SCHNEIDER
ELEKTRONIK

Comprehensive ventilation technology for laboratories and buildings

LabSystem + AirSystem

LabSystem + AirSystem

Comprehensive ventilation technology from a single source

Whether it's fume hood monitoring, fume hood control, room air control, room management system or visualization - with LabSystem + AirSystem SCHNEIDER offers the entire range of ventilation technology for laboratories from a single source. All, of course, with extendable modules and fully networked with simple connection to the building management system. That is ventilation technology without compromises.

Maximum safety

The safety and protection of people in the laboratory are of paramount importance to SCHNEIDER. This requirement is a constant challenge for us and is the benchmark for our product developments in the area of laboratory ventilation technology. Comprehensive risk analyses and our in-house development and production in accordance with the highest technological standards guarantee that we fulfill this self-imposed commitment.

The ideal room climate

We excel in creating an ideal room climate that takes into account all control parameters (room air exchange, pressure, humidity and temperature) for all operating and load conditions. A continuously improved control algorithm guarantees an optimal room climate (comfort climate) with stable room pressure maintenance and thus fulfills all ventilation requirements for laboratories.

How well do you know your air consumption?

Not at all? We know it exactly, and we can capture the air consumption of each individual fume hood and balance it if necessary. This facilitates transparent cost calculation of the air consumption and improves energy efficient working procedures at the fume hood.

SCHNEIDER is market and technology leader and guarantees the full functionality.

Maximum energy efficiency and customer value

Heated or cooled air is expensive. That's why SCHNEIDER attaches such great importance to energy efficiency when developing our products. It starts with the products' low energy consumption and continues with high measuring accuracy as well as rapid, precise and stable controllers. Here, SCHNEIDER sets standards with innovative ideas and patents.

All SCHNEIDER products have the following technical characteristics:

- extendable modular design
- low maintenance
- energy efficient
- reliable
- durable
- always of the highest technological standard
- first class quality

That means for the customer a high level of investment security and maximum benefits for the operator.
And that bodes well for your budget and even better for our environment.

Innovative and flexible system solutions

Not all ventilation control systems in laboratories are the same. That requires flexible system solutions. We offer various control strategies and components to provide an optimal solution for individual control requirements. The integration of SCHNEIDER products with all established bus systems is our special know-how and allows simple and integrated connection to the building management system.

A web server is integrated in all new developments. This allows to access the data via a standard web browser and offers a high level of data transparency. We support native BACnet® IP, BACnet® MS/TP, LON®, Modbus® TCP, Modbus® RTU and CAN®. All network cards and extension boards are modularly extendable, can be retrofitted and allows flexible system adaption to the individual control task.

Fume hood controlling

SCHNEIDER offers suitable controllers for all fume hood types, regardless of whether the exhaust air volume flow is controlled according to requirement or the face velocity is controlled constantly. The modular design makes it easy to extend the functionality, even after the initial installation. Our products can be connected to one another and ensure a very high level of flexibility for users and planners.

For each application you can choose from various control types: from constant control (1-point, 2-point and 3-point) and fully variable sash dependent control with integrated control/monitoring of the support air technology to combined supply air/exhaust air control for supply air fume hoods. All from a single source and suitable for all fume hood types. The common criterion for all LabSystem + AirSystem controllers is the very fast control time. To achieve this, SCHNEIDER has specifically developed its own high-speed hysteresis-free actuator, which, together with our unique control algorithm, allows extremely fast control times (< 2 s) and long-term durability. In accordance with DIN EN 14175-7 standard, thermal loads in the fume hood are measured, indicated by an alarm and safely discharged by increasing the exhaust air volume flow.

The maintenance-free measuring system from SCHNEIDER

The maintenance-free measuring system by SCHNEIDER guarantees a high level of availability for the user and safe and precise measurements at all times. Almost any measuring task can be completed with this innovative system and it is suitable both for round PPs pipes and rectangular PPs ducts.

More information at a glance

Using a graphical display you have an overview at a glance of all important operating information relating to the fume hood. Volume flow, face velocity, operating and error messages are immediately and clearly displayed and can be read off directly. Status messages are represented by icons. This means additional operational safety and ease-of-use.

Web browser operation

The internal web pages of the integrated web server can be visualized with a standard web browser. Settings and parameters can be easily changed.

The integrated web surface of all series 700 devices offers the user an insight of the current status and the configuration of the local device. A tabularly survey of the most important set and actual values as well as various diagnosis functions allows the establishment of ideal parameters and the fast and efficient detection of network problems.

Native BACnet®

Networked systems are becoming increasingly important to ensure exchange of data and system security.

The building management system is provided with a large amount and variety of data and thus facilitates optimal requirements planning and process control. Native BACnet® (IP or MS/TP) ensures fast, easy and direct connection to the building management system, without additional gateways. Our BACnet® stack, developed in-house, guarantees the highest flexibility. In addition to native BACnet® we also support LON® or Modbus®.

Thereby SCHNEIDER reinforces its technological leadership.

Products

FC700
- High-tech fume hood controller with Ethernet interface and integrated web server. Optionally integrated interfaces for BACnet® IP, BACnet® MS/TP, Modbus® TCP, Modbus® RTU or LON®. Static differential pressure transmitter. Maintenance-free measuring system with damper and hysteresis-free high-speed actuator. Integrated support air control.

FC700-S
- A compact and inexpensive system combination with the FC700 high-tech controller and integrated sash closing system module.

iCM500
- Basic system with color graphic display for controlling constant face velocity. Compact, built-in unit with Modbus® RTU interface. Face velocity sensor, damper and hysteresis-free high-speed actuator.

Fume hood monitoring

The safety and protection of people in the laboratory is considerably improved by using a fume hood monitor. One generally distinguishes between monitoring of the safe exhaust air volume flow and monitoring of the safe face velocity. SCHNEIDER offers suitable systems for both monitoring types.

Safety for people

An acoustic and optical alarm is activated when the safe exhaust air volume flow or the face velocity is underrun. Additionally, an optical and optionally also an acoustic alarm is activated when the sash is opened beyond the predefined working height. All system specific parameters are failsafe stored and freely programmable. SCHNEIDER´s fume hood monitors fulfill the European standard EN 14175 and improve health and safety at work and are suitable for all types of fume hoods.

Suitable for all types of fume hoods

A flexible selection of systems with different function displays (design and functionality) enables individual tuning to the specific customer requirements for every fume hood type.

Products

FM100
- Standard system for monitoring a safe level of exhaust air volume flow. Static differential pressure transmitter. Measuring tube or maintenance-free measuring system.

FM500
- Extended system for monitoring a safe level of exhaust air volume flow. Static differential pressure transmitter. Measuring tube or maintenance-free measuring system. Integrated support air monitor. Temperature alarm according to DIN EN 14175-7.

iM50
- Basic system for monitoring a safe level of face velocity with integrated airflow sensor. Suitable for direct fitting in the fume hood, installed at the side of the fume hood.

Automatic sash closing

The safest operating state for a fume hood is a closed sash in combination with sufficient exhaust air. SCHNEIDER continually enhances its automatic sash closing system and it has already been used successfully worldwide for over 15 years. Its functions, operating safety and flexibility are unique.

SCHNEIDER is market and technology leader in the area of fume hood controllers and sash closing systems.

Increased safety and low operating costs

After the user has left the working area in front of the fume hood, the sash closes automatically after a programmable delay time. This considerably increases safety for people in the laboratory and also saves energy and operating costs. The automatic closing procedure is monitored electronically and comes to a stop when an obstacle is detected. In case of smoke or fire, the sash can be closed directly via the building management system.

When the sash is closed, the fume hood controller reduces the exhaust air volume flow to the minimum safe level. This reduces the airflow and operating costs up to 70 %. The combination of fume hood controller and sash closing system makes it possible to considerably reduce the diversity factor. That means that the total investment costs of the ventilation system are also substantially reduced.

An economical and intelligent decision, because these products have a very short payback period and they also help the environment with an improved CO_2 balance.

Products

SC500
- Automatic sash closing system to improve safety and energy efficiency of the controlled fume hood. Movement detector for detecting the presence of users.

FC700-S
- A compact and inexpensive system combination with high-tech controller and integrated sash closing system module. Integrated web server and optionally native BACnet® IP and BACnet® MS/TP, Modbus® TCP, Modbus® RTU or LON® interface.

Laboratory air control
Heating ▪ Cooling ▪ Room pressure maintenance

Rapid exhaust air control of the fume hoods requires fast and stable volume flow control of the room supply air and room exhaust air. Laboratories are primarily maintained at negative pressure, while clean rooms require positive pressure. Control and measurement of the room pressure maintenance is achieved by using a suitable reference point. The LCO700 laboratory room controller performs the control tasks and actuates the volume flow controller. This can be done by using conventional technology (0 to 10 V DC) or network technology.

All relevant data available at a glance with room control units

With SCHNEIDER´s room controllers and room operating units almost any ventilation control task can be performed easily and effectively. Also available with color touch screen graphic display and freely configurable user interface. From heating and cooling of the laboratory with room pressure maintenance and maintenance of a predefined or multistage room exchange rate, these solutions consistently stand the test of time in day to day operation.

These technical challenges motivate us more every day.

Products

LCO700
- Laboratory room controller with integrated web server. Optionally native BACnet® IP and BACnet® MS/TP, Modbus® TCP, Modbus® RTU and LON® interface. Extendable modular design. Conventional technology (0 to 10 V DC)

RMC700
- Room management controller with color backlit graphic display. Up to six freely configurable operating keys. Optional network connection via LON® or Modbus® RTU.

RMC-Touch
- Room information and management system with color touch-screen graphic display. Freely configurable user interface providing simple human-machine interaction.
  Network connection via BACnet® IP, BACnet® MS/TP, Modbus® TCP or Modbus® RTU.

Fast variable volume flow controller
Room supply air ▪ Room exhaust air

Laboratories are primarily regulated at negative pressure. The room supply air follows the rapid changes in volume flow of the fume hood exhaust air and other extraction units.

In this product area, SCHNEIDER offers the entire spectrum, from conventional technology (analogue 0 to 10 V DC) to network technology with volume flow controllers that perform automatic balancing.

Room balancing

All networked volume flow controllers have an integrated room balancing module. The exhaust air actual values of the connected fume hood controllers and other extraction units are automatically balanced and the required room supply and exhaust air is regulated quickly and safely. Data transfer between the connected controllers takes place via standardized network interfaces like Ethernet or RS485. The room supply air setpoint is calculated by totalling the individual values, while in case of the room exhaust air setpoint, the sum of the individual values is subtracted from a room constant value. This differential control guarantees constant room air exchange rates in the laboratory for all operating situations.

The modular system of VAV700 allows the integration of different control functions, e.g. regulation of temperature, relative humidity as well as constant room pressure.

SCHNEIDER offers the entire product spectrum for laboratory ventilation, from silencers to high-tech controllers. All from a single source.

Products

VAV700

- High-tech volume flow control system with integrated web server. Optionally integrated interfaces for BACnet® IP, BACnet® MS/TP, Modbus® TCP, Modbus® RTU or LON®. Static differential pressure transmitter. Hysteresis-free high-speed actuator. Maximum high precision control. Volume flow control range of 1:15. High flexibility due to the modular design. Conventional technology (0 to 10 V DC).

VAV500

- Basic volume flow controller with static differential pressure transmitter. Hysteresis-free high-speed actuator. High precision control. Conventional technology (0 to 10 V DC) and network connection via LON® or Modbus® RTU.

Room pressure controlling
Room pressure monitoring

Clean rooms and laboratories must be maintained in a state of constant positive or negative pressure relative to neighbouring rooms (for example, a reference room). Depending on the area of application, the infiltration or leakage of contaminated or impure air with excess levels of dust is thus avoided.

Ideally suited to laboratories, clean rooms and airlocks

The iCM-RP room pressure controller automatically regulates the required, freely programmable room negative or positive pressure and is available as a compact, wall-mounted unit with an attractive design. Setpoint selection takes place via the digital inputs. Programming, which is password-protected, can be done via the internal menu or optionally via a laptop with the PC2500 software.

A high-speed control algorithm compares the room pressure setpoint with the actual room pressure measured by a static differential pressure transmitter and regulates quickly, precisely and steadily, compensating against the pressure fluctuations in the duct system.

Room pressure at a glance

The regulated room pressure actual value is displayed as a numeric value in Pascal on the graphic LC display. A red LED optically and optionally also acoustically signals an alarm when the regulated setpoint is overrun or underrun. The optional Modbus® interface facilitates easy connection to the building management system.

That is safety at its highest technical level.

Product

iCM-RP

- Fast control system for constant room pressure maintenance of rooms, with graphic LC display and green/red indicator. Optional Modbus® RTU interface.

Safety laboratory BSL1-3
Clean room ▪ Animal laboratory

Airtight rooms, such as BSL 3 laboratories, clean rooms or animal laboratories have special requirements regarding the control technology for constant room pressure maintenance. Due to the low level of leakage (e.g. < 0,001 m^2) even small control deviations result in significant pressure deviations from the regulated setpoint within a very short time. Here, SCHNEIDER sets standards.

Pressure prioritized volume flow controllers

To regulate the room pressure maintenance with a high level of airthightness quickly, stably and precisely is the most significant technical challenge.

That's why SCHNEIDER has developed the VCP700, a patented high definition pressure prioritized volume flow controller as a master/slave controller for supply and exhaust air as well as with an integrated bypass regulation to maintain the pressure as a complete solution for airtight rooms. This new technology replaces conventional pneumatic control systems.

The preliminary control is performed via the control loop and the motor driven damper of the main pipe. At the same time, a second internal control loop (fine control) ensures that the predefined room pressure is very precisely regulated via a second motor driven damper in the bypass pipe. This special hysteresis-free activation of the actuator and the multitasking capable controller makes it possible to achieve maximum control precision with an electronic controller. The additional integration of supply and exhaust controller within one device (master/slave principle) allows a reaction without any delay to changing pressure ratio within a supply air as well as an exhaust air system.

As with all newly developed SCHNEIDER systems, the VCP700 by default includes the network protocol TCP/IP, as well as BACnet® IP, BACnet® MS/TP, LON®, Modbus® TCP or Modbus® RTU. Thereby data communication using standard web browers or a building management system is easily possible and all safety relevant data can be quickly and cost-effectively evaluated.

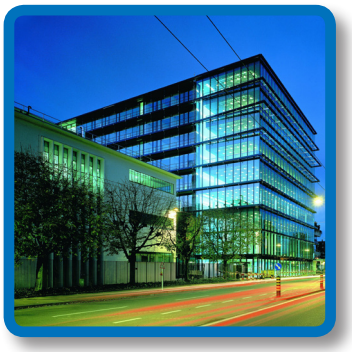
We develop specific ventilation solutions together with our customers. Take advantage of our entire know-how and expertise.

Product

VCP700

- Complete pressure prioritized volume flow controller with additional integrated bypass control loop. Multitasking controller with two static differential pressure transmitters and three actuators regulates the room pressure in airtight rooms independently via exhaust and supply air - fast, precise and safe. Integrated web server. Optionally integrated interfaces for BACnet® IP, BACnet® MS/TP, Modbus® TCP, Modbus® RTU or LON®.

Laboratory buildings



Duct pressure controller

The duct pressure is subject to constant pressure fluctuations, depending on the dynamic load. SCHNEIDER has developed an automatic duct pressure controller to regulate stable duct pressure (e.g. -400 Pa for the building exhaust air). The controller is freely programmable and suitable for constant pressure maintenance in supply air and exhaust air ducts. Constant pressure maintenance can be achieved either via the frequency inverter of the fan or via actuation of a motor driven bleed damper.

All in one compact unit

The iCM-DP duct pressure controller automatically regulates the required duct negative or positive pressure and is available in a mounting case with integrated static differential pressure transmitter. The regulated duct pressure actual value is displayed as a numeric value in pascal on the graphic LC display. A red LED signals an overrun or underrun of the regulated setpoint. The optional Modbus® interface allows easy connection to the building management system.

Duct pressure optimizer for increased energy efficiency

The DPO700 duct pressure optimizer replaces the classic duct pressure controller and is the best choice for networked systems. The damper positions of all connected volume flow controllers are included in the control process. This means that the entire installation is operated dynamically in the optimized range, which reduces the electricity consumption of the supply air and exhaust air fans by up to 80 % and considerably increases the comfort of use of the system (e.g. reduction of sound emission).

Clearly a valuable contribution by SCHNEIDER towards greater energy efficiency.

Products

iCM-DP
- Fast control system in a compact mounting case for constant pressure maintenance in ventilation ducts with static differential pressure transmitter. Optional Modbus® RTU interface.

DPO700
- High-tech duct pressure optimizer for maximum energy efficiency. Integrated web server. Optionally integrated interfaces for BACnet® IP, BACnet® MS/TP, Modbus® TCP, Modbus® RTU or LON®.

Visualization of ventilation technology

All relevant data for the building management system (BMS) is available via the network and can be used for facility management tasks. Significant characteristics are better planning and utilization of resources, as well as a reduction in energy and operating costs.

Remote diagnosis ▪ Remote maintenance

Laboratory occupation plans, night-time operation (reduced air) and individual accounting of the air consumption data, energy efficient operation, and improved safety through remote maintenance and remote diagnosis of the fume hood controllers and volume flow controllers for room supply air and room exhaust air are the outstanding advantages of the network technology with integrated BMS.

The PRO7000 project and programming software runs under Windows® and allows quick and easy commissioning. Device programming can be done from a central point for the entire room or building.

The visualization interface VIS7000 offers an efficient survey of all installed SCHNEIDER series 700 controller with Ethernet connection. The hierarchical structured and clear presentation offers compact room lists as well as customized floor and building views. Thereby the room status and the most important control parameters can be realized at one glance, even from afar. The native indication of the web browser (HTML5, no applets, or similar) allows the use of touch panels already at hand as well as of devices provided by SCHNEIDER.

Products

VIS7000

- Visualization environment to display the most important room and controller parameters. Embedding of building and floor plans (vector format) possible. Installation on dedicated or already on site available hardware.

Worldwide networking

SCHNEIDER consistently uses Internet technology. All series 700 products have an integrated web server. Optionally, upgrading with native BACnet® IP, BACnet® MS/TP, LON® or Modbus® TCP, Modbus® RTU is also possible.

Simple and cost-efficient remote maintenance and diagnosis is possible via Internet or Intranet with standard web browsers. This reduces service costs and enables remote maintenance by the operating company or authorized service companies.

The project software PRO7000 allows the configuration of all installed devices within the network from a central point. If a remote control for this network exists it is possible to execute simple service operations via a remote session.

Future-oriented technology

As a market and technology leader, SCHNEIDER is known for its future-oriented technology and long lasting products. Expect products and services at the highest technological level and of first class quality.

- State-of-the-art microcontroller
- Flexible, modular extendable system
- Simple and quick engineering, installation and service
- Integrated web server
- Open to many different communication protocols
- Energy efficient systems
- 100 % original SCHNEIDER

We plan and design ventilation systems

Our motivation and our challenge is the planning and design of the entire ventilation system, right down to the individual development of customer-specific applications, together with our customers.

The results are optimized solutions that take economic aspects into account.

References

Industry/Chemistry/Pharmaceutics

ACTELION
ALTANA AG
BASF SE
BAYER AG
BAYER-SCHERING AG
BOEHRINGER Ingelheim
CILAG AG
CLARIANT
DSM
GIVEAUDON
GRÜNENTHAL GmbH
HOFFMANN LA ROCHE AG
HIGH TECH PARK Shanghai
MERCK KGaA
NIZO
NOVARTIS AG
NYCOMED GmbH
PFIZER AG
SANOFI-AVENTIS AG
SOLVAY AG
SYNGENTA

Universities/Colleges/Schools

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Institutes

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DZNE Bonn
FZ Karlsruhe
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Paul Ehrlich Institut
Max Planck Institut
WWA Kulmbach
Hospitals

These references are only a small extract from our wide range of services.
We would be happy to provide you with further examples on request.

Know-how and expert solutions for ventilation technology

Many large projects implemented worldwide speak for themselves.
Would you like more information?

Visit our website and contact us directly.

SCHNEIDER's LabSystem + AirSystem products offer
security of investment, innovation, cost-effectiveness and quality.

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