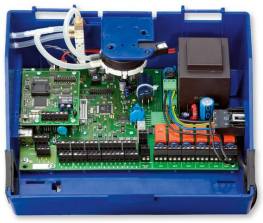
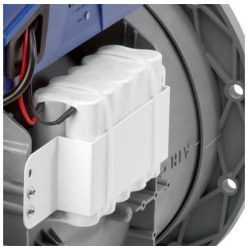
TROX® TECHNIK
The art of handling air





# EASYLAB TCU3

## EASYLAB CONTROLLERS FOR THE MOST DEMANDING CONTROL ENGINEERING TASKS

Electronic controller that offers plug and play communication for demanding control tasks, yet simple wiring and commissioning

- Maximum control comfort for laboratories, clean rooms, hospital wards, and offices
- Perfect system for complete room solutions from a single source
- Demand-based and quick-response control for fume cupboards, and of supply air, extract air and pressure
- Interactive configuration software with commissioning wizard and Bluetooth adapter
- Plug-in communication cable for easy wiring
- Adaptable control panels and many special functions allow for individual operating modes and control strategies
- Fume cupboard control and monitoring according to EN 14175

Expansion options

- Connection to the mains (230 V)
- Expansion modules with LonWorks, BACnet or Modbus standard interfaces to the central BMS
- Automatic zero point correction for long-term stability and reduced maintenance
- Control panels for fume cupboards and for room control

## Application

Application

- Electronic controller Type EASYLAB TCU3 for the control of volume flow rates in fume cupboards and for the control of supply and extract air in laboratories; can also be used as an attachment for air terminal units
- For use in laboratories, clean rooms in the pharmaceutical and semiconductor industries, operation theatres, intensive care units, and offices with very demanding control requirements
- Fast and stable control of the volume flow rate for fume cupboards, and of room supply air and room extract air
- Fume cupboard control tested to EN 14175, part 6, for fume cupboards of all brands
- Controllers can be used individually or combined with other controllers for a complete room solution
- System solution for the volume flow control in rooms (room balance)
- For extract air led areas such as laboratories
- For supply air led areas such as clean rooms
- Numerous options for the integration of additional volume flows into the room balance
- Room pressure control or duct pressure control as cascade of differential pressure and volume flow rate
- Interface to the central BMS, voltage signals 0 – 10 V or with expansion modules for LonWorks, BACnet, Modbus

Special characteristics

- Plug and play communication system with automatic controller identification, no component addressing required
- Modular system for functional expansion
- Connections and status displays on the outside of the controller casing
- Project-specific adjustments are possible using adaptable control panel for fume cupboard and room
- Project-specific adjustments can be achieved with configurable special functions, monitoring, and alarm signalling
- Permanent function monitoring of the system and the connected sensors
- Very simple commissioning, configuration changes and diagnosis
- Centralised configuring and permanent signalling of room settings (room management function)
- EasyConnect configuration software enables interactive navigation (also wireless)
- Factory tested and configured with project-specific parameters

## Description

Equipment functions

Fume cupboard control

- FH-VS: Face velocity transducer – face velocity control
- FH-DS: Sash distance sensor – linear control strategy
- FH-DV: Sash distance sensor – safety-optimised control strategy
- FH-2P: 2 switching steps for on-site switch contacts
- FH-3P: 3 switching steps for on-site switch contacts
- FH-F: Volume flow rate constant value

Extract air controller / supply air controller

External volume flow rate setting

- EC/SC-E0: Volume flow rate default setting 0 – 10 V DC
- EC/SC-E2: Volume flow rate default setting 2 – 10 V DC

Without signalling

With switching steps for on-site switch contacts

- EC/SC-2P: 2 switching steps
- EC/SC-3P: 3 switching steps
- EC/SC-F: Volume flow rate constant value

Room control

Extract air led system for laboratories

- RS/LAB: Supply air control
- RE/LAB: Extract air control
- PC/LAB: Differential pressure control (supply air)

Supply air led system for clean rooms

- RS/CLR: Supply air control
- RE/CLR: Extract air control
- PC/CLR: Differential pressure control (extract air)

Parts and characteristics

- Ready-to-commission controller, as an attachment for air terminal units
- Static differential pressure transducer for rapid actual value measurement
- Fast-running high-precision actuator, running time for 90° is 3 s
- Microprocessor system with programme and system data stored in nonvolatile memory
- Double-stack terminal block for supply voltage connection
- Connections for two control panels
- Connection of communication line to plug socket or screw terminals
- Digital outputs with screw terminals
- Digital inputs with screw terminals or plug socket
- Analog inputs with screw terminals or plug socket
- Analog outputs with screw terminals or plug socket (actuator)
- Integral terminal resistor for the communication line
- Alarm indicator lights on both sides of the casing
- Status indicator lights (heartbeat, communication and terminal resistor)
- Equipment function FH-VS: Face velocity transducer VS-TRD for measuring the face velocity for fume cupboards
- Equipment function FH-DS, FH-DV: Sash distance sensor DS-TRD-01 for capturing the sash position of a fume cupboard

Attachments

Expansion modules are factory mounted or can be fitted at a later stage

- T: EM-TRF, power supply unit for connecting the controller to the 230 V AC mains voltage
- U: EM-TRF-USV, power supply unit for connecting the controller to the 230 V AC mains voltage and to ensure uninterrupted power supply
- Z: EM-AUTOZERO, automatic zero point correction for long-term stable volume flow rate measurement and hence reduced maintenance.
- L: EM-LON, LonWorks FTT-10A interface
- B: EM-BAC-MOD-01, interface configured for BACnet MS/TP
- M: EM-BAC-MOD-01, interface configured for Modbus RTU
- S: EM-LIGHT, wired socket (230 V) for the connection of lighting and for switching the lighting on/off using the control panel

Useful additions

- BE-SEG-**: Control panel for fume cupboard control
- BE-LCD-01: Control panel for fume cupboard control and room control
- TAM: Adapter module as an interface between fume cupboard control and room control, and to the central BMS
- Differential pressure transducers: Static differential pressure transducers for room pressure control or duct pressure control
- EasyConnect: Configuration software for the commissioning and diagnosis of EASYLAB components

Construction features

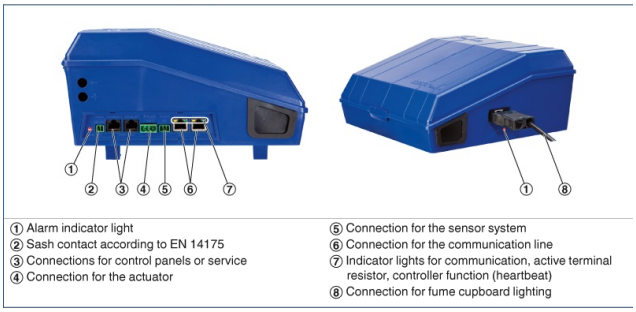
- Main PCB and expansion modules in one casing
- Controller casing is clip-fixed to the VAV terminal unit
- Controller casing can be opened without tools, except for TCU3 with EM-TRF or EM-TRF-USV
- Pin header socket for the connection of expansion modules
- Plug sockets for the most important connections on the outside of the casing
- Static differential pressure transducer with room air induction to protect the sensor

Materials and surfaces

- Casing made of ABS plastic, blue (RAL 5002)

## INFORMACIÓN TÉCNICA

**Connections and status displays**



① Alarm indicator light
② Sash contact according to EN 14175
③ Connections for control panels or service
④ Connection for the actuator
⑤ Connection for the sensor system
⑥ Connection for the communication line
⑦ Indicator lights for communication, active terminal resistor, controller function (heartbeat)
⑧ Connection for fume cupboard lighting

| | |
|---|---|
| **Supply voltage** | 24 V AC ± 15 %; 230 V AC as option; 50/60 Hz |
| **Power rating** | 35 VA fume cupboard controller with control panel; 29 VA room controller; 33 VA room controller with coom control panel; 40 VA max. with all expansion modules |
| **Micro fuse** | 2 A, slow blow, 250 V |
| **Actuator** | Fast-running high-precision actuator, running time for 90° is 3 s |
| **Operating temperature** | 10 – 50 °C |
| **IEC protection class** | III (protective extra-low voltage) |
| **Protection level** | IP 20 |
| **EC conformity** | EMC according to 2004/108/EG |
| **Weight** | 1.4 kg |

| | |
|---|---|
| **Recovery time** | 500 ms |
| **2 interfaces for communication line** | Network cable SF-UTP, 300 m max.; up to 24 devices |
| **2 interfaces for control panels** | Network cable SF-UTP, 40 m max. |
| **6 digital inputs** | for volt-free switch contacts; can be configured as make or break contacts |
| **6 digital outputs** | Relay with make/break contact, 250 V, 12 A; switch-on current 25 A |
| **5 analog inputs** | 0 – 10 V, input resistance > 100 kΩ, characteristic can be configured |
| **4 analog outputs** | 0 – 10 V, 10 mA max., characteristic can be configured |

Standard description (characteristics)

EASYLAB, electronic control unit with plug and play communication interface; modular system that can be expanded to provide sophisticated variable volume flow rate control with a fast-running actuator.

With the application software the control unit can be set to various equipment functions such as fume cupboard control, supply and extract air control, and differential pressure control in order to meet demanding control requirements; even entire rooms can be controlled individually.

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