

# esi 24 - QUICK START GUIDE

**EMF Detector / Electro-Smog Detector - with high-resolution RF mode (enhanced sensitivity)**  
**50 MHz to 8 GHz frequency range - excellent Wi-Fi / WLAN detection**



**Tables for standard operating mode** (display shows field strength by means of LED light-emitting diodes)

**Low-frequency magnetic and electric fields.** Measuring range 16 Hz - 3 kHz.

Values* for the esi 24 Detector	unnoticeable	slightly noticeable	slightly noticeable	noticeable	noticeable	very noticeable	very noticeable	extremely noticeable	extremely noticeable
	<b>Green</b>	<b>Green/Amber1</b>	<b>Amber 1</b>	<b>Amber1/Amber 2</b>	<b>Amber2</b>	<b>Amber2/Red1</b>	<b>Red1</b>	<b>Red1/Red2</b>	<b>Red2</b>
<b>Alternating magnetic field *</b> in nT (= Nanotesla)	< 20	20... 80	80 ... 120	120 ... 160	160 ... 200	200 ... 300	300 ... 400	400 ... 1000	> 1000
<b>Alternating electric field *</b> in V/m (= Volt per meter)	< 6	6 ... 15	15 ... 20	20 ... 25	25 ... 30	30 ... 35	35 ... 40	40 ... 50	> 50

\*All values are peak values. The values for individual units can slightly vary from the values specified in the table as a result of differences in individual electronic components.

**High-frequency field strength (radio waves and microwaves).** Measuring range 50 MHz - 8 GHz, values in  $\mu\text{W}/\text{m}^2$  (= microwatts per square meter).

Values* for the esi 24 Detector	unnoticeable	slightly noticeable	slightly noticeable	noticeable	noticeable	very noticeable	very noticeable	extremely noticeable	extremely noticeable
	<b>Green</b>	<b>Green/Amber1</b>	<b>Amber1</b>	<b>Amber1/Amber 2</b>	<b>Amber2</b>	<b>Amber2/Red1</b>	<b>Red1</b>	<b>Red1/Red2</b>	<b>Red2</b>
Frequencies around 0,9 GHz *	< 2	2 ... 4	4 ... 10	10 ... 20	20 ... 31	30 ... 50	50 ... 75	75 ... 100	> 100
Frequencies around 1,9 GHz *	< 10	10 ... 20	20 ... 45	45 ... 85	85 ... 130	130 ... 200	200 ... 300	300 ... 450	> 450
Frequencies around 2,5 GHz *	< 20	20 ... 40	40 ... 100	100 ... 200	200 ... 300	300 ... 500	500 ... 750	750 ... 1000	>1000
Frequencies around 5,0 GHz *	< 80	80 ... 150	150 ... 380	380 ... 750	750 ... 1100	1100...1850	1850...2800	2800...3900	> 3900

\* All values are peak values. The values for individual units can slightly vary from the values specified in the table as a result of differences in individual electronic components.

## Table for high-resolution RF mode (enhanced sensitivity) - EMF Detector esi 24

Measuring range 50 MHz - 8 GHz, values in  $\mu\text{W}/\text{m}^2$  (= microwatts per square meter), table of values is optimised for frequencies ~ 2.5 GHz

HF-radiowaves & microwaves	Radiation level in $\mu\text{W}/\text{m}^2$ * (~ 900 MHz)	Radiation level in $\mu\text{W}/\text{m}^2$ * (~ 1,9 GHz)	Radiation level in $\mu\text{W}/\text{m}^2$ * (~ 2,5 GHz)	Radiation level in $\mu\text{W}/\text{m}^2$ * (~ 5,0 GHz)
LED1+2	> 0,06	> 0,25	> 0,6	> 2,5
LED3	> 0,25	> 1,0	> 2,5	> 10
LED4	> 1,0	> 4,2	> 10	> 40
LED5	> 2,2	> 8,8	> 20	> 80
LED6	> 4,2	> 17,0	> 40	> 150
LED7	> 5,5	> 22,0	> 50	> 200
LED8	> 8,5	> 33,0	> 75	> 300
LED9	> 11,0	> 43,0	> 100	> 380
LED10	> 27,0	> 105	> 250	> 950
LED11	> 52,0	> 205	> 500	> 1850
LED12	> 78,0	> 310	> 750	> 2800
LED13	> 110	> 435	> 1000	> 3900
LED14	> 140	> 550	> 1250	> 5000
LED15	> 165	> 650	> 1500	> 5900

\* All values are peak values. The values for individual units can slightly vary from the values specified in the table as a result of differences in individual electronic components.

## Operation of esi 24

### • Insert / change battery:

Open the battery compartment, connect the 9 V-battery to the terminal and then place battery in the compartment.

**Warning:** Please make sure that the battery cable is not put underneath the battery but is placed at the side of the battery, between the battery and the compartment wall. Failure to comply with instructions can cause damage to cable and / or battery compartment lid to not close properly.

### • How to turn on the unit:

To switch the device on, press and release the “on/off” button once.

- Battery check starts: LEDs on top of the unit are activated for 0.5 seconds; green for battery power 25...100%; red for battery power < 25% - replace battery soon! Red LED flashing - battery too low for getting proper results - unit shuts down.
- LED green – amber – red for each field type are activated briefly (testing of LED function).
- The sound is activated.



When switched on, the esi 24 electrosmog-detector is in **standard operating mode**.

To switch the sound on/off, press and hold the “on/off” button once.

To switch the device off, press and release the “on/off” button once.

**For best detection of Electro-Smog, hold the esi 24 electrosmog-detector with your arm extended away from your body. Keep unit in place without moving it, to allow ample time for the microcontroller to collect data from the sensors, and to calculate correct activation of LED.**

### • Standard operating mode:

In standard operating mode the LF electric and magnetic field strength and the HF power flux density / field strength are measured simultaneously.

- **LF magnetic and electric fields:** electrical equipment, computers, lighting, radio alarm clocks, network components ...
- **Radio waves (high frequency):** cell phone towers, cell phones, DECT cordless telephones, wireless internet (wi-fi), baby monitors,
- **Radiation leakage from microwave ovens**

Radiation levels / EMF levels increase and decrease as a result of:

- the distance from the source
- the power of the source / transmitter
- the type, structure and direction of the transmitter
- reflection of the radiation by neighbouring objects
- environmental, geographical and weather conditions
- the type, structure and shielding properties of the buildings concerned

Sound frequency changes with increasing field strengths.

- **High-resolution RF mode (with enhanced sensitivity):**

To change to high-resolution RF mode, press and release the “select” button once.

The display is now in high-resolution RF mode.

LED 1 and 2 will light up. All 15 LEDs now show HF radiation.

LED 1 (bottom left) shows the lowest radiation, LED 15 (top right) shows the highest radiation level.



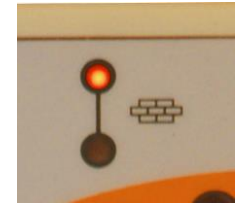
- **Locating mode:**

To change to locating mode, press and release the “select” button once again.

The two LEDs at the top of the display unit are activated. The lower green LED is activated permanently, the upper red LED comes on when an electric field is present.

In locating mode, concealed electric cables, junction boxes and similar can be located.

The esi 24 will detect a 110 V live wire / currency-carrying wire from approx. a 10 cm distance / 4 inch distance.



- **“Hold” mode:**

To switch to “hold” mode, press and hold the “select” button once again.

The reading is held on the display and LEDs are flashing.

“Hold” mode is useful for measurements where the display is difficult to read or cannot be seen at all, such as under a bed or desk or behind a piece of furniture.

*Please note: Hold mode is not available in locating mode.*

To switch off the device, press the “on/off” button once. The device can be switched off from any mode.



- **Checking the battery:**

The esi 24 electro-smog detector automatically checks the battery level.

If battery power is low, the red locating mode LED flashes several times and the device switches off automatically.

Reliable indication of field strength cannot be provided until the battery is replaced.

Do not throw away the 9 V battery; it may be possible to use the battery in other devices (e.g. remote controls or similar).