 nF / 99.99 nF / 9.999 nF	$\pm(2.0 \% + 5)$
	9.999 mF / 99.99 mF	$\pm(5.0 \% + 20)$
Temperature	-55 ~ 1300 $^{\circ}$ C / -67 ~ 2372 $^{\circ}$ F	$\pm(2.5 \% + 5)$
Diode / ON-OFF	✓	—

4.9 Settings Interface



System settings interface

- **Language settings:** there are 8 languages to switch among, including Chinese, English, German, Portuguese, Japanese, Spanish, Korean and Russian. Czech is not available, so the menu items remain in English.
- **Brightness settings:** swipe left or right to adjust the screen display brightness.
- **Sound settings:** swipe left or right to adjust the device volume.
- **Theme settings:** switch between device yellow/blue themes.
- **Startup settings:** automatically jump to the corresponding function interface after the device starts up. Selecting [None] will jump to the main menu after startup.
- **Auto shutdown:** the device will automatically shut down if no operation is performed within the set time. Selecting [OFF] will disable the auto shutdown function.
- **USB sharing:** enable USB sharing to access the USB drive when connected to a computer. Screenshots can be found in the [Screenshot file] folder.
- **About:** displays brand information and current version number.
- **Factory reset:** restoring to factory settings will reset all previous settings.

5. Firmware Upgrade

In the settings, when connecting to a computer, a USB drive will pop up. Then, place the firmware into the *Upgrade file* folder on the USB drive, disconnect the USB, shut down, and then restart the device. It will automatically enter the upgrade page. After the upgrade is completed, the device will automatically shut down.

6. Precautions

- When using both channels simultaneously, the ground clips of the two probes must be connected together. It is strictly prohibited to connect the ground clips of the two probes to different potentials, especially to different potential ends of high-power devices or 220 V, as this can cause damage to the oscilloscope mainboard by short-circuiting the internal ground lines of the mainboard, since both channels share a common ground. All oscilloscopes are like this.
- The BNC end of the oscilloscope can tolerate a maximum input of 400 V. It is strictly forbidden to input a voltage exceeding 400 V when using the 1X probe switch.
- When charging, a separate charging head must be used for charging. It is strictly prohibited to use the power supply of other devices being tested or the USB port, as this may cause a short circuit of the mainboard ground lines during testing, resulting in damage to the mainboard.
- Before using the product, please check whether the insulation near the shell and interfaces is damaged.
- Please hold the protective device behind the test probe with your fingers.
- When measuring a circuit, do not touch any of the input terminal ports.
- Disconnect the test probes and circuit connections before changing the range.
- When the DC voltage of the circuit being measured is higher than 36 V or the AC voltage is higher than 25 V, users should pay attention to prevent electric shock.
- When the battery power is low, a pop-up window will prompt you to charge in a timely manner to avoid affecting measurement performance.

7. Production Information

Any FNIRSI user with any questions who comes to contact us will have our promise to get a satisfactory solution + an extra 6 months warranty to thank you for your support.

By the way, the manufacturer has created an interesting community; you are welcome to contact FNIRSI staff to join it.

Manufacturer	Shenzhen FNIRSI Technology Co., LTD.
Address	West of Building C, Weida Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong, China
E-mail	fnirsiofficial@gmail.com (business) / fnirsiofficialcs@gmail.com (equipment service)
Phone	0755-28020752 / +8613536884686
Website	www.fnirsi.cn

*** Claims should be made with the retailer from whom you purchased the product - see Chapters 8.1 and 9.**

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@rotorاما.cz
Phone	+420 252 252 098
Website	www.rotorاما.cz

8.2 Product conformity



- 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@rotorاما.cz.
- **Product identification:** the type designation (FNIRSI-2C53P) and the serial number are given on the rating label on the product; the firmware version number can be found in *Settings* → *About*.

8.3 Disposal of electrical equipment and batteries



- 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 product contains a built-in rechargeable battery. Where possible, hand it over together with the device – do not dispose of the battery in mixed waste or in fire.
- 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. Any warranty promises of the manufacturer (see Chapter 7) **do not in any way limit** the buyer's rights arising from these regulations.

- 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.