

Product description

BCX – Climate baffle controller

Introduction BCX

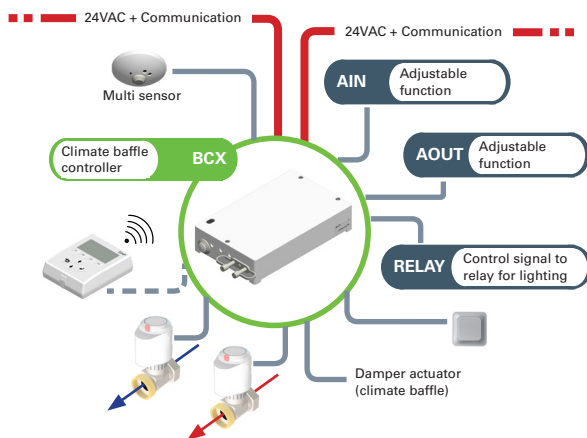
BCX is designed to control room climate via climate baffles. The controller has functionality to control heating, cooling and air flow with the aid of temperature, carbon dioxide and occupancy detectors.

Function

- Can control air flow, heating and cooling in sequence via P band, based on input signals from temperature, carbon dioxide and occupancy detectors.
- Can control actuator for valves 24V ON/OFF or 0-10V.
- Can control VAV baffles with built-in actuator that controls the flow to the nozzles.
- Can control and measure flow via a duct-mounted damper (see functional chart BCX on page 2).
- Can interlock cooling valves via condensation sensor.
- Can connect lighting to motion-controlled lighting zones.
- Can be connected via node ID to a communication loop (CAN) for access to and communication with other concurrent nodes or systems via LINDINTELL or Gateway NCE with ModbusTCP/RTU.
- The controller has a great number of parameters that can be read and controlled from LINDINTELL/LINDINSPECT via CAN.
- Supplied as standard with internal flow sensor.

Connections for input and output signals

Many types of equipment/functions can be connected to the controller. If exchange to a superior system is desired but is not possible via Modbus, a number of functions can instead be defined for the controller's inputs and outputs.



Connection diagram BCX. The controller is connected to a voltage feed and communication loop via Lindinvent's standard cable with two conductors for voltage feed and two twisted-pair conductors for communication. The same cable is used for connection of a number of other accessories.



Climate baffle controller BCX.

User interface

- Communication via server with LINDINTELL/LINDINSPECT via CAN.
- IR communication directly with controller or multi sensor is via hand unit DHP.
- Wired communication via hand unit DHP.

LINDINTELL/LINDINSPECT

LINDINTELL is the software package that is installed on a central server and coordinates all optimisation and monitoring functions in Lindinvent's system designs for climate control and protective ventilation. LINDINTELL has, among other things, functions for optimisation, oversteering and free programming.

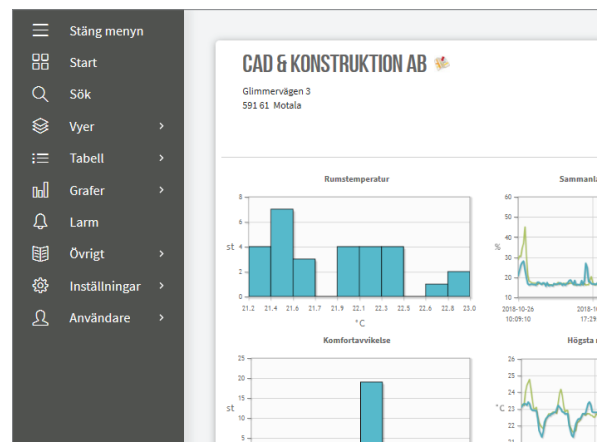
LINDINSPECT is a Web interface that has been developed to be used with LINDINTELL.

Control and alarm

Systems with LINDINTELL/LINDINSPECT can log values continually and set an alarm flag in the event of any deviations.

Calibration

BCX is supplied factory calibrated.

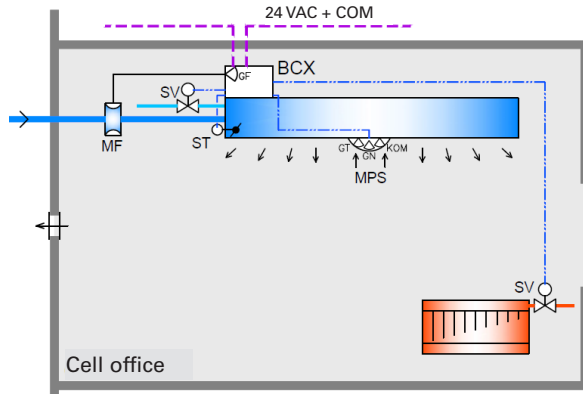


Via the web tool LINDINSPECT, BCX can be monitored and administered like all other connected nodes in the network.

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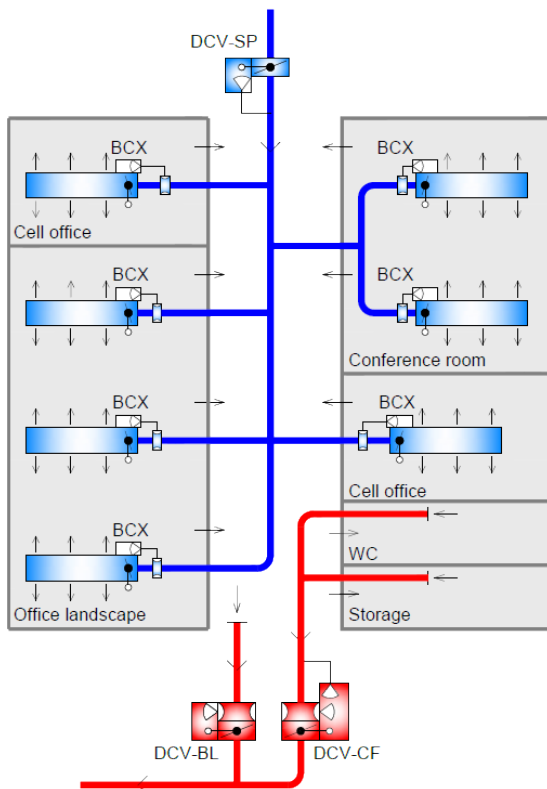
BCX – Climate baffle controller

Functional chart BCX



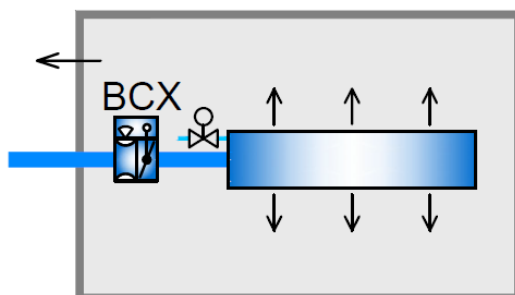
BCX with multisensor mounted on a VAV climate baffle

- Multisensor [MPS] with room temperature sensor [GT], occupancy detector [GN] and IR communication [IR].
- Supply airflow measurement by a duct mounted measuring flange.
- Control of the built-in actuator [ST] in the baffle for regulating the supply air flow.
- Sequential adjustment of valves for cooling and heating [SV].



Constant pressure holding and flow balancing in conjunction with climate baffles

- BCX in each room measures and regulates the airflow.
- Flow measurement in the duct for each baffle.
- DCV-SP maintains a constant pressure in the main duct for supply air.
- DCV-CF maintains constant pressure and measures the flow for fixed extract air units.
- DCV-BL balances supply and extract air within the zone with any offset.



Flow control of climate baffle via a duct mounted damper

Continuous control of the air flow in a CAV baffle (supply air baffle) is not recommended, since these often require at least 40 - 50 Pa for correct function.

If you want to regulate the flow, a 2-position flow control based on presence is recommended:

- Without occupancy, a minimum air flow is maintained, while the cooling valve is interlocked.
- With occupancy, the occupancy flow is obtained, while the cooling valve is allowed to control.

Product description

BCX – Climate baffle controller

Technical specifications BCX

General

Dimensions (mm)

200 x 125 x 45 (LxWxH)

Material

Polystyrene encapsulation

Net weight

0.4 kg

Colour

RAL 9003

IP classification

Encapsulation complies with IP53

Temperature limits

Operation: 0°C to 40°C; <85% RF

Storage: -20°C to 50°C; <90% RF

Electrical system

Supply voltage

24 VAC

Capacity

1.5 VA

CE marking

Complies with EMC and the Low Voltage Directive

Controlling the air flow

Flow sensor

BCX is equipped as standard with a flow sensor for measuring the supply air flow to the baffle.

Range

Recommended range: 0.5–6.0 m/s

Maximum range: 0.2 - 7.0 m/s

Tolerance

±5 % or minimum ± x l/s (x = the duct area in dm²)

Performance

Speed: Change regulated within 4 s (95% within 3 s)

Room temperature measurement

Temperature sensor

Sensor with thermistor of NTC type.

Accuracy

Temperature ± 0.5 K

Connections to BCX

- 2 x for 24 VAC + Communication loop (CAN)
- 1 x for multi sensor MPS (IR unit, Occupancy sensor, Temperature sensor)
- 1 x connection for 0-10 VDC analogue out for damper actuator
- 1 x 0-10 VDC analogue in for feedback from damper actuator
- 1 x for occupancy sensor 24VAC/13VDC/5VDC
- 1 x for internal digital CO₂ sensor
- 1 x for condensation sensor (G0, Signal)
- 1 x for lighting system control
- 1 x for duct temperature sensor
- 1 x for two general 0-10 VDC (AIN2 and AIN3)
- 1 x for two general 0-10 VDC (AOUT2 and AOUT3)
- 1 x for DIN (G0, DIN1)
- 2 x for valve actuators (Triac 1 and Triac 2)
- 1 x IR transceiver "IRDA" - for wireless communication with DHP
- 1 x RJ45 - for wired connection of user panel DHP
- 1 x for generic voltage feed (G0, +5V, +13V)

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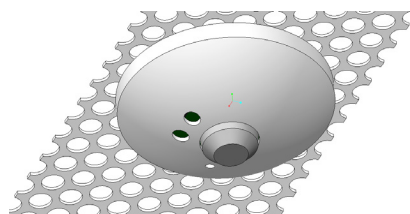
BCX – Climate baffle controller

Accessories

The following examples of accessories must be ordered separately:

Multi sensor

Multi-sensor where room temperature sensor, occupancy sensor and IR communication are connected. Mounted on the plate on the base of the climate baffle.



Multi sensor mounted in the base plate of a climate baffle.

Temperature and CO₂ sensors

The sensors are available for both wall and duct mounting. CO₂ sensors are also available for fitting in the baffle.

External supply air damper and measuring flange

If the climate baffle has no actuator for nozzle adjustment, an external damper with measuring flange can be mounted in the supply air duct. Baffles with built-in actuators are equipped with external measuring flanges for measurement of supply air flow, or alternatively the flow is measured via a measurement point on the baffle with correction factor.

External occupancy detector

Available in different designs depending on the size of the room.

Lighting system control box CBR

Control of lighting via push button and/or occupancy detector. An in-house developed relay function gives operation without power spikes.

Valve actuator

Heating and/or cooling are controlled in sequence. Actuator versions are available for either open or closed when power is off, for control of radiators and/or any fan coil units.

Room panel with reference value adjuster

Digital room panel DRP for displaying and changing values.

Flow balancing

Supply air flow from BCX is balanced via flow control DCV-BL set for flow balancing.

Condensation sensor

BCX can be supplied with a condensation sensor, which is mounted on the feed pipe to the climate baffle. In the event of condensation, the cooling valve is closed.

Wireless communication via IR link

DHP is a handheld user panel designed for easy and flexible access to Lindinvent's controllers and control units for climate control. The unit is temporarily connected to BCX via IR link or wired by FTP-cable.

Additional product documentation BCX

Table 1: Additional documentation for BCX can be obtained via links on the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction		●	See the external connection diagram; project specific documentations
Start-up instruction	●		Describes the complete menu structure with settings
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram	●		
Environmental product declaration	●		Assessed by Byggarbetsdömningen
User information		●	Not applicable
Modbus list	●		
AMA text	●		

Product documentation for BCX can be downloaded via www.lindinvent.se/products/



Contact

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Tel: 046-15 85 50

Lindinvent – Smarter indoor climate. Greener buildings.

The company offers products and systems for controlling ventilation, lighting, solar shading and local utilization. Equipment and climate solutions are being developed for offices, schools, hospitals, laboratories and similar environments. Lindinvent's systems work together for the best comfort and energy use.

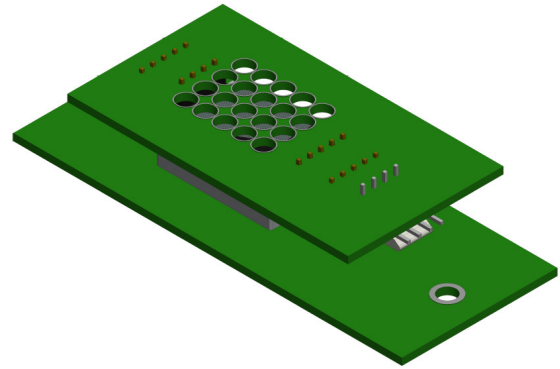
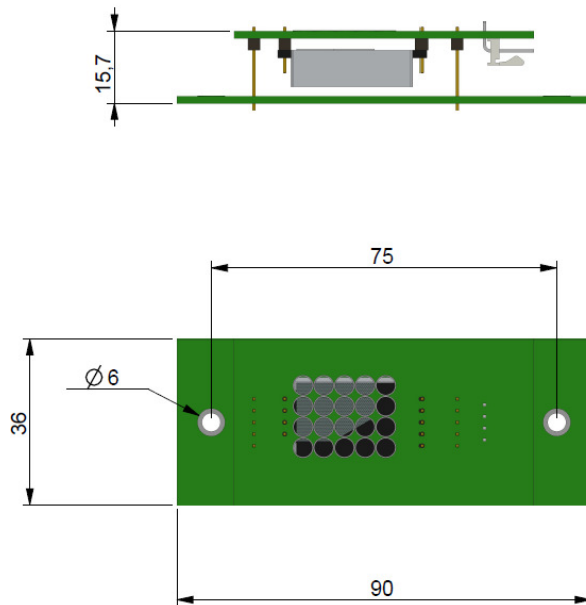
Product description

GQB – Carbon dioxide sensor

Introduction

GQB is a small carbon dioxide sensor designed to be mounted inside a supply air baffle. The sensor is mounted above the baffle grid. There, the sensor is passed by ejected room air.

Dimensions



GQB – Carbon dioxide sensor

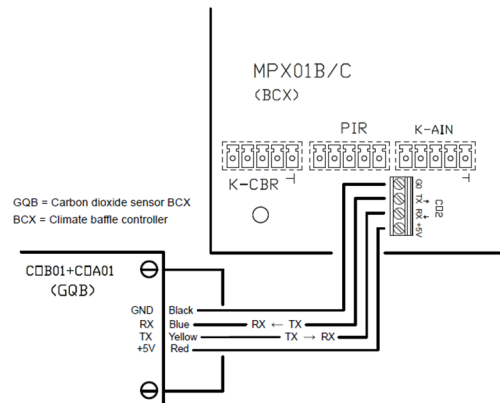
Connection

GQB has a four-pole pin connector for cable connection to controller BCX. Together with GQB, a cable (standard 2 m) is supplied which is pre-contacted for connection to the sensor. The other end of the cable is connected to a screw terminal in regulator BCX.

GQB is powered by 5 V and communicates digitally with BCX.

Mounting

GQB is screwed into the baffle above the outlet grid where it is exposed to co-injected room air. For example, GQB can be attached to one of the short sides of the baffle.



Product description

MPS – Multisensor

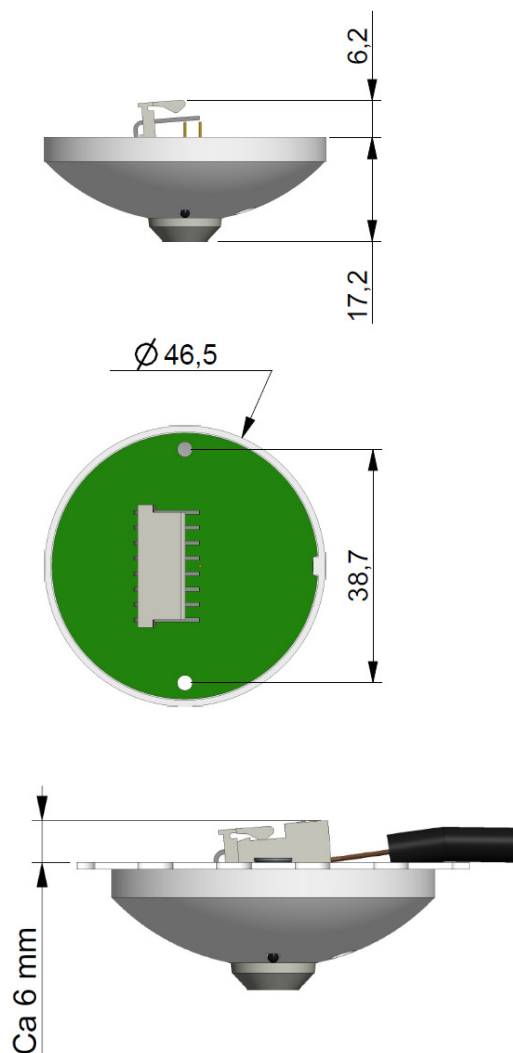
Introduction

MPS is a small multi-sensor designed for use with supply air baffles. The sensor is mounted on the outlet grid of the baffle and consists of:

- 1 temperature sensor (NTC)
- 1 presence detector (PIR)
- 1 IR port
- 1 cabling with pin connector (Length 2.95 m)

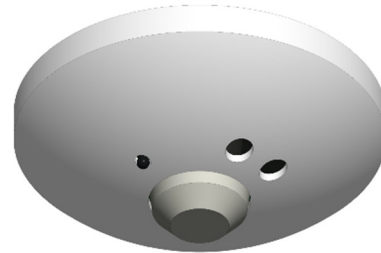
The wiring harness has an eight-pin connector for the controller BCX. IR communication provides wireless access to BCX via user panel DHP.

Dimensions



Connections

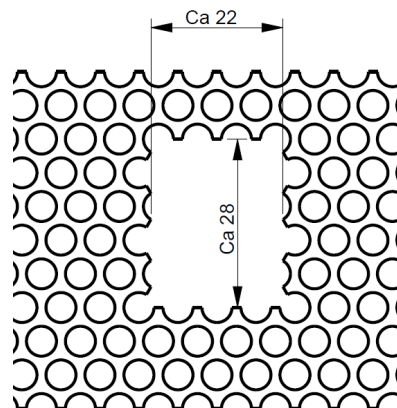
- 1 x 8-pin connector.



MPS – multisensor

Mounting

MPS is mounted onto the bottom of the outlet grid using two screws from the inside of the grid. Before mounting, a hole has to be made in the grid, see dimensions below. Cut with a clip cutter or use a hole saw, \varnothing about 25 - 29 mm.



Align the holes in the circuit board with the holes in the grid so that the connector protrudes through the hole. Screw the multi-sensor with the supplied screws.

Then connect the multi-sensor with the connector located on the black end of the supplied cable.

