

Oxygen Description

Intelligent, healthy energy-efficient IAQ control

Jaga Oxygen is an energy-efficient, intelligent and fully programmable heating and ventilation solution which creates a fresh, healthy and comfortable indoor climate in buildings of any age or type.

Particularly suited for rooms with high occupancy such as classrooms, offices and care homes, Oxygen delivers clean, healthy, fresh air on demand and in a highly energy efficient way.

In schools, poor indoor air quality (IAQ) has long been an issue and has been proven to have a detrimental effect on educational performance. Similarly in an office environment, good indoor climate is essential for productivity and to reduce sickness and absenteeism. In care homes the need is even more acute as poor IAQ, due to excess CO₂, is a real threat to healthy living and occupants' comfort.

How Does it Work?

The Oxygen system works by monitoring and measuring the air quality in a room and cutting in automatically when required. This ensures that an adequate supply of fresh, clean outside air is introduced into the room and the contaminated, stale air is removed.

As the Oxygen's intelligent demand controlled (heating and) ventilation system only vents fresh air when required it is more efficient than natural ventilation and eliminates the drawbacks of draughts, stuffiness and security risks. During the hot summer months Oxygen's boost function can be used to deliver effective secure night-time air purging. This cools the building fabric down so that the environment is more comfortable first thing in the morning.

The Oxygen system can be specified with a wide range of Jaga wall-mounted heating solutions. Oxygen systems can be linked to an existing building management system, centrally controlled in a stand-alone system, or even controlled simply through a panel on the radiator.

The system features Oxygen Refresh fans built into Jaga's patented Low H₂O radiators. The refresh unit draws in outside air and filters it before discharging it through the radiator and into the space.

The Jaga Master controller regulates and balances inlet (and exhaust if installed) air. The exhaust unit directs stale air outside or into central corridors to provide a degree of heat recovery. The Oxygen CO₂ sensor controls the whole system, continuously measuring the air quality and reacting accordingly by replacing stale air with fresh clean air. As the ventilation demand changes the Low H₂O radiator is able to respond instantly offering excellent fast response heating control.

The fresh air, depending on the requirements of the CO₂ sensor, will vary from 30 m³/hr on 1.0 vdc output from main oxygen control panel to 200 m³/hr on 4.5 vdc output from main oxygen control panel, which will be boosted up to 400 m³/hr on 7.0 vdc output once the 'BOOST' button has been depressed on the smart switch.

When using The Jaga Oxygen control system, remote access can provide real-time monitoring of room conditions including, CO₂, temperature and air volumes.

Also, with the 'Cloud Service' the current status can be monitored and changed remotely – ideal for Facility Managers.

Installed Components

CO₂ Sensor

CO₂ Sensor communicates with the other control components over the Jaga bus system to control and balance the inlet and exhaust fans.

This sensor also measures the room temperature and can control the heating valves and ventilation speed to provide a degree of temperature control within the space.



Refresh Unit & Damper

The Oxygen air inlet fans are housed within the Jaga Low H2O radiator casing. Depending on the type of casing being used, up to four air inlet fans can be fitted into one radiator, therefore saving valuable wall space.

Each of the air inlet fans require a 163mm diameter feed to outside air and accommodate the damper assembly. The damper closes when the fan is not operational to ensure full control.



Exhaust Fan

An exhaust fan is used to remove stale air from the space. It can accept a 0 – 10 volt signal. The fan curve is programmed into the Jaga Master Controller to ensure accurate control, balanced with the inlet air from the refresh units.



Room Smart Switch

A single 2-button switch can be installed in each room to provide a user interface with the system. The indicator lights illuminate in different colours depending on the mode of operation.



Central Control Panel and Associated Components

The panel is located in a central location (comms room or plant room) and houses the master control unit to communicate with all bus components.

The front of the panel has an isolator and smart switch for service and maintenance purposes.



Analogue Output Module 0..10vdc

Each refresh unit (maximum four refresh units) and exhaust fan/s, require an analogue output module to convert the Green Wire BUS signal into a 0-10vdc control signal from the controller using an inbuilt program by Jaga to configure their speed of running on the dictates of the CO₂ sensor.



Display

A display is provided to give an indication to of the system conditions including settings, operating speeds and CO₂ levels.



Radiators and TRVs

The radiator design is to suit the requirements of the specification, and houses a low water content heat emitter and valves.

The radiators are fitted with TRVs to control the water flow based on the space temperature. This can be traditional manual type or electrically activated.

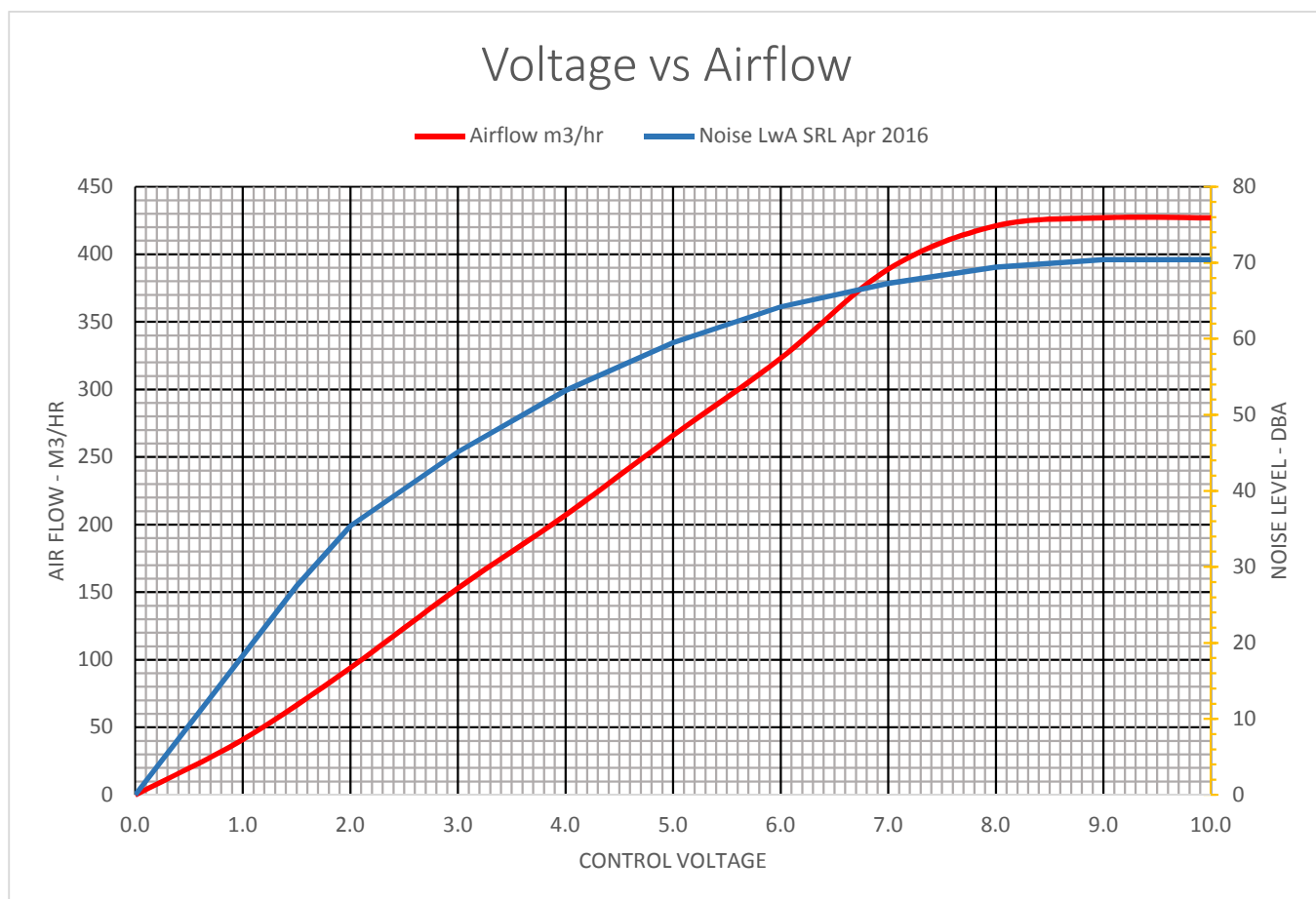
Refresh Unit Description

Type Of Units Available with Oxygen

Model	LowH2O Standard H min.	Low H2O Twin H min.	Length minimum			
			1 Unit	2 Units	3 Units	4 Units
Strada	500	650	800	1400	2400	2800
Maxi WT/WF	N/A	740	1033	1433	2033	N/A
Maxi FT/FF	N/A	740	1033	1433	2033	N/A
Guardian FT	N/A	800	840	1440	N/A	N/A
Guardian WT	N/A	600	840	1440	N/A	N/A
Tempo	500	600	800	1400	2400	2800
Play	650	650	1000	N/A	N/A	N/A

Performance Data

This shows the performance data, in graph form, of the Oxygen Refresh Unit showing Airflow (m3/hr) and Noise Level (dBA) against Control Voltage (vdc).



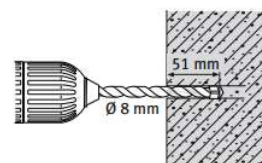
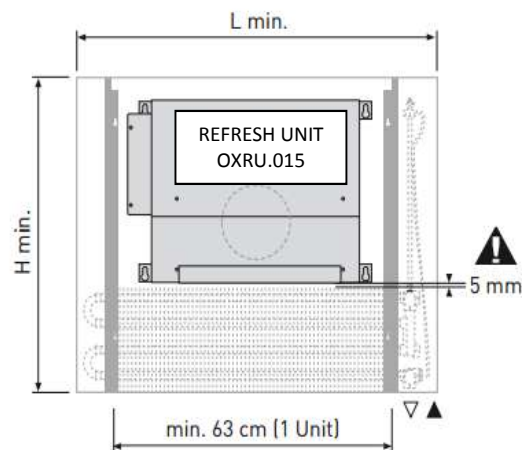
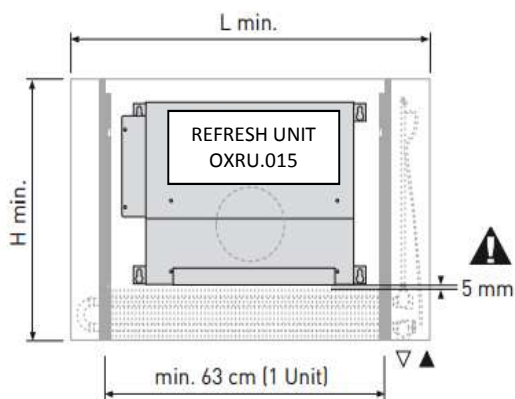
All the tests have been taken on the Refresh Unit alone, without radiator casing.

Fitting Instructions

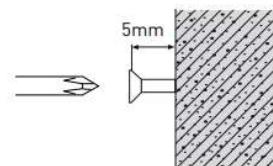
Fit the element and brackets as their fitting instructions, then mount the template:

LowH20 Standard / Standard / Estándar _____

LowH20 Twin _____



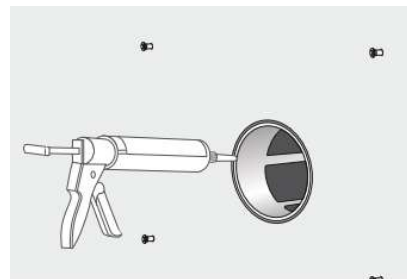
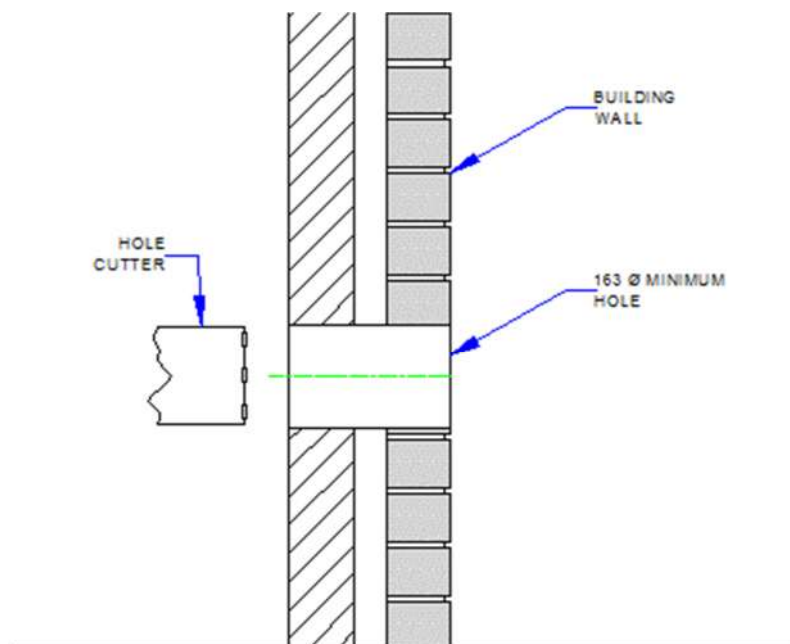
Drill the four holes on behalf of hanging the appliance with drill 8 and 51mm deep.
Fit the wall plugs



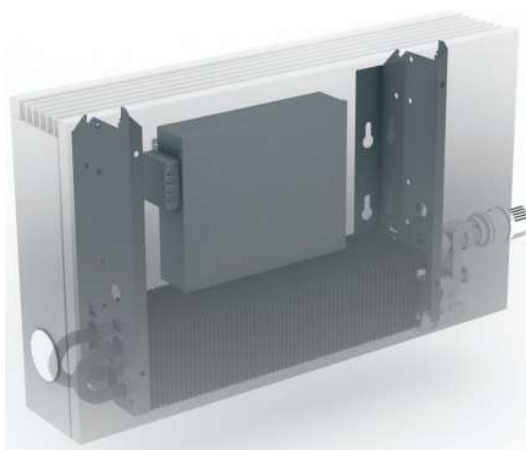
Drive in the provided screws (5x60) and let them put out 5 mm from the wall.
Remove the mounting model from the wall.



Core drill through the wall from the marked out circle from the mounting template :



- determine the length of the plastic lead through pipe, and saw to the correct length.
- ensure the tube is cut so that it does not protrude from the wall! The tube must be parallel with the wall.
- remove possible burrs with a file. Seal the tube on both ends so you have a neat finish.
- remove all remaining rumble, and clean the inside of the tube with a vacuum cleaner or with dustpan and brush
- fix the tube and external grille in the wall. Isolate on all sides.

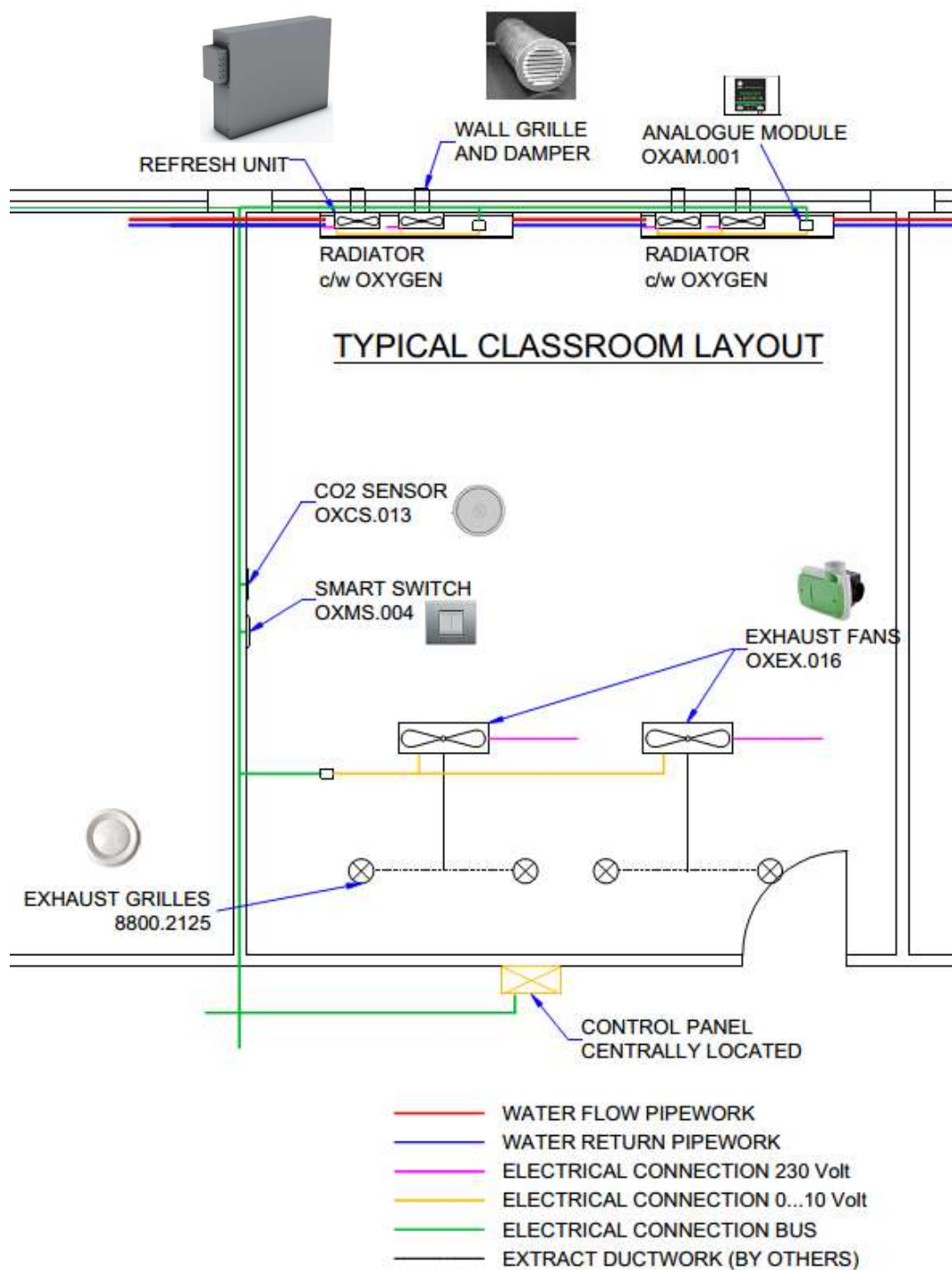


Place the slots on the screws and sliding it down.
Tighten the screws.

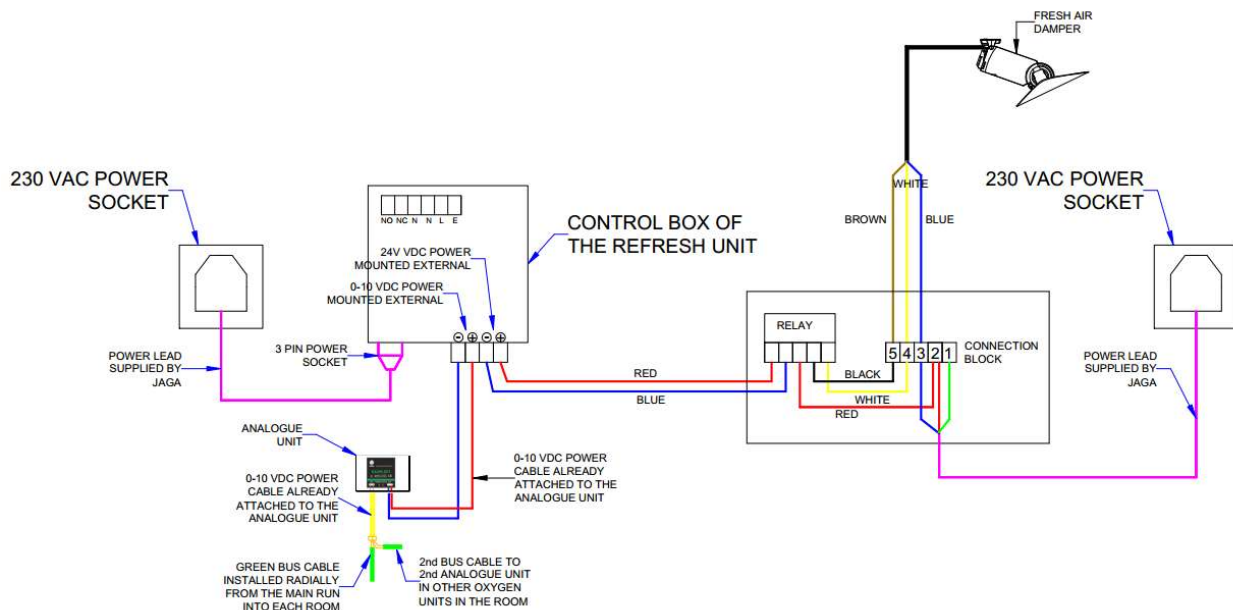
Wire the refresh unit as described in the wiring section.

Wiring of System

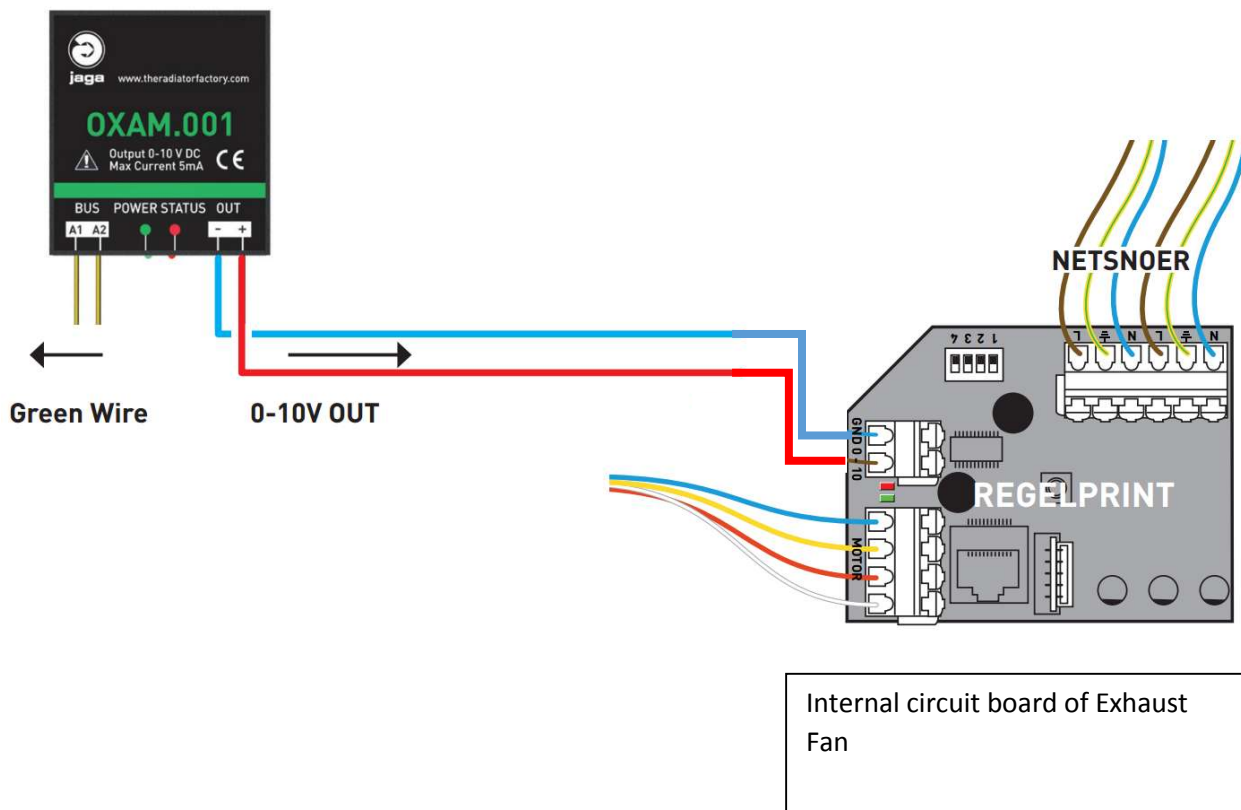
Typical Oxygen system layout –



Refresh Unit wiring -

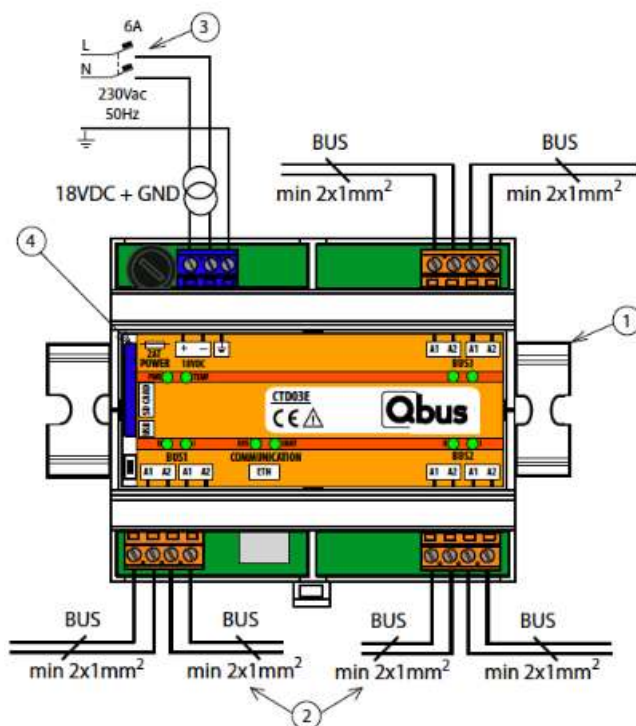


Exhaust Fan –



Green Wire BUS Installation –

Example of OXJC.03E



Product Description –

The aim of the data BUS is to link the controller with all the Jaga input and output modules. The power supply and control signals are sent from the controller via 2-wire data BUS to the various connected consumers/users (switches, output modules, displays etc).

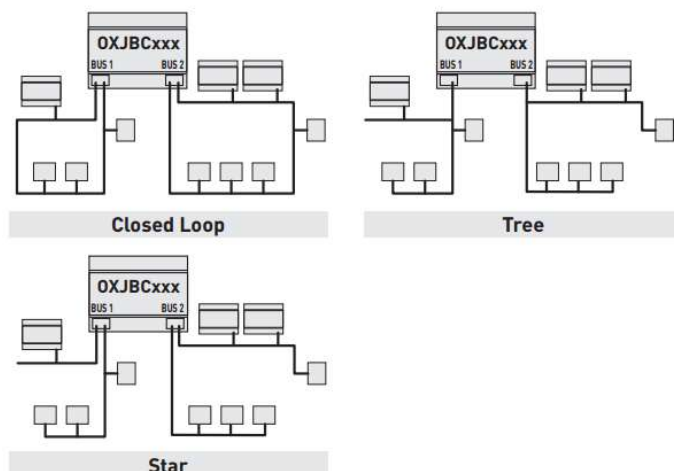
The OXJC01 and OXJC01E have 1 BUS output, OXJC02 and OXJC02E have 2 BUS outputs, OXJC03 and OXJC03E have 3 BUS outputs.

Maximum BUS load –

The BUS on all of the controllers can supply a maximum of 500mA. When calculating the load on each BUS the power consumption per module must be taken into account :

CO ₂ Sensor -	50mA
Master controller -	60mA
Output module -	15mA
Smart switch -	10mA
Relay Module -	20mA

! IMPORTANT : THE BUS CABLE SHOULD BE GROUNDED! THE GROUNDING SHOULD BE CONNECTED TO THE OVERALL GROUNDING OF THE BUILDING



Mounting Variations –

The BUS can be mounted in any architecture(closed loop, tree, star) as long as the distance and section requirements are respected.

BUS cable –

It is recommended to use the QBUS cable or any other cable with minimum 2 x 1mm² conductors as a BUS lead.

BUS Lengths –

The BUS can be installed up to a length of 200 metres. The maximum distance between the OXJC and the module that is farthest away from the OXJC may be 200 metres.

We strongly recommend to run the BUS in a loop and join it at the controller. In this case (with a sealed loop) we can increase the total length to 400 metres. The BUS connection will continue working, even when the circuit is interrupted, the it would work as a star.

Features of the BUS –

- The BUS consists of 2 conductors (minimum 2 x 1mm²)
- The BUS has no polarity
- The response time for 1 output is 20 msecs and 0.1 secs for 388 outputs.
- The BUS operates in 2 directions (bi-directional) and each module can send and receive.
- The BUS allows for simultaneous communication (programming and operations can be carried out at the same time)
- There are no BUS conflicts or waiting times when several operations are carried out simultaneously.
- The BUS supplies power to and controls all modules via the controller.

Maintenance

Every 6 months

- Clean filters in refresh units
- Clean external grilles to remove blockages

Every 12 months

- Replace filters in refresh units
- Check all electrical connections are tight
- Clean heating element
- Service central heating system as recommended by boiler manufacturer and heating system installer. This would typically include, but not limited to:
 - Check operation of all safety valves
 - Check system pressures
 - Check cleanliness of system fluid
 - Check operation of all heating components

Control System

The control system is a fully programmed control system and is maintenance free. Should this system need to be changed as a result of damage or failure, please contact Jaga Heating Products (UK) Ltd. See final page for contact details.

Refresh Units

The refresh unit is located inside the radiator casing, and houses the filter element. This will need to be removed and cleaned / replaced. The filter element is in the bottom section of the refresh unit and can be removed by sliding it out.

Radiator

The removal of the radiator casing can be found in its own fitting instructions by following in reverse order.

The casing is manufactured from painted steel and may be cleaned with any normal detergent. Do not use dry cleaning fluid or any other product containing volatile solvents.

The heating element is manufactured from copper tube, brass collectors with coated aluminium convector fins. During operation the convector heating element filters dust and coarse particles from the air. It is important for the efficiency of the convector that the airways are kept clear at all times if possible. It is advisable to check during routine maintenance that nothing is blocking or obstructing the top fins (for example; paper, food or other foreign bodies). Also check that there is no build-up of dust on the underside of the element.

Easy access with a vacuum cleaner to the underside of the convector is possible.

Contact Details

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