

High- and Low frequency



- **New model 2021** with slightly extended functions compared to the proven ESI 24
- the all-in-one device for daily use
- ideal for technical laymen
- in handbag format, also ideal for travelling (approx. 135 g)
- for easy detection of high-frequency electromagnetic waves (HF) and low-frequency electric fields (AWF), as well as alternating magnetic fields (AEF)
- for uncomplicated assessment of the exposure situation and quick control of existing shielding measures
- helps to quickly and easily identify the sources of EMF electrosmog
- uncomplicated finding of areas with low exposure due to extended HF mode
- The ESI 34 is a completely newly developed, easy-to-use Trifield EMF indicator with excellent accuracy. Helps detect **high frequency radiation and low frequency alternating electric and magnetic fields**. This allows for a simple and sound assessment of your personal field exposure.

The ESI 34 displays the measured field strengths by LEDs in traffic light colours. The detected values are determined via an easy-to-read table.

In addition, there is an audio signal to identify the sources, the pitch of which increases proportionally to the EMF field strength.

EMF sources that are detected by the ESI 34:  
Cordless phones DECT, WLAN, Wi-Fi, mobile phone transmitters, high-voltage lines, electrical installations, baby monitors, microwave ovens, mobile phones, etc.

**Order-No.: 500986**  
Short-Desc.: ESI 34

### Multifunction indicator

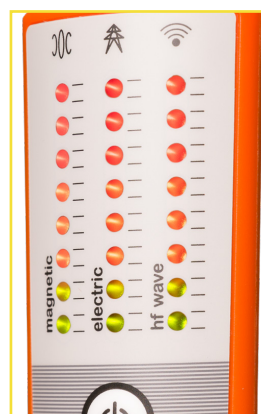
#### ESI 34

### Technical data

dimensions unit:	180 x 40 x 27 mm
packing dimensions:	290 x 85 x 65 mm
frequency range:	10 Hz - 10 GHz
measuring range:	high frequency HF power flow density 1 MHz to 10 GHz in $\mu\text{W}/\text{m}^2$ alternating magnetic fields low frequency 10 Hz to 5 kHz in nT alternating electric field LF Low frequency: 10 Hz to 5 kHz in V/m
AWF= (three-dimensional)	
AEF= (one-dimensional)	
accuracy:	optical display: by means of LEDs High-resolution HF mode
sensor:	HF diode, field plates, processing by means of microcontroller
audio analysis:	audio signal, pitch changes with increasing field strengths
displays: signal weighting:	LEDs: green, orange, red and combinations of adjacent LEDs
power supply:	9 Volt E-block commercially available block battery / rechargeable battery
average operating time:	10 to 15 h in continuous operation (depending on mode)

### Scope of delivery

- EMF indicator (Cemprotec ESI 34)
- detailed operating instructions



## Some ideas for limiting your exposure to radiation

1. Use a low-radiation cordless phone for short calls and a corded phone for long calls (if necessary we can refer you to manufacturers).
2. Set up call forwarding from your mobile phone to a landline phone when you are at home or in the office.
3. If possible, ground your Internet box (making sure you comply with the manufacturer's conditions of use).
4. Favour an internet connection with an Ethernet cable. When you use the cable, remember to turn off the WiFi. For computers not equipped with RJ45 sockets, you can buy small adapters that plug into USB sockets.)
5. Use a timer or a switch on the internet box power supply so you can cut it off at certain times of the day or night if necessary.
6. Use a USB grounding kit for a laptop.
7. Use shielded extension cords and multi-sockets at home or in the office.

### WARNINGS

CEMPROTEC is by no means a measuring device  
CEMPROTEC is a detection device that gives tendencies and approximations in relation to radiation.

The human body is likely to directly affect detection. For more accurate detections, hold the device at least 50cm away from you.

The devices are calibrated in an environment at a temperature of 20°C and a humidity level of 45%.

—  
Store CEMPROTEC in a dry place with low humidity.

All modifications to this device are not authorized and will void the warranty.  
Keep the device away from children

### Technical Specifications

- ◆ Powered by 9V battery, non-rechargeable .
- ◆ Maximum current: 50mA
- ◆ Device dimensions: 179,5 x 46 x 32,2 mm
- ◆ Device weight: 80g
- ◆ Ideal temperature usage: -10°C +50°C
- ◆ Cleaning recommendations: To clean, use a soft, slightly damp cloth with household/ rubbing alcohol



Evaluation Pollutions Electromagnétique & Conseil  
offers its expertise in the detection and control of  
electromagnetic radiation

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## User Guide



### Electromagnetic field detector

- High frequencies from 1 MHz to 10 GHz 
- Low frequencies (electric and magnetic field) from  
10 Hz to 5 kHz

EPE Conseil would like to thank you for purchasing  
CEMPROTEC, before using it, please read this guide in its  
entirety, especially the "Warnings" section.

This section specifically indicates the terms of use so that  
CEMPROTEC is used safely and within the warranty limits.



## What is electromagnetic pollution?

There are mainly two "families" of electromagnetic radiation:

**High-frequency radiation:** Generated by popular wireless systems such as connected objects, Wi-Fi, cell phone towers/ antenna arrays, cell phones, fixed wireless phones, Bluetooth, baby-phones, etc.

**Low-frequency radiation:** This concerns all appliances connected to the electrical network, medium and high voltage power lines, electrical panels and motors.

Cables and electrical systems can create an electric field and also a magnetic field depending on the power.



### Inserting the device battery

**Installing the 9V battery (supplied):** The 9V battery must be connected respecting the + and - terminals on the black connector.

**Battery level display:** When switching the device on the battery level is displayed for 3 seconds in the middle row of LEDs, while the other LEDs are off at this point. The LEDs will light up from the red one at the top, stopping at the relevant LED to show the battery level. The green LEDs at the bottom represent a full battery.

**Battery saving mode:** To save power the device will automatically switch itself off after 20 minutes. For frequent usage, it is recommended to use a rechargeable battery.



### Using your detector, there are two main functions!

#### 1. Standard Mode:

As soon as the device is turned on, it is in « Standard Mode » This mode detects the magnetic field, the electric field, and high frequencies (radio frequencies) separately.

#### 2. Full HF Mode:

Press the HF ONLY **briefly**. This function only allows the detection of high frequencies (therefore not electric and magnetic fields). The LEDs light up from the bottom to the top, from left to right. The corresponding LED values are on page 5 of this manual.

To turn off the SOUND press and hold the **HF ONLY** button.

## Usage guidance

### Interior or exterior pollution?

The first time you use the device you may be surprised by the level of exposure if it is higher than expectations.

It is absolutely necessary to identify the cause(s) of radiation to have the clearest possible "picture" of the situation; this will make it possible to apply suitable and effective protection/shielding solutions against the nuisances observed.

To help you quickly identify your electromagnetic exposure:

1. Turn on the device in Standard mode (with or without speakerphone on)
2. Move slowly from room to room, paying particular attention to the areas where you stay for a long time (e.g. the bedroom, living room, office). If possible after, switch off the electricity in your home for a few moments and then repeat the same detection room by room.
3. If the levels are the same, it means that the radiation is coming from outside. If they are lower, it means that you have an exposure generated by your own electrical installation or a system (s) connected to it.

For outside radiation, some effective solutions can be used such as paints, fabrics, curtains and plastic films on windows. These products act as screens and greatly reduce the penetration of outside radiation coming inside. However, it is important to choose the right solution according to the type of radiation that is detected, as unfortunately there is no effective solution that works for all types of radiation.

### How to find the polluting devices inside?

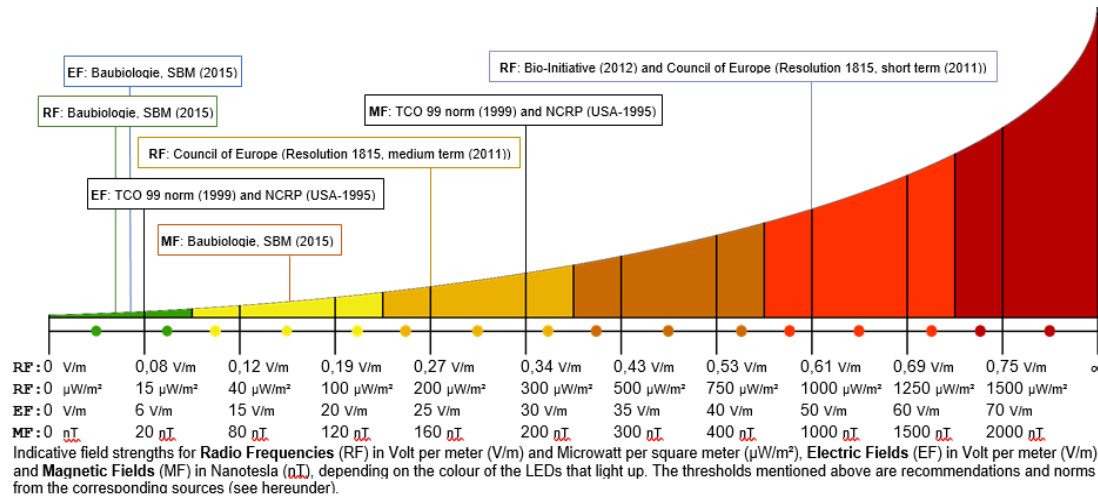
It is advisable to use the detector and check the radiation level room by room.

The polluting systems are mainly cordless phones (DECT), WiFi, alarms, and various connected objects. If you unplug each device for a few moments you should immediately notice a decrease in radiation with your detector.

Please note! If you measure an internet box and you have a DECT phone next to it, you must be careful to dissociate the two sources because these two systems have the same type of radiation (high frequency).

## STANDARD MODE GRAPH WITH THRESHOLDS

(radiation power indicated by each row of 8 LEDs )



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- Council of Europe. (2011). Resolution 1815 (2011) Final version. In the potential dangers of electromagnetic fields and their effect on the environment. Retrieved November 16, 2015, from <http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=17994&>. (recommendation)
- NCRP, (1995) "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields", NCRP Report No.86, Bethesda, Maryland, USA. (norm)
- TCO Development. (2012). TCO-Certified-Displays-6.0. In TCO Development. Retrieved November 16, 2015, from <http://tcodevelopment.com/files/2013/04/TCO-Certified-Displays-6.0.pdf#page=28>. (norm)

## Detection level display

The 3 rows of LEDs display the detected radiation levels:

- **Magnetic:** Example of sources > transformers, telephone chargers, electrical panels and electrical transformers, high voltage lines.
- **Electric:** Example of sources > bedside lamps, various electrical appliances plugged into the mains, computers, power supplies, sockets, switches.
- **High Frequency:** Example of sources > WiFi, cell phones, cell phone antennas, connected objects, baby phones, fixed wireless phones.

### How it displays:

- If there is no radiation, the first green LED stays on.
- If radiation is detected, its level is reflected by the LEDs being lit.
- The LED's value is explained on page 7 of this manual

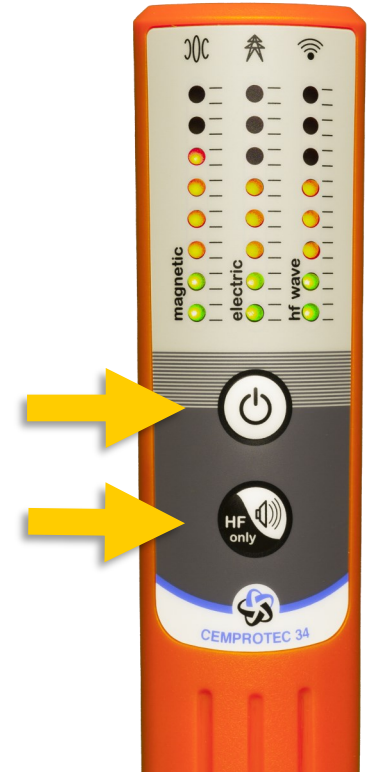


### ON - OFF Button

- Press once to turn on the device
- Press and hold to turn off the device

### HF ONLY button with or without sound:

- Press once to turn on/off the FULL HF
- Press and hold the button to turn on/off the speaker



Initial State	Action	Final State
Device off	Press the ON/OFF button	The device is turned on
Device on	Press and hold on the ON/OFF button	Device is switched off
Full HF function deactivated	Press the HF ONLY button	The Full HF function is activated
Full HF function activated	Press the HF ONLY button	The Full HF function is deactivated
Loudspeaker is on	Press and hold on the HF ONLY button	Loudspeaker is switched off
Loudspeaker is off	Press and hold on the HF ONLY button	Loudspeaker is switched on

## 1. Detection in Standard Mode:

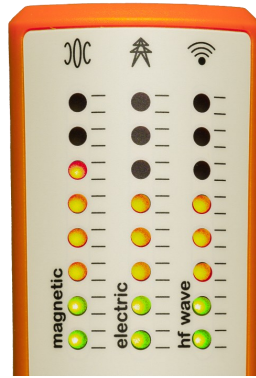
The standard mode is very practical and allows the simultaneous detection of electric and magnetic fields and high frequencies **with or without sound**.

The device makes radiation easily "visible" therefore making the sources more easily identifiable.

It can also be used to verify the protection solutions that have been put in place to reduce exposure to waves.

1. Briefly press the "on-off" button to switch the unit to standard mode.
2. Hold the detector with your arm slightly extended forward.
3. **Move around slowly** to detect electromagnetic fields. The device performs a new detection every two seconds.

NB: To **activate or deactivate** the sound, press and hold on the select button.



## Standard Mode Table:

It indicates the power of radiation by each row of 8 LEDs and 14 levels. The table indicates the numerical values for the LEDs :

- **The magnetic field** with a 3D detection spectrum of 10 Hz to 5 kHz.
- **The electric field** with a detection spectrum of 10 Hz - 5 kHz.
- **The high-frequency field** with a detection spectrum of 1 MHz to 10 GHz.

Levels :	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
LED :															
G = green LED Y= yellow LED R = red LED	G1	G1 + G2	G2	G2 + Y1	Y1	Y1 + Y2	Y2	Y2 + Y3	Y3	Y3 + R1	R1	R1 + R2	R2	R2 + R3	R3
EF in V/m :	0	6	12	17	22	26	30	34	39	45	52	60	70	80	90
HF -in $\mu\text{W}/\text{m}^2$ :	0	15	40	70	110	150	200	300	500	750	1000	1250	1500	1750	2000
-in V/m :	0	0,08	0,12	0,16	0,19	0,23	0,27	0,33	0,43	0,53	0,61	0,69	0,75	0,81	0,86
MF in nT :	0	20	60	100	140	180	220	300	400	650	1000	1500	2000	2500	3000

## 2. Detection in FULL HF Mode:

The FULL HF mode enables an enhanced sensitivity detection that corresponds to the tolerance thresholds of electro-sensitive people.

In Standard Mode, high-frequencies are detected by 8 LEDs. In FULL HF Mode there are 24 LEDs for greater accuracy. The LEDs light up from LEFT to RIGHT from the BOTTOM to the TOP.

The detected high-frequency sound corresponds to a FINE ACOUSTIC ANALYSIS which is very useful. This allows the sources to be **identified by a sound proportional to the modulated frequency**. In other words, this function allows the ear to differentiate between different sources of radiation. For example, if it is from the WiFi, a DECT phone, or an antenna. However, if the SOUND bothers you, it can be easily turned off by **pressing and holding** the HF ONLY button.

Electromagnetic waves from base stations, Wifi/WiMax networks, or DECT phones, connected objects, etc.

1. Press the ON/OFF button briefly to turn on the standard mode.
2. Press the "HF ONLY" button to activate **the high-resolution HF mode**
3. Hold the detector with your arm slightly extended forward.
4. **Move around slowly** to detect electromagnetic fields. The device performs a new detection every two seconds.

Note: In this mode, all 24 LEDs are used for wave detection. The LEDs at the bottom of the display indicate the lowest radiation level, while the LEDs at the top of the display show the highest level.

## Hypersensitive mode table:

When the FULL HF function is activated, the unit detects only high-frequencies.

Radiation power is indicated by all 24 LEDs, from left to right from the bottom to top, with a detection spectrum of 1 MHz to 10 GHz.

High-frequency levels:	0	1	2	3	4	5	6	7	8	9	10	11
in $\mu\text{W}/\text{m}^2$ :	0	1	2,5	10	20	40	50	75	100	140	180	225
in V/m :	0	0,02	0,03	0,06	0,09	0,12	0,14	0,17	0,19	0,22	0,25	0,29
levels :	12	13	14	15	16	17	18	19	20	21	22	23
in $\mu\text{W}/\text{m}^2$	300	400	550	750	1000	1250	1500	1750	2000	2250	2500	2750
in V/m :	0,33	0,38	0,45	0,53	0,61	0,69	0,75	0,81	0,86	0,92	0,96	1