

Quick Start



nl

Raadpleeg www.duco.eu voor meer informatie omtrent garantie, onderhoud, technische gegevens enz.

Installatie, aansluiting, onderhoud en herstellingen dienen door een erkend installateur te gebeuren. De elektronische onderdelen van dit product kunnen onder spanning staan. Vermijd contact met water.

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Naviguez vers www.duco.eu pour plus d'informations sur la garantie, l'entretien, des fiches techniques etc.

L'installation, le raccordement, l'entretien et les réparations doivent être effectués par un installateur agréé. Les éléments électroniques de ce produit peuvent être sous tension. Éviter tout contact avec l'eau.

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en

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.



DUCO
Ventilation & Sun Control

Table of contents

1	Application	76
	Centrally controlled exhaust.....	77
	Zonally controlled exhaust.....	78
2	Connectors and buttons	79
3	Cabling	81
	Cabling diagram.....	82
	RF (wireless communication).....	84
	Wired (cabled communication).....	85
	Various cabling options.....	86
4	Installation	88
	Mounting.....	88
	Air duct connections.....	89
5	Zonal control options	90
6	Installation	92
	Installer / User mode.....	92
	Installing components.....	94
	Other operations.....	98
7	Configuration	99
	Setting exhaust vents.....	99
	Configuration.....	102
8	Settings	106
	Setting the time.....	108
	NightBoost.....	109
	ModBus.....	110

1 Application

The IQ-unit operates as a '**master**' or brain within Duco's Demand-Controlled Natural Ventilation Systems.

It receives and interprets signals from the 'slave' components (measurements from a sensor or manual input), based on which it controls the ventilation system and any external unit. The IQ-unit thus ensures that stale air, with excessive CO₂ or moisture content, is exhausted.

The IQ-unit boasts smart functions such as NightBoost and ventilative cooling, and can also be connected to a building management system via ModBus.

The IQ-unit can be used in different situations and can perform different functions depending on requirements and the type of central extract unit:

DucoBox WTW

The IQ-unit controls the DucoBox WTW via the WTW connection.

Pressure-controlled fan

With this the IQ-unit is **not** connected to the central extract unit. In this case, the IQ-unit is only required to utilise functions such as ModBus, NightBoost and ventilative cooling.

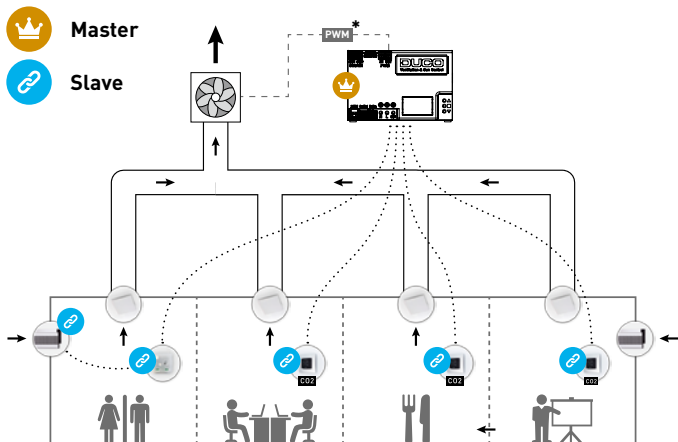
Non-pressure-controlled fan

The IQ-unit controls the fan via a PWM connection.

With the IQ-unit, both **centrally** and **zonally** controlled exhaust is available.

1A. Centrally controlled exhaust

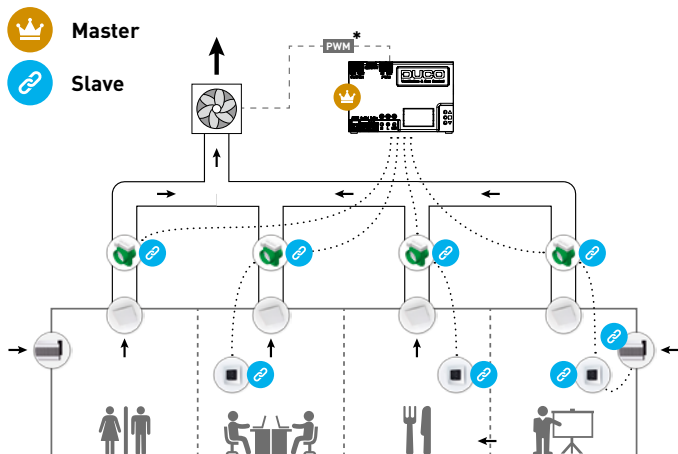
With centrally (= not locally) controlled exhaust, air is exhausted in **every air duct connected**.



* Connection between IQ-unit and fan (via PWM) is only applicable when using a non-pressure-controlled fan.

1B. Zonally controlled exhaust

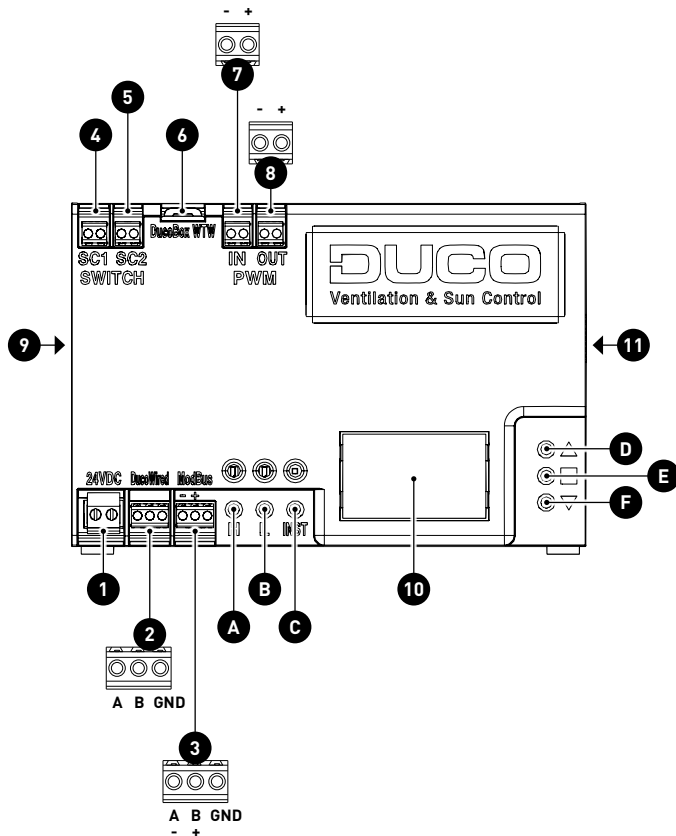
With zonally (= locally) controlled exhaust, stale air is exhausted **only where necessary**, which is conducive to optimum energy-efficiency and quietness in the ventilation system. This requires a component to be provided for each zone that acts as a control valve to regulate the exhaust air flow rate in that zone. This can be done by providing an Intelli Air Valve — Duco's smart control valve — in the duct of each zone, or using another component with actuator control if the maximum flow rate through an Intelli Air Valve is insufficient, such as a DucoGrille Close.



* Connection between IQ-unit and fan (via PWM) is only applicable when using a non-pressure-controlled fan.

2

Connectors and buttons



CONNECTORS

1	Power 24 VDC
2	DucoBus (A, B, GND)
3	ModBus (A/-, B/+, GND)
4	Switch contact 1 - onboard (n132)
5	Switch contact 2 - onboard (n133)
6	DucoBox WTW
7	PWM IN
8	PWM OUT
9	Duco Network Tool

BUTTONS

A	HIGH
B	LOW
C	INST (installer mode)
D	UP
E	ENTER
F	DOWN

DIVERS

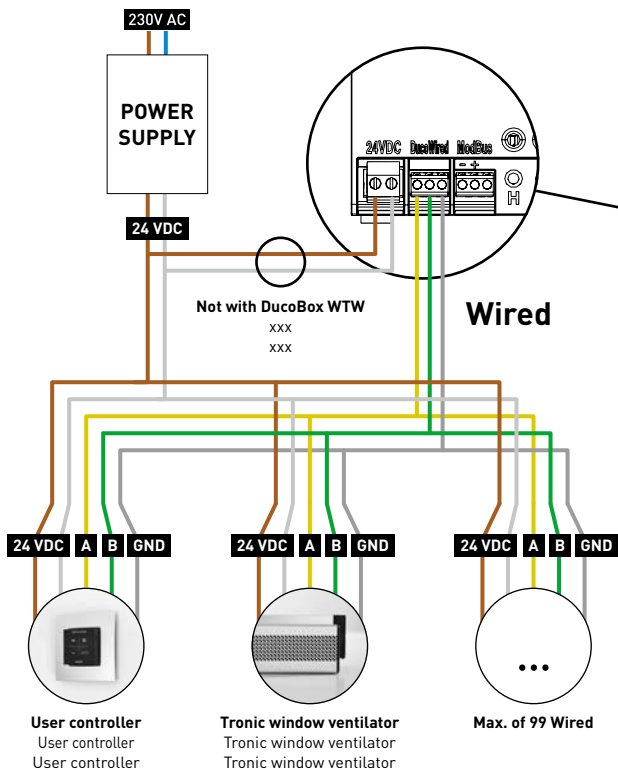
10	Display
11	SD card (software update)

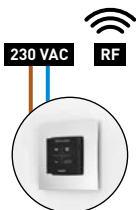
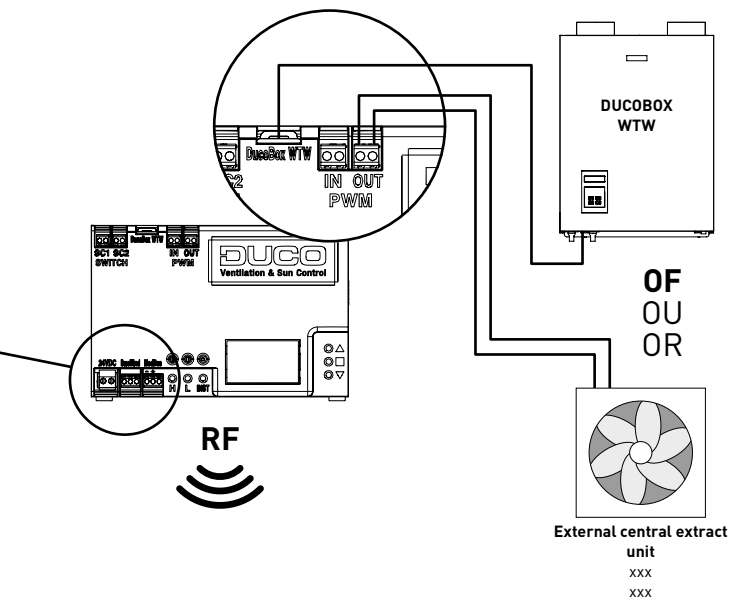
3**Cabling**

The IQ-unit is able to communicate with slave components via a wireless (RF) or wired link. Both types of communication can be combined in one system. Wired connections are to be recommended in all cases of non-residential and other projects where large distances or various walls and/or building levels need to be spanned.

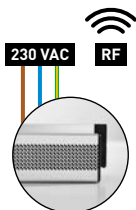
In addition, connections can also be made via a Switch Sensor (quantity of 2), PWM-IN and PWM-OUT, WTW and ModBus.

3A. Cabling diagram

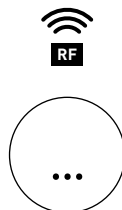




User controller
User controller
User controller



Tronic window ventilator
Tronic window ventilator
Tronic window ventilator



Max. of 30 RF

3B. RF (wireless communication)

RF components (📶) have a maximum free-field range of 350 metres. This distance will be much less in a building because of obstacles so you will need to allow for features such as walls, concrete and metal. 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 non-battery-powered component (= hop point). Please refer to information sheet **RF communication (L8000001)** at www.duco.eu for further information.

DUCO RF	
Power supply	230 VAC
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

3C. Wired (cabled communication)

Wired components (W) can be daisy-chained (= 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. We strongly advise using a shielded cable to prevent any interference that may affect the data communication.

DUCO WIRED	
Power supply	24 VDC
Cabling	3-cores of 0,8 mm communication (A, B, GND)
Maximum distance	up to 300 m
Maximum number of components	Up to 99 wired components in a single system

3D. Various cabling options

WTW

Communication with the DucoBox WTW. In this case a separate 24 VDC is not required for the IQ-unit.

PWM / 0-10 V

PWM-OUT enables communication with a central extract unit or an actuator such as a Variable Air Volume (VAV) valve.

Its operating mode (PWM or 0-10 V) can be changed using the display menu or the Duco Network Tool. It is set to PWM as standard.

PWM-IN enables the IQ-unit to be controlled like an actuator.

An **Actuatorprint** is required for each actuator to control multiple actuators independently of one another.

ModBus

Communications with building management systems for instance, for reading out information as well as controlling the ventilation system.

Please refer to information sheet **ModBus (L8000009)** at www.duco.eu for more information.

Switch Sensor

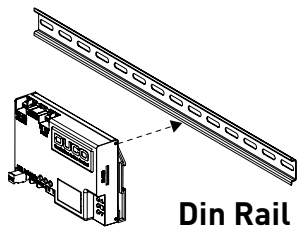
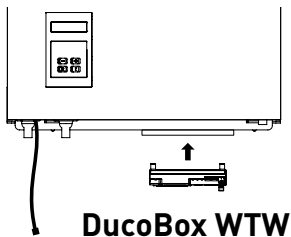
The Switch Sensor can perform one of the following functions when closing one contact in a two-pole zero voltage contact (only one function per connection): toilet detection, link to heat pump or overrule setting. Please refer to information sheet [Display menu \(L8000015\)](#) at www.duco.eu for more information about its operation.

The contact needs to be closed once in order to pair the component.

4 Installation

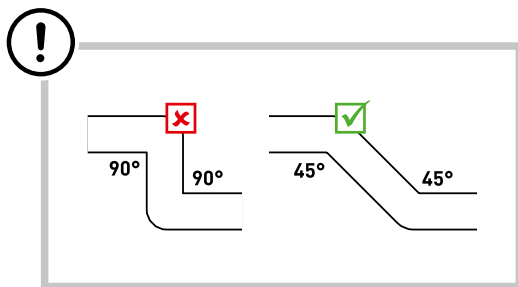
4A. Mounting

Click the IQ-unit onto the DIN rail underneath the DucoBox WTW or another DIN rail. Use a screwdriver to "prise" the IQ-unit off the rail.



4B. Air duct connections

Keep resistance down (especially in the bypass duct). Avoid excessive use of bends. A non-return flap is required when discharging into a manifold.

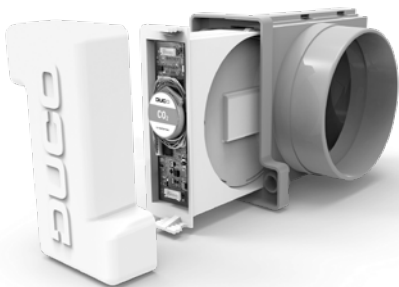


5 Zonal control options

In order to enable zonal control, a control valve capable of controlling the air exhaust from the zone must be utilised in each zone. This can be done using an Intelli Air Valve or an actuator via Duco's Actuatorprint.

Intelli Air Valve

This intelligent control valve uses a wired connection with the IQ-unit and a wireless (RF) connection with the underlying control components. The Intelli Air Valve can be easily installed in (existing) ventilation ducts. Please refer to the manual with the Intelli Air Valve for more information.



Actuator via Duco's Actuatorprint

Actuators can be controlled via Duco's Actuatorprint. This PCB enables the IQ-unit to control different actuators separately via a Duco Wired connection. The Actuatorprint supports PWM, 0-10 V, 2 and 3-point control. The Actuatorprint is available as an external component or is built into Duco's components such as the DucoGrille Close.







6

Installation**6A. Installer / User mode**

To add, remove or replace components in the network, the system must be set to 'Installer mode'. The LED on each component indicates the active mode of the component (see table below).

'Installer mode' can be activated by pressing the IQ-unit 'INST' button. Once the LED on the master unit starts flashing, it means that 'Installer mode' is active. Press 'INST' again to return to 'User mode' (LED fully on or off). The system reverts automatically to 'User mode' after 15 minutes of inactivity.

LED INDICATION

	<p>RED (flashing slowly) Not in network</p> <p>RED (flashing rapidly) Pairing in progress</p>
	<p>GREEN (flashing slowly) In network</p> <p>GREEN (flashing rapidly) In network, waiting for associated components</p>
	<p>YELLOW (flashing slowly) Transfer phase (please wait)</p> <p>YELLOW (on) Initialising (system configuration in progress)</p>
	<p>WHITE or OFF Normal</p>

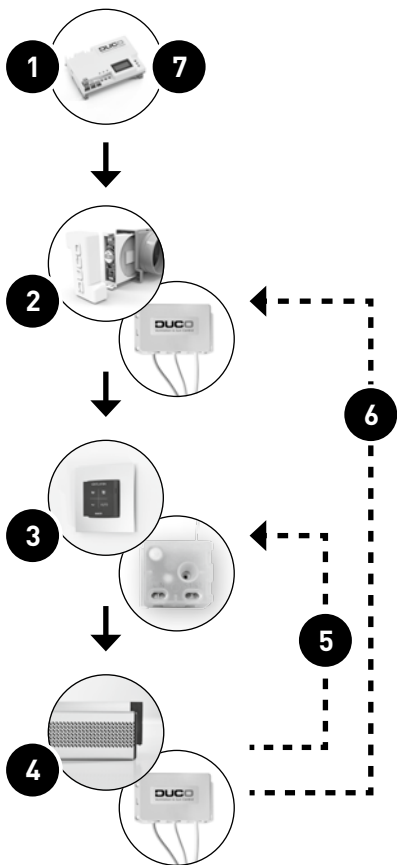
6B. Installing components

Go through the following steps to pair components with the IQ-unit.



- 1 Activate 'Installer mode' by tapping 'INST' on the IQ-unit. The LED will flash green rapidly.
- 2 **For zonally controlled systems only:** Tap once on the feed-through component to pair it with the IQ-unit so the LED flashes green slowly. Tap again so the LED starts to flash rapidly. Underlying components can now be added in this zone.
- 3 Add control components* by tapping once on the component to be paired. The LED will start to flash green rapidly.
- 4 Add any window ventilators* by tapping once on the component to be paired. The LED will flash green slowly.
- 5 **For zonally controlled systems only:** Repeat steps 3 and 4 until all remaining components in the current zone are paired. Exit the current zone next by tapping the feed-through component from step 2 once more. The LED will flash green slowly again.
- 6 **For zonally controlled systems only:** Repeat steps 2 to 5 inclusive for the remaining zones.
- 7 Once all components have been paired, 'Installer mode' can be deactivated by tapping 'INST' on the IQ-unit.

Please refer to the manual with the components for more detailed information.

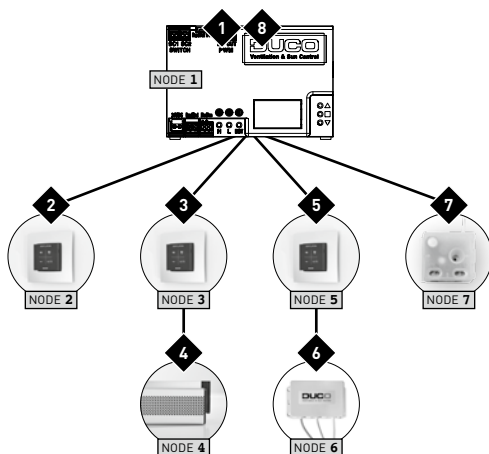
* NB: only RF components can be paired under an Intelli Air Valve.



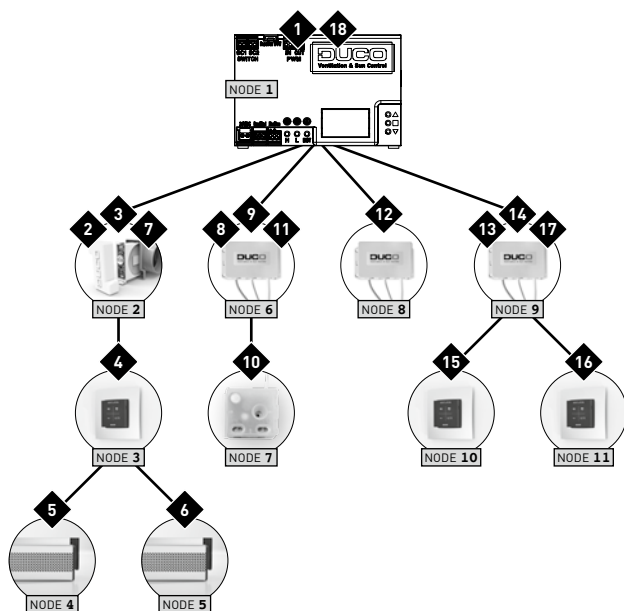
EXAMPLE OF A PAIRING SEQUENCE

	<p>indicates the order in which a button of the component must be pressed.</p>
	<p>indicates the assigned node number, required for settings in the display menu (see page 107) and Modbus (see page 110).</p>

centrally controlled exhaust



zonally controlled exhaust



6C. Other operations

Activate 'Installer mode' in order to remove or replace a component. This may be done via the component itself, please refer to the manual for the component concerned.

Removing a component

Press **once and hold** the button of the component in order to remove it from the network.

Replacing a component

Press **briefly twice** on the button of the component to be removed. After that, press **briefly once** on the button of the new component. The latter will take on all settings/connections within the network.

Tips

In order to remove all components from the network (e.g. in the event of problems) you **can press and hold 'INST'** until the LED starts flashing red. The IQ-unit will then reboot (around 15 seconds) and the LED will stop flashing.

Use the **Duco Network Tool** to read out information from components.

Never pair more than one system with RF components at the same time.

7

Configuration

The system needs to be configured for it to work correctly. This will ensure its operation is as quiet and as energy-efficient as possible.

See under the Tools heading at www.duco.eu for info about determining ventilation flow rates.

Configuration takes place in two stages: setting exhaust vents and actual configuration.




7A. Setting exhaust vents

The exhaust vents are installed in an exhaust duct for humid/stale air extraction. For correct configuration, the vents must be set depending on the exhaust method:

Central exhaust: set the vents to match the desired flow rate in accordance with the following table.

Zonal exhaust: set the vents in accordance with the methods that follow, depending on the situation in each zone.

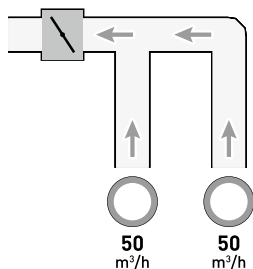
When using DucoVent Design, exhaust vents always leave the outer ring in place for acoustic effect.

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



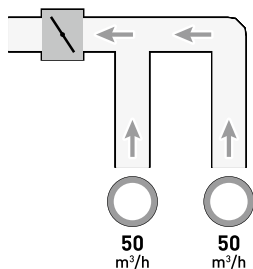
SITUATION 1: one exhaust vent per zone

Set **all exhaust 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 acoustic effect.



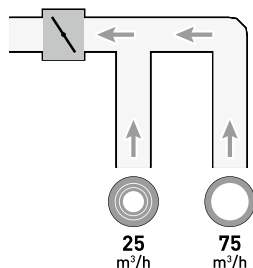
SITUATION 2: Multiple exhaust vents per zone with equal flow rates

Set **all exhaust vents to the fully open position**, regardless of the desired flow rate.



SITUATION 3: Multiple exhaust vents per zone with different flow rates

Set the exhaust vents so they match the desired flow rate **in line with the table** on page 100.

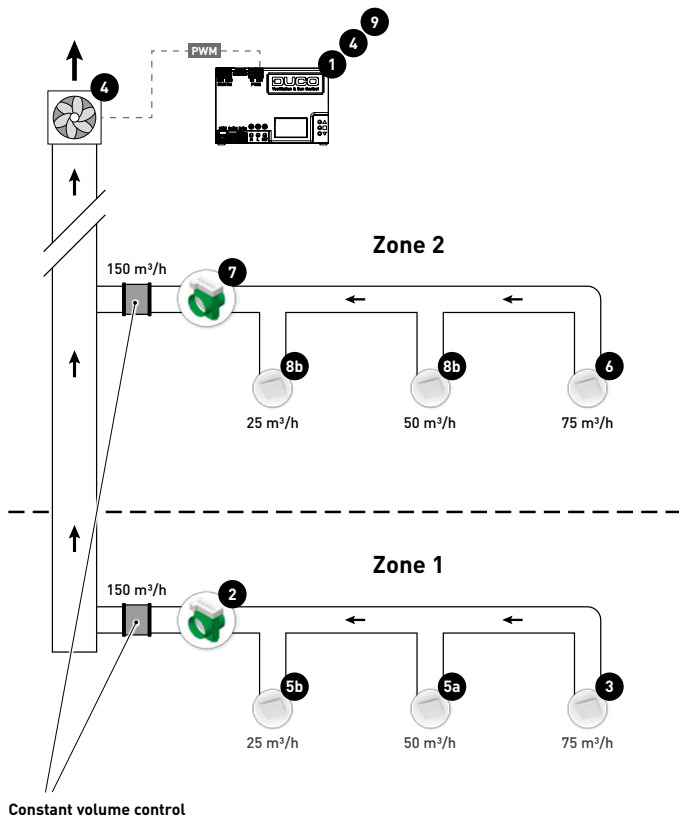


7B. Configuration

The configuration procedure covers the use of multiple (stand-alone) iAV Control valves.

Important, before setting up: Close **all** windows and doors, and avoid air leaks in the ventilation ducts. Set all window ventilators to the 100% open position. Any Tronic window ventilators will open automatically.

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



The steps set out below match the numbers shown in the preceding illustration.

- 1 Press 'HIGH' or 'LOW' on the IQ-unit to activate the configuration mode for 30 minutes.
- 2 **With zonally controlled exhaust only:** select the zone with the highest pressure drop (usually the zone located furthest from the central extract unit).
- 3 Measure the exhaust vent with the highest pressure drop (usually the vent with the highest flow rate).
- 4 Adjust the fan speed of the central extract unit until the desired flow rate through the exhaust vent in step 3 has been attained. This can be done using the arrow keys on the IQ-unit if it has been connected to it (via PWM or WTW). If the zone is fitted with a constant volume control, the point must be found at which the fan runs as slow as possible while attaining the desired flow rate. If the fan speed cannot be adjusted, the desired flow rate can be attained by fine-tuning the feed-through component (e.g. using the arrow keys on the iAV control valve) 2. **Note that this can generate more noise and higher energy consumption!**
- 5 Measure any remaining vents within the current zone and fine-tune them using the exhaust vent. Work from highest to lowest flow rate.

Now complete the remaining zones. To do this, repeat the following steps, working towards the central extract unit.

- 6 Select the exhaust vent with the highest flow rate.
- 7 Adjust the flow rate through the exhaust vent in step 6 by fine-tuning the feed-through component (e.g. using the arrow keys on the iAV control valve).
- 8 Measure any remaining vents within the current zone and fine-tune them using the exhaust vent. Work from highest to lowest flow rate.
- 9 Exit configuration mode by pressing 'HIGH' on the iAV Control valve or on the IQ-unit.

8

Settings

Most factory settings for the network and components will be sufficient as they are, nonetheless depending on the situation a few parameters will need to be set correctly. This can be done via the Display menu on the IQ-unit or using the Duco Network Tool.

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.

* Only in Belgium and the Netherlands



Duco Network Tool

Display menu

The menu can be operated using the arrow keys (▲, ▼) and the enter key (■). Use the arrow keys to scroll through the menu. Use '>BACK' at the end of each menu to return to the menu above. Press the arrow keys together briefly to return to the main menu.

The display will switch off automatically after 2 minutes of inactivity.

Press a button (▲, ▼ or ■) to reactivate the display.

Please refer to information sheet [Display menu \(L8000015\)](#) at www.duco.eu for a complete overview of the display menu.



8A. Setting the time

The time needs to be set on the IQ-unit for functions including Night-Boost to work correctly. Navigate to the parameters listed below and set them correctly:

>Config

>Box

>Time

>Time

▲▼ 20:05

>Day

▲▼ 22

>Month

▲▼ March

>Year

▲▼ 2015

>Timezon

▲▼ +1HRS

Confirm using Enter (■) in each case.

8B. NightBoost

Duco's NightBoost function is used to set the ventilation system during the summer to assist in cooling down high indoor temperatures.

This fully automatic smart (night) cooling function temporarily deactivates demand control at indoor temperatures of 24 °C and over, and causes the system to operate at nominal value. Not only does this reduce the risk of overheating, it also reduces the need for cooling. Smart NightBoost algorithms ensure energy-efficient operation without disturbing night rest.

When using 'Tronic' window ventilators, outdoor temperature is also measured for even greater operating efficiency in the NightBoost function.

NightBoost is not activated as standard in the IQ-unit. **Ensure the time of day has been set (see section 8A)** and complete the following steps to activate NightBoost:

>Config

>NgghtBst

>Mode

▲ ▼ ON

Confirm using Enter (■).

8C. ModBus

A ModBus link can be used to read out and alter ventilation system parameters from connected equipment (e.g. a building management system). Please refer to information sheet **ModBus (L8000009)** at www.duco.eu for comprehensive information about ModBus.

A white sheet of paper with rounded corners, featuring 20 horizontal grey lines spaced evenly down the page. The lines are parallel and extend across the width of the page, leaving a small margin at the top and bottom.

Geïnstalleerd door:
Installé par:
Installed by: