



S-75 MK II, S-100 MK II,
S-150 MK II

power amplifier



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07.07.2021, ID: 141140, 144356, 141141 (V5)

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1 General information

This user manual contains important information on the safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device to another user, be sure that they also receive this manual.

Our products and user manuals are subject to a process of continuous development. We therefore reserve the right to make changes without notice. Please refer to the latest version of the user manual which is ready for download under www.thomann.de.

1.1 Further information

On our website (www.thomann.de) you will find lots of further information and details on the following points:

| | |
|-----------------------|---|
| Download | This manual is also available as PDF file for you to download. |
| Keyword search | Use the search function in the electronic version to find the topics of interest for you quickly. |
| Online guides | Our online guides provide detailed information on technical basics and terms. |
| Personal consultation | For personal consultation please contact our technical hotline. |
| Service | If you have any problems with the device the customer service will gladly assist you. |

1.2 Notational conventions

This manual uses the following notational conventions:

Letterings

The letterings for connectors and controls are marked by square brackets and italics.

Examples: *[VOLUME]* control, *[Mono]* button.


Cross-references


References to other locations in this manual are identified by an arrow and the specified page number. In the electronic version of the manual, you can click the cross-reference to jump to the specified location.

Example: See ↗ *'Cross-references'* on page 6.

1.3 Symbols and signal words

In this section you will find an overview of the meaning of symbols and signal words that are used in this manual.

| Signal word | Meaning |
|---|--|
| DANGER! | This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided. |
| CAUTION! | This combination of symbol and signal word indicates a possible dangerous situation that can result in minor injury if it is not avoided. |
| NOTICE! | This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided. |
| Warning signs | Type of danger |
|  | Warning – high-voltage. |

| Warning signs | Type of danger |
|---|------------------------|
|  | Warning – danger zone. |

2 Safety instructions

Intended use

This device amplifies electric audio frequency signals to operate passive speakers. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

Safety



DANGER!

Danger for children

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard! Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke! Never let children unattended use electrical devices.

**DANGER!****Electric shock caused by high voltages inside**

Within the device there are areas where high voltages may be present. Never remove any covers. There are no user-serviceable parts inside. Do not use the device if covers, protectors or optical components are missing or damaged.

**DANGER!****Electric shock caused by short-circuit**

Always use proper ready-made insulated mains cabling (power cord) with a protective contact plug. Do not modify the mains cable or the plug. Failure to do so could result in electric shock/death or fire. If in doubt, seek advice from a registered electrician.

**CAUTION!****Possible hearing damage**

With loudspeakers or headphones connected, the device can produce volume levels that may cause temporary or permanent hearing impairment. Do not operate the device permanently at a high volume level. Decrease the volume level immediately if you experience ringing in your ears or hearing impairment.

**NOTICE!****Risk of fire**

Do not block areas of ventilation. Do not install the device near any direct heat source. Keep the device away from naked flames.



NOTICE!

Operating conditions



This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations. Only operate the device within the ambient conditions specified in the chapter 'Technical specifications' of this user manual. Avoid heavy temperature fluctuations and do not switch the device on immediately after it was exposed to temperature fluctuations (for example after transport at low outside temperatures). Dust and dirt inside can damage the unit. When operated in harmful ambient conditions (dust, smoke, nicotine, fog, etc.), the unit should be maintained by qualified service personnel at regular intervals to prevent overheating and other malfunction.



NOTICE!

Power supply



Before connecting the device, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly injure the user. Unplug the device before electrical storms occur and when it is unused for long periods of time to reduce the risk of electric shock or fire.



NOTICE!

Possible damage due to installation of a wrong fuse



The use of different types of fuses can cause serious damage to the unit. Fire hazard! Only fuses of the same type may be used.



NOTICE!

Magnetic fields



The device generates strong magnetic fields that can interfere with the function of poorly shielded devices. The strongest magnetic fields are directly above and below the power amplifier. Therefore, never place sensitive devices such as pre-amplifiers, radio transmission systems, or tape decks directly above or below the power amplifier. When installing the power amplifier into a rack, you should place it in the lowest position, and further equipment such as pre-amplifiers in the highest position.



NOTICE!

Possible staining



The plasticiser contained in the rubber feet of this product may possibly react with the coating of your parquet, linoleum, laminate or PVC floor and after some time cause permanent dark stains. In case of doubt, do not put the rubber feet directly on the floor, but use felt-pad floor protectors or a carpet.

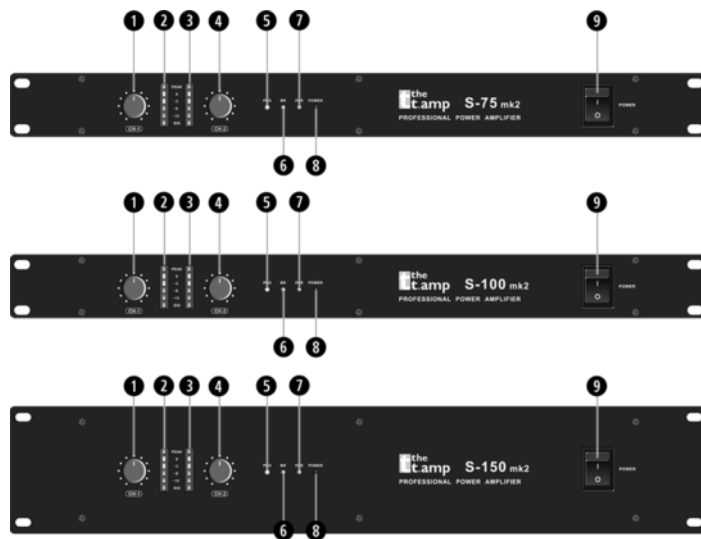
3 Features

- Output power $2 \times 45 \text{ W}$ to 250 W (depending on the model)
- Speaker Twist and terminal connections for speakers
- All protection circuits incl. soft start
- Input level switchable from -0 to $+4 \text{ db}$
- Fanless operation
- Standby function

S-75 MK II, S-100 MK II, S-150 MK II

4 Connections and operating elements

Front panel



| | |
|-------|--|
| 1 | <p>CH-1: Input level controller for channel 1</p> <p>Use the input level controllers CH-1 and CH-2 (4) on the front panel to control the signal amplification in the respective channel. If possible, turn this control fully to the right stop (= 0 dB attenuation) for optimal headroom. Professional power amplifiers then output their rated power, if the input voltage is 0.775 V resp. 1.4 V (depending on the position of the switch for the input sensitivity [19]).</p> |
| 2 / 3 | <p>PEAK: Indicator for signal / maximum level</p> <p>These LED chains indicate the output power of the device in the respective. The PEAK indicator lights up when the output power reaches its maximum. If this indicator lights up continuously, the volume of the respective channel must be reduced. To do so, turn to the input level knob counter-clockwise.</p> |
| 4 | <p>CH-2: Input level controller for channel 2</p> <p>Input level controller for channel 2, functionality is equal to point (1).</p> |

5 PRO: Indicator for activated protection circuit

This indicator lights up, if one of the following situations arises in one of the channels:

- 3-5 seconds after switching on, as the speakers are still electrically disconnected from the power amp.
- The temperature of the output transistors exceeds 85°C.
- A malfunction exists in the device.

6 BR: Indicator for mono operation in bridged mode

Please read more about the available operating modes in chapter ↗ *'Possible operation modes' on page 26.*

7 PAR: Indicator for mono operation in parallel mode

Please read more about the available operating modes in chapter ↗ *'Possible operation modes' on page 26.*

8 POWER: Power indicator light

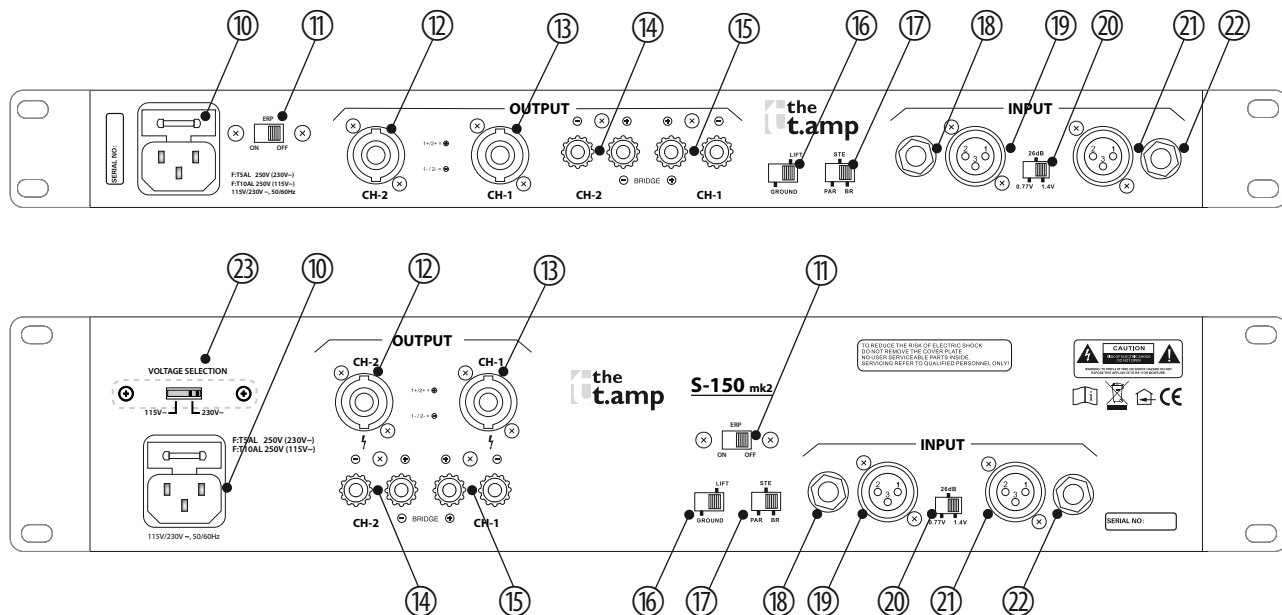
Lights up green when the device is turned on. In standby mode, the LED lights red. As soon as the unit receives a signal, it switches back to normal mode and the LED will light up green again.

9 POWER: On / off switch (9)

Use this mains switch to turn the device on or off. When switching on, the protection circuits are activated. After a few seconds you will hear two 'clicks' - now the speakers are electrically connected to the amplifier and the device is ready to operate.

When switching on electronic devices, especially power amps, the power consumption is particularly high. Make sure not to turn on too many devices simultaneously. Otherwise, the power supply circuit may be overloaded and the RCD will disconnect the power supply.

Rear panel



| | |
|---------|---|
| 10 | Mains connector with fuse holder Connect the supplied power cord here and supply the device with mains voltage. |
| 11 | ERP ON OFF On / off switch for standby function. If the standby function is enabled, the device automatically switches to standby mode after 20 minutes without any input signal. |
| 12 / 13 | Speaker outputs CH-1/2 Connect speakers to the speaker outputs of channel 1 and 2 using SPK cables (wiring = 1+ 2+ 1– 2–). |
| 14 / 15 | Speaker terminals CH-1/2 You can connect the speakers either with cable lugs or bare wire to the cable terminals on the rear panel. |

| | |
|----|---|
| 16 | GROUND/LIFT switch In normal operation signal source and power amplifier should share the same ground potential. In some constellations this admittedly leads to ground loops and thus to humming. If this happens vary the toggle switch setting for ground potential on the rear panel of the unit. This switch connects in one setting the shield/ground of the input signal with the housing of the power amp and thus with mains earthing. In the other setting there is no electrical connection between the shield/ground of the input signal and the power amp housing. |
| 17 | STE / PAR / BR Use this switch to select the operating mode of the power amp: stereo (STE), parallel (PAR) or bridged (BR). |
| 18 | CH-2 Connect the line-level signals to be amplified to the 1/4" balanced TRS phone jack input of Channel 2 using a 1/4" phone jack cable. |
| 19 | CH-2 Connect the line-level signals to be amplified to the XLR input of Channel 2 using a XLR cable. |

| | |
|----|---|
| 20 | <p>0.77V 1.4V 26dB</p> <p>The input sensitivity at which the amplifier is delivering its full rated power, can be set with this switch between 0.775 V_{RMS} and 1.4 V_{RMS}). Often multiple amplifiers are used simultaneously. In this case, switch to the '26 dB' position, the signal will then be amplified by all amps equally. Thus, you can combine different power amps of the S-series, and always get the same output level.</p> |
| 21 | <p>CH-1 (MONO)</p> <p>Connect the line-level signals to be amplified to the XLR input of Channel 1 using a XLR cable.</p> |
| 22 | <p>CH-1 (MONO)</p> <p>Connect the line-level signals to be amplified to the 1/4" balanced TRS phone jack input of Channel 1 using a 1/4" phone jack cable.</p> |
| 23 | <p>Power supply switch</p> <p>Before connecting the amplifier to the mains power supply, ensure that the mains voltage switch on the bottom side (or rear side for S-150) is in the position that corresponds to the actual power available (in Germany 230 V~). f in doubt, consult an electrician.</p> |

5 Installation and starting up

Unpack and check carefully there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the product against vibration, dust and moisture during transportation or storage use the original packaging or your own packaging material suitable for transport or storage, respectively.

Create all connections while the device is off. Use the shortest possible high-quality cables for all connections. Take care when running the cables to prevent tripping hazards.



DANGER!

Electric shock caused by high voltages at the power amplifier output

The output voltages of modern high-performance amplifiers may result in death or serious injury.

Never touch the bare ends of loudspeaker cables when the amplifier is on.



NOTICE!

Magnetic fields

The device generates strong magnetic fields that can interfere with the function of poorly shielded devices. The strongest magnetic fields are directly above and below the power amplifier. Therefore, never place sensitive devices such as pre-amplifiers, radio transmission systems, or tape decks directly above or below the power amplifier. When installing the power amplifier into a rack, you should place it in the lowest position, and further equipment such as pre-amplifiers in the highest position.

Rack mounting

Model types S-75 and S-100

The unit has been designed for rack mounting in a standard 19" rack; it occupies one rack unit.

Model type S-150

The device is designed for mounting in 19" racks, it occupies two rack units (RU).

5.1 Tips on handling speakers

We recommend you to set up the speakers in a way, that the sound signals can reach the audience unobstructedly. It will often be helpful to mount the speakers on tripods. Thus, the sound will be evenly spread with maximum range throughout the audience area.

Always use high grade cable to connect your equipment. Otherwise you won't reach maximum sound quality.

For optimum results both impedance and power handling of the speakers must match the requirements of the amplifier. Always follow the technical specifications of the speakers! The overall impedance of the connected loudspeakers must not exceed the minimum output impedance of the amp. The amps max. RMS output power should be 50 % above the power handling capacity of the connected speakers.

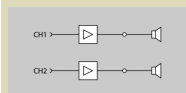
If you notice distortion during operation, either the amp or the speaker is overloaded. This may permanently damage the amp or the speaker. Always reduce the volume when you hear distortion.

5.2 Additional useful tips

Possible operation modes

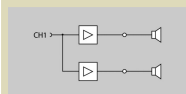
Depending on the individual application, the amplifier can be used in different operation modes:

Stereo mode



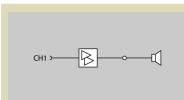
The two amplifier channels operate independently of one another, either channel (CH1 and CH2) is amplified and connected to loudspeakers, the volume can be controlled separately for the two outputs.

Parallel mode



The two amplifier channels receive the same input signal from channel CH1 and loudspeakers are connected to each amplifier, the volume for both outputs is controlled by the volume control of CH1.

Bridged mode



The two amplifier channels are internally connected in such a way that twice the output power is available. Only the input signal from channel CH1 is amplified and loudspeakers are connected only to the correspondingly marked output. The volume is controlled by the volume control of CH1.

For each output of the amplifier, the total impedance resulting from the loudspeakers connected to it must not be below the allowed minimal impedance of the amplifier output. Connecting more than one loudspeaker to an amplifier output, please consider:

- If the loudspeakers are connected in a series, the individual impedances will be added up.
- If the loudspeakers are connected in parallel, the reciprocal of the total impedance equals the sum of the reciprocals of the individual impedances.

Example: Using two loudspeakers which have the same impedance, the impedance doubles if they are connected in a series, but it halves if they are connected in parallel.

For detailed information related to this topic please refer to our Online Guide "PA Speakers" (www.thomann.de).

6 Technical specifications

| Model type | | S-75 | S-100 | S-150 |
|--|-------------------------------------|----------------------------------|------------------|------------------|
| Amplifier class | | AB | AB | AB |
| Input impedance | | 20 k Ω (active, balanced) | | |
| Input level | | 21 dBV / 9 V | | |
| Output power | _{RMS} 8 Ω , stereo | 2 \times 45 W | 2 \times 65 W | 2 \times 85 W |
| | _{RMS} 4 Ω , stereo | 2 \times 75 W | 2 \times 100 W | 2 \times 150 W |
| | _{RMS} 8 Ω , bridged | 150 W | 200 W | 250 W |
| Frequency response | | 10 Hz ... 50 kHz, -1.5 dB | | |
| Signal-to-noise ratio, A-weighted, RMS | | > 80 dB | > 80 dB | > 85 dB |
| Damping factor (1 kHz, 8 Ω) | | > 150 dB | | |
| Sensitivity | | 0.77 V ... 1.4 V (26 dB) | | |
| Slew rate | | 35 V/ μ s | 35 V/ μ s | 40 V/ μ s |

| Model type | | S-75 | S-100 | S-150 |
|--------------------------------------|--------------------------|---|----------------|----------------|
| Crosstalk @ rated power (1 kHz, 8 Ω) | | > 70 dB | | |
| Power consumption | 1/2 nominal power 8 Ω | Typical current consumption depending on the output power level (A _{RMS}). All values based on a 230 V ~ mains voltage and a 1 kHz input signal at 0 dB (sine). | | |
| | | 65 W | 100 W | 120 W |
| Supply voltage | | 115 - 230 V ~ 50/60 Hz | | |
| Fuse | | 115 V: 5 mm × 20 mm, 10 A, 250 V, slow-blow 230 V: 5 mm × 20 mm, 5 A, 250 V, slow-blow | | |
| Protective circuits | | Short-circuit current limitation, DC voltage fault, fuse for supply voltage, limiter, temperature, mains transients | | |
| Installation | | 19", 1 RU | 19", 1 RU | 19", 2 RU |
| Dimensions (W × H × D) | | 483 × 330 × 44 | 483 × 330 × 44 | 483 × 320 × 88 |
| Weight | | 7.5 kg | 7.5 kg | 11.5 kg |

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| Model type | S-75 | S-100 | S-150 |
|--------------------|-------------------|-------|------------------------------|
| Ambient conditions | Temperature range | | 0 °C...40 °C |
| | Relative humidity | | 20 %...80 % (non-condensing) |

Further information

| Model type | S-75 | S-100 | S-150 |
|----------------------------|------|-------|-------|
| Power 4 Ω / channel | 75 W | 100 W | 150 W |
| Channels | 2 | 2 | 2 |
| 2 Ω stable | No | No | No |
| DSP / frequency | No | No | No |
| Convection cooling | Yes | Yes | Yes |

7 Plug and connection assignment

Introduction

This chapter will help you select the right cables and plugs to connect your valuable equipment in such a way that a perfect sound experience is ensured.

Please note these advices, because especially in 'Sound & Light' caution is indicated: Even if a plug fits into the socket, an incorrect connection may result in a destroyed power amp, a short circuit or 'just' in poor transmission quality!

Balanced and unbalanced transmission

Unbalanced transmission is mainly used in semi-professional environment and in hifi use. Instrument cables with two conductors (one core plus shielding) are typical representatives of the unbalanced transmission. One conductor is ground and shielding while the signal is transmitted through the core.

Unbalanced transmission is susceptible to electromagnetic interference, especially at low levels, such as microphone signals and when using long cables.

In a professional environment, therefore, the balanced transmission is preferred, because this enables an undisturbed transmission of signals over long distances. In addition to the conductors 'Ground' and 'Signal', in a balanced transmission a second core is added. This also transfers the signal, but phase-shifted by 180°.

Since the interference affects both cores equally, by subtracting the phase-shifted signals, the interfering signal is completely neutralized. The result is a pure signal without any noise interference.

1/4" TS phone plug (mono, unbalanced)



| | |
|---|-------------------|
| 1 | Signal |
| 2 | Ground, shielding |

1/4" TRS phone plug (mono, balanced)



| | |
|---|--------------------------|
| 1 | Signal (in phase, +) |
| 2 | Signal (out of phase, -) |
| 3 | Ground |

1/4" TRS phone plug (stereo, unbalanced)



| | |
|---|----------------|
| 1 | Signal (left) |
| 2 | Signal (right) |
| 3 | Ground |

1/4" TS phone plug (mono, unbalanced)



| | |
|---|--------|
| 1 | Signal |
| 2 | Ground |

3.5 mm TRS phone plug (mono, balanced)



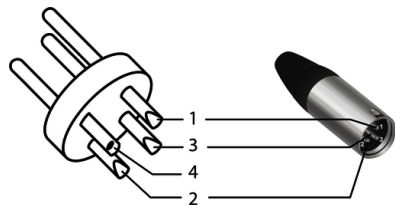
| | |
|---|--------------------------|
| 1 | Signal (in phase, +) |
| 2 | Signal (out of phase, -) |
| 3 | Ground |

Three-pole 1/8" mini phone jack (stereo, unbalanced)



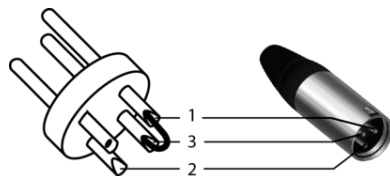
| | |
|---|-------------------|
| 1 | Signal (left) |
| 2 | Signal (right) |
| 3 | Ground, shielding |

XLR plug (balanced)



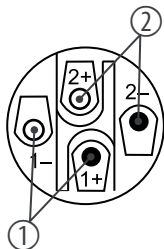
| | |
|---|------------------------------------|
| 1 | Ground, shielding |
| 2 | Signal (in phase, +) |
| 3 | Signal (out of phase, -) |
| 4 | Shielding on plug housing (option) |

XLR plug (unbalanced)



| | |
|---|-------------------|
| 1 | Ground, shielding |
| 2 | Signal |
| 3 | Bridged to pin 1 |

Speaker Twist chassis connector



| | |
|------|-------------------------|
| 1, + | Signal 1 (in phase) |
| 1, - | Signal 1 (out of phase) |
| 2, + | Signal 2 (in phase) |
| 2, - | Signal 2 (out of phase) |

8 Cleaning

Fan grids

The fan grids of the device must be cleaned of any contamination, such as dust, etc. on a regular basis. Before cleaning, switch off the device and disconnect mains-operated devices from the mains. Only use pH-neutral, solvent-free and non-abrasive cleaning agents. Clean the unit with a slightly damp lint-free cloth.

9 Protecting the environment

Disposal of the packaging material



For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

Disposal of your old device



This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE) in its currently valid version. Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.



