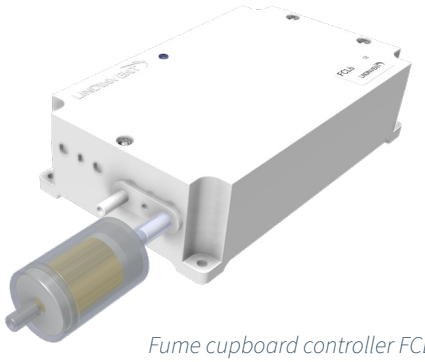
FCLb FUME CUPBOARD CONTROLLER

INTRODUCTION

Fume cupboard controller FCLb maintains a constant air speed in the hatch opening regardless of the hatch position up to the marked safe height.

The Swedish Work Environment Authority's regulations (AFS 2020:1, AFS 2018:1) set requirements for fume cupboards and hygienic limits respectively.



Fume cupboard controller FCLb.

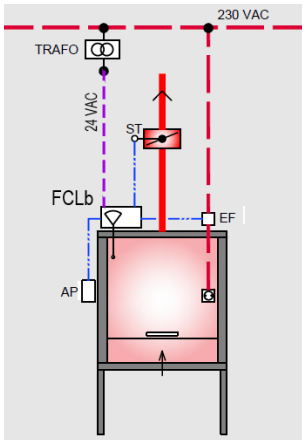
FUNCTION

FCLb controls, via connected damper with damper actuator, the air velocity in the fume cupboard opening to 0.5 m/s regardless of the hatch position up to a safety level.

- In addition to the normal operating mode, you can select emergency or rigging mode using fume cupboard monitor FLOCHECK V. An acoustic and optical alarm is activated in case of emergency. In emergency mode the air velocity is increased. In rig mode, the air velocity is lowered. From rig mode, the control is back to normal operation after a preset period of time.
- Can be connected via a Node ID to a wired loop, a local area network (CAN), for stable communication between cooperating control units.
- Gateway NCE is connected to the local network for access and communication via a parent system.
- The controller, which is programmable, has parameters that can be read and set locally or centrally.
- Equipped with Bluetooth® for local communication via mobile application LINDINSIDE.

MEASURING PROBE

The controller is supplied with a measuring probe for air velocity which is mounted in the fume cupboard. The measuring probe is connected via hose to the air velocity sensor in FCLb.



Operating card showing: FCLb, fume cupboard montintor FLOCHECK V (AP), transformer 230/24VAC, damper actuator (ST) and electric interlock box (EF) without CAN connection.

TECHNICAL SPECIFICATIONS

General

Dimensions (mm): 176 x 105 x 52 (LxBxH)
Material: Polystyrene (Encapsulation)
Nettweight: 0,4 kg
Colour: RAL 9003
IP-class: Complies with IP53

Temperature limits:
Operation: 10°C to 40°C; <85% RF
Storage: -20°C to 50°C; <90% RF

Design features

Spacious enclosure with breakable cutouts adapted for cables ~4 & ~6 mm. The cover, which is removable, replaces at reassembley the need for cable glands by clamping the cables. External ears for attachment. Lid with LED tube for exposure of LED showing operating mode.

Air velocity control

Massflow sensor: Analogue, integrated in the controller. The sensor is connected to two sockets in the enclosure. An outlet (+) for reference pressure (with filter) and an outlet marked (-) for the hose from the measuring probe.

Measurement range: 0.2-1.0 m/s

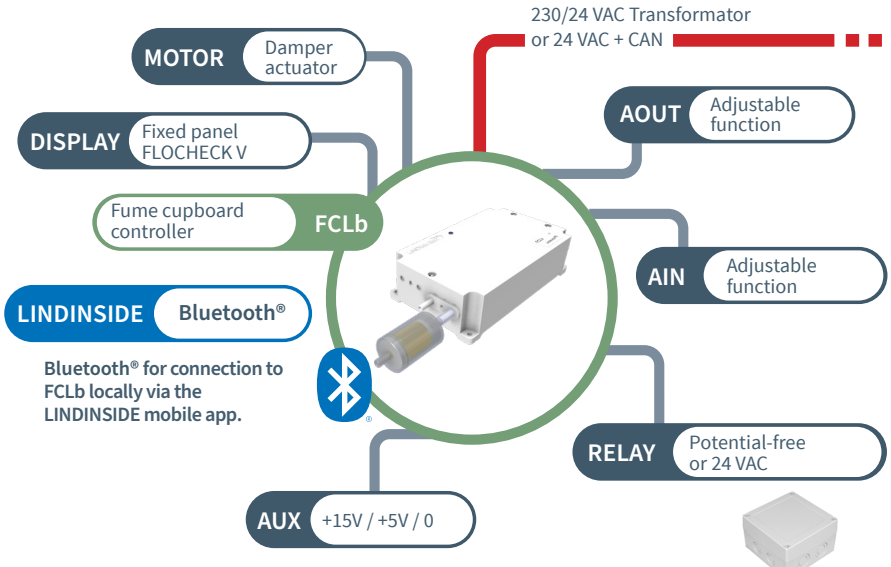
Tolerans: ± 0,04 m/s between 0,3 och 0,8 m/s

Performance: Change regulated within 3 s (90% within 2 s) at maximum change from the 300 mm safety level.

Electrical system

Supply voltage: 24 VAC
Effect: 1,5 VA
CE-marking: Complies with EMC and the low voltage directive.

CONNECTIONS TO FCLb



Connection diagram for FCLb.

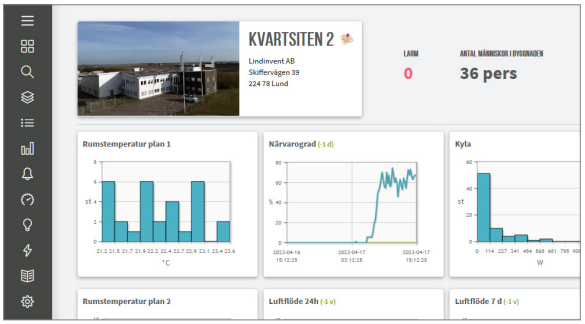
Electrical interlocking contactor, EFK

CONNECTIONS

Two terminals: 24 VAC + CAN.
Terminal: 0-10 VDC AIN and AOUT for the damper actuator.
Terminal: AIN2, General 0-10 VDC
Terminal: AOUT2, General 0-10 VDC
Relay: 24 VAC or Potentialfree
Terminal: Generic power supply (AUX: G0, +5V, +15V)
Module for Bluetooth®
Terminal: Monitor and user panel (FLOCHECK V version B02)

VISUALIZATION TOOL LINDINSPECT®

LINDINSPECT® is a powerful web-based tool which is part of the central unit system software. Everything from control units to supplementary systems for comfort and sustainable energy use is made accessible for central optimization, administration and visualization.



Detail from the home page in LINDINSPECT® where equipment and system solutions can be visualized and administered.

USER INTERFACE

Look for details about a specific interface via its product name and product description.

- Fixed panel FLOCHECK V, which is wired directly to FCLb.
- Log in to the controller via mobile phone and the LINDINSIDE app.
- Via Lindinvents central unit with the visualization tool LINDINSPECT®. FCLb must then be part of a network (CAN) connected to the central unit via Gateway NCE.
- Another external central system through Gateway NCE and ModbusRTU or ModbusTCP.

CONTROL & ALARM

By the fixed panel FLOCHECK V, an alarm is indicated both acoustically via a buzzer and optically via LED in the event of air speed deviation. Systems with LINDINSPECT® can log air speed continually and set an alarm flag in the event of deviation.

CALIBRATION

The controller requires on-site airspeed calibration.

ELECTRICAL INTERLOCKING - EFK

As a safety measure, through the electric interlock contactor EFK, the controller can cut the voltage to electrical outlets after an adjustable time at low air speed in the cupboard opening. An installation with EFK can reduce the risk of explosions when handling flammable substances.

THE CONTROLLER AND ITS INSTALLMENT

FCLb is usually placed and fastened on top of the cupboard.

- Positioning of the measuring probe:
  *Note! The different alternatives below are recommended to start from. Find the best positioning dependingon your type of cupboard. Any adjustment is evaluated in connection with commissioning.
  Cupboard with slot for draught both at the bottom and at the top:
  The included measuring probe is mounted HORIZONTALLY, see illustration 1M and 2M for instructions. The measuring probe is mounted so that the measuring holes point STRAIGHT INTO the cabinet space TOWARDS the back.
  Cupboard with slots for draught only in the upper half of the cupboard:
  Mount the measuring probe VERTICALLY on the side wall of the cupboard approx. 5 cm from the corner. Align the measuring holes in the measuring probe so that they point STRAIGHT in TOWARDS the back of the hood, see illustration 3M.
- On the top of the cupboard, a circular hole, Ø 9 mm, is made for the hose passage. The measuring probe hose is fitted to the controller socket “Mät”/measure.
- FLOCHECK V, which is used as monitor, is mounted in connection with or on the fume cupboard.

FCLb is prepared for connection of the Electric Interlocking Box EFK. EFK is an accessory that is ordered separately. For assembly and connection: See the exterior connection diagram for EFK. **Notice: Assure that 230 VAC is not connected directly to FCLb!**

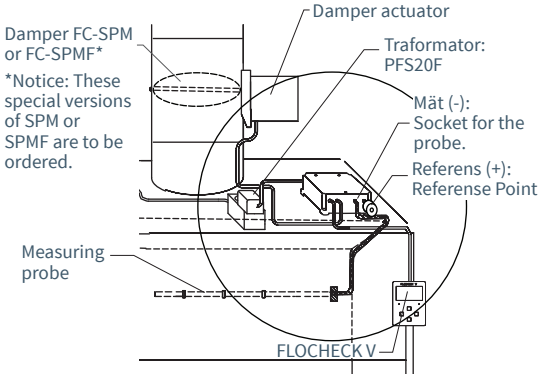


Illustration 1M. FCLb installed with additional equipment connected.

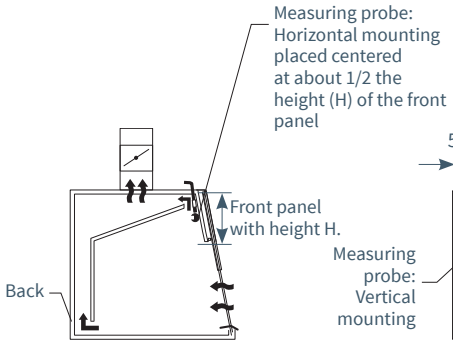


Illustration 2M. Cabinet with openings both at the bottom and top for draft: The measuring probe is placed horizontally with measuring holes directed straight into the cabinet towards the back.

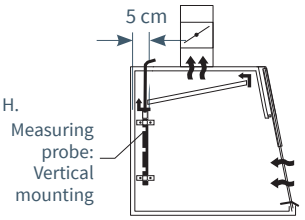


Illustration 3M. Cabinet with air gap for draft only at the top of the cabinet: Here the measuring probe is placed vertically with measuring holes directed straight into the cabinet towards the back.

ADDITIONAL PRODUCT DOCUMENTATION

Download available in FCLb product page at lindinvent.com

Document	Comment
Installation instruction	See hereby included instructions and the installation instruction in swedish for some additional guidance. Note: Adapted damper FC-SPM or FC-SPMF is to be used with damper actuator DBA.
Start-up instruction	Not translated. A guide on how to use FLOCHECK V or app LINDINSIDE to start-up commisioning.
Maintenance instruction	Regarded as maintenance-free.
External connection diagram	Available.
Building material declaration	Assesed by Byggvarubedömningen.
End-user info	Available: A FLOCHECK V operation manual (in both swedish and english)
Modbuslista	The latest modbus list for FCLb.
AMA-text	Descriptive text according to AMA standard.