

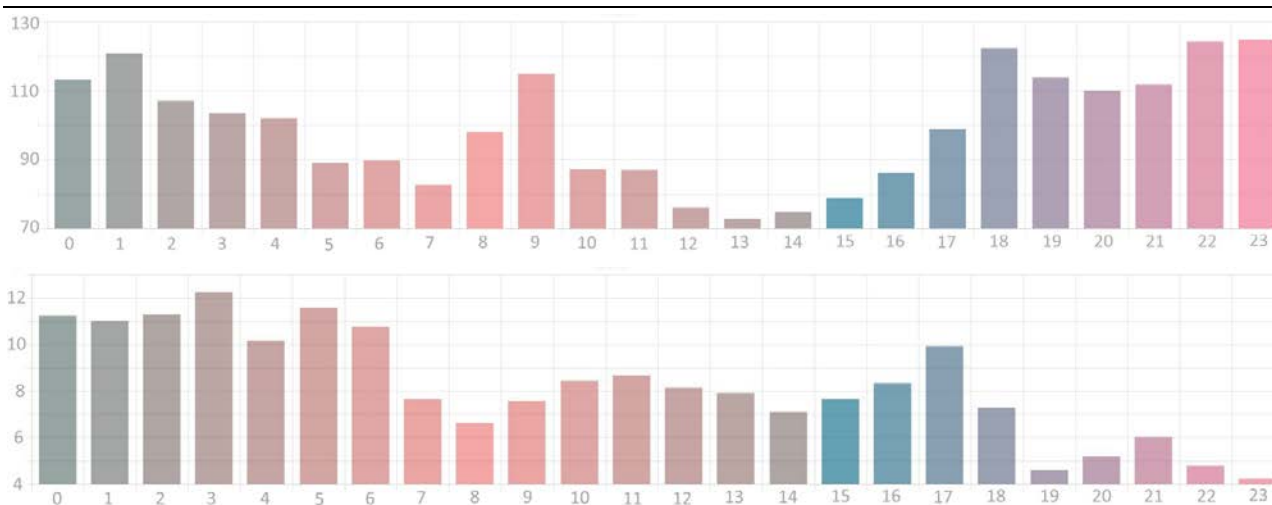
# TAQ18 Air Quality Monitoring System



TAQ18 is a low cost measuring station for real time monitoring of PM2.5, PM10 and, on request, CO<sub>2</sub>, NO<sub>2</sub>, BTX, SO<sub>2</sub> and other pollutants. It is completely compatible with the bus and the storing architecture of the SHM602 system so that it allows also an easy realization of multipurpose systems. While reference PMX measuring systems are based on gravimetric approaches relying on filters that remain in place for 24 hours, the TAQ18 is based on real time laser scattering techniques that allow adopting, when necessary, corrective actions on emissions (e.g. urban traffic, domestic and industrial emissions etc.) that are not possible with the delay introduced by gravimetric systems (typically 72h). At the same time, the cost of the system is two order of magnitude lower than that of standard gravimetric sets.

## Features

- Data storage on the cloud
- Remote access via web
- Primary sampling: 1'
- Accuracy: 1 µg/m<sup>3</sup>
- Standard deviation of hourly mean values:  $\sigma=1,9 \mu\text{g}/\text{m}^3$
- Air flux: 1 m<sup>3</sup>/h (0,6 CFM)
- Meas. range: 0-500 µg/m<sup>3</sup>
- PM10 and PM2.5 options
- Operating temperature: -10 +40°C
- External connections: standard SHM602 bus
- Backup power supply: on request
- Dimensions: 38x30 x 18 cm
- Weight: 3,75 Kg
- Power supply: 230V, ±10%, 50/60 Hz

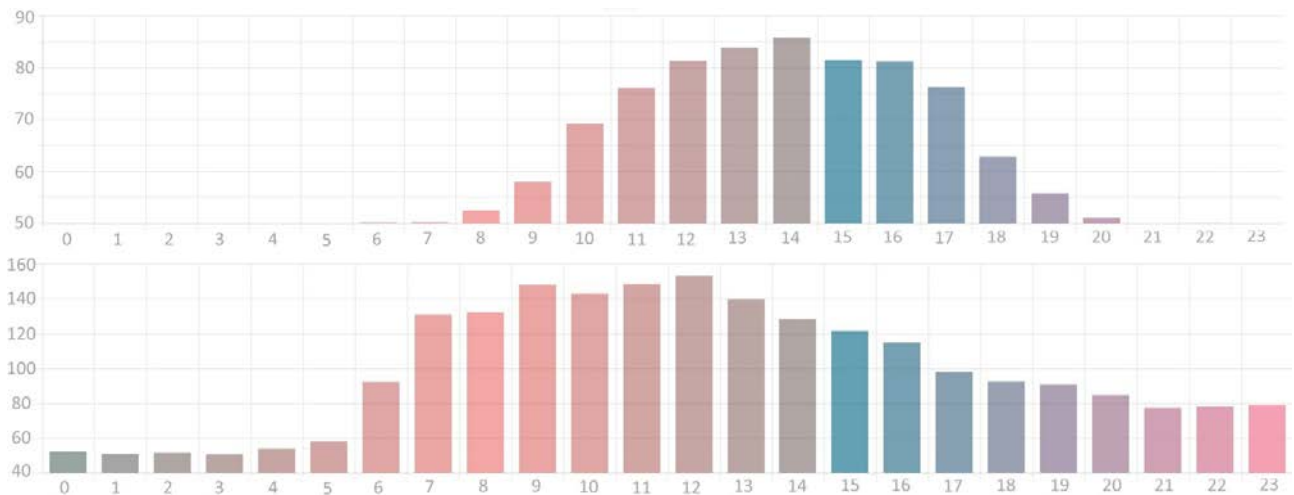
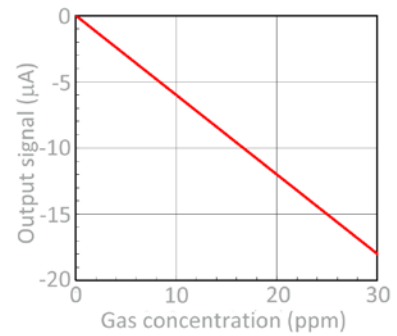


Mean hourly measures of PM10 at Lugo di Romagna (Via Ettore Majorana) obtained on October 11, 2018 and on May 1, 2019 with a TAQ18. It is possible to observe a large difference between the data of October 11 (working day in a period where heating systems were active) that exceed 120 µg/m<sup>3</sup> and those of May 1 (public holiday in spring) that remain under 13 µg/m<sup>3</sup>.

Despite its low cost, the TAQ18 relies on state-of-the-art components and on sensors realized by top producers. This assures both its reliability and its easy maintenance that reduces to the programmed substitution of those sensors whose life is limited by the necessity of assuring the initial accuracy levels.

As an example of this design philosophy, consider the sensor that has been selected for the critical measure of the Nitrogen Dioxide, the Figaro FECS42-20.

The excellent linearity of this electrochemical sensor is reported on the right. Besides linearity, the FECS42-20 is characterized by a remarkable stability and by a life that exceeds 3 years. Its measure range is 0-30 ppm but it can stand overloads of 150 ppm.



The histograms above report the NO<sub>2</sub> measures performed at Lugo di Romagna (Via Ettore Majorana) on October 11, 2018 and on May 1, 2019. The second histogram shows peak values of approximately 150 µg/m<sup>3</sup>, well below the EU limit of 200 µg/m<sup>3</sup> over an averaging period of 1 hour.