iAV Control valve

ENGLISH en

Quick Start

L1020502 (Revision G | 08.04.2025)

DUCO

Table of contents

Translation of the original instructions (in Dutch)

See www.duco.eu for information regarding warranty, maintenance, technical data, etc.
Installation, connection, maintenance and repairs are to be carried out by an accredited installer. The electronic components of this product may be live. Avoid contact with water.

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DUCO

01 Application

The iAV Control Valve is an intelligent control valve that enables demand control to be set both centrally and zonally, in combination with a pressure-controlled or non-pressure-controlled (roof) fan. This valve is therefore extremely suitable for ventilation projects with collective exhaust, such as flats, student houses, studios... as well as in utility construction (schools / offices / residential and care centres).

The iAV Control Valve is available with built-in sensor (CO_2 or humidity) or without sensor.

01.A Controller / Component

One or more iAV Control Valves can be provided per zone. These can function as controller (standalone) or as component (with external control). An iAV Control Valve can be paired with an IQ unit or with another controller iAV Control Valve.
To control multiple iAV Control Valves simultaneously with one or more controls (= zone with multiple valves), iAV Control Valves can be addes as a wireless (RF) component under a controller iAV Control Valve. If an iAV is added as a component, it can no longer be paired as a Wired component to an IQunit.

01.B IQ unit

When using a pressure-controlled fan, the iAV Control Valve can operate independently. A non-pressure-controlledf an requires an IQunit that controls the fan with a PWM-signal[1]. For systems to be paired with a building management system (via Modbus), an IQunit must be provided, regardless of the fan type. Please refer to the manual of the IQunit for more information.

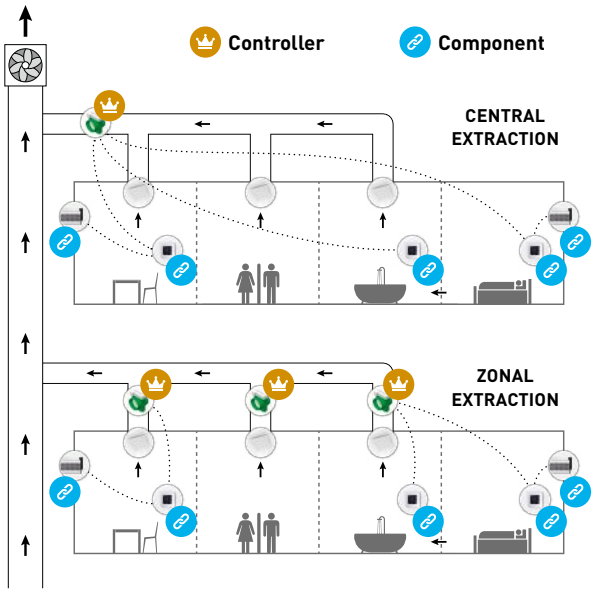
[1] PWM = Pulse width modulation = pulses are emitted at a fixed frequency to control actuators, among other things

01.C Possible configurations

Depending on your situation, there are a few possible configurations:

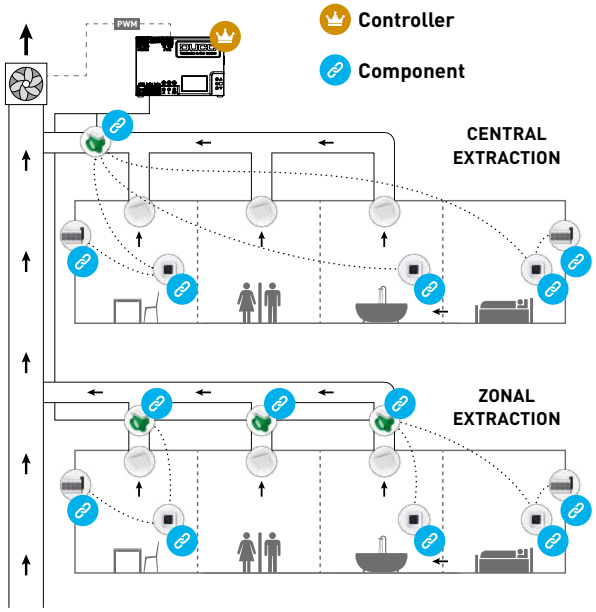
Configuration A: one iAV Control Valve per zone without IQ unit

This configuration is especially suitable for residential applications and rooms with small flow rates, in combination with a pressure-controlled fan. All valves operate automatically based on measurements in the iAV itself or from an external component such as a Room Sensor. The valves operate independently of each other.



Configuration B: one iAV Control Valve per zone with IQ unit

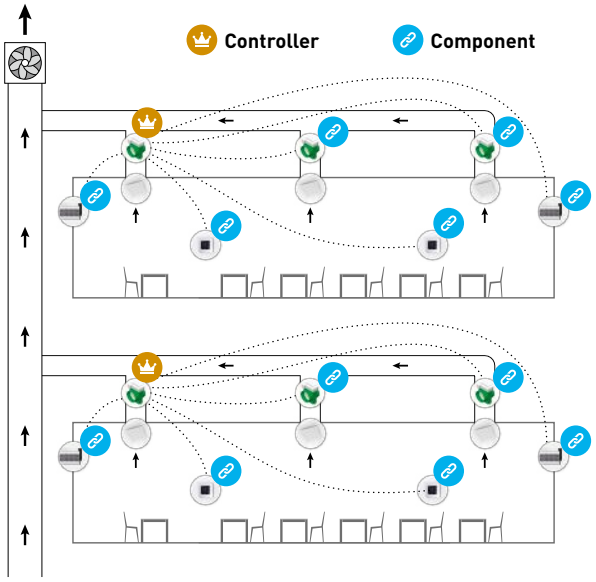
This configuration is especially suitable for residential applications and rooms with small flow rates. This setup is possible with both a pressure-controlled and a non-pressure-controlled fan. All valves operate automatically based on measurements in the iAV itself or from an external component such as a Room Sensor. The valves operate independently of each other.



Configuration C: multiple iAV Control Valves per zone without IQ unit

This configuration is especially suitable for utility projects with a pressure-controlled fan, where high flow rates per zone are required (for example classroom, open plan office ...). All iAV Control Valves are opened or closed together based on measurements in the iAV itself or from an external component such as a Room Sensor.

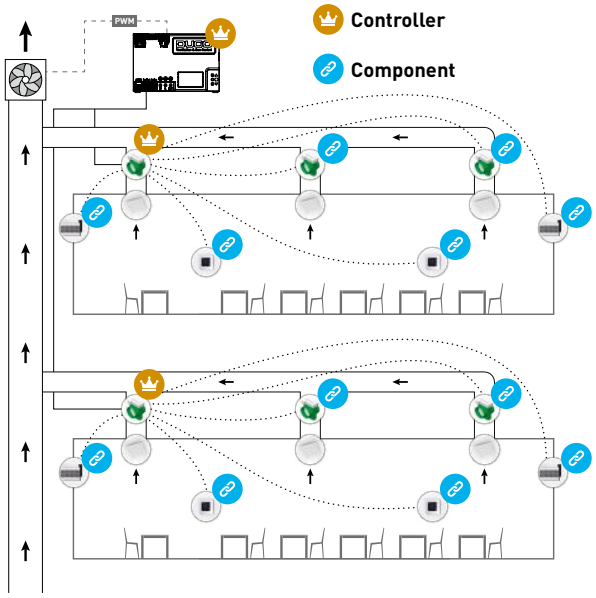
ATTENTION:
in this configuration, all iAV Control Valves in the zone must be of the same type (CO_2, humidity or sensorless). In the case of sensorless valves, one or more room sensors can be provided.



Configuration D: multiple iAV Control Valves per zone with IQ unit

This configuration is especially suitable for utility projects where high flow rates per zone are required (for example classroom, open plan office ...), in combination with a pressure-controlled or non-pressure-controlled fan or connection to a building management system. All iAV Control Valves are opened or closed together based on measurements in the iAV itself or from an external component such as a Room Sensor.

ATTENTION:
in this configuration, all iAV Control Valves in the zone must be of the same type (CO_2, humidity or sensorless). In the case of sensorless valves, one or more room sensors can be provided.



02 Regulations and safety instructions

The installer is responsible for installing and commissioning the unit.

Only a certified installer is permitted to install, connect and commission the iAV Control Valve, as described in this manual.

The installation of the iAV Control Valve must be carried out in accordance with the general and locally applicable construction, safety and installation regulations of municipal and other authorities.

When installing the unit, always follow the safety instructions in the manual. Failure to follow these safety instructions, warnings, notes and instructions could result in damage to the iAV Control Valve or in personal injury for which DUCO NV cannot be held liable.

Do not install this product in areas where the following are present or could occur:
- **Excessively greasy atmosphere.**
- **Corrosive or flammable gases, liquids or fumes.**
- **Room air temperature above +40 °C or below -5 °C.**
- **Relative humidity higher than 90 % or outdoors.**
- **Obstacles that prevent accos to or removal of the unit.**

Do not use the unit in the presence of flammable or volatile substances such as alcohol, insecticides, petrol ...

The unit must not be used in places where it could be subject to water jets.

Do not expose the unit to the elements.

The unit can only be used with the appropriate DUCO accessories and user controllers.

Use the unit only for applications for which it has been designed, as stated in this manual.

Modifications to the unit or to the specifications stated in this document are not permitted.

The iAV Control Valve meets the legal requirements for electrical appliances.

Handle electrical equipment with care:
- Never touch the unit with wet hands.
- Never touch the unit when barefoot.

When handling electronics, always take ESD inhibiting measures, such as wearing a grounded wristband.
Make sure that the electrical system to which the unit is connected complies with the stipulated conditions.

Make sure that the electrical power supply corresponds to a 24 VDC power source.

Use suitable and appropriate tools to work on the unit.

Use cables with the correct cable thickness.

Ensure that the electrical circuit is not damaged.

Check that the unit is complete and undamaged when you take it out of the packaging. If you have any doubt about this, please contact DUCO or the DUCO distribution point.

Keep the manual close to your unit.

This unit is not intended for use by people (including children), with reduced physical, sensory or mental capabilities, or who lack experience or know-how, unless they are supervised or have been given instructions on the use of the unit by a person who is responsible for their safety.

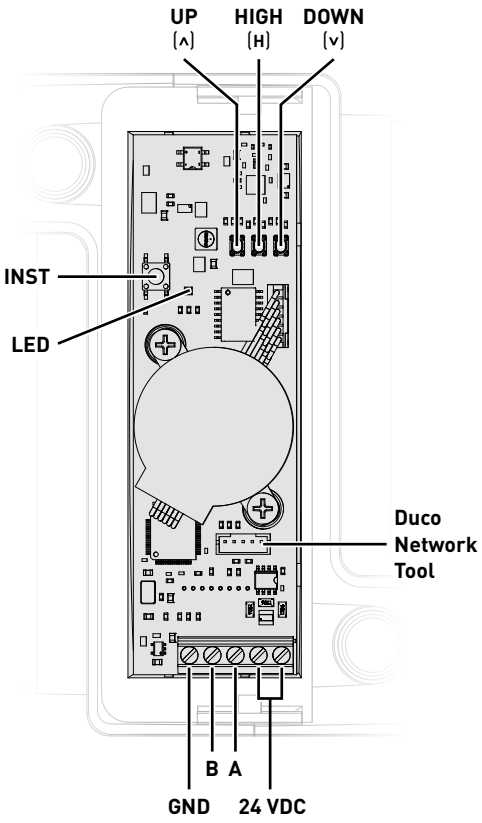
Children must be supervised to ensure that they do not play with the unit.

Maintenance instructions must be followed carefully to avoid damage and wear.

In case of a defect, contact a professional installer and have repairs carried out only by qualified personnel.

The user is responsible for the safe disposal of the iAV Control Valve at the end of its service life, in accordance with locally applicable laws and regulations. You can also take the unit to a collection point for used electrical appliances.

03 Connections and buttons



LED indication

	RED (blinking slowly) Not in network	**RED (blinking rapidly)** Busy pairing
	GREEN (blinking slowly) In network	**GREEN (blinking rapidly)** In network, waiting for associated components
	YELLOW (blinking slowly) Transitional phase (please wait)	**YELLOW (on)** Initialisation (searching for the initial position of the actuator, this may take a few minutes)
	WHITE or OFF Normal	
	BLUE Visualisation of the Actuator PCB when changes are made via the Controller or Duco Network Tool	

04 Wiring

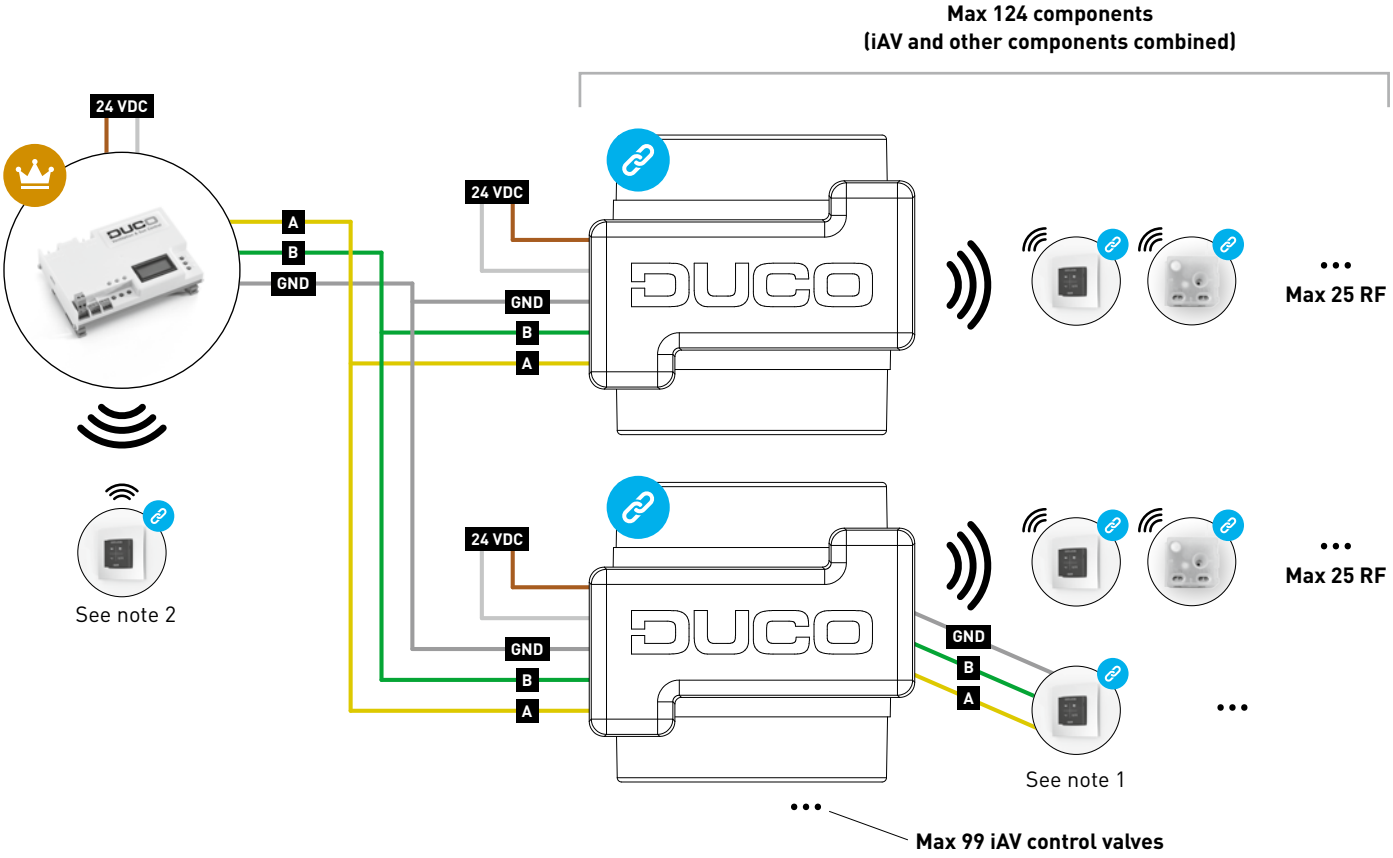
The iAV Control Valve communicates only via a Wired connection to a parent controller (if applicable).

Under an iAV Control Valve, Wired[1] and RF components (such as a user controller) can be installed. If Wired components are installed under an iAV, the RF function of the IQ unit is disabled and no components can be installed directly below it.

Multiple iAV Control Valves can be looped through (= recommended). This means that a separate cable will not be required for each component. A single central power supply can be used.

The prescribed cable is a data cable of 0.75 mm^2 (maximum 1.5 mm^2). To avoid disrupting data communication, DUCO strongly recommends using a shielded cable.

Wiring with External control (iAV as component)[2]



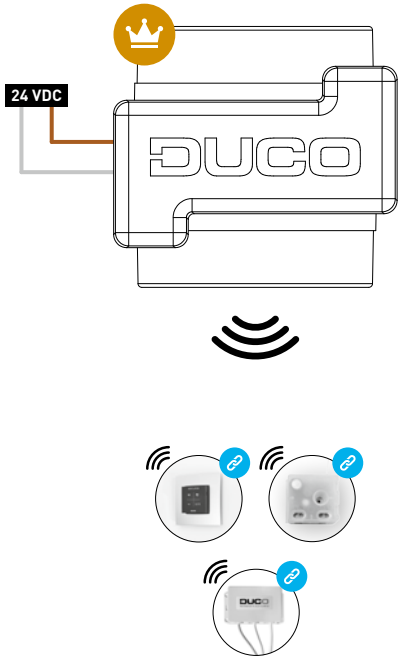
1. RF components can only be paired to an IQ unit if no Wired components are paired under a component iAV.
2. Wired components can only be paired to iAV Control Valves as from product version 180327.

1 Wired components only possible from iAV product version 180327
2 Restriction to a maximum of 300 metres Wired cabling

Wiring in standalone operation (iAV as controller)

RF components have a maximum free field range of 350 metres. This distance will be much less in a building because of obstacles. Therefore, you will need to take objects such as walls, concrete and metal into account. All components (except those which are battery powered) also act as repeaters. Signals from components that are unable to make a (strong) connection with the controller are forwarded automatically via no more than one other component (= hop). Please refer to information sheet RF communication (L8000018) at www.duco.eu for further information.

DUCO RF	
Power Supply	230 VAC
Frequency	868 Mhz
Maximum distance	350 m in free field (less through obstacles)
Maximum number of components	Up to 25 wireless components in a single system



05 Mounting

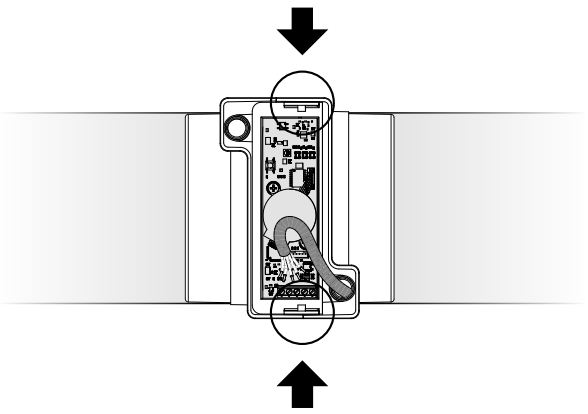
05.A Installing iAV Control Valve

Slide the iAV Control Valve in the iAV Casing until it clicks into place. Please refer to the casing manual for installation instructions on casing. When positioning the casing, allowance must be made for space to slide the valve in and out and to operate it easily during installation. The valve is symmetrical and may be slid into the casing in any direction. Wiring can be connected to the PCB via the holes provided in the iAV Casing.

05.B Removing iAV Control valve

DO NOT DISCONNECT THE CABLES YET!

1. To be able to remove the iAV Control Valve from the casing, the valve must be in the closed position. Press the 'INST' button 1 x briefly to close the valve. The colour of the LED indicates the postion of the valve, with bright white meaning 'open' and off meaning 'closed'. When closing, the white LED will dim until the LED is off.
2. Disconnect the cables only now.
3. Push the two ribbed tabs inwards in order to be able to slide the iAV Control Valve back out of the casing.



06 Installation

The installation procedure depends on the configuration of the system (see "Application" on page 3). the LED on each component indicates the active mode of the component (see table on page 6).

- Never pair components to multiple iAV Control Valves at the same time. Complete zone by zone to prevent components from being paired to the wrong iAV Control Valve (= different network).
- After 15 minutes of inactivity, the iAV Control Valve automatically returns to User mode.

06.A Installing components

Pairing procedure for one valve per zone (configurations A and B)

1. **Only for systems with IQ unit:**
   a. Activate Intaller mode by tapping 'INST' on the IQ unit. The LED will flash green rapidly.
   b. Tap 1 x on the iAV Control Valve to pair it to the IQ unit so that the LED flashes green slowly. Tap again so that the LED starts blinking rapidly. Underlying components can now be added in this zone.

   Proceed to step 3.
2. **Only for systems without IQ unit:**
   Activate Installer mode by long pressing 'INST' on the iAV Control Valve until the LED starts blinking green rapidly.
   Proceed to step 3.
3. **For all systems:**
   Add a control component (RF only if working without IQ unit) by tapping 1 x on the component to be paired. The LED will start to flash green rapidly.
4. Repeat step 3 for the remaining control components.
5. Press 'INST' on the iAV Control Valve when all components in the zone are paired.
6. Only for systems with IQ unit:
   Repeat steps 1b through 5 for any remaining zones.
7. Exit Installer mode by tapping 'INST' on the IQ unit. the LED of each component in the system will stop blinking.

Please refer to the manual for the control components for more detailed information per component.

Pairing procedure for multiple valves per zone (configuration C and D)

1. **Only for systems with IQ unit:**
   a. Activate Installer mode by tapping 'INST' on the IQ unit. The LED will flash green rapidly.
   b. Tap 1 x on the iAV Control Valve to pair it to the IQ unit so that the LED flashes green slowly. Tap again so that the LED starts blinking rapidly. Underlying components can now be added in this zone.

   Proceed to step 3.
2. **Only for systems without IQ unit:**
   Activate Installer mode on the controller iAV Control Valve by long pressing 'INST' on this iAV Control Valve until the LED starts blinking green rapidly.
   Proceed to step 3.
3. **For all systems:**
   a. Add a control component (User Controller or Room Sensor, RF only) by tapping 1 x on the component to be paired. The LED will start to flash green rapidly.
   b. Set another iAV Control Valve to be paired in component mode by long pressing UP (▲) and DOWN (▼) at the same time until the iAV Control Valve starts blinking red slowly.
   c. Tap 1 x on 'INST' of this component iAV Control Valve to pair it to the network.
   d. Repeat steps 3b and 3c for the remaining component iAV Control Valves in this zone.

Only perform steps 3e and 3f if additional control components are to be paired in the same zone.

e. Press 1 x on the 'INST' button of any component iAV Control Valve in this zone. For the operation it does not matter which one, so the nearest one can be chosen.
f. Add remaining control components (User Controller or Room Sensor, RF only) by tapping 1 x on any button of each control component to be paired. The LED will start blinking green rapidly when pairing is successful.
g. Deactivate Installer mode for the current zone by tapping 1 x on 'INST' of the controller iAV Control Valve.

4. **Only for systems with IQ unit:**
   a. Repeat steps 1b through 3h for any remaining zones.
   b. Exit Installer mode by tapping 'INST' on the IQ unit. the LED of each component in the system will stop blinking.

Please refer to the manual for the control components for more detailed information per component.

06.B **Other operations**

Activate Installer mode to remove or replace a component. This may be done via the component itself; please refer to the manual of the component concerned.

Removing a component

Press 1 x long on a button of the component to remove it from the network.

Replacing a component

Press 2 x briefly on the button of the component to be removed. Then press 1 x briefly on the button of the new component. The latter will take on all settings/connections in the network.

TIPS:

- To remove all components from the network (for example in case of problems):
  - Long press 'INST' to activate Installer mode.
  - Long press 'INST' again to remove all components under the iAV Control Valve. The LED will stop blinking.
- Use the Duco Network Tool to read information from the components (see page 14 for more information).
- Never pair components to multiple iAV Control Valves at the same time.
- To deactivate Installer mode for the entire system, the palm method can be used on any user controller. To do so, touch the 4 buttons simultaneously with the palm of your hand. The LED of each component in the network will stop blinking.

07 Calibration

For the system to work correctly, it needs to be configured. This helps ensure the quietest possible and most energy-efficient operation. See under the Tools heading at www.duco.eu for information about determining ventilation flow rates.

The calibration procedure depends on whether iAV is used as a controller (standalone) or iAV as a component (external control).

07.A Calibration with iAV as component (EXTERNAL CONTROL)

Follow the calibration procedure described in the manual of the controller.

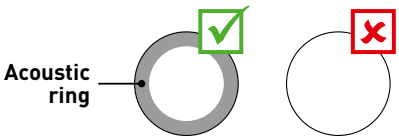
07.B Calibration with iAV as controller (STANDALONE)

Follow the steps described in this chapter to install components. The calibration is done in two phases: setting exhaust vents and actual calibration.

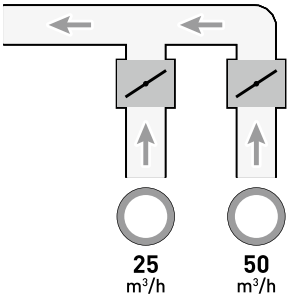
Setting exhaust vents

The exhaust vents are installed in an exhaust duct to extract moist or polluted air. In order to calibrate the air extraction correctly, these vents must be set depending on the situation in accordance with the table below. The possible situations can be found on the following page. When using DucoVent Design vents, always leave the outer ring in place for acoustic effect.

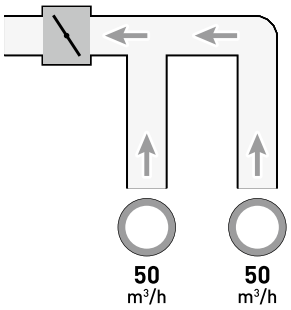
FLOW RATE	DUCOVENT DESIGN	DUCOVENT BASIC AND OTHER VENTS
75 m³/h		**100 %** open
50 m³/h		**50 %** open
25 m³/h		**25 %** open



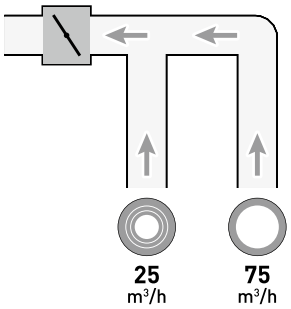
Situation 1: one vent per iAV Control Valve
Open all vents fully, regardless of the desired flow rate. When using DucoVent Design vents, leave the outer ring in place for acoustic effect.



Situation 2: multiple vents per iAV Control Valves with equal flow rates
Open all vents fully, regardless of the desired flow rate.



Situation 3: multiple vents per iAV Control Valve with different flow rates
Set the exhaust vents to match the desired flow rate in line with the table on page 11.



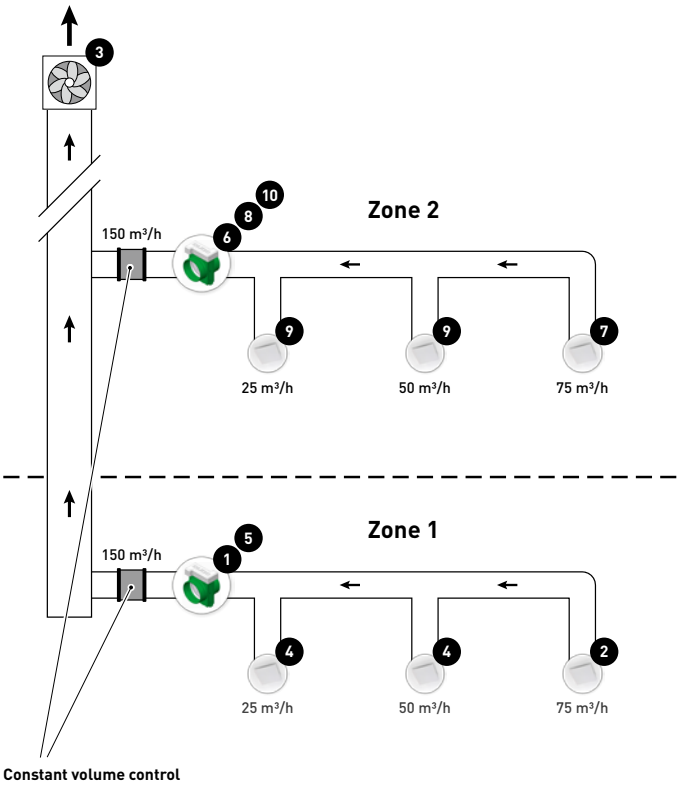
Calibration

The calibration procedure involves the use of multiple (standalone) iAV Control Valves.

IMPORTANT, BEFORE CALIBRATING:
close **all** windows and doors and avoid air leaks in the ventilation ducts. Open all window ventilators 100 %. Any Tronic window ventilators will open automatically.

For quick and easy calibration, it is recommended to provide a CFR (Constant Flow Regulator) in each zone (flow rate = sum of underlying flow rates).

NOTE: the calibration procedure must be carried out on a windless day (maximum 2 Beaufort: leaves rustling, wind felt in face).



The steps below correspond to the numbers indicated on the previous figure.

1. Choose the iAV Control Valve with the largest pressure drop (usually the zone furthest away from the fan). Press 'HIGH' on this iAV Control Valve.
2. Measure the valve with the largest pressure drop (usually the valve with the highest flow rate).
3. Adjust the speed of the fan until the desired flow rate is reached on the valve from step 2 is. If the zone is equipped with a CFR (Constant Flow Regulator), the point should be sought at which the fan runs as low as possible while achieving the desired flow rate. If the fan speed cannot be adjusted, the desired flow rate can be achieved using the arrow keys on the iAV Control Valve from step 1. Note that this may result in more noise and higher energy consumption!
4. Measure any other vents within the current zone and adjust them via the exhaust vent. Work from the highest to the lowest flow rate.
5. Exit the calibration mode of the current zone by pressing 'HIGH' on the iAV Control Valve.

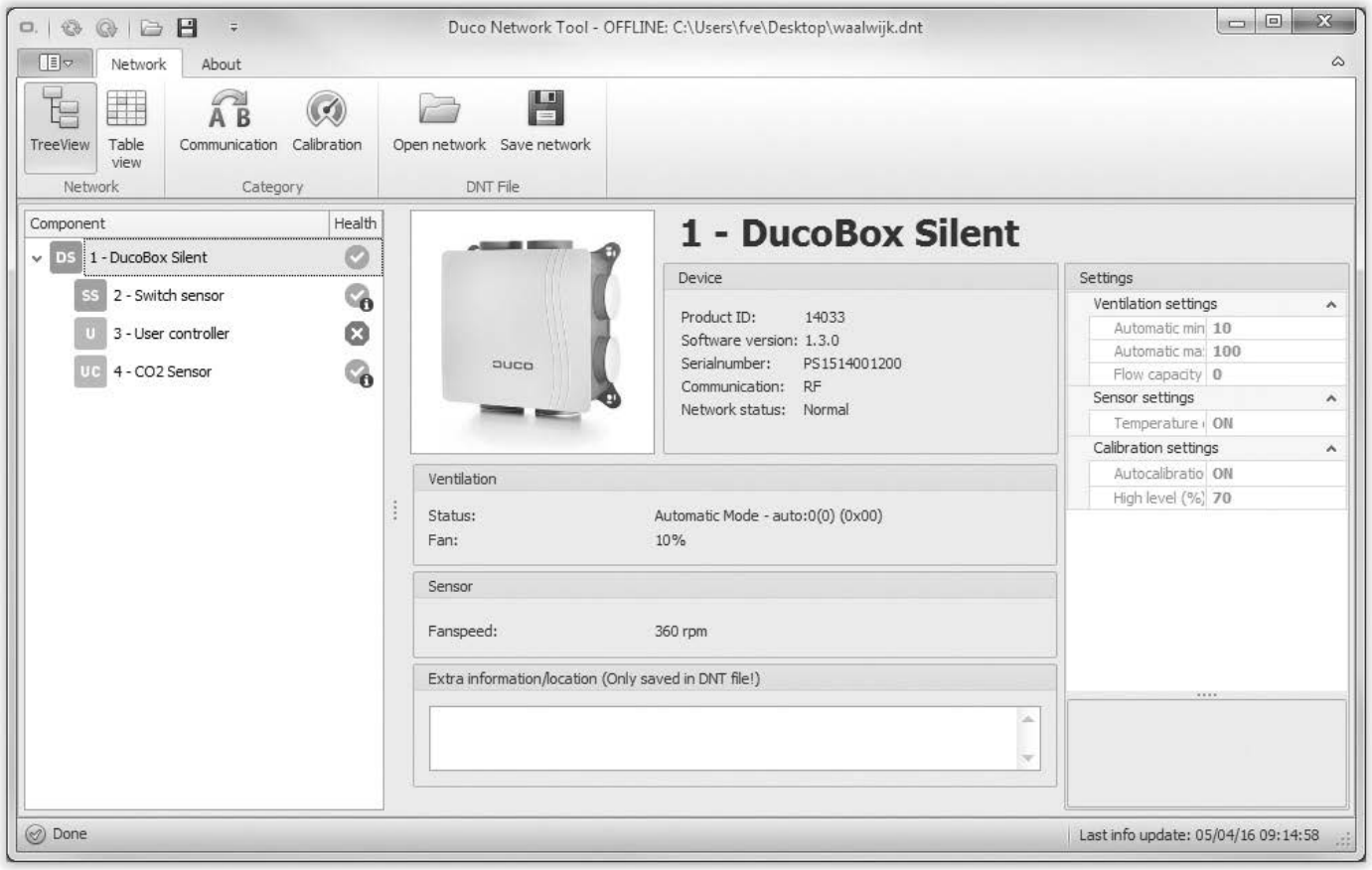
Now finish the other zones. To do this, repeat the previous steps, working towards the fan.

6. Activate the calibration mode of the new zone by pressing 'HIGH' on the iAV Control Valve.
7. Choose the fan with the highest flow rate.
8. Adjust the flow rate of the vent from step 7 using the arrow keys on the iAV Control Valve.
9. Measure any other vents within the current zone and adjust them via the exhaust vent. Work from the highest to the lowest flow rate.
10. Exit the calibration mode of the current zone by pressing 'HIGH' on the iAV Control Valve.

08 Settings

Most factory settings of the network and the components will suffice, but depending on the situation it may be desirable to change some of the parameters, such as the CO_2 setpoint of an iAV Control Valve. This can be done using the Duco Network Tool.

This user-friendly software is the ideal way to change settings and detect problems in the system. The Duco Network Tool is issued to every installer after attending a free training course in the Duco Academy. Please consult our website or your DUCO dealer for more information.



Modbus

Via a Modbus connection, it is possible to read and change parameters of the ventilation system from connected equipment (for example a building management system). This requires an IQ unit. Refer to the information sheet Modbus (L2003592) at www.duco.eu for detailed information about Modbus.

09 Maintenance

Refer to the information sheet Maintenance instructions Duco Ventilation Systems (L8000011) at www.duco.eu for all information related to maintenance.

10 Warranty

All warranty conditions concerning the DucoBox and DUCO's ventilation systems can be found on the DUCO website.
All complaints are to be reported to DUCO by the DUCO distributor with a clear description and the order/invoice number under which the products were delivered. To do so, please fill out the complaint registration form, found on the DUCO website, mentioning the serial number and send it to service@duco.eu.

11 Legislation

Product fiche and energy labels can be consulted and downloaded at www.duco.eu..

Simplified EU declaration of conformity

CE Hereby DUCO Ventilation & Sun Control declares that the radio equipment type iAV Control Valve is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:
en.duco.eu/intelli-air-valve

Frequency band	868,3 MHz
Maximum radio frequency power	0,4 dBm

Installed by:

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