LUCAS-NÜLLE

PID

IoT INDOOR CLIMATE MONITORING

A training system for fresh air in the classroom

IoT

1st Edition

IoT INDOOR CLIMATE MONITORING

Poor air quality in the classroom was already a problem even before the onset of the coronavirus pandemic. Good ventilation concepts have now become an important prerequisite for schools and training centres to resume in-person instruction.

CO_2 traffic lights are a tool for feeding such concepts with data. Because, according to recommendations from the German Federal Environment Agency, the risk of SARS-CoV-2 transmission via room air is greatly reduced when the CO_2 concentration remains below 1000 ppm (parts per million). The CO_2 here reflects the quantity of aerosols in the room. Instructors who seek to inspire students' enthusiasm for technology take note: this is an excellent opportunity to combine necessity with utility.

With the new "IoT Climate Monitoring" training system from Lucas-Nülle, students develop a CO_2 traffic light autonomously in the classroom. Using the integrated sensors, they can record CO_2-concentration, temperature and humidity of the room air. They also learn how to use the graphic programming language Ardublock to program a controller and process the measured data.

Guided by an e-learning course, the users control an LED strip based on the measurements so that it displays a clear colour-based, traffic light-style indicator of room air quality.

Alongside it, there is also an OLED display to show the measurement data. The integrated WLAN module enables wireless communication between two indoor air quality monitoring devices. This enables you to use values from different measurement points to assess room air quality. In the multimedia course, this is ultimately used step by step to create an IoT (Internet of Things) application, so you can access the measurement data from every internet-enabled device.

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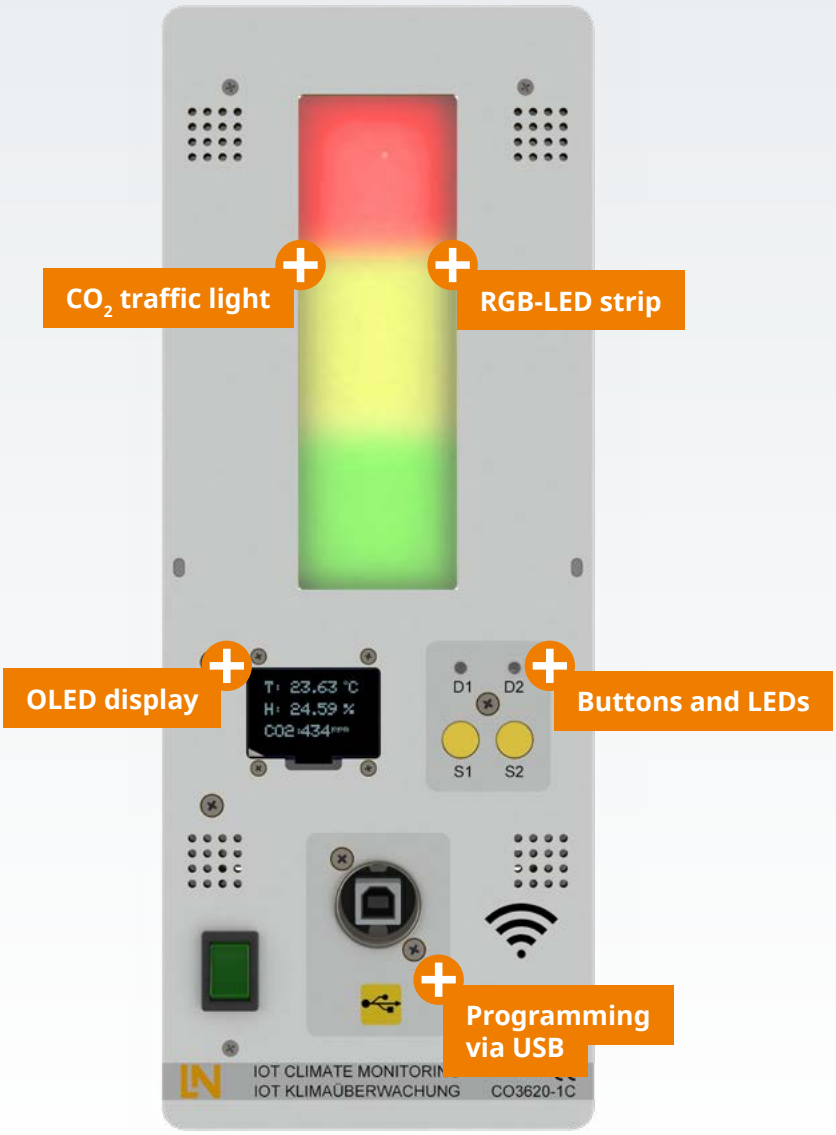

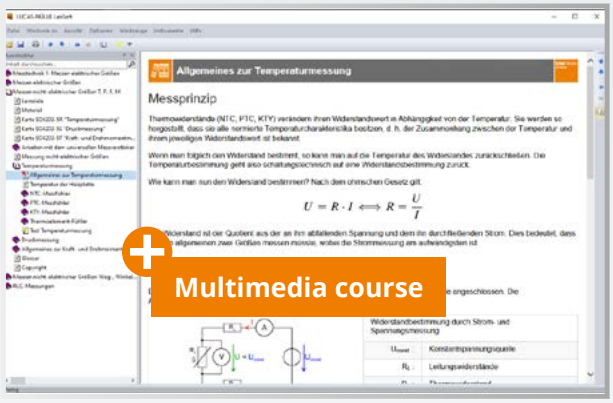

Training content

- CO_2, temperature and humidity measurement
- Graphic programming with Ardublock
- Classic programming via the Arduino development environment also available as an option
- Control of an RGB-LED strip
- Control of an OLED display
- Wireless communication
- Integration of sensors as IoT devices

Benefits and technical data

- Immediately applicable as CO_2 traffic light
- No programming skills required
- Precise and reliable CO_2 measurement with NDIR technology
- Temperature and humidity sensor with high accuracy and fast reaction time
- RGB-LED strip as CO_2 traffic light with 3x18 individually addressable LEDs
- High-contrast OLED display for displaying multiple measurement values simultaneously
- Integrated WLAN module for wireless communication
- IoT compatibility with preconfigured projects

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