Smart Radon Sensor

Radon Monitor for integration in building automatization systems

SARAD's outstanding detector technology defines a new level of Radon monitoring in buildings and at workplaces as requested by the recently introduced EU radiation protection regulations.

The Smart Radon Sensor offers very high sensitivity in a very small and shapely housing. Due to the detector technology, the instrument will not be affected by any variations of temperature and humidity, external radiation, mechanical shocks and vibrations. The measurement starts as soon as the power is connected. Various interfaces for system integration are available.

The RS485 network interface can be operated either with the MODBUS RTU (industrial standard) or the proprietary SARAD protocol. The analogous output makes it easy to connect the Smart Radon Sensor to existing PLC's. A stand-alone ventilation control system can be easily realized by the alert switch output. If no data line is available, the optionally integrated ZigBee wireless interface can be used for connection to a host system. The wide range power input accepts all in building automation commonly used voltage supplies. For easy installation, all connections are available through a screw terminal.

Two AAA batteries are integrated to continue the measurement in case of power interruptions. All measurement results will be stored locally in a non-volatile circular memory. Sensors for temperature and humidity are integrated as a standard. There are options for CO2 and barometric pressure measurement.

Smart radon Sensor
Wall mount

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Smart Radon Sensor

SPECIFICATIONS

Radon measurement		
Principle of operation	Lucas cell & SiPM	
Range	1 Bq/m3 ¡K 1MBq/m3	
Accuracy	8%@1kBq/m3;1h	
Sensitivity	> 2.5cpm/(kBq/m3)	
Stat. Error (1ƒã)	1 hour @ 300Bq/m3 1 day @ 300Bq/m3 1 day @ 50Bq/m3	15% 3% 8%
Principle of operation	Lucas cell & SiPM	
Sensors		
Humidity		
Range	0%rH - 100%rH	
Accuracy	< 4.5%rH (3% typ.) for 20%rH - 80%rH	
Temperature		
Range	-40ºC - 120ºC	
Accuracy	< 0.4°C (0.3°C typ.) for 5°C - 60°C	
Pressure (option)	**Smart Radon Sensor – CO^2 only**	
Range	760mbar … 1200mbar	
Accuracy	< 0.5% FSO	
CO^2 (option)	**Smart Radon Sensor - CO^2 only**	
Principle of operation	Non dispersive infrared (NDIR)	
Range	400ppm - 5000ppm (0% to 0.5%)	
Accuracy	< 5% ± 50ppm	
Response time	10 min	
Remark	Automatic calibration with respect to outdoor CO^2 level	
Instrument		
Environmental conditions	-10°C - 40°C, 0% rH - 95% rH no condensation, 800 - 100hPa	
Power supply	12 to 24 VDC, 2 x AAA battery for power backup	
Data storage	Non-volatile memory with circular structure for 16383 data records in any number of test series Saves all parameters including temperature and humidity each interval (settable from 1 to 255 minutes)	
Interface	RS485 (MODBUS RTU and SARAD protocol) ZigBee wireless (SARAD Net Monitors) - optional 4…20 mA analogous output (range configurable) Alert switch (potential free contacts) All interfaces with screw terminals	
Alert indication	Red, yellow and green LED indicators for alert and state of operation	
Operation	Automatic start after powering up	
Radon Vision Software (incl.)	• Set-up, data download (also via modem – analogue line,ISDN, GSM, TCP-IP) • Interactive graphical display (zoom, pan, fit data- cursor) • Marker for tilt and start of a new measurement, error bars, smoothing) • Selective ASCII export (EXCEL format) • Selective graphical protocol print (space for individual header, user comments) • Calculation of average concentration and exposure • Automatic created file names and path structure • Switch over between US and SI-units (Bq/m³/pCi/L)	
Dimensions	82mm x 96mm x 44mm	
Weight	150 g. incl. batteries	
Accessory	• Bracket for wall mounting • USB cable • batteries 2 x AAA • User manual & Software (electronic version) • Calibration certificate according to DIN EN ISO/IEC 17025:2018 (DAkkS-compliant) • •Power supply adapter (on request)	