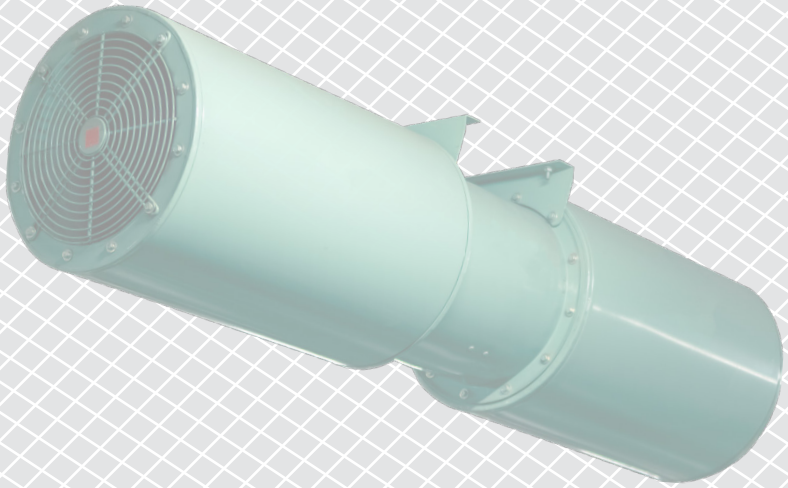
CO and LPG | EC fans detection

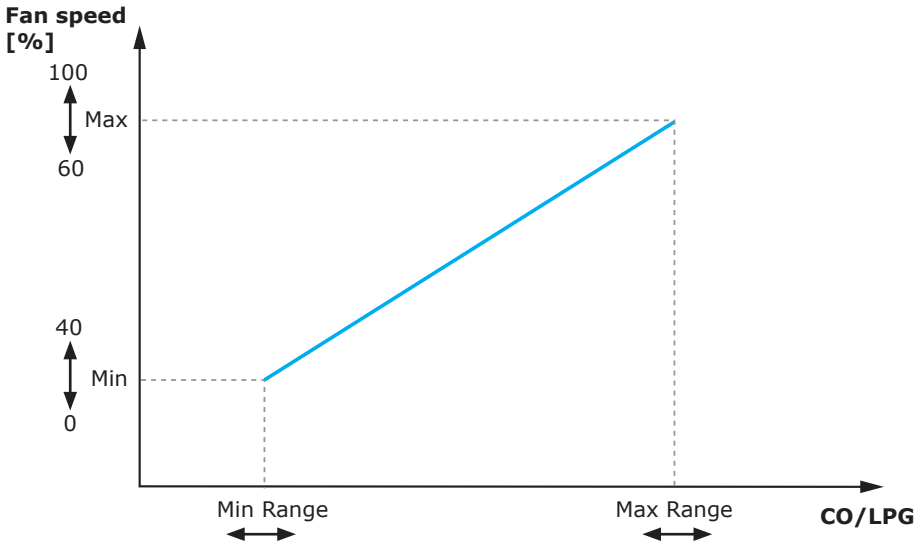
Controls for car park ventilation



SOLUTION DESCRIPTION

Jet fans are typically used for ventilation of car parks. This control solution monitors the air quality in car parks and activates the jet fans when toxic gases are detected.

Operational diagram



By default, the temperature, the relative humidity, the CO and the LPG sensors are active. It is possible to deactivate each one individually via Modbus. To regulate the fan speed based on CO and LPG only, deactivate the temperature and relative humidity sensors (and vice versa). When all sensors are active, the highest percentage value of all sensors will be used to regulate the fan speed.
Minimum and maximum CO and LPG values can be set via Modbus registers. When the measured CO or LPG values are < the minimum set values, the fan will run at minimum speed. As soon as the measured CO or LPG values rise above the minimum set values, the fan speed will increase. In case the measured CO or LPG values reach the maximum set values, the fan will run at full speed.

- The DRPS8-24-40 power supply module is used to provide 24 VDC.
- The DIGWM Internet gateway is used for connection to SenteraWeb. It is required to download firmware and set up the system.
- The ALR-M1 module is designed to provide visual and audible alarms. It is equipped with indicators to represent the status of the system. The buzzer will be activated if one of the measured values (CO, CO_2, LPG) exceeds the preset threshold. The ALR-M1 has 3 digital outputs, which can be used to connect an external lamp or a signal on the BMS.
- The MDACM1 converts the digital signals coming from the sensors into an analogue control signal that is sent to the fan.

Typical applications

- Monitoring gas concentration in parking garages and loading docks
- Ventilation control based on temperature, relative humidity and vehicle exhaust fumes - CO and LPG
- Suitable for both indoor and outdoor use (e.g. open-air spaces, multi-storey and subterranean car parks, residential and commercial buildings)

TECHNICAL DATA

The SPRKM sensor and the MDACM1 conversion module can be installed in harsh environments. Its enclosure offers protection against ingress of water and dirt. The power supply and internet gateway are available in:

- Temperature range: -10 ºC to +50 ºC
- Humidity range: 0—95 %

SENTERAWEB - YOUR PERSONAL HVAC CLOUD

Sentera products are delivered with standard firmware (standard functionality). In order for these products to function according to a specific solution, application specific firmware must be downloaded via SenteraWeb. Setpoints, ranges and other settings can be adjusted remotely. The measured values and the status of the connected devices can be monitored. Make sure you have the ID code of the desired Sentera solution as well as the unique serial numbers of the installed Sentera devices.

Via the SenteraWeb HVAC cloud, it is possible to:

- Easily and remotely adjust parameter settings of the connected devices
- Define users and give them access to monitor the installation via a standard web browser
- Log data - create diagrams and export logged data
- Receive alerts or warnings when measured values exceed alert ranges or when errors occur
- Create different regimes for your ventilation system - e.g. day-night regime.

SENTERA INTERNET GATEWAY

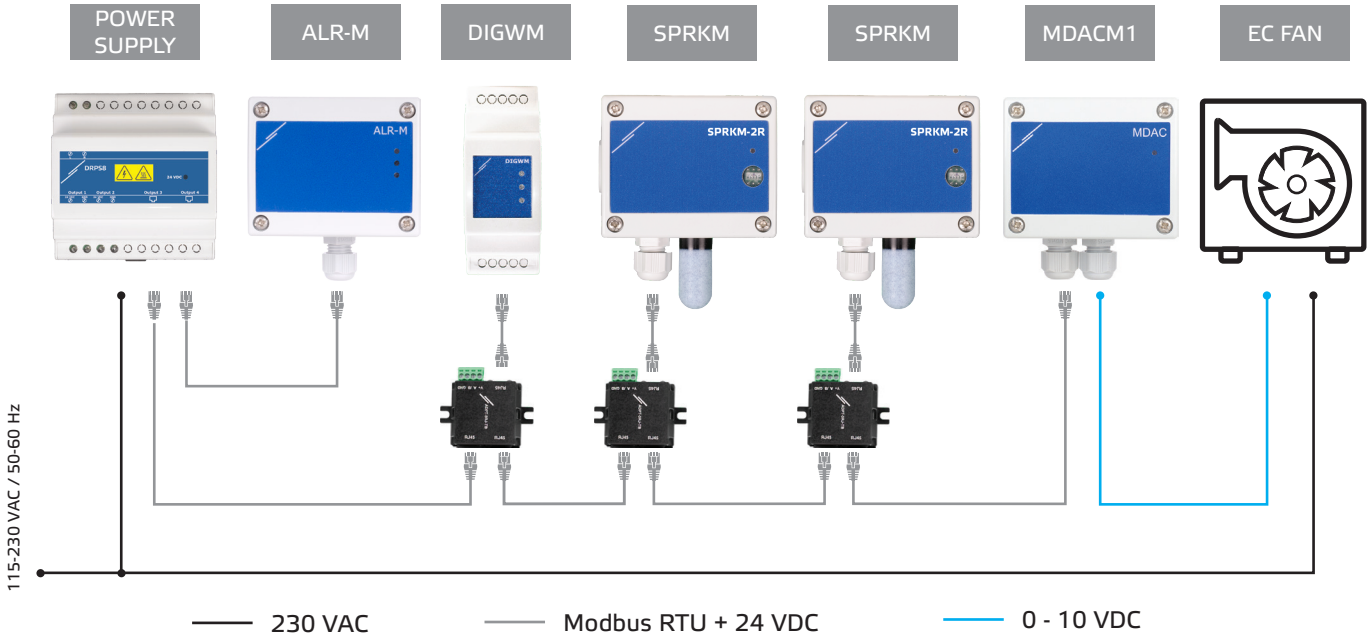
The Sentera Internet Gateway is used to connect your installation to the SenteraWeb HVAC cloud and to download the application specific firmware.

- When the firmware is downloaded, the internet gateway can be left installed or can be removed.
  - If the Gateway is left installed, the installation remains connected to the SenteraWeb HVAC cloud and makes it possible to use the above described features. Installations that are inactive for more than one month will be deleted automatically. To prevent the installation from being deleted, it can be archived. Archived installations can be activated again at any moment.
  - If the Gateway is removed, it can be used to set up another installation. In that case, you have to disconnect the current installation from SenteraWeb as every internet gateway has a unique serial number and it can be used to create one installation at a time.
- They are available with only Wi-Fi connection or combined with LAN connection.
- There are versions for DIN rail mounting or surface mounting.
- It allows you to download the required application specific firmware into the connected devices and to adjust the settings.

See chapter "How to connect your installation to SenteraWeb" for more information.

WIRING AND CONNECTIONS

One example of the solution is shown in the connection diagram below, different combinations are possible.



Install the products following the mounting instructions on the corresponding product pages on sentera.eu.

Supply voltage

The products require a supply voltage of 24 VDC. We recommend using a Sentera 24 VDC power supply, as it offers an overload and overvoltage protection.

UTP wiring for data (Modbus) and power distribution (24 VDC)

Sentera devices communicate via Modbus RTU. To facilitate wiring, the Sentera devices used for this solution are available with RJ45 connectors to connect 24 VDC power and Modbus data communication using 1 UTP cable.

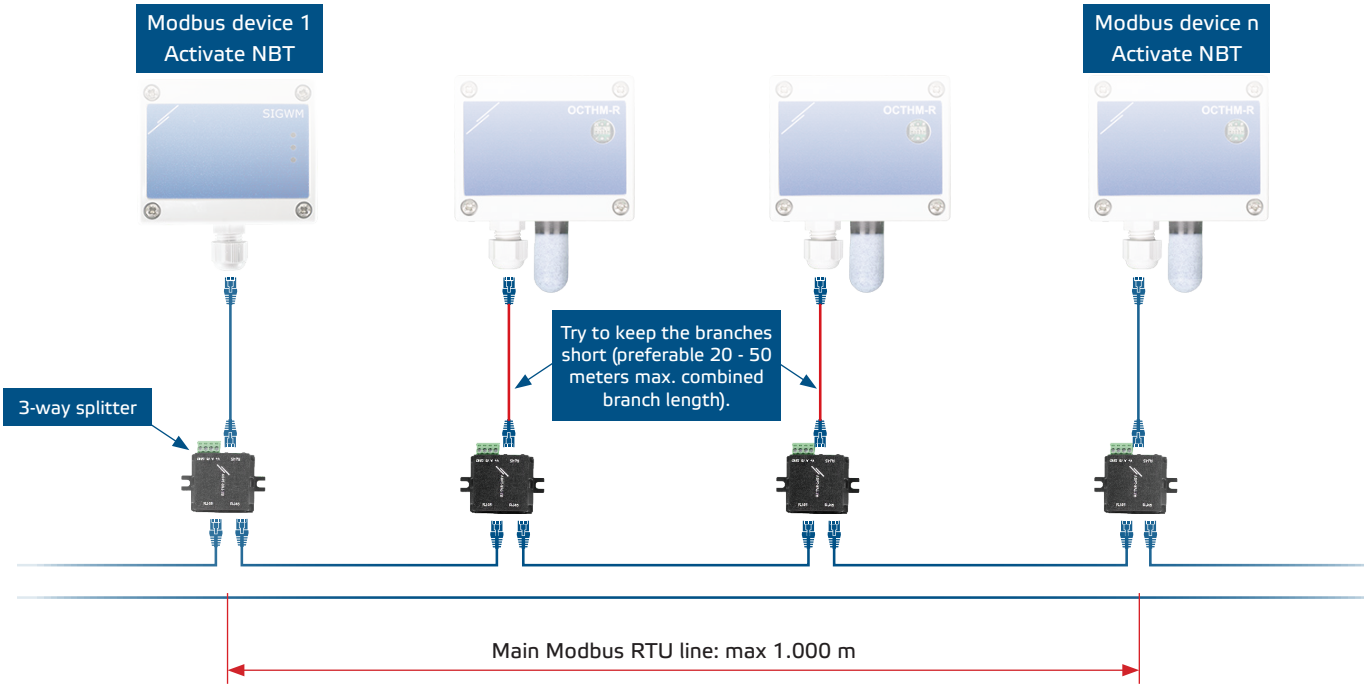
The advantages of Modbus communication over an analogue (0—10 Volt) control signal are:

- Higher reliability
- Reduced risk of disturbances and data loss
- Extended cables lengths are possible
- Status of and feedback from the connected devices and motor are available.

ADDITIONAL WIRING GUIDELINES

A Modbus RTU network should follow these topology guidelines:

- The maximum length of the main line should be limited to 1.000 m. If a longer main line is required, we advise you to use Modbus RTU repeaters.
- It is advisable to minimise the length of the branches. The use of a 3-way splitter (type ADPT-3RJ-TB) can be helpful.
- In case of extended cable lengths or strong electrical pollution, we advise you to activate the Network Bus Terminator (NBT) on two devices in the Modbus network. These NBTs reduce electrical reflections. Every Sentera device features an NBT that can be activated via the parameter settings. By default, the NBT is deactivated.



HOW TO CONNECT YOUR INSTALLATION TO SENTERAWEB

1. Create an account on SenteraWeb

First create an account on SenteraWeb.
Go to https://www.senteraweb.eu/en/Account/Login. Here you can register or log in.

2. Create your installation

- Once logged in, add a new installation;
- Make sure that the internet gateway is powered and connected to the internet (green LED);
- Register the internet gateway via its serial number;
- Once the internet gateway is registered, your installation is created;
- Register the other connected devices. To add a device, use its serial number.

3. Download your application specific firmware

When all the devices have been added to your SenteraWeb installation, you can download the required firmware for this solution via the solution ID code:

- Select your installation on SenteraWeb and click "Link to solution";
- Enter the solution ID code and click "Submit";
- The solution specific firmware will be downloaded into the connected devices (this download can take up to two minutes);
- After the download, check the functionality of all devices;
- When the solution is operational, you can choose to leave the internet gateway installed or to be removed (check chapter "*Sentera Internet Gateway*" for more information).