

Radiation scanner Model 900



*USB port
Automatically store data
Data analysis software in
Chinese and English
 α β γ ray selection
Real-time data transmit to
computer
Large high definition LCD
display*

In 2008, Coliy Technology GmbH acquired Joint Systems Co. and upgraded the Radiation scanner Model 900 comprehensively, which made more than 20 improvements on the basis of original functions enabling it more powerful and reliable. For example, it adds function of calibration factor so that the clients could adjust the calibration parameters by themselves. And the function of average time setting improves the sensitivity of response when necessary. Radiation scanner Model 900 was designed to prevent terrorist attack after 9.11. With its powerful functions, it could be used under severe conditions. Due to its resistances to high impact and high or low temperature, it offers the reliable and precise measurement data. Available of high strength body, the 2009 version of Radiation scanner M900 is of small size, very light and strong. It can detect α 、 β 、 γ and X-ray, adopted the nuclear radiation sensor manufactured by American Bureau of Standard that is the small size radiation sensor of best performance in the current market.

Applications

Radiation scanner Model 900 could be used widely in the fields of pharmaceutical factory, laboratory, power plants, quarries, emergency rescue stations, metal treatment plant, underground oil field and oil pipeline equipment, environmental protection, police station etc. It is used for:

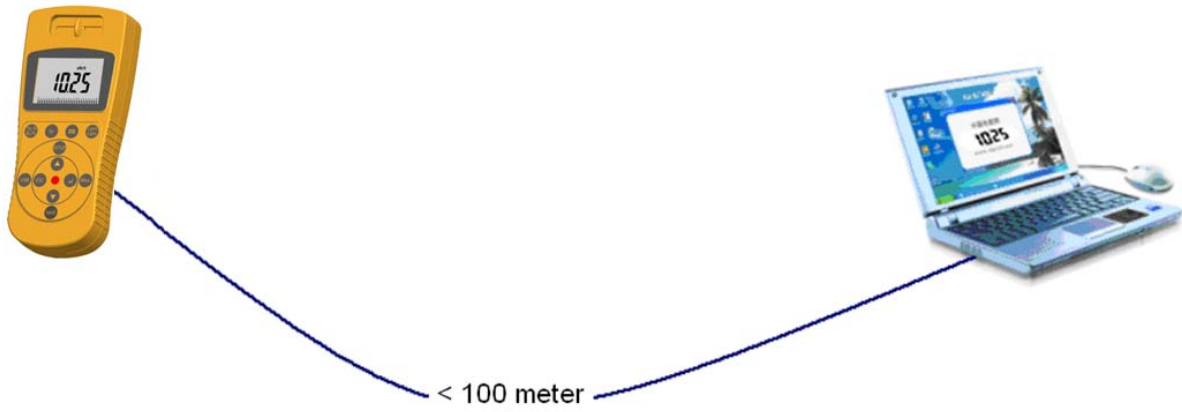
- Inspecting underground water, radium pollution
- Inspecting radioactivity of underground drilling pipes and equipment
- Inspecting radon radiation and cesium pollution of surrounding environment
- Inspecting radioactivity of architecture materials, such as stone etc
- Inspecting radioactivity of porcelain, tableware and glass etc
- Inspecting local radiation leakage and nuclear radiation pollution
- Inspecting the danger of nuclear radiation in landfill and garbage dump
- Inspecting harmful radiation of personal precious property and jewelry
- Inspecting X-ray intensity of Medical and industrial X-ray instrument from

Features

- Ray selection switch
- Function of holding Maximum
- Display the adjustable average time
- Automatically store the sample data
- Accumulate the radiation measurement data
- Calibration every five years
- Design of compact and anti-impact, easy carry
- In accordance with the principle of Ergonomics with comfortable hand feel
- USB port connecting computer and available of analyzer software with plentiful functions
- Transmit current data, displayed and analyzed real-timely on computer
- Large high definition LCD display, easy to read

Specifications

Types of measured Ray	α 、 β 、 γ and X ray
Range	Radiation dose rate: 0.01 μ Sv/h-1000 μ Sv/h Impulse dose rate: 0-30,000cpm, 0-5, 000cps Radiation dose accumulation: 0.001 μ Sv-999999Sv Impulse dose accumulation: 0-999999
Sensitivity	108pcs impulse or 1000 cpm/mR/hr in Cobalt-60 radial environment with power of 1 μ Sv/h Alpha ray: from 4 MeV Beta ray: from 0.2 MeV Gamma ray: from 0.02 MeV X ray: from 0.02 MeV
Ray selection switch	α β γ X rays selection
Sensor	Halogen filled detector
Output port	USB Port (with special USB extend cable to opt, which can extend to 100M)
Average time	Default:32 seconds, adjustable from 2s to 120s automatically or manually
Display	6-digit Large display (LCD), numeric with all inspection data, with bar chart: Radiation dose rate、impulse rate、Radiation dose accumulation、impulse dose accumulation、time、date、alarming value、standard calibration factor、max. radiation dose rate
Calibration	Calibration factor adjustable directly
Alarm	Alarming value settable freely, default: 5 μ Sv/hr
Precision(Calibration source Co-60 ray)	<10%(500 μ Sv/h 以下) <20%(500 μ Sv/h 以上)
Storage	storing a thousand data manually or automatically
Software	Transmit data in real-time to computer for displaying, analyzing and recording.
Working temperature of detector	-40 $^{\circ}$ C to 75 $^{\circ}$ C
Weight	250g
Dimension	L 170 mm, W 74 mm, H 30 mm
Power	3 AAA batteries to work 30 days consecutively
Quality certificate	European CE, US FCC15
Warranty	1 year



Dada is transmitted in real-time to computer for displaying and analyzing.

Radiation scanner Model 900 has two types: Model 900 and Model 900+.

1. Model 900: Ray type selection switch, radiation current value, radiation accumulative value, impulse current value, impulse accumulative value.
2. Model 900+: Add functions on the basis of Model900: sound alarming when overranging, computer analysis software in Chinese version (optional English, German, Italian), current data transmitted remotely to computer for displaying and analyzing, record manually and automatically, Maximum hold.

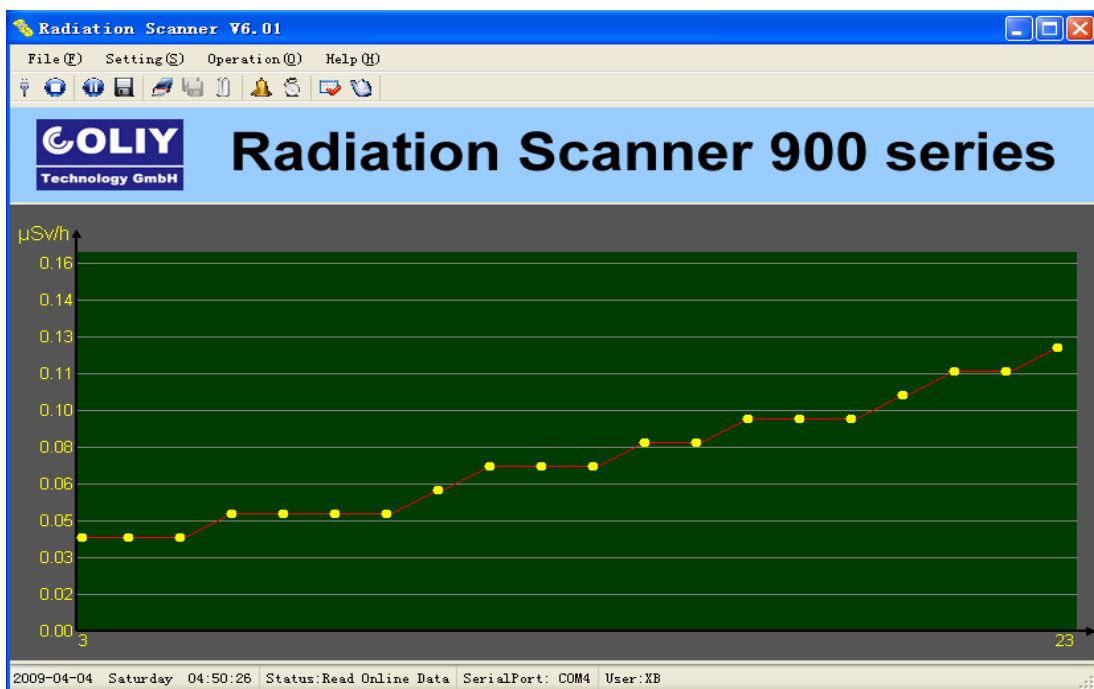
Option:

5 M USB cable.

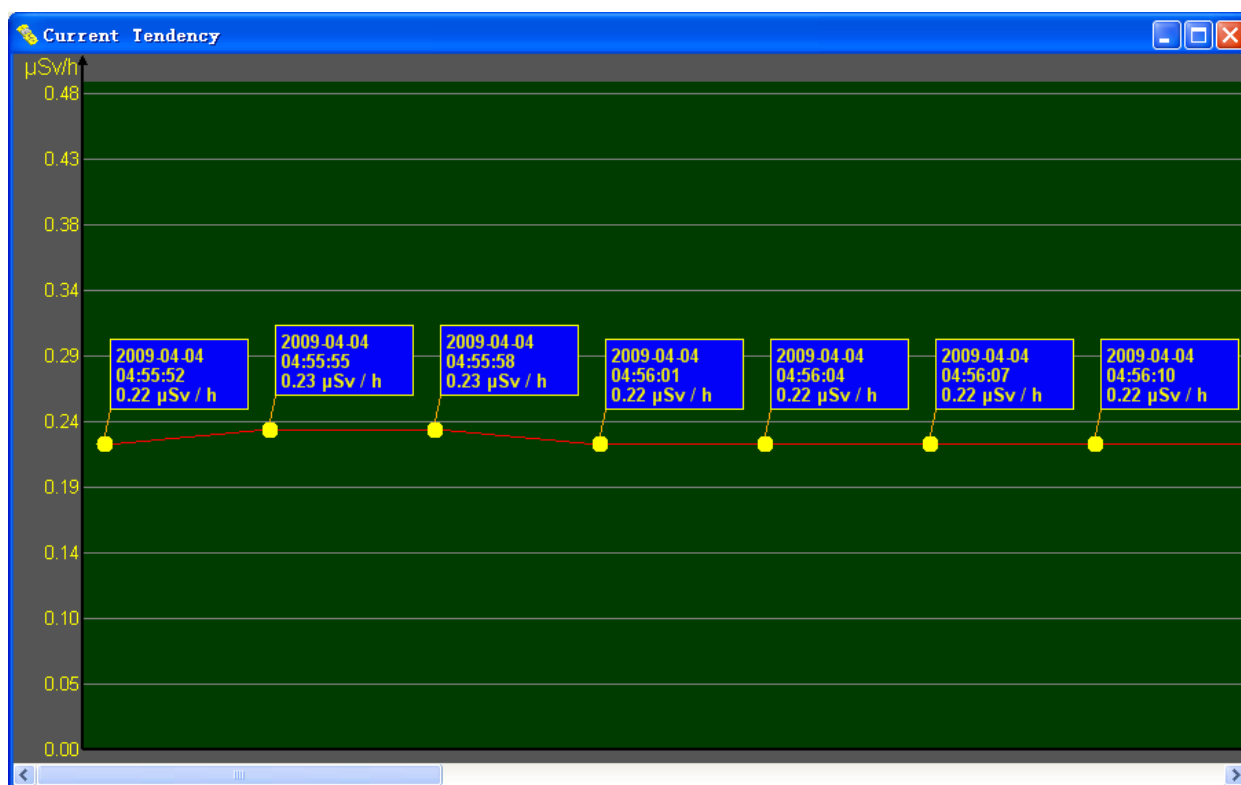
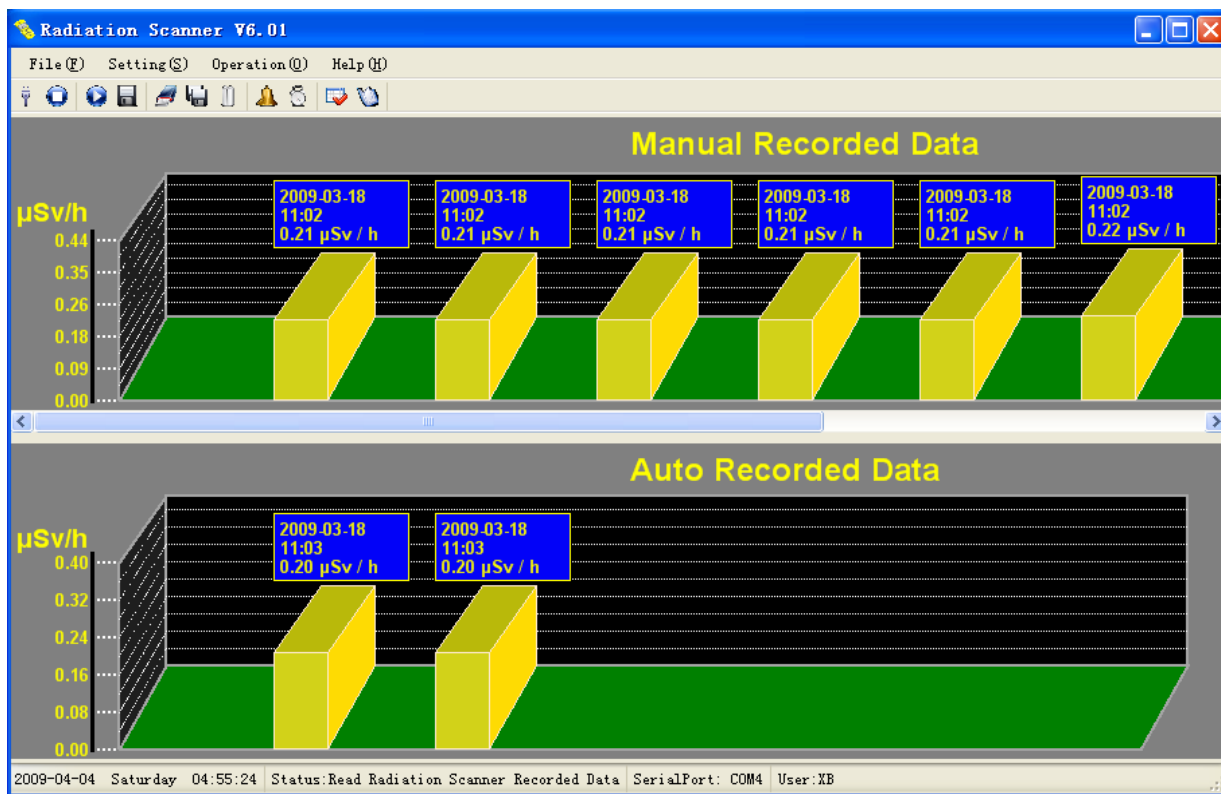
USB extender with cable of 50M;

USB extender with cable of 100M.

Software



Software



Appendix 1 Frequent asked questions:

1. Is Radiation scanner Model900 suitable for my usage?

Model 900 has 4 main groups of customers. The first group is security organizations, such as police and fire departments, emergency response organizations, environmental organizations, hazardous materials disposal and metal recycling companies. Maybe they just check the parcel, suitcase, car, loose materials etc. The second is individuals who care about personal safety. For examples, someone want to check at home the environmental pollutions in food, water etc. (caused by the accident or terrorist attack). The third is educators or hobbyists want to test a variety of materials or display radioactive rays. The last is in the field of medical treatment as radiologists, dentists, hospitals, laboratories, Food and Drug Administration. The baseline is if you believe you might meet radioactive rays, (even if the possibility is far away) and you want to protect yourself from the potentially lethal contaminants, you definitely want to have the radiation scanner Model 900.

2. Is Radiation scanner Model 900 detectable to polonium -210 that caused the death of the former Russian agent?

Polonium -210 is a sort of highly toxic radionuclide, and its toxicity is a hundred times of iodine -131 used for test of nuclear medicine in hospital. But it emits the alpha rays which is very easy to be shield for its very short range. It could be harmful to human body after inhaling or eating. Radiation scanner Model 900 can definitely detect Polonium -210. That's why the sales is increased significantly of radiation scanner Model 900 in the world recently.

3. After nuclear accident or terrorist attack, how helpful would Radiation scanner Model 900 be?

Radiation scanner Model 900 is originally conceived to use in accidents similar to 9.11. Its characteristics make it the best device in such situations. In the circumstances of possible terrorist attack, except in the center of nuclear explosion, you can escape the danger of nuclear radiation by using the radiation scanner Model 900. It can easily detect changes in radiation levels around you. Radioactive contaminants may drift into your house, contaminating your food or water. With 900 radiation instrument you have not to check the radiation level every day for its built-in memory can record radiation values and allows you to download measurement data to your PC. If it is detected that the radiation level exceeds limit setting, the device would alarm.

4. Nowadays how risk is radiation?

Generally people never think about the radiation in their ambiances. Actually the potential danger results in harm. Now there are various radioactive sources causing the human body disease

and death in a few years. Risks are frequently caused by the recycling scrap metal of nuclear plants, unannounced or unknown leak of nuclear plant and nuclear waste. Once there was a building that is made of coal ash bricks exceeding standard in radiation, which caused the residents being sick continuously. After 9/11 a new danger emerges that the terrorists attack the city by dirty bombs (note: a small nuclear bomb) or destroy the nuclear plant. In the unstable security circumstances there is even possibility of low-intensity nuclear confrontation (as in India, Pakistan, Iran and North Korea). In such incident the radioactive particles could be spreading through the jet stream around the world. No body would be in safety.

5. What is measurement unit of the radiation scanner Model 900?

Radiation scanner Model 900 shows the radiation exposing rate by $\mu\text{Sv/h}$, mSv . mSv (microSievert) is accepted worldwide as the dose unit. In modern times REM was also used.

REM is transformed to Sieverts in ratio: $1\text{REM} = 0.01\text{Sv} = 10\text{mSv} = 10,000 \mu\text{Sv}$

$1\text{mREM} = 0.001\text{REM} = 10 \mu\text{Sv}$

6. How can I know that I am in danger?

The radiation level around the world is about $0.05\mu\text{Sv/hr}$ - $0.40\mu\text{Sv/hr}$, depending on various factors including atmospheric conditions and geographical location. However, the real problem is not the level (intensity), but radiation accumulation. We try to make Radiation scanner model 900 to offer you the required information on the estimated particular danger easily and exactly. Radiation scanner Model 900 indicates the current radiation level in three modes: dose value in digital numbers of $\mu\text{Sv/hr}$, bar graph format, and a maximum-allowable exposure time. Find quickly in the bar graph to tell immediately the corresponding radiation level, your maximum-allowable exposure time. That is simple, easy, fast, and accurate. In addition, there is a set of alarm function, and the sound of beeps will fasten along with the increase of radiation level. The default setting for the alarm is $5\mu\text{Sv/hr}$, you can adjust by yourself.

7. Should I take a radiation scanner Model 900 with me for I travelled a lot by air?

No one tells you where or when you will be exposed to high or extreme levels of radiation. The radiation quantity received by passengers in a flight across the Atlantic is 3 to 5 times of that in the earth floor. In addition, the particular issues may be raised on travel in the high-risk areas. Many of our customers bring Radiation scanner model traveling to Europe, of which Ukraine and Belarus are contaminated. And part of Baltic. The unusually high radiation levels of the environment in Baltic and part of Poland are resulted from remnants of Chernobyl radioactive particles and uranium mining wastes in Soviet era. So wherever you go, it is better to be safe than

to be regret - please take the radiation scanner Model 900 with you.

8. Can Radiation scanner Model 900 detect Radon gas?

Radiation scanner Model 900 can definitely detect radon gas (alpha particle), although it is not the best choice for that. If you are concerned with radon gas, the measuring tank is recommended. It costs less and is accurate.

9. How about the durability of the shell of Radiation scanner Model 900?

It is very good. A variety of vibration standard was consulted in the beginning of development of Radiation scanner Model 900. Its shell is 20% thicker than the ordinary. It won't crack, peel, separate or break under extreme temperature or load.

10. How sensitive is radiation scanner Model 900?

Radiation scanner Model 900 is of resolution $0.01 \mu\text{ Sv/h}$ and with a change of the measuring value every 2 seconds on the screen. It is more sensitive than other radiation detecting device.

11. How far can I detect the radiation source by radiation scanner Model 900?

It depends on the radiation resource and the obstacles between them. Generally a radioactive resource can be detected within 10M. Moreover, we found that it is easier to measure the varieties of the radiation level all around, for example, during the trip across continent.

12. Can I use radiation scanner Model 900 on the airplane?

You can use the radiation scanner Model 900 on airplane. It passed the FCC15 standard without emitting radio wave. And it won't be impaired by the X-ray machine for baggage inspection.

13. Can I use radiation scanner Model 900 under water?

Sorry, radiation scanner Model 900 can't be used under water. Just like the mobile phone, it will be short circuit in water.

14. Does radiation scanner Model 900 require calibration?

A highly stable G-M tube is used in Radiation scanner Model 900, of which the required calibration time is as long as 5 years. You can returned it back to factory for calibration or do it by yourself.

Appendix 2 History of Product Development

- Dec. 2009 - Range expands 50% to the maximum of 1500 μ Sv/h.
- Mar. 2009 - Add the function of response time setting. Users can increase the response speed by hand. It is more quickly to detect the radiation source by increasing the response speed under low intensity of radiation. The maximum is 2 seconds.
- Jan. 2009 - Add the function of calibration factor. Users can verify the measurement precision of Radiation scanner Model 900 by themselves.
- May 2008 - More than 20 improvements and adopt larger display screen. Add function of radiation accumulation. Connect remotely the computer by USB port to transmit data in real-time for displaying and analyzing. Monitor the current radiation value. Add functions of recording data manually and keeping the maximum.
- Jan. 2006 - Add displaying the unit transformation of Sievert/Rem.
- Oct. 2005 - Announce the latest improvements of radiation scanner Model 900. Take USB port to transmit data in place of RS-232 port. Enhance the performance of resisting shake and increase the lifetime of the product. The circuit design is more suitable to apply in field measurement.
- Feb. 2005 - Sold the 5000th radiation scanner model 900. Export took 50% of the total sales. It was looked promising by global security and consumer market. The latest foreign customers included foreign embassy security, nuclear regulatory bodies, organizations of health and epidemic prevention, environmental protection and the world's largest freight companies.
- May 2004 - Introduce its latest upgrade, that was to add a function of alarm according to the customer's suggestion.
- Nov. 25, 2003 - Enrich further features. Police in U.S. Capitol used radiation scanner Model 900 to protect Capitol. After that it was used constantly by all regional polices and fire stations to guard and protect communities from danger of radiation.