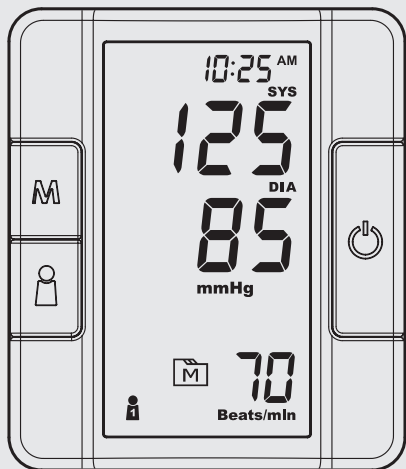


ri-champion® smartPRO & smartPRO+ (TD-3128)

Ver 1.0 2020/06
311-3128000-015

BLOOD PRESSURE MONITORING SYSTEM
OBERARM BLUTDRUCKMESSGERÄT
SYSTÈME DE SURVEILLANCE DE LA PRESSION ARTÉRIELLE
SISTEMA DI MONITORAGGIO DELLA PRESSIONE ARTERIOSA
SISTEMA DE CONTROL DE PRESIÓN SANGUÍNEA
СИСТЕМА МОНИТОРИНГА ДАВЛЕНИЯ КРОВИ



**Operation Instruction / Gebrauchsanleitung / Mode
d'emploi / Manuale dell'utente / Instrucciones de
Operación / Инструкция по эксплуатации**

Dear ri-champion® smartPRO/smartPRO+ (TD-3128) owner:

Thank you for purchasing the **smartPRO/smartPRO+ (TD-3128)** Blood Pressure Monitoring System. This manual provides important information to help you to use this system correctly. Before using this product, please read the following contents thoroughly and carefully.

With the compact size and easy operation of this **smartPRO/smartPRO+ (TD-3128)** Blood Pressure Monitoring System, you can easily monitor your blood pressure by yourself at any time or place. In addition, this system can help you and your healthcare professionals to monitor and adjust your treatment plans, and keep your blood pressure under control.

If you have other questions regarding this product, please contact the place of purchase.

IMPORTANT SAFETY PRECAUTIONS

READ BEFORE USE

1. Use this device **ONLY** for the intended use described in this manual.
2. Do **NOT** use accessories which are not specified by the manufacturer. Other cables and accessories may negatively affect EMC performance.
3. Do **NOT** use the device if it is not working properly or damaged.
4. Do **NOT** use under any circumstances on newborns or infants.
5. This device does **NOT** serve as a cure for any symptoms or diseases. The data measured are for reference only. Always consult your doctor to have the results interpreted.
6. Keep the equipment and its flexible cord away from hot surfaces.
7. Do **NOT** apply the cuff to areas other than the place directed.
8. Use of this instrument in a dry environment, especially if synthetic materials are present (synthetic clothing, carpets etc.) may cause damaging static discharges that may cause erroneous results.

9. Do not use this instrument in close proximity to sources of strong electromagnetic radiation, as these may interfere with the accurate operation.
10. Proper maintenance is essential to the longevity of your device. If you are concerned about your accuracy of measurement, please contact local customer service for help.
11. Be careful to strangulation due to cables and hoses, particularly due to excessive length.
12. Do not try to maintain the device while it is in use.
13. Keep the unit out of reach of small unsupervised children.
14. Do not try to modify the device to prevent any dangers.
15. Do not place the device in liquid, nor put it where it could fall into liquid. If the device becomes wet, unplug the device before touching it.
16. For the reason of maintain basic safety and essential performance in regards to EMC, please always contact the manufacturer or the manufacturer's representative to report unexpected operation or event. Do not try to fix it by yourself.
17. When in use, you should stay away from electromagnetic radiation, such as the mobile in use.
18. Used in close proximity or stacking to others, EMC must be tested and verified.
19. If abnormal behavior is observed due to EM disturbances, please relocate the device accordingly.

KEEP THESE INSTRUCTIONS IN A SAFE PLACE

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BEFORE YOU BEGIN

INTENDED USE

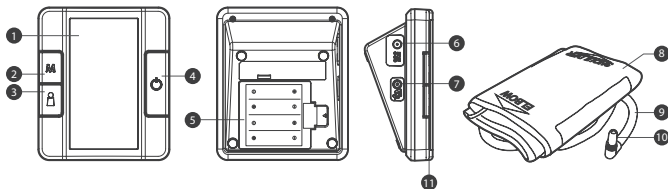
The **smartPRO/smartPRO+ (TD-3128)** system is a system designed to measure blood pressure non-invasively. It is intended for use at home and in clinical settings by one with a good understanding of the operation instruction, where the patient may be an operator. The device is not to be used for the diagnosis or screening of hypertension or for testing on newborns.

TEST PRINCIPLE

Blood pressure is measured non-invasively at the arm based on oscillometric method.

This device is **NOT** able to take measurements in the presence of common arrhythmia, such as atrial or ventricular premature beats or atrial fibrillation. It may produce reading error.

METER OVERVIEW



1 DISPLAY SCREEN

2 M BUTTON

Enter the meter memory.

3 USER SELECTION BUTTON

Assist you with user number selection.

4 ON/OFF BUTTON

5 BATTERY COMPARTMENT

6 AC ADAPTER PORT

Connect to a power supply.

7 AIR JACK

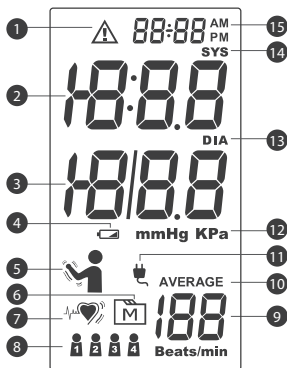
8 PRESSURE CUFF

9 AIR TUBE

10 AIR PLUG

11 BT INDICATOR (ri-champion® smartPRO+ only)

DISPLAY SCREEN




- | | |
|-------------------------------|------------------------------|
| 1 Error Warning | 9 Pulse Rate |
| 2 Systolic Pressure Value | 10 Average |
| 3 Diastolic Pressure Value | 11 AC Adaptor Symbol |
| 4 Low Battery Symbol | 12 Units of Blood Pressure |
| 5 Movement During Measurement | 13 Diastolic Pressure Symbol |
| 6 Memory Mode Symbol | 14 Systolic Pressure Symbol |
| 7 Pulse Rate Symbol | 15 Time & Date |
| 8 User Number | |

SETTING THE METER

Before using your meter for the first time or if you change the meter battery, you should check and update these settings. Make sure you complete the steps below and save the desired settings.

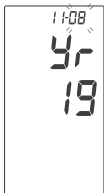
Entering the Setting Mode

Start with the meter off. Press and firmly hold  for 3 seconds until the meter turns on.

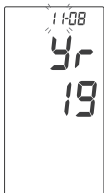
Setting the Date and the Time



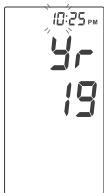
With the year flashing, press **M** until the correct year appears.
Press **i** to set.



With the month flashing, press **M** until the correct month appears. Press **i** to set.



With the day flashing, press **M** until the correct day appears.
Press **i** to set.



With the hour flashing, press **M** until the correct hour appears.
Press **i** to set.



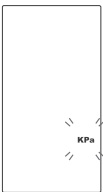
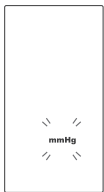
With the minute flashing, press **M** until the correct minute appears. Press **i** to set.

Setting the Time Format



Press **M** to select the desired time format --- 12h or 24h. Press **i** to set.

Setting the Unit of Measurement



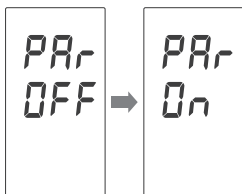
Press **M** to select mmHg or KPa. Press **i** to set.

Delete The Memory



While “dEL” and a flashing “**M**” symbol appears on the display, if you do not wish to delete the saved results, press **i** to skip this step. To delete ALL the results, press **M** twice. “CLR” and “**M**” are displayed on the meter, which indicates that all results have been deleted.

Enter the Bluetooth Pairing (ri-champion® smartPRO+ only)



NOTE

This step is recommended when the user needs to pair this meter to a Bluetooth receiver for the first time, or when user needs to pair this meter to another new Bluetooth receiver.

If you wish to enter the pairing mode, with “PAr OFF” shows on the meter, press **M** once and the meter will display “PAr On” to enable Bluetooth pairing mode.

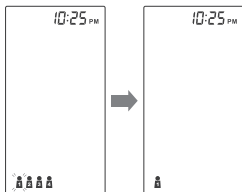
Congratulations! You have completed all settings!

NOTE

- These parameters can **ONLY** be changed in the setting mode.
- If the meter is idle for 3 minutes during the setting mode, it will turn off automatically.

USER NUMBER SELECTION

This system stores blood pressure measurements for up to four users. Each user's test results are stored separately under each user number.



1. Press **i** to select the desired user number.
2. Press **⏻** to confirm. The monitor will repeat the selected user number and then turn off automatically.

TESTING YOUR BLOOD PRESSURE

BEFORE MEASUREMENT

- Avoid caffeine, tea, alcohol and tobacco for at least 30 minutes before measurement.
- Wait 30 minutes after exercising or bathing before measurement.
- Sit or lie down for at least 10 minutes before measurement.
- Do not measure when feeling anxious or tense.
- Take a 5-10 minute break between measurements. This break can be longer if necessary, depending on your physical condition.
- Keep the records for your doctor as reference.
- Blood pressure naturally varies between each arm. Always measure your blood pressure on the same arm.

SELECTING THE CORRECT CUFF

Two different cuff sizes are provided with the blood pressure monitoring system: Small and Wide. Select the cuff size that best matches the circumference of the patient's upper arm.

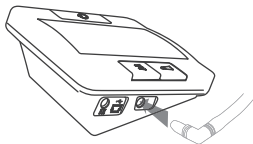


S (Small size) 15-24cm (5.9-9.4 inches)

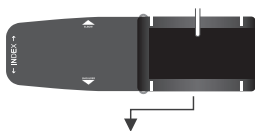
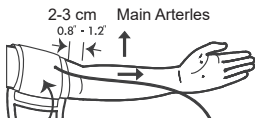
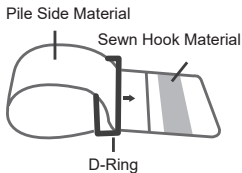


W (Wide size) 24 – 43 cm (9.4 – 16.9 inches)

FITTING THE CUFF PROPERLY



1. Connect the air plug of the tubing to the air jack of the meter.
2. Assemble the cuff as shown. The smooth surface should be inside of the cuff loop and the metal D-ring should not touch your skin.



The range index of cuff should fall within this range


3. Stretch your left (right) arm in front of you with your palm facing up. Slide and place the cuff onto your arm with the air tube and artery mark region toward the lower arm. Wrap and tighten the cuff above your elbow. The bottom edge of the cuff should be approximately 0.8" to 1.2" (2 cm to 3 cm) above your elbow. Align the tube over the main arteries on the inside.

4. Leave a little free space between the arm and the cuff; you should be able to fit two fingers between them. Clothing must not restrict the arm. Remove all clothing covering or constricting the measurement arm.

5. Press the hook material firmly against the pile material. The top and bottom edges of the cuff should be tightened evenly around your upper arm.

PROPER MEASUREMENT POSITION



1. Sit down for at least 10 minutes before measuring.
2. Place your elbow on a flat surface. Relax your hand with the palm facing up.
3. Make sure the cuff is about the same height as the location of your heart. Press . Remain still and do not talk or move during the measurement.

WARNING

If the cuff is relatively lower (higher) than the heart, the obtained blood pressure value could be higher (lower) than the actual value. A 15 cm difference in height may result in an error around 10 mmHg.

- Measurement is in progress. After the meter is turned on, the cuff will begin to inflate automatically.

TAKING MEASUREMENTS

Always apply the pressure cuff before turning on the meter.



- Press . All the LCD symbols will appear. Press to select user "1 2 3 4" (numbers from 1 to 4) whose test reading will be stored in its memory. Then the cuff will begin to inflate automatically.

- The heart symbol "♥" will flash when pulse is detected during the measurement.



- After the measurement, the meter displays the systolic pressure, diastolic pressure and pulse rate.






- Press to switch off or it will switch off automatically after being idle for 3 minutes.



- The meter will enter Bluetooth mode automatically. (ri-champion® smartPRO+ only)







NOTE

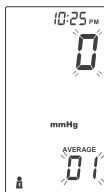
- If you press  during measurement, the meter will be turned off.
- If the pulse rate symbol is shown as “” instead of “”, this indicates that the meter has detected an irregular heart beat.

AVERAGING MEASUREMENT MODE

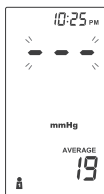
Always apply the pressure cuff before turning on the meter.




1. Press and hold  until the meter displays "AVERAGE", then press  to select user “” (numbers from 1 to 4) whose test reading will be stored in its memory. Then the cuff will begin to inflate automatically.



2. After the first measurement is completed, the meter will start counting down before the second measurement begins. The number on the right represents the remaining countdown between each measurement. The meter will take three (3) measurements consecutively with intervals of 20 seconds.



3. After taking three measurements, the results are averaged to produce the blood pressure measurement with "AVERAGE" symbol display on the meter. Press  to turn off the meter.



METER MEMORY

Your meter stores the 400 most recent blood pressure test results along with respective dates and times in the meter memory. To recall the memory, **start with the meter off.**

REVIEWING TEST RESULTS



1. Press and release **M**. The user symbol “**1 2 3 4**” (numbers from 1 to 4) appears first, press **1** to select which one you used to store in the memory.



2. Press **M** again, and the first reading you see is the last blood pressure result along with date and time.

3. Press **M**
Review all test results stored in the meter.



4. Exit the memory
Press **⏻** and the meter will turn off.

DOWNLOADING RESULTS

Data Transmission via Bluetooth (ri-champion® smartPRO+ only)

You can transmit your blood pressure monitoring data from the meter to your device via Bluetooth. Please contact your local customer service or place of purchase for assistance.

How to Install and Update the Healthy Check App

You must connect to the internet to download the app. The App Store or Google Play can be accessed by tapping the App Store or Play Store icon on your iOS or Android devices. It is simple and intuitive to use, for better understanding of your current condition and to achieve better blood pressure control.

System Requirement

For the requirement of OS version, please find on App Store or Google Play when you download the app. Please contact your local customer service or place of purchase for assistance. Please note that you must complete the pairing between meter and Bluetooth receiver before transmitting data.

Pairing with your mobile device

1. Turn on the Bluetooth function on your mobile device.
2. Start with the meter off. Press and firmly hold **M** for 3 seconds until the meter turns on. "PCL" will appear on the meter.
3. Follow the instruction of the Healthy Check app to pair the device. (Ex. Search to find the meter and then add it into app.)
4. After successfully pairing the app with the device, the Bluetooth function of meter shall be on before transmitting the data to the Healthy Check app.

Bluetooth indicator on the blood pressure monitor:

BLUETOOTH INDICATOR	STATUS
Flashing Blue	The Bluetooth function is on and waiting for connection.
Solid Blue	The Bluetooth connection is established.

NOTE

- While the meter is in transmission mode, it will be unable to perform a blood pressure test.
- Make sure your device supporting Bluetooth Smart Technology has turned on Bluetooth before transmitting the data and the meter is within the receiving range. For the requirement of OS version, please find on App Store or Google Play when you download the app.
- The Bluetooth functionality is implemented in different ways by the various mobile device manufacturers, the compatibility issue between your mobile device and the meter may occur.

MAINTENANCE


BATTERY

Your meter comes with four (4) 1.5V AA size alkaline batteries.


Low Battery Signal

The meter will display either of the two messages below to alert you when the meter power is getting low.



1. The  symbol appears along with display messages: The meter is functional and the result remains accurate, but it is time to change the batteries.



2. The  symbol appears with E-b: The power is not enough to do a test. You must change the batteries immediately.

Replacing the Battery

To replace the batteries, make sure the meter is turned off.

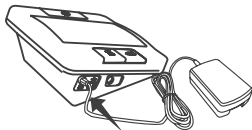
1. Press the edge of the battery cover and lift it up to remove.
2. Remove the old batteries and replace with four 1.5V AA size alkaline batteries.
3. Close the battery cover.

NOTE

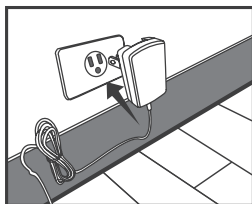
- Replacing the batteries does not affect the test results stored in memory.
- As with all small batteries, these batteries should be kept away from small children. If swallowed, promptly seek medical assistance.
- Batteries might leak chemicals if unused for a long time. Remove the batteries if you are not going to use the device for an extended period (i.e., 3 months or more).
- Properly dispose of the batteries according to your local environmental regulations.


USING AC ADAPTER (optional)

Connect AC adapter to the meter.

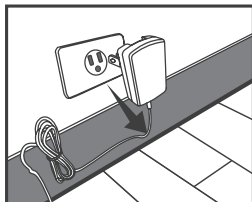


1. Connect AC adapter plug to DC adapter jack of the meter.

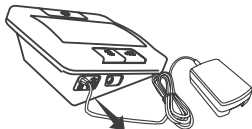


2. Plug AC adapter power plug into an electrical outlet. Press  to start the measurement.

Remove AC adapter from the meter.



1. When the meter is off, remove AC adapter power plug from the electrical outlet.



2. Disconnect AC adapter plug from DC adapter jack of the meter.

CARING FOR YOUR METER

To avoid the meter attracting dirt, dust or other contaminants, wash and dry your hands thoroughly before use.

Cleaning

- To clean the meter exterior, wipe it with a cloth moistened with tap water or a mild cleaning agent, then dry the device with a soft dry cloth. Do **NOT** flush with water.
- Do **NOT** use organic solvents to clean the meter.
- Do **NOT** wash the pressure cuff.
- Do **NOT** iron the pressure cuff.

Meter Storage

- Storage condition: -25°C to 70°C (-13°F to 158°F), 10% to 95% relative humidity.
- Always store or transport the meter in its original storage case.
- Avoid dropping or heavy impact.
- Avoid direct sunlight and high humidity.

DETAILED INFORMATION

REFERENCE VALUES

Human blood pressure naturally increases after reaching middle age. This symptom is a result of continuous ageing of the blood vessels. Further causes include diabetes, lack of exercise and cholesterol (LDL) adhering to the blood vessels. Rising blood pressure accelerates hardening of the arteries, and the body becomes more susceptible to apoplexy and coronary infarction.

Definitions and Classification of blood pressure levels according to 2018 ESC/ESH Guidelines for the management of arterial hypertension:

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	< 120	and	< 80
Normal	120–129	and/or	80–84
High normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥ 180	and/or	≥ 110
Isolated systolic hypertension	≥ 140	and	< 90













Isolated systolic hypertension should be graded (1, 2, 3) according to systolic blood pressure values in the ranges indicated, provided that diastolic values are <90mmHg.







Source: The European Society of Hypertension and European Society of Cardiology Task Force Members.
 2018 ESC/ESH Guidelines for the management of arterial hypertension. Journal of Hypertension:
 October 2018 - Volume 36 - Issue 10 - p 1953–2041.

SYSTEM TROUBLESHOOTING

If you follow the recommended action but the problem persists, or error messages other than the ones below appear, please call your local customer service. Do not attempt to repair by yourself and never try to disassemble the meter under any circumstances.

ERROR MESSAGES

MESSAGE	CAUSE	WHAT TO DO
 	Inflation or pressure error.	Please contact local customer service for help.
 	Blood pressure measurement error.	Refit cuff tightly and correctly. Relax and repeat the measurement. If error still remains, contact local customer service for help.
 	Appears when the cuff deflates too slow.	Please contact local customer service for help.
 	Appears when the cuff deflates too fast.	
 	Problems with the meter.	Review the instructions and repeat the test. If the meter still does not work, please contact the local customer service for help.
 		

 	Batteries are too low.	Repeat with new batteries or input AC adapter.
 	Bluetooth transmission errors.	Please contact local customer service for help.
	Appears when systolic or diastolic blood pressure value is above the pre-set range.	Review the instructions and repeat the test. If error still remains, contact local customer service for help.
	Appears when systolic or diastolic blood pressure value is below the pre-set range.	

TROUBLESHOOTING

1. If no display appears after pressing .

POSSIBLE CAUSE	WHAT TO DO
Batteries exhausted.	Replace the batteries.
Batteries incorrectly installed or absent.	Check that the batteries are correctly installed.

2. If the heart rate is higher/lower than user's average:

POSSIBLE CAUSE	WHAT TO DO
Movement during measurement.	Repeat measurement.
Measurement taken just after exercise.	Rest at least 30 minutes before repeating measurement.












3. If the result is higher/lower than user's average measurement:

POSSIBLE CAUSE	WHAT TO DO
May not be in correct position while measuring.	Adjust to the correct position to measure.
Blood pressure naturally varies from time to time.	Keep in mind for next measurement.

4. If the cuff inflates again while measuring:

POSSIBLE CAUSE	WHAT TO DO
Cuff is not fastened.	Fasten the cuff again.
If user's blood pressure is higher than the pressure the device has inflated, the device will automatically increase the pressure and start to inflate again. Stay relaxed and wait for the measurement.	

SYMBOL INFORMATION

Symbol	Referent	Symbol	Referent
	Manufacturer		Type BF applied part
	Serial number	IP21	Resistant to liquid ingress
	Temperature limit		Humidity limitation
	CE mark		RoHS Compliance
	Caution		This device does not belong to household waste and must be returned to a collection point for recycling electric and electronic devices according to local laws. If it contains batteries, the batteries should be removed and disposed in accordance with local regulations for separate collection of spent batteries.
	Authorized representative in the European Community		
	Refer to instruction manual / booklet NOTE On ME EQUIPMENT "Follow instructions for use"		

SPECIFICATIONS

SYSTEM PERFORMANCE

Model no.: TD-3128

Power Source: Four 1.5V AA alkaline batteries

Battery Life: 200 times

Size of Meter w/o Cuff: 141 (L) x 121 (W) x 72 (H)mm, 350g without batteries

Cuff Size: S (small) 15 – 24cm (5.9 – 9.4 inches) with air tube 80 cm

W (Wide size) 24 – 43 cm (9.4 – 16.9 inches) with air tube 80 cm

Memory: Maximum 400 memory records

External Output: Bluetooth (ri-champion® smartPRO+ only)

(Frequency:2.45GHz, Bandwidth:170MHZ, Modulation:GFSK, ERP:3.54 dBm)

Power Saving: Automatic power off if system idle for 3 minutes

Operating Conditions: 5°C to 40°C (41°F to 104°F), 15% to 93% relative humidity, 700 hPa to 1060 hPa

Storage / Transportation Conditions: -25°C to 70°C (-13°F to 158°F), 10% to 95% relative humidity

Power Supply Input: DC + 6V / 1A (max) via Power Plug

IP Classification: IP21

Expected Service Life: 3 years

BLOOD PRESSURE MEASUREMENT PERFORMANCE

Heart Rate Range: 40 – 199 beat per minute

Systolic Measurement Range: 60 mmHg – 255 mmHg

Diastolic Measurement Range: 30 mmHg – 195 mmHg

Pulse Rate Measurement Range: 40 – 199 beats / minute

Maximum Inflation Pressure: 280 mmHg

Accuracy of Pressure: ± 3 mmHg or $\pm 2\%$ of reading

Accuracy of Pulse rate: $\pm 4\%$ of reading

Measurement Unit: Either mmHg or KPa

This device has been tested to meet the electrical and safety requirements of: IEC/ EN 60601-1, IEC/EN 60601-1-2, EN 301 489-17, EN 301 489-1, EN 300 328.

Reference to Standards:

- EN 1060-3, NIBP-requirements
- IEC60601-1 General requirement for safety
- IEC60601-1-2 Requirements for EMC
- EN1060-4, NIBP clinical investigation
- AAMI / ANSI / IEC 80601-2-30, ANSI/AAMI/ISO 81060-2, NIBP requirements

Manufacturer's declaration-electromagnetic immunity

The **TD-3128** is intended for use in the electromagnetic environment (for home and professional healthcare) specified below.

The customer or the user of the **TD-3128** should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance (for home and professional healthcare environment)
Electrostatic discharge (ESD) IEC 61000-4-2	Contact: ± 8 kV Air ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV	Contact: ± 8 kV Air ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines Not applicable	Mains power quality should be that of a typical home healthcare environment.
Surge IEC 61000-4-5	± 0.5 kV, ± 1 kV line(s) to line(s) ± 0.5 kV, ± 1 kV, ± 2 kV line(s) to earth	± 0.5 kV, ± 1 kV line(s) to line(s) Not applicable	Mains power quality should be that of a typical home healthcare environment.
Voltage Dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	Voltage dips: 0 % U_i ; 0,5 cycle 0 % U_i ; 1 cycle 70 % U_i ; 25/30 cycles Voltage interruptions: 0 % U_i ; 250/300 cycle	Voltage dips: 0 % U_i ; 0,5 cycle 0 % U_i ; 1 cycle 70 % U_i ; 25 cycles Voltage interruptions: 0 % U_i ; 250 cycle	Mains power quality should be that of a typical home healthcare environment. If the user of the TD-3128 requires continued operation during power mains interruptions, it is recommended that the TD-3128 be powered from an uninterruptible power supply or a battery.
Power frequency (50, 60 Hz) magnetic field IEC 61000-4-8	30 A/m 50 Hz or 60 Hz	30 A/m 50 Hz	The TD-3128 power frequency magnetic fields should be at levels characteristic of a typical location in a typical home healthcare environment.

NOTE U_i is the a.c. mains voltage prior to application of the test level.

Manufacturer's declaration-electromagnetic emissions

The **TD-3128** is intended for use in the electromagnetic environment (for home and professional healthcare) specified below.

The customer or the user of the **TD-3128** should assure that it is used in such an environment.


Emission test	Compliance	Electromagnetic environment-guidance (for home and professional healthcare environment)
RF emissions CISPR 11	Group 1	The TD-3128 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. The TD-3128 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11	Class B	
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Compliance	

Manufacturer's declaration-electromagnetic immunity

The **TD-3128** is intended for use in the electromagnetic environment (for home and professional healthcare) specified below.

The customer or the user of the **TD-3128** should assure that it is used in such and environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance (for home and professional healthcare environment)
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<p>Conducted RF IEC 61000-4-6</p>	<p>3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz</p>	<p>3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the TD-3128 including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p>
<p>Radiated RF IEC 61000-4-3</p>	<p>80 % AM at 1 kHz 10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz</p>	<p>80 % AM at 1 kHz 10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz</p>	<p>Recommended separation distance: $d = 1,2 \sqrt{P}$ $d = 1,2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2,3 \sqrt{P}$ 800 MHz to 2,7 GHz</p> <p>Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol: </p>

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

a) Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the **TD-3128** is used exceeds the applicable RF compliance level above, the **TD-3128** should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the **TD-3128**.

b) Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

**Recommended separation distance between
portable and mobile RF communications equipment and the TD-3128**

The **TD-3128** is intended for use in an electromagnetic environment (for home and professional healthcare) in which radiated RF disturbances are controlled. The customer or the user of the **TD-3128** can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the **TD-3128** as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz to 80 MHz $d = 1,2\sqrt{P}$	80 MHz to 800 MHz $d = 1,2\sqrt{P}$	800 MHz to 2,7 GHz $d = 2,3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where p is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Manufacturer's declaration-electromagnetic immunity
Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment

The **TD-3128** is intended for use in the electromagnetic environment (for home and professional healthcare) specified below.

The customer or the user of the **TD-3128** should assure that it is used in such an environment.

Test frequency (MHz)	Band ^{a)} (MHz)	Service ^{a)}	Modulation ^{b)}	Maximum power (W)	Distance (m)	IMMUNITY TEST LEVEL (V/m)	Compliance LEVEL (V/m) (for home and professional healthcare)
385	380–390	TETRA 400	Pulse modulation ^{b)} 18 Hz	1,8	0,3	27	27
450	430–470	GMRS 460, FRS 460	FM ^{c)} ±5 kHz deviation 1 kHz sine	2	0,3	28	28
710	704–787	LTE Band 13, 17	Pulse modulation ^{b)} 217 Hz	0,2	0,3	9	9
745							
780							
810	800–960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation ^{b)} 18 Hz	2	0,3	28	28
870							
930							
1720	1700–1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation ^{b)} 217 Hz	2	0,3	28	28
1845							
1970							

2450	2400–2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation ^{b)} 217 Hz	2	0,3	28	28
5240	5100–5800	WLAN 802.11 a/n	Pulse modulation ^{b)} 217 Hz	0,2	0,3	9	9
5500							
5785							

NOTE If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

- a) For some services, only the uplink frequencies are included.
- b) The carrier shall be modulated using a 50 % duty cycle square wave signal.
- c) As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

ri-champion® smartPRO & smartPRO+ (TD-3128)

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