



TERA Radon Program

TRR3 Wireless Repeater Technical Specifications & Operation Manual



v.1 – 2020

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Instruction also available on www.tesla.cz

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Users should be familiar with operation basis of used product. If you experience any problems with your product, please contact us at:

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1 Introduction

This document describes technical specifications and user operation of TRR3 Wireless Repeater.

Product was developed and manufactured in the Czech Republic. All rights reserved TESLA. Offer or delivery of products or services related to the product does not include transfer of ownership rights.

Before using the product, please read this manual carefully and understand all operating and safety precautions. Compliance with operational and safety precaution can prevent from damage to equipment or injuries to personnel. Operating and safety instructions in the document are marked as follows:

Attention! This formatted text indicates the operating and safety instructions.

The product may only be used in the specified manner and for its intended purpose. The product may be provided to third persons along with this documentation only.

2 Description and Utilization

Repeater is an autonomous element designed to increase the system range. It provides connection between the central unit and other elements of wireless net where signal is too weak for direct connection. This may happen in an empty space at a long distance. The range in buildings is dependent particularly on building material (walls, partitions, floors, etc.). For example, in case of reinforced concrete skeleton, which represents efficient shielding, problem can occur even at very short distances. Repeater contains radio module which only repeats (retransmits) received data in both directions. The device can be switched ON/OFF by switch. LEDs „STAT“ a „CHRG“ indicate current status of device see 'Operation manual' below. Internal accumulator ensures autonomous operation due for more than 1 year after full charging. For permanent powering is possible to connect power adaptor 230VAC/5VDC.

Attention! For setting and controlling of Repeater it is essential to have wireless Central Unit in system, see <http://www.tesla.cz/>. Central Unit is not included with package of TRR3 and it is sold and delivered extra.

Setting and configuration of TRR3 Wireless Repeater and whole system is also managed by connected computer to Central Unit and TERAvie application on PC.

TERAvie application, drivers and user manual with detail configuration description is free downloaded on website: <http://www.tesla.cz/>.

TRR3 Wireless Repeater can be used in these systems:

- A) TERA System for Radon Concentration Measurement (Figure 1)
- B) TERA System for Regulating Radon Concentrations (Figure 2)

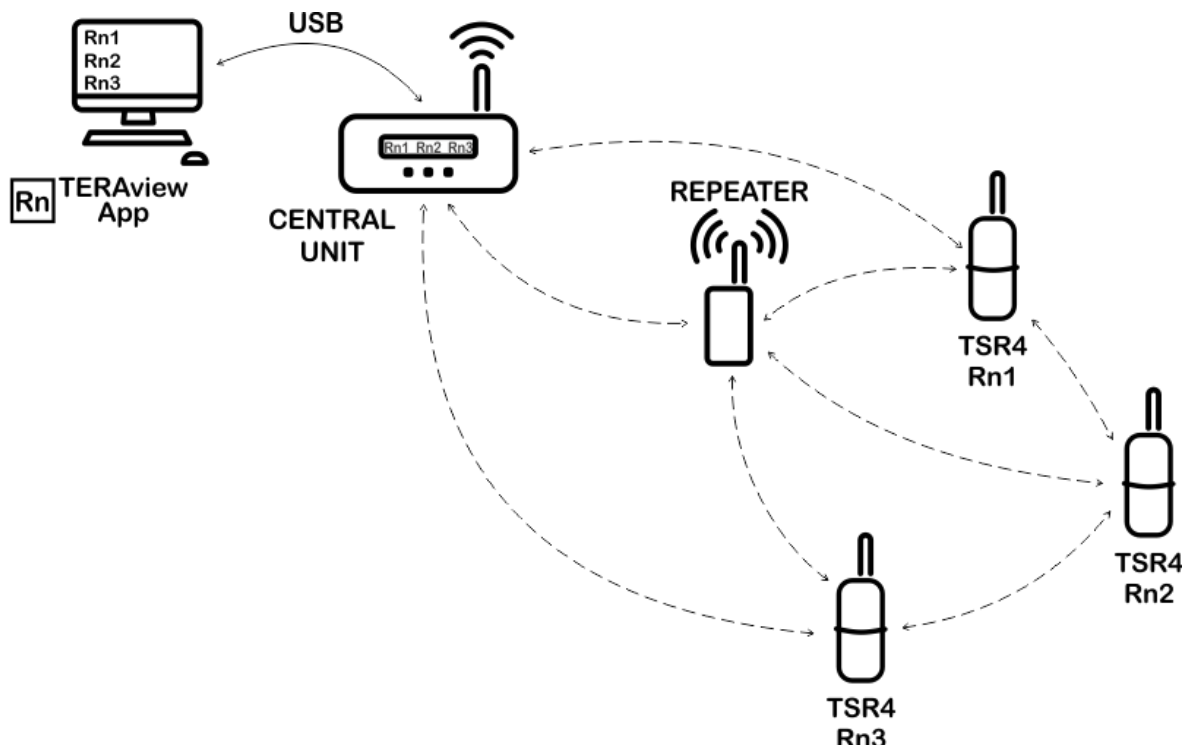


Figure 1 – TRR3 Wireless Repeater in TERA System for Radon Concentration Measurement

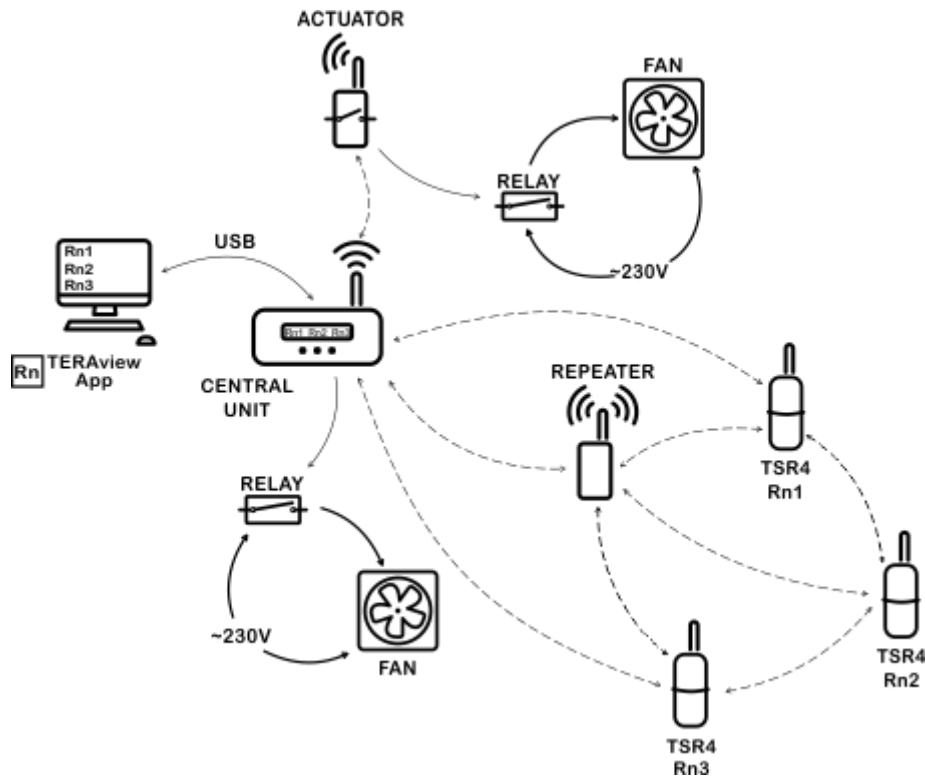


Figure 2 – TRR3 Wireless Repeater in TERA System for Regulating Radon Concentrations

Regulating system diagram description - Radon measuring probes located in building transmit their current radon concentration values to central unit wirelessly. Central unit analyzes this information and on the basis of measured (set) concentration level value it sends wireless command to actuator which is hardwired with power relay. Power relay switches on a fan which decreases radon concentration within an area. After decreasing of radon concentration, actuator receives a command to switch off the fan. This cycle repeats depending on increasing or decreasing volume activity of radon in building.

Repeater is random for location in measured property so that longer radio range is reached in wireless net. In case of time continuous radon concentration measurement or in case of setting in regulation system Repeater must be placed in optimal distance from Central Unit. Distance (radio range) between TRR3 and central unit is up to 600 m in open space. In buildings it depends on number of walls, building material, etc. Strength of radio signals (RSSI) is monitored by Central Unit.

3 Scope of Delivery

- The TRR3 Wireless Repeater
- Power adapter 230VAC/5VDC
- USB cable A-B
- Antenna
- Operation Manual

4 Product Specification

Product	The TRR3 Wireless Repeater
Type symbol	042 127 241 000
Radio interface	868MHz
Power supply	internal rechargeable accumulator
Accumulator life (one charging)	1-2 years
Dimensions	30x60x25 mm

TRR3 has distance (radio range) up to 600 m in open space. In buildings it depends on number of walls, building material, etc.

5 Operating Instruction

Switching on and off:

Repeater provides 2 switches ON and OFF. By short pressing of ON switch the device is switched on into operation state of retransmission. By short pressing of OFF switch the device is switched off totally. Both of state are indicate by LED diode „STAT“ according to chart below. Switching on and off of device is especially designed for quick bond of other elements in wireless network.

LED diode „STAT“:

It signalizes status of device according to following chart:

Color	Description
Green blink after 4s	Repeater is in retransmission operation state
Yellow blink after 4s	Repeater is in retransmission operation state but accumulator is discharged
No light, No blinking	Repeater is switch off or accumulator is empty or device is damaged. Charging process of accumulator is described in chapter „Basic Maintenance/ Accumulator charging“

Antenna installation:

Supplied antenna is screwed on antenna connector. When installing antenna, hold antenna by knurled end.

Wall mounting

The packaging of the device is intended for disassembly without loss of warranty for fixed mounting of the device, for example on a wall. Remove the plastic caps on the top corners of the package and loosen the screws. The top cover is easy to remove. At the bottom of the package, pre-prepared dimples are available for drilling of mounting holes.

Power supply:

According to operation method of device can be supplied:

- 1) By internal accumulator for portable use – Device includes internal accumulator which is able to ensure autonomous operation of device for more than 12 months without charging. Depends on

frequency of wireless data retransmitting and depends on climatic condition of device use. Accumulator is charged over USB port and over provided USB cable. The USB cable is possible to connect to PC or to delivered power adapter. Status of accumulator and charging process are described in paragraph 'Basic Maintenance/Accumulator charging'

- 2) By mains power supply 230V/50Hz for stationary use – Device is permanently supplied by delivered power adapter 230VAC/5VDC. Power adapter is connected to device via provided USB cable. In case of blackout the internal accumulator ensures UPS function.

Configuration:

Setting and configuration of Repeater and whole measuring system is realized by Central Unit connected to PC and TERAview application. Central Unit is not included with package of TRR3 and it is sold and delivered extra; see <http://www.tesla.cz/>.

TERAview application, drivers and user manual with detail configuration description is free downloaded on website: <http://www.tesla.cz/>.

For successful repeater configuration in measuring system it is necessary to know repeater radio channel number (communication wireless channel) and P2P address (identification in wireless net). Both parameters are printed out on repeater serial number plate. Repeater radio channel number is possible to change by TERAview application and it must be identical to central unit radio channel number. P2P address is permanent and it occur in one big wireless net only once. Only P2P address of Central Unit can be identical to P2P address of other elements in network.

6 Basic Maintenance

Accumulator charging:

During portable use of device is essential to monitor state of internal accumulator and recharge it if necessary. If accumulator is discharged the device automatically turns off.

Current state of accumulator can be determined by these ways:

- 1) By LED diode 'STAT' - If LED starts blinking in yellow color it indicates low voltage of accumulator. (see paragraph "Operation Manual / LED diode "STAT"")
- 2) In TERAview application - where you can check current accumulator voltage. Voltage should not fall below 3.5 V, in limit conditions falls below 3.3V.

Accumulator is charged via USB port using supplied USB cable. USB cable can be connected to PC or to supplied power adapter. Connect USB cable with power to USB port of device. LED diode 'CHRG' next to USB port of device indicates charging status according to following chart:

LED diode 'CHRG'

Color	Description
Green	Accumulator is fully charged
Yellow	Accumulator is being charged
Green - Yellow alternate blinking	Accumulator is damaged, contact Service Center
No light, No blinking	It is not connected to an external power supply or device is damaged.

Accumulator is fully charged when LED diode 'CHRG' is green. You can disconnect USB cable.

7 Repairs

Any repairs and non basic maintenance must be performed exclusively by Tesla manufacturer.

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8 Warranty

This product is covered by warranty of 24 months from purchase date. In case of warranty claim, please contact our Service Department.

Warranty covers any defects in materials or workmanship and excludes any damage resulting from or caused by transport or handling or by any misuse.
Warranty ceases if product has been used improperly or its seal is broken.
In case of warranty claim, warranty period is prolonged by number of days the product was undergoing warranty repairs.
After the end of its life, product must be handled as e-waste.

9 EC Declaration of Conformity

EC Declaration of Conformity will be delivered by Tesla producer on request. If interested, please use contacts on web sites www.tesla.cz.

10 Accessories

TRR3 Wireless Repeater accessories is available at producer www.tesla.cz or distributor.

Reserve antenna



11 Revision History

Revision	Date	Comments
Rev.1:	30. 9. 2020	Initial release