

NLII-DUST-IQRF | Particulate matter room sensor with IQRF

Sensor is used to monitor air quality inside buildings and to control ventilation (HVAC) and air filtration systems according to current levels of air pollution. The sensor measures the concentration of particulate matter (PMx), such as dust and various chemical substances in the air. The sensor is suited for indoor air quality monitoring, where is the need to monitor PM concentrations such as offices, school classrooms, homes, shopping centers, etc.

- › detects and measures dust particles PM1, PM2,5, PM4 a PM10 in air
- › 0 – 10 VDC analog output for PM2,5
- › 0 – 10 VDC analog output for PM10
- › communication over IQRF network
- › sensor is suited for indoor air quality monitoring according to WELL Building Standard defined by IWBI (International WELL Building Institute)
- › does not require maintenance during operation
- › long life > 8 years

Measurement is based on the principle of laser beam dispersion on particles. Human organism can dispose of particles bigger than 10 µm, but smaller particles will easy get deep in to the respiratory tract and can come through up to alveoli and then to the bloodstream.

Increased PM concentration can cause respiratory irritation and lead to more frequent infections. Prolonged exposure to elevated concentrations increases also the risk of other health problems.

The sensor has built-in two separate analog outputs with range 0-100 µg/m³ according to size of particles PM2,5 and PM10, which are the standard indicators of particle matter air pollution. Output of all detected particle sizes measurement, including PM1 and PM4, is available through communication interface. The current air quality can easily be determined by looking at the three LED indicators.

International WELL Building Institute provides the following particulate matter limits for indoor air: < 15 µg/m³ for PM2,5 and < 50 µg/m³ for PM10.

For detailed information about IQRF, use the document [NLII-IQRF-Communication](#). For information on the communication protocol, use the document [NLII-Modbus-Communication](#).

Explanation of abbreviations and technical terms can be found on our website in the [Glossary](#) section.



| Parameter | Value | Unit |
|---|--------------------------------|-------------------|
| Supply voltage range | 12 – 35 12 – 24 | V DC V AC |
| Power consumption | max 0,8 | W |
| Measuring range PM1, PM2,5, PM4, PM10 | 0 - 1000 | µg/m ³ |
| Analog outputs range | 0 - 100 | µg/m ³ |
| PM2,5 analog output | 0-10 V / 0-20 mA ¹⁾ | |
| PM10 analog output | 0-10 V / 0-20 mA ¹⁾ | |
| Resolution | 1 | µg/m ³ |
| Accuracy 0 – 100 µg/m ³ | ± 10 | µg/m ³ |
| Accuracy 100 – 1000 µg/m ³ | ± 10 | % |
| Measurement interval | 1 | s |
| Start-up time | < 8 | s |
| Working humidity non condensing | 0 – 95 % | RH |
| Working temperature | 0 to +50 | °C |
| Storage temperature | -20 to +60 | °C |
| Expected lifetime | min. 8 | years |
| Ingress protection | IP20 | |
| Dimensions | 90x80x31 | mm |
| ¹⁾ It is possible to select the desired type of analog output by a jumper. | | |

| Particle sizes ranges | | |
|-----------------------|------------|----|
| PM1 | 0,3 – 1,0 | µm |
| PM2,5 | 0,3 – 2,5 | µm |
| PM4 | 0,3 – 4,0 | µm |
| PM10 | 0,3 – 10,0 | µm |

