

iAV Control valve

ENGLISH **en**

Quick Start

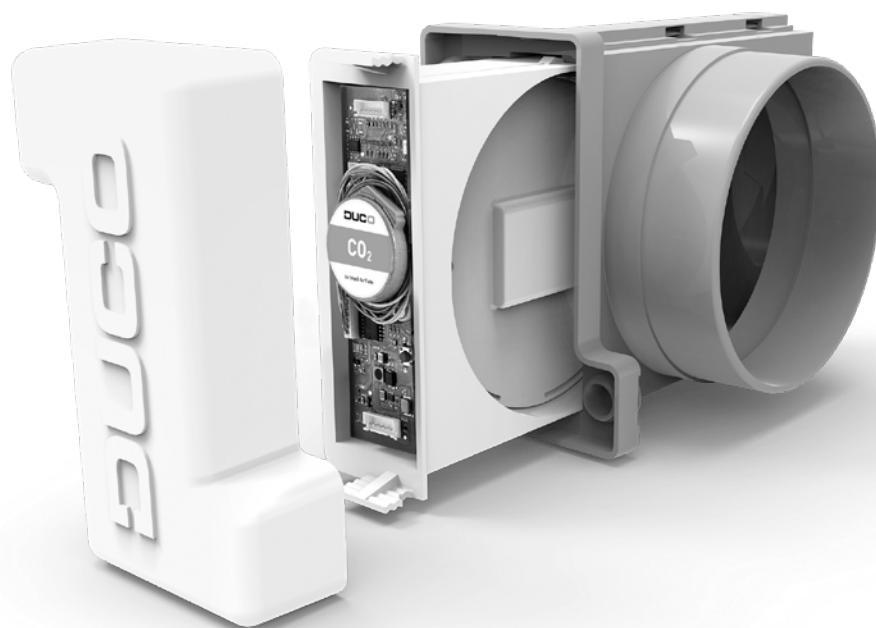


Table of contents

01 Application	3
01.A Master / Slave.....	3
01.B IQ unit.....	3
01.C Possible configurations.....	3
02 Connections and buttons	6
03 Wiring	7
04 Mounting	8
04.A Installing iAV Control Valve.....	8
04.B Removing iAV Control valve.....	8
05 Installation	9
05.A Installing components.....	9
05.B Other operations.....	10
06 Calibration	11
06.A Calibration with iAV as slave (EXTERNAL CONTROL).....	11
06.B Calibration with iAV as master (STAND ALONE).....	11
07 Settings	14
08 Maintenance	15
09 Warranty	15

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.



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 a built-in sensor (CO₂ or humidity) or without sensor.

01.A Master / Slave

One or more iAV Control Valves can be provided per zone. These can function as master (stand alone) or as slave (with external control). An iAV Control Valve can be paired with an IQ unit or another master iAV Control Valve.

To control multiple iAV Control Valves simultaneously with one or more actuators (= zone with multiple valves), iAV Control Valves can be added as a wireless (RF) slave under a master iAV Control Valve. If an iAV is added as a slave, it can no longer be paired as a wired component with an IQ unit.

01.B IQ unit

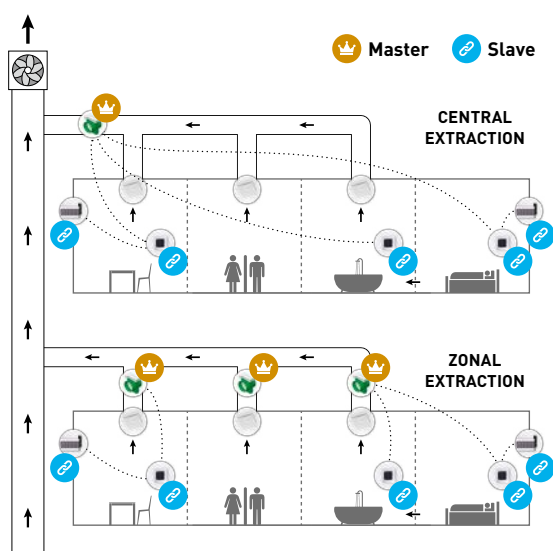
When using a pressure-controlled fan, the iAV Control Valve can operate independently. For a non-pressurised fan an IQ unit is required that controls the fan with a PWM signal.¹ For systems to be paired with a building management system (via ModBus), an IQ unit must be provided, regardless of the fan type. Please refer to the manual of the IQ unit for more information.

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

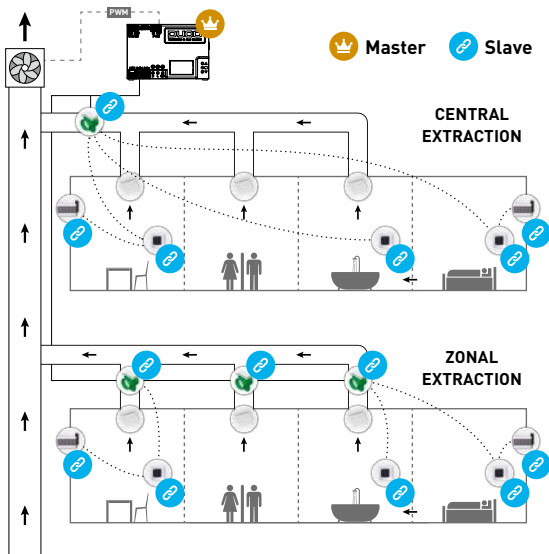
This configuration is especially suitable for residential applications and rooms with small flow rates, in combination with a pressure-controlled fan. All valves operate automatically based on measurements in the iAV itself or from an external component such as a Room sensor. The valves operate independently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



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

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.



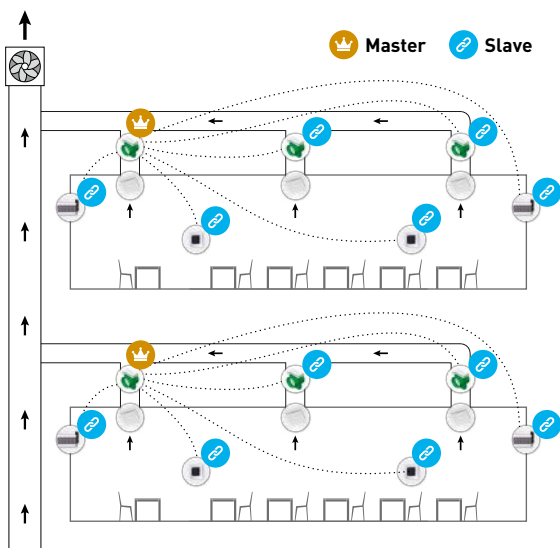
Configuration C: multiple iAV Control valves per zone without IQ unit

This configuration is especially suitable for utility projects with a pressure-controlled fan, where high flow rates per zone are required (e.g. classroom, open plan office...). All iAV Control Valves are jointly opened or closed 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 (CO₂, Humidity or sensorless). In the case of sensorless valves, one or more room sensors can be provided.



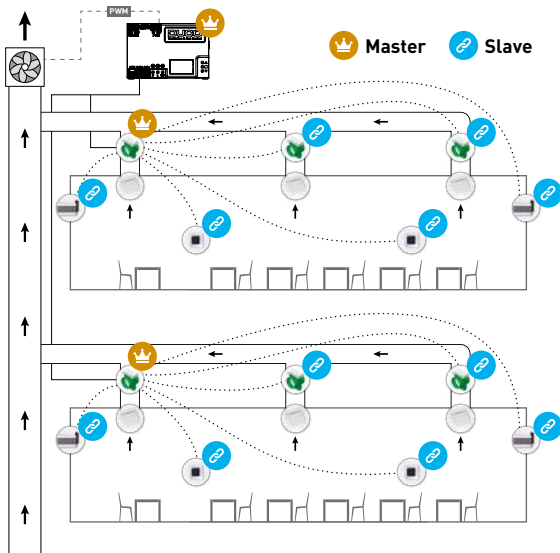
Configuration D: multiple iAV Control valves per zone with IQ unit

This configuration is particularly suitable for utility projects requiring high flow rates per zone (e.g. classroom, open plan office...), in combination with a pressure-controlled or non-pressurised fan and/or interfacing with a building management system. All iAV Control Valves are jointly opened or closed based on measurements in the iAV itself or from an external component such as a Room Sensor.

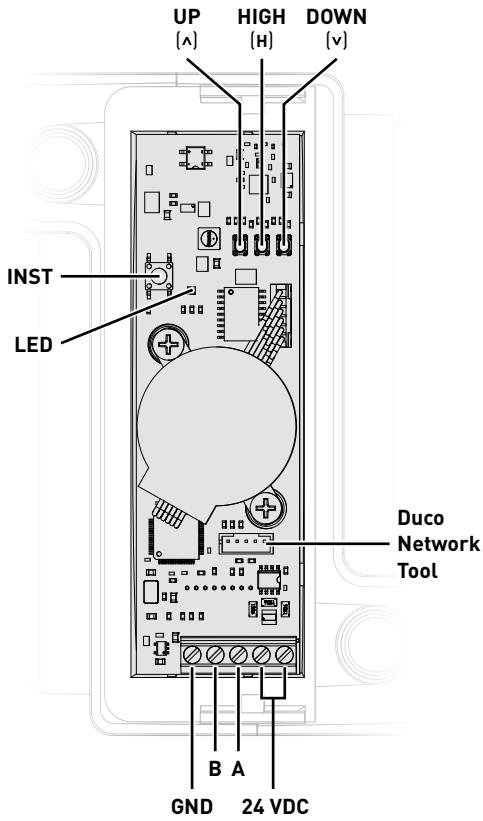


ATTENTION:






in this configuration, all iAV Control Valves in the zone must be of the same type (CO₂, Humidity or sensorless). In the case of sensorless valves, one or more room sensors can be provided.



02 Connections and buttons



LED indication

	RED (blinking slowly) Not in network	RED (blinking rapidly) Logging in
	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 board when changes are made via the master or Duco Network Tool	

03 Wiring

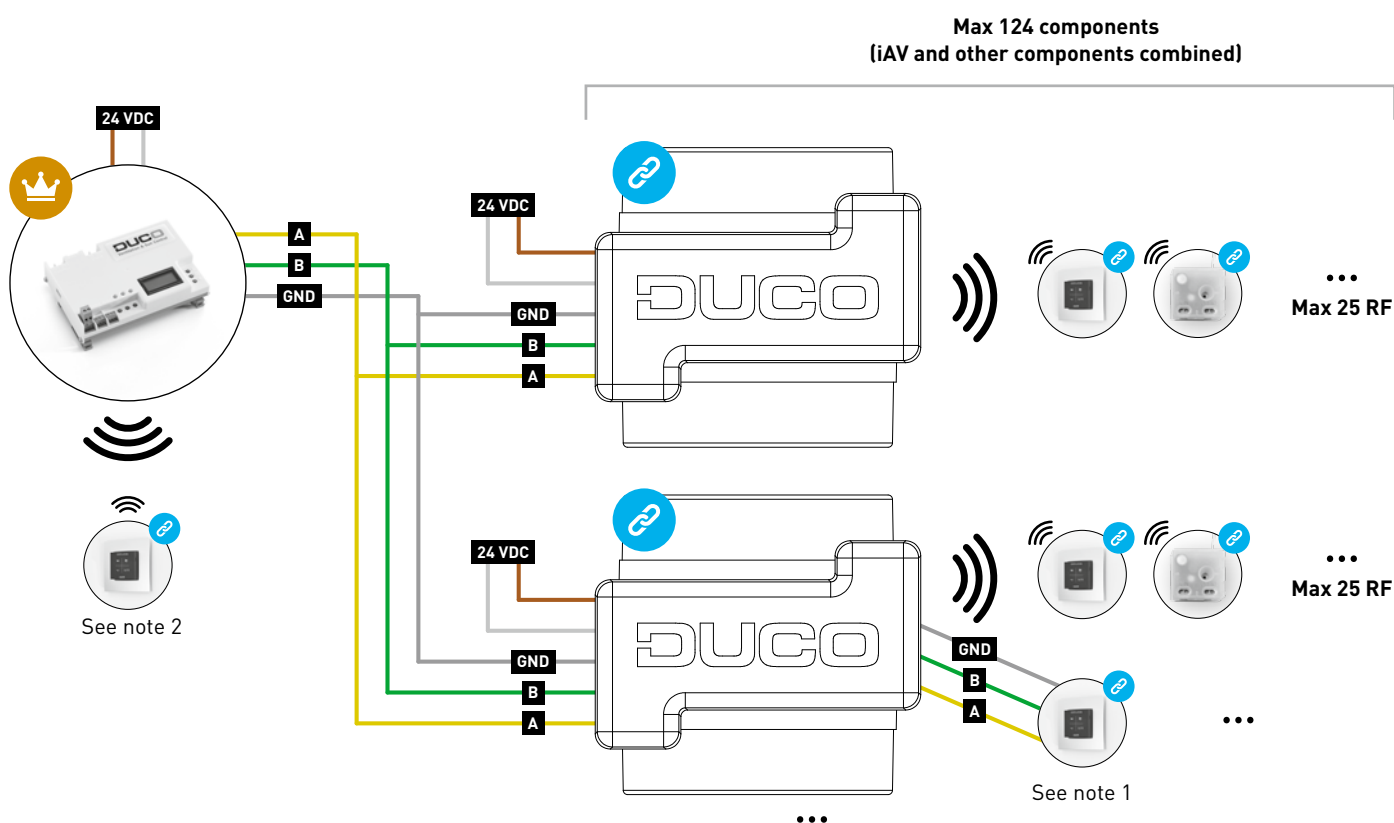
The iAV Control Valve only communicates via a Wired connection to a parent master (if applicable).

Under an iAV Control Valve, Wired² and RF components (such as a control) 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.

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 cable required is a 0.8 mm data cable (max. 1.5 mm). To avoid data communication being disrupted, DUCO strongly recommends using a shielded cable.

Wiring with external control (iAV as 'slave')³



1. RF components can only be paired with an IQ unit if no wired components under a slave iAV are paired.
2. Wired components can only be paired with iAV Control valves as from product version 180327.

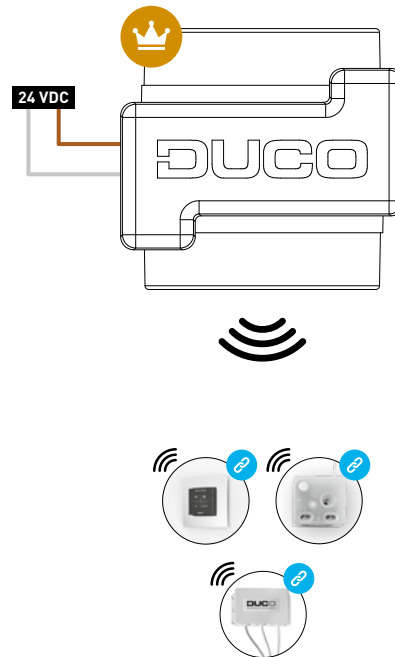
² Wired components only possible from iAV product version 180327.

³ Restriction to a maximum of 300 meters Wired cabling

Wiring in stand-alone operation (iAV as master)

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 slave components (except those which are battery powered) also act as repeaters. Signals from components that are unable to make a (strong) connection with the master component 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	230V AC
Frequency	868 Mhz
Maximum distance	350 m, free field (less through obstacles)
Maximum number of components	Up to 25 wireless components in a single system



04 Mounting

04.A Installing iAV Control Valve

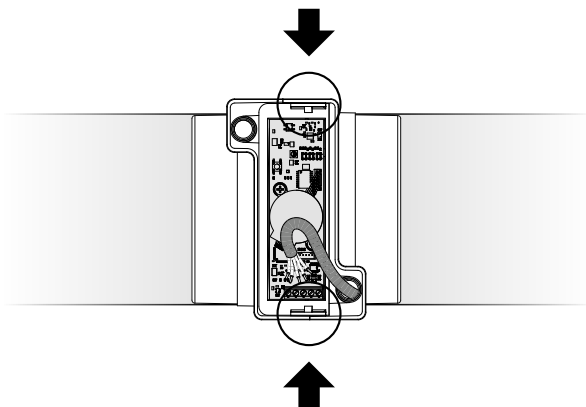
Slide the iAV Control Valve into the iAV Housing until it clicks into place. Please refer to the casing manual for installation instructions on casing. When positioning the casing, allowance must be made for space to slide the valve in and out and to operate it easily during installation. The valve is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

04.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. Briefly press the INST button once to close the valve. The colour of the LED indicates the position of the valve, with bright white meaning 'open' and off meaning 'closed'. When closing, the white LED will fade out.
2. Disconnect the wires now, not before.
3. Push in the two ribbed snaps in order to be able to slide the iAV Control Cover back out of the casing.



05 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 the table on page 6).



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

05.A Installing components

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

1. Only for systems with IQ unit:

- Activate Installer mode by tapping INST on the IQ unit. The LED will flash green rapidly.
- Tap the iAV Control valve 1x to pair it with the IQ unit so that the LED flashes green slowly. Tap again so the LED starts flashing quickly. Underlying components can now be added in this zone.

Proceed to step 3.

2. Only for systems without an IQ unit:

Enter Installer mode by long pressing INST on the iAV Control valve until the LED starts flashing green quickly.

Proceed to step 3.

3. For all systems:

Add a control component (RF only if you are working without an IQ unit) by tapping 1x 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 to 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 flashing.

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:

- Activate Installer mode by tapping INST on the IQ unit. The LED will flash green rapidly.
- Tap the iAV Control valve 1x to pair it with the IQ unit so that the LED flashes green slowly. Tap again so the LED starts flashing quickly. Underlying components can now be added in this zone.

Proceed to step 3.

2. Only for systems without an IQ unit:

Activate Installer mode on the master iAV Control valve by long pressing INST on this iAV Control valve until the LED starts flashing green quickly.

Proceed to step 3.

3. For all systems:

- Add a control component (User control or Room sensor, RF only) by tapping 1x on the component to be paired. The LED will start to flash green rapidly.
- Set another iAV Control valve to be paired in slave mode by long pressing up (↑) and down (↓) simultaneously until the iAV Control valve slowly starts flashing red.
- Tap INST of this slave iAV Control valve 1x to pair it with the network.
- Repeat steps 3b and 3c for the remaining slave 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 the INST button 1x of any slave iAV Control valve in this zone. For the operation it does not matter on which one, so the nearest one can be chosen.
 - f. Add remaining control components (User control or Room Sensor, RF only) by tapping 1x on any button of each control component to be paired. The LED will start flashing green quickly when the login is successful.
 - g. Deactivate Installer mode for the current zone by tapping INST on the master iAV Control valve 1x.
4. **Only for systems with IQ unit:**
- a. Repeat steps 1b to 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 flashing.

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

05.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 1x long on a component button to remove it from the network.

Replacing a component

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

TIPS:

- To remove all components from the network (e.g. 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 flashing.
- Use the Duco Network Tool to read out information from the components (see page 14 for more information).
- Never pair components with multiple iAV Control Valves at the same time.
- To deactivate Installer mode for the entire system, the palm method can be used on any control. To do so, touch the 4 buttons simultaneously with the palm of your hand. The LED of each component in the network will stop flashing.



06 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 adjustment procedure depends on whether iAV is operated as master (stand alone) or as slave (external control).

06.A Calibration with iAV as slave (EXTERNAL CONTROL)




Follow the adjustment procedure described in the manual of the master unit.

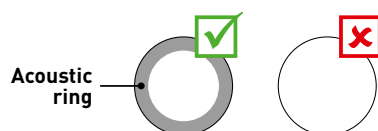
06.B Calibration with iAV as master (STAND ALONE)

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

Setting exhaust vents

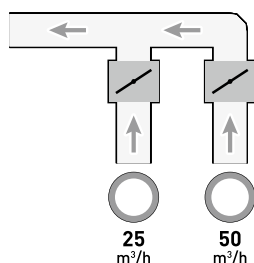
The exhaust vents are installed in an exhaust duct for moisture-laden/stale air extraction. In order to calibrate the air extraction correctly, these vents must be set depending on the situation in accordance with the table below. The possible situations can be found on the following page. When using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

FLOW RATE	DUCOVENT DESIGN	DUCOVENT BASIC AND OTHER VENTS
75m ³ /h		100% open
50m ³ /h		50% open
25m ³ /h		25% open



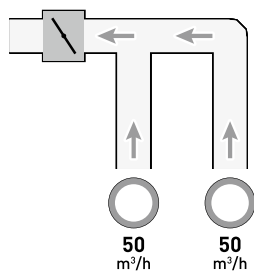
Situation 1: one vent per iAV Control Valve

Set all vents to the fully open position, regardless of the desired flow rate. When using DucoVent Design exhaust vents, leave the outer ring in place for an acoustic effect.

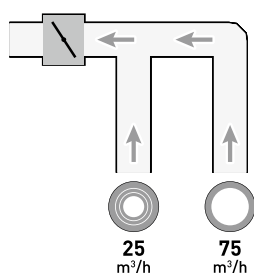


Situation 2 : Multiple vents per iAV Control valve with equal flow rates

Set all vents to the fully open position, 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 (stand alone) iAV Control Valves.

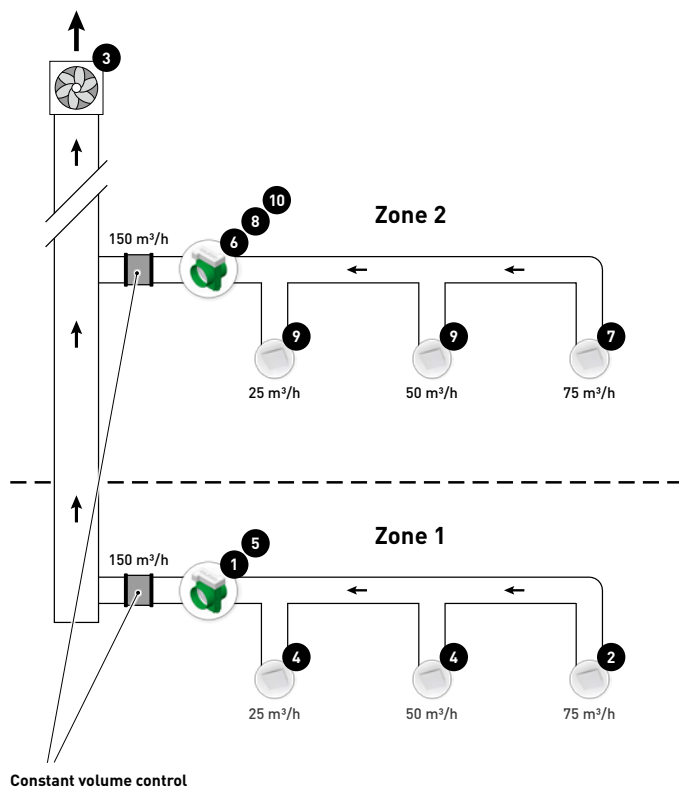
**IMPORTANT, BEFORE CALIBRATING:**

close **all** windows and doors and avoid air leaks in the ventilation ducts. Set all window ventilators to the 100% open position. Any Tronic ventilators will open automatically.

For quick and easy calibration, it is recommended that a CVC (constant volume control) is provided in each zone (flow rate = sum of underlying flow rates).



NOTE: the adjustment procedure should be done on a windless day (max 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 fan speed until the desired flow rate from step 2 is reached at the valve. If the zone is equipped with a CVC (constant-volume controller), the point should be sought where 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 current zone's calibration mode by pressing HIGH on the iAV Control Valve.

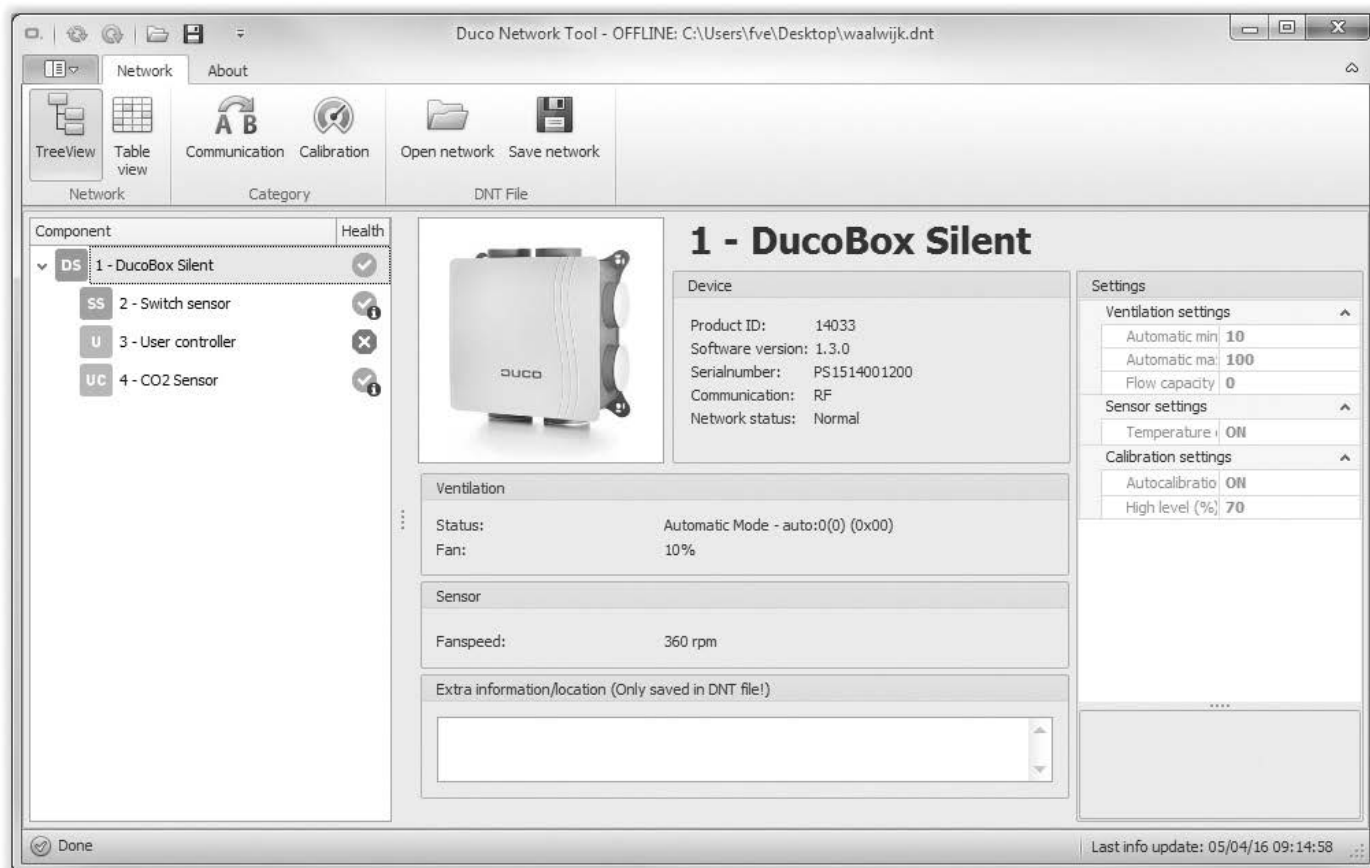
Now finish the other zones. To do this, repeat the previous steps, working towards the fan.

- 6 Activate the new zone's calibration mode by pressing HIGH on the iAV Control Valve.
- 7 Select the vent with the highest flow rate.
- 8 Adjust the flow rate of the vent from step 7 using the arrow buttons 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 current zone's calibration mode by pressing HIGH on the iAV Control Valve.

07 Settings

Most of the factory settings for the network and the components will be satisfactory as they are, however, depending on the situation, it may be desirable to change some parameters, such as the CO₂ setpoint of an iAV Control valve. This can be done using the Duco Network Tool.

This user-friendly software is the ideal way of changing settings and pinpointing problems in the system. The Duco Network Tool is issued to every installer after attending a free training course at the Duco Academy. Please refer to our website or your Duco dealer for further information.



ModBus

Via a ModBus connection, it is possible to read and change parameters of the ventilation system from linked equipment (e.g. a building management system). For this purpose, an IQ unit is needed. Please refer to information sheet ModBus (L8000009) at www.duco.eu for comprehensive information about ModBus.

08 Maintenance

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

09 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.

Installed by:

DUCO