



- ▶ **Integrated control for the X-CUBE**



TROX[®] TECHNIK
The art of handling air

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Advanced centralised ventilation units must meet the demands of both buildings and occupants, and then with maximum efficiency. This is why we have developed a control module that offers a whole range of measurement and control functions to adapt the X-CUBE to your needs and let you use it efficiently and effectively.

Integrated refrigeration functions, intelligent control of operating modes and precise volume flow rate control are just three of the wide range of functions that complement each other perfectly and work towards first class efficiency and hence significant energy savings. Have a look at what all the X-CUBE control module has to offer.



► FUNCTIONS



COOLING

Air cooling is achieved by different means, which can also be combined:

- Integrated refrigeration
- Cooling coil (PCW)
- External evaporator
- Adiabatic cooling

The X-CUBE control module supports cooling with:

- Temperature control
- Night purge function
- Protection against excessive cooling down
- Control of refrigeration components
- Control of cooling coil (PCW)
- Integration of an external evaporator
- Integration of adiabatic cooling
- Anti block function for pumps and valves



HUMIDIFICATION AND DEHUMIDIFICATION

The X-CUBE control module allows for monitoring and controlling the humidification and dehumidification of the air by:

- Humidifier control
- Integrated supply air humidifiers
- Temperature control



HEAT RECOVERY

Effective heat recovery is the heart of a combined supply and extract air system. It is achieved with:

- Plate heat exchangers
- Rotary heat exchangers
- Run around coil systems and high-efficiency run around coil systems

With the X-CUBE control module these heat recovery systems can be integrated and protected:

- Plate heat exchanger with bypass control
- Icing protection for plate heat exchangers
- Rotary heat exchanger with actuator
- Run around coil systems with optional pump station



AIR QUALITY

We have built the X-CUBE not just to supply air, but to supply air of the best quality. The X-CUBE control module integrates:

- Air quality control
- (Combined) VOC and CO₂ sensors
- Temperature sensors
- Humidity sensors
- Smoke detectors
- Filter monitoring function based on differential pressure measurement



HEATING

Air heating is usually achieved by PWW coils or electric heating coils. The X-CUBE control module supports:

- Temperature control
- PWW heating coil control and reheater control
- Integration of an electric air heater
- 'Turn on boiler' signal
- Anti block function for pumps and valves
- Frost protection
- Start-up delay in winter
- Summer/winter compensation



FAN TECHNOLOGY AND VOLUME FLOW RATES

State-of-the-art fan technology moves the air in the X-CUBE. Airflows are treated in various ways, depending on the requirements. The X-CUBE control module provides specific functions such as:

- Fan speed control (stepless or not stepless)
- Volume flow control
- Differential pressure control
- Airflow monitoring
- Differential pressure sensors
- Different volume flow rate setpoints for supply and extract air
- Volume flow rate calculation based on fan differential pressure
- Control of mixed, supply, outside and exhaust air dampers

► DISPLAY AND MONITORING

Information, information, information

What is the current operating mode? What are the setpoint and actual values? Characteristics? Running times? Other parameters? The X-CUBE control module has all the information and supports you with:

- Touch screen
- Function changes at your fingertips
- Dynamic display of system functions, including measurement and control signals and values
- Extensive time setting functions
- Web server integration and data retrieval via web browser
- Remote control using additional touch panel or access via web browser

Building management systems and interfaces

To control the building services the X-CUBE control module can be integrated with state-of-the-art BMS and allows for web-based access. The most extensive functions are available to transfer parameters and to access the equipment settings. The following interfaces are available:

- BACnet
- Modbus
- Ethernet
- LON (upon request)

Integration with air distribution systems

Air distribution or air conditioning systems consist of many different components. The X-CUBE control module connects them all:

- Fire dampers, including monitoring and fault detection
- TROXNETCOM for fire dampers
- Volume flow controllers
- Duct sensors
- Dampers

Quality and reliability

All units to be linked by a bus are subjected to comprehensive quality control before shipping. Component addresses and the bus communication are tested on a dedicated test facility to ensure they meet the very high TROX quality standards.

An integral cable duct protects the cables and prevents excessive loading. The cable duct is fitted with patch panels that facilitate electrotechnical connections even when a system is shipped in parts; it is in fact so easy that we call it plug and play.

The TROX measurement and control system is useful at many ends; for example, it helps the Technical Service to change sensors and actuators. The integral cable duct and the straightforward cabling of the components are a hygienic solution which helps the X-CUBE meet the hygiene requirements of the VDI 6022 guideline. The high-quality industry PLC is intrinsically safe. Should data ever be lost due to an unforeseeable event, such as a lightning strike, the previously saved configuration can easily be restored by simply replacing a micro SD card as long as the hardware is intact.

System diagrams

The comprehensive control diagrams that cover all parts of the system are generated according to the applicable VDI guideline and using the latest CAD technology.

Circuit diagram

The circuit diagram is created using E-Plan and is supplied with the control module.

Bespoke solutions

A very high level of flexibility has literally been built into the TROX measurement and control system. Due to its modular structure it can be adapted to individual requirements. Just ask us!

Other features of the TROX measurement and control system

Several analog and digital inputs and outputs are available as standard, and I/O expansion modules can be added, if necessary. Sensors and actuators can be retrofitted at a later stage upon request. Extending the operating time ('party mode') is useful for extraordinary occasions. Special signals are processed using the user-configurable volt-free contacts. Many control applications for either supply air or extract air systems as well as for combined supply and extract air systems can be implemented. If you have any questions, just give us a call or send a text message! Our Sales staff will be happy to help. The integral XC bus system means state-of-the-art connection to sensors and actuators.