

TRENCH HEATING LIMITED

sales@trenchheating.com

AQUAFAN-ELECTROFAN WIRING/INSTALLATION INSTRUCTIONS

AQUAFAN/ELECTROFAN – Cross flow fan assisted convection with ready to install in- floor units with LPHW/electric heating element.

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Explanation of symbols:



Caution: Danger

The non-observance of this information can result in serious injury to persons or property.



Danger of electrocution

The non-observance of this information can result in serious damage to persons or property from electrical power.

Read this manual carefully prior to assembly and installation work.

All persons involved in the installation, commissioning and use of this product are obliged to pass this manual on to all persons working simultaneously or subsequently on the equipment, including the end user. Retain this manual until the equipment is ultimately decommissioned.

We reserve the right to make changes to the content or design without prior notification.



1. Correct and proper use

AQUAFAN/ELECTROFAN units are manufactured in accordance with state-of-the-art and recognised safety regulations. Personal danger or damage to the equipment or other property can nevertheless be caused if the units are not installed, commissioned and used correctly and properly.

AQUA/ELECTROFAN units should only be used indoors (for example in residential and office buildings, salesrooms etc). They cannot be used in damp areas, such as swimming pools or outdoors. The products should be protected from moisture during installation. In case of doubt discuss the proposed use with the manufacturer. Any damage resulting from improper use is the sole responsibility of the user/operator of the equipment. Correct and proper use will also be deemed to include observance of all information regarding safety, operation and maintenance/servicing, contained in this manual.

The installation and electrical wiring of these products require specialist knowledge in the field of heating, cooling, ventilation and electrical engineering. This knowledge is generally taught as part of a vocational training course in the aforementioned fields and so is not described separately here. Damage resulting from improper installation is the sole responsibility of the operator.





2. Safety information

Installation, assembly and maintenance of electrical equipment should only be conducted by a qualified electrician. Wiring should comply with current BS7671: 2008 amended 2011.

Non observance of these guidelines and the operating manual can lead to malfunctions with subsequent damage to the equipment and risk personal injury. Incorrect wiring can result in fatal injury owing to crossed wires!

Prior to all wiring and maintenance work, all parts of the system have to be made voltage-free and prevented from being reconnected accidentally! The installer of this unit should have adequate knowledge about:

- Safety and accident prevention regulations
- Guidelines and recognised technical regulations e.g E.N standards-EN 60730 (Part 1)

3. AQUAFAN/ELECTROFAN units are supplied as standard with:

Height adjustment feet, with rubber bases. Grille removal tool. Fixings.

4. Alignment and Fixing

Remove the blind grommets in the base of the heater. These are the floor fixing points. Position the AQUAFAN/ELECTROFAN in the trench and adjust the height using the height adjustment feet. Mark through the fixing holes where the fixing holes are to be drilled. Remove the Heater and drill the fixing holes. Insert the drop in anchor into the holes. Replace the Trench Haeter and fix in place. Tighten nuts on Adjustable Feet.

Ensure that the installation manual is visible on the unit for the subsequent trades. Cover the grille and the AQUAFAN/ELECTROFAN unit to protect it from dirt or cement.

5. Screeding

Prior to commencing screeding, check whether

- the electrical connection has been made correctly
- the AQUAFAN/ELECTROFAN is aligned correctly in terms of height and distance to the window
- the grille has been covered (Caution! Cement can destroy the surface of the grille!),
- sound insulation (not with raised floors) has been fitted under the units where specified.
- ensure rubber/felt feet pads are in place
- there are no sound bridges to the concrete slab, especially around the height adjustment feet
- all openings in the AQUAFAN/ELECTROFAN have been sealed with suitable material against the ingress of screed

Caution

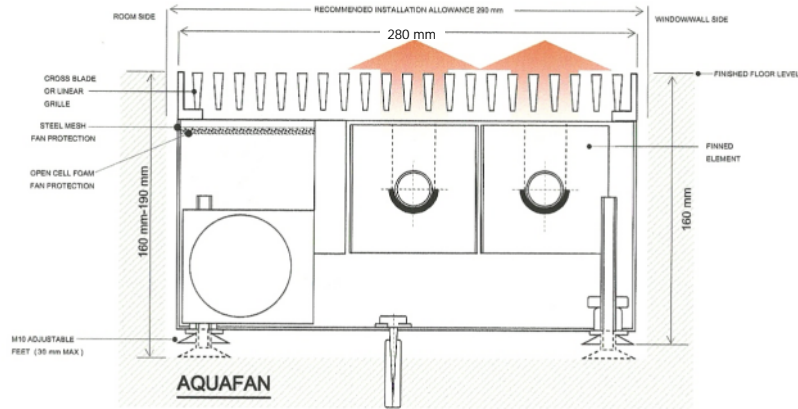
- the AQUAFAN/ELECTROFAN units should not be used as form work for final floor finish. Installation drawings show a recommended working space allowance for best practice.

6. Fitting grilles

Grilles should be handled with care when removing and re-fitting into unit.

7. AQUAFAN Dimensions/Heat Outputs

7.1 AQUAFAN Dimensions/Heat Outputs for Double Elements

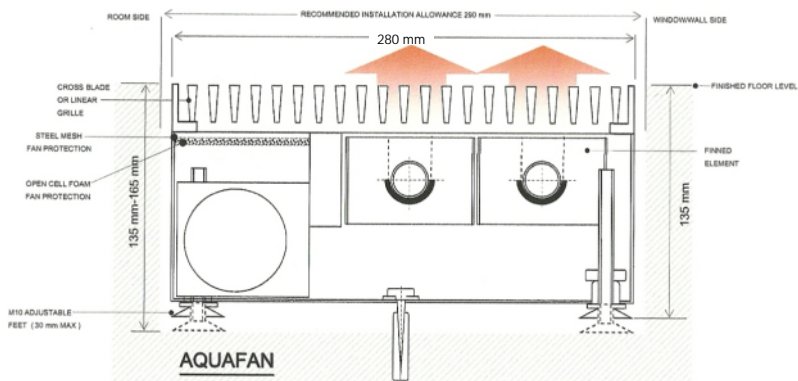


CROSS SECTION:

Calculation for ΔT = mean water temperature less entering air temperature. Example: $\Delta T = \frac{82 + 72 - 20}{2} = 57$ Deg C

HEAT OUTPUTS PER 900 mm FAN						
FAN SPEED	OUTPUT AT 20 Δ T (WATTS)	OUTPUT AT 30 Δ T (WATTS)	OUTPUT AT 40 Δ T (WATTS)	OUTPUT AT 50 Δ T (WATTS)	OUTPUT AT 60 Δ T (WATTS)	OUTPUT AT 70 Δ T (WATTS)
HIGH	834	1264	1699	2137	2576	3018
MEDIUM	643	978	1317	1659	2004	2351
LOW	465	713	965	1221	1480	1741

AQUAFAN D75-75



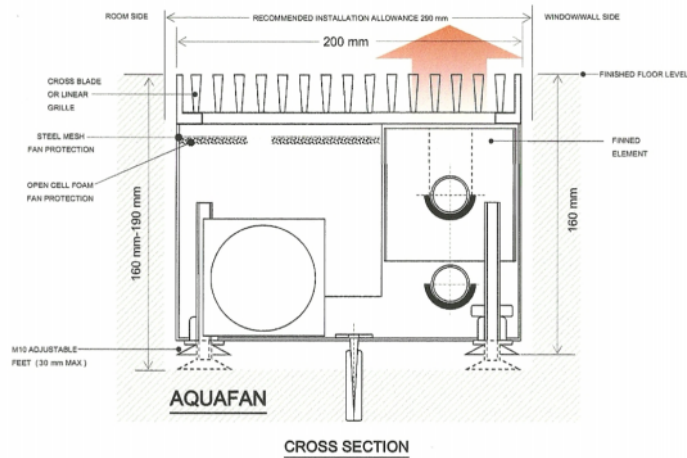
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HIGH	619	943	1284	1613	1942	2283
MEDIUM	476	729	982	1254	1523	1785
LOW	348	524	721	924	1131	1326

AQUAFAN D75-50

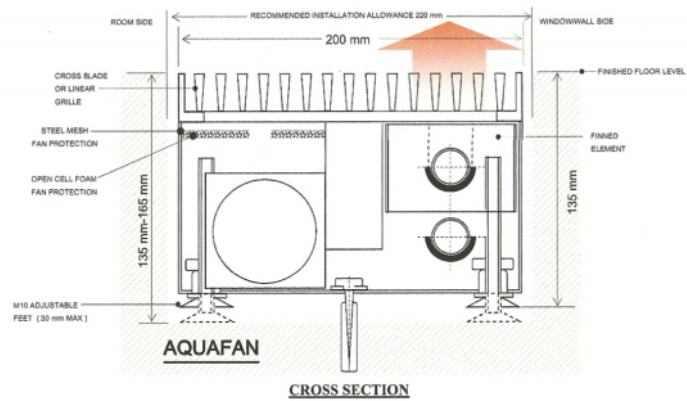
7.2 AQUAFAN Dimensions/Heat Outputs for Single Element



Calculation for ΔT = mean water temperature less entering air temperature. Example: $\Delta T = \frac{82 + 72}{2} - 20 = 57$ Deg C

HEAT OUTPUTS PER 900 mm FAN						
FAN SPEED	OUTPUT AT 20 Δ T (WATTS)	OUTPUT AT 30 Δ T (WATTS)	OUTPUT AT 40 Δ T (WATTS)	OUTPUT AT 50 Δ T (WATTS)	OUTPUT AT 60 Δ T (WATTS)	OUTPUT AT 70 Δ T (WATTS)
HIGH	501	759	1019	1282	1545	1811
MEDIUM	385	587	790	995	1202	1410
LOW	279	428	579	732	889	1044

AQUAFAN S75-75

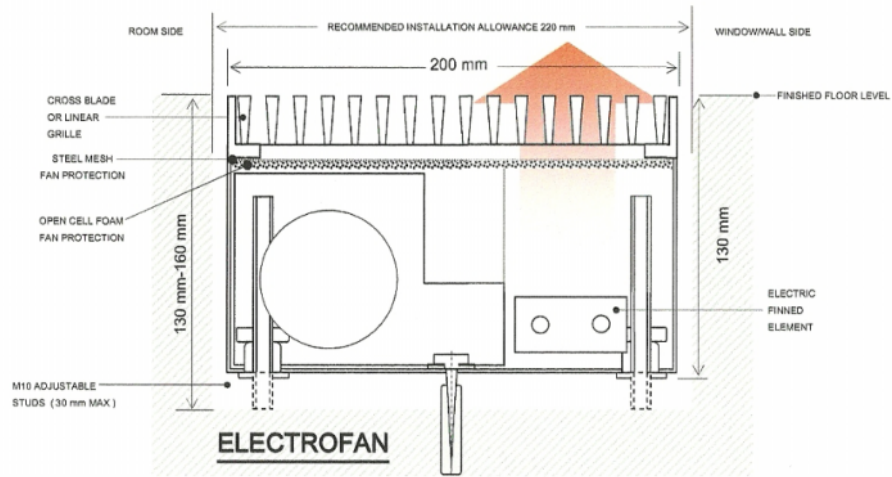


Calculation for ΔT = mean water temperature less entering air temperature. Example: $\Delta T = \frac{82 + 72}{2} - 20 = 57$ Deg C

HEAT OUTPUTS PER 900 mm FAN						
FAN SPEED	OUTPUT AT 20 Δ T (WATTS)	OUTPUT AT 30 Δ T (WATTS)	OUTPUT AT 40 Δ T (WATTS)	OUTPUT AT 50 Δ T (WATTS)	OUTPUT AT 60 Δ T (WATTS)	OUTPUT AT 70 Δ T (WATTS)
HIGH	371	565	770	967	1165	1369
MEDIUM	286	438	589	752	913	1071
LOW	209	314	433	554	678	796

AQUAFAN S75-50

8. ELECTROFAN Dimensions/Heat Outputs



CROSS SECTION:

ELECTROFAN 1250 watts per heater



9. Wiring

9.1 Safety Information

The installation and electrical wiring of this product requires specialist knowledge in the field of heating, cooling, ventilation and electrical engineering. This knowledge is generally taught as part of a vocational training course in the aforementioned fields and so is not described separately here.

The installer of this unit should have adequate knowledge about

- Safety and accident prevention regulations
- Guidelines and recognised technical
- EN standards
- Accident prevention directives
- EN 60730 (Part 1)

It is mandatory that the following safety-related information is adhered to prior to working on the controller and the units:

Disconnect the unit from the mains power supply and ensure that it cannot be reconnected accidentally.

Wire the unit in accordance with the wiring diagrams supplied.

Wiring should comply with BS 7671: 2008 amended 2011.

The unit should only be wired to fixed cables.

Modifications to the units:

Do not undertake any modifications, conversions or additions to the units without consulting the manufacturer, as this would impair the safety and operation of the equipment.

Incorrect wiring or modifications to the unit can result in damage to the units. The manufacturer cannot be held liable for the damage caused by incorrect wiring and/or incorrect installation and operations.

Disregard of the regulations and information contained in the operating manual can cause malfunction of the unit with possible damage to the unit and risk of possible injury. Incorrect wiring and crossed wires can cause fatal injury!

Please see the next page for wiring connection details.

9.2 Wiring instructions



- Remove grille from Heater.
- Unscrew the 2 screws holding the black protection cover.
- Lift protection cover 5-10 cm and push 1 cm towards end of Heater.
- This will release the end of the cover and it can be lifted out of the heater.



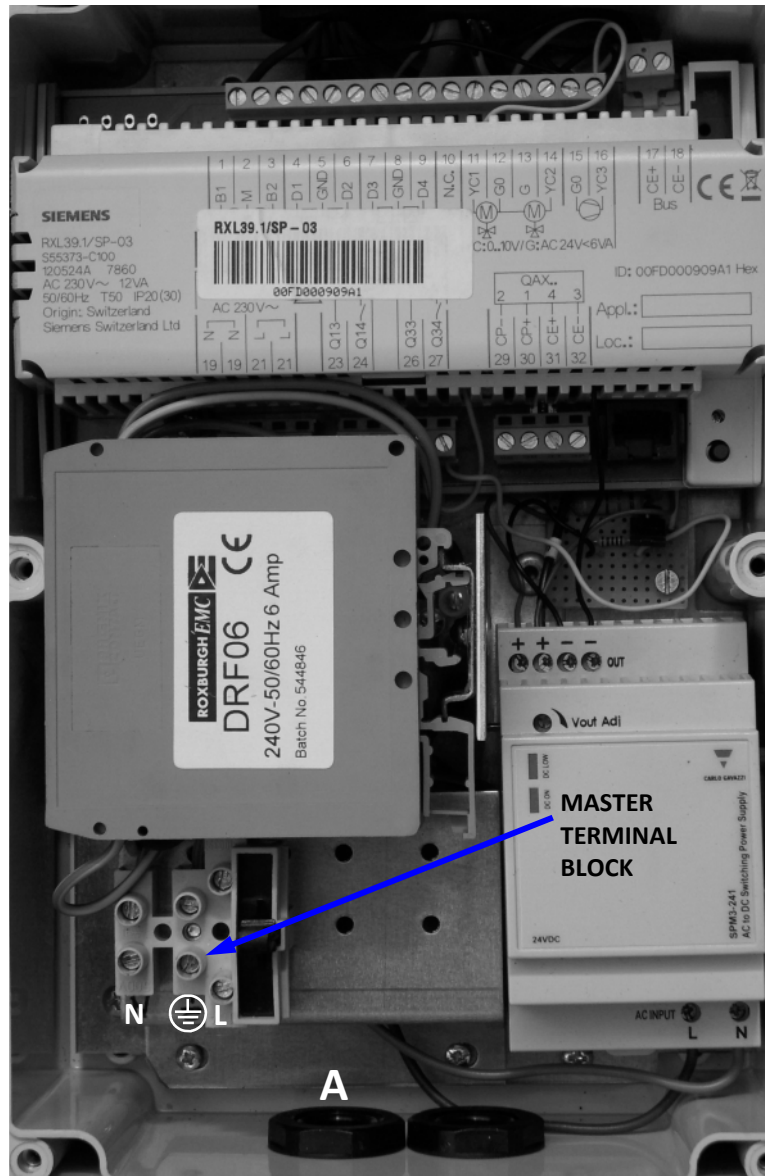
- Remove screws from enclosure cover and remove.



- The heater is ready to be electrically connected.



AQUAFAN-ELECTROFAN 230V SUPPLY CONNECTION



Prior to all wiring, all parts of the system have to be made voltage free and prevented from being reconnected accidentally.

EACH TRENCH HEATER MUST HAVE A SEPARATE 230V SUPPLY.

The 230 V supply must be wired from a RCD (earth leakage circuit breaker) and a Wall mounted switched supply.

230 V SUPPLY

Ensure the 230V supply

Feed the 230 V cables through the end gland

(A in the IP Enclosure box) and connect to the Master terminal box.

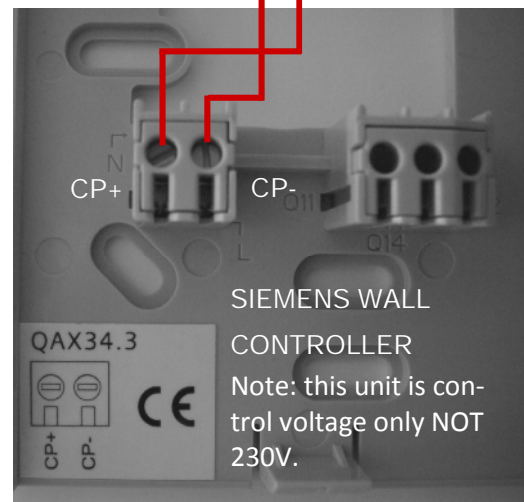
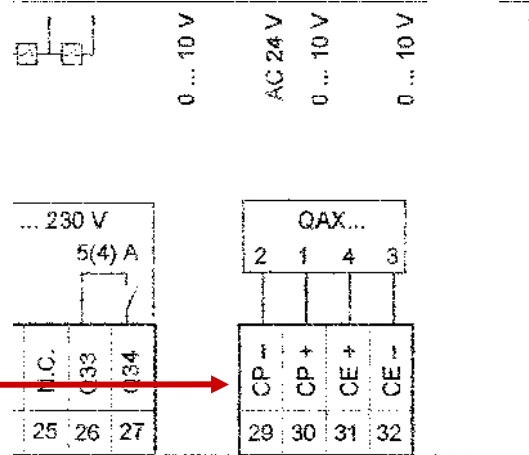
Live Earth and Neutral are marked on the MASTER Terminal block.

Tighten Gland A to ensure no moisture ingress.



AQUAFAN-ELECTROFAN

SIEMENS WALL CONTROLLER CONNECTION TO THE MASTER TRENCH HEATER



Prior to all wiring, all parts of the system have to be made voltage free and prevented from being reconnected accidentally.

Two cables connect the SIEMENS Wall controller to the SIEMENS RXL39.1 In Trench Heater Controller.

Feed the cables through the cable gland (C in the Enclosure box) and connect to the SIEMENS RXL39.1

Tighten Gland C to ensure no moisture ingress.

The wall controller Terminal CP+ must be connected to the RXL39.01 Terminal 30-CP+

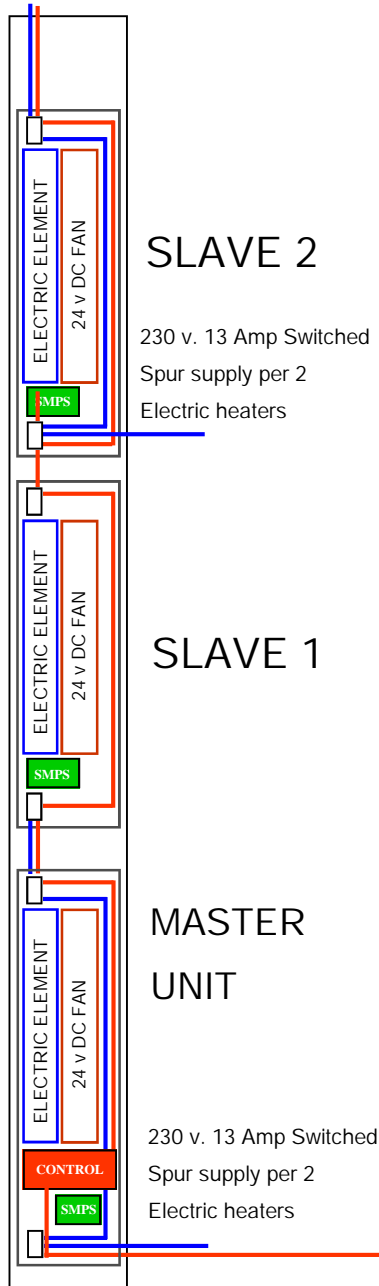
The wall controller Terminal CP- must be connected to the RXL39.01 Terminal 29-CP-

Refer to SIEMENS instruction sheet if necessary.



ELECTROFAN

GENERAL ARRANGEMENT FOR CONTROL OF MULTIPLE UNITS



Wiring from Slave 1 to Slave 2 (independent 230 V supply)

The Blue (Neutral) and Brown (Live) wires must run through the Gland and wired into Live & Neutral marked L, E & N.

NOTE: One 230 v supply can operate 2 Heating Elements, ie a Master and one Slave or Two Slaves.

Fan control from Slave 1 to Slave 2-3-4 etc

The Black control wires must run through the Glands and be connected to terminals marked 1 & 2

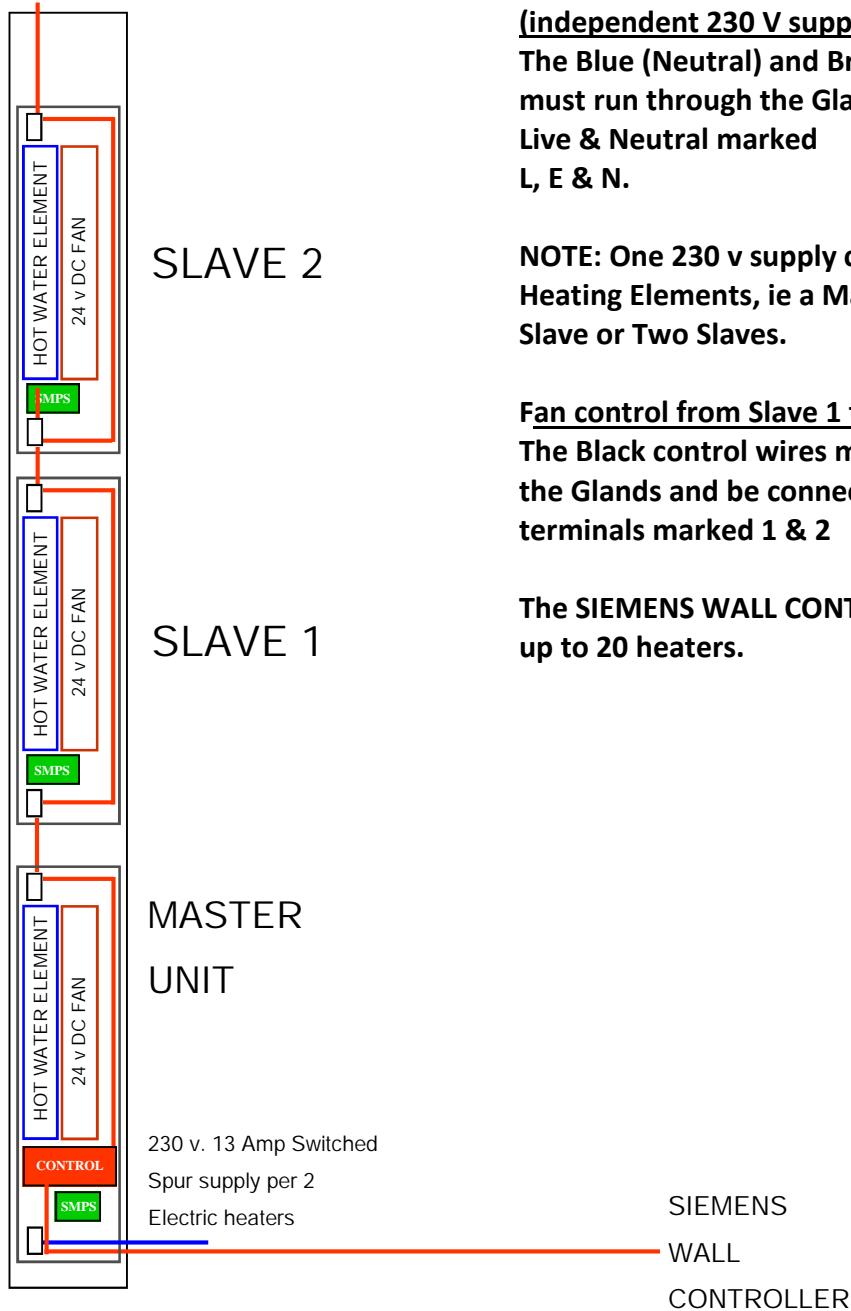
The SIEMENS WALL CONTROLLER can run up to 20 heaters.

SIEMENS
WALL
CONTROLLER



AQUAFAN

GENERAL ARRANGEMENT FOR CONTROL OF MULTIPLE UNITS



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Fan control from Slave 1 to Slave 2-3-4 etc

The Black control wires must run through the Glands and be connected to terminals marked 1 & 2

The SIEMENS WALL CONTROLLER can run up to 20 heaters.

9.3 Controls

The AQUAFAN and ELECTROFAN Heaters are designed to be controlled via a SIEMENS wall mounted controller.

The QAX34.3 or the QAX84.1/PPS2

Both of these units provide the following functions:

- Auto temperature control
- Auto Fan Speed control to achieve desired temperature and minimise Fan use
- Fan speed manual override
- Fan only mode for cool air
- Frost protection mode

Please refer to the appropriate SIEMENS Control data sheet

9.4 ELECTROFAN Safety Cut-out Switches

The ELECTROFAN Heating element has 3 Safety cut-out switches.

The first switch (Re-set switch) will cut power to the Electric Element if it senses an unusual rise in temperature, that would occur in the event of material being placed over the heater and blocking the air flow. This switch will cut the power as the temperature rises and restart the unit when the temperature has lowered significantly.

The other two switches will cut power to the Electric Heater if the temperature rises beyond the cut-off temperature of the first Re-set switch. The unit will not re-start and a fully qualified electrician must be called to investigate if the reason for excessive heat is not obvious.

After investigation by a qualified electrician and having identified and resolved the problem the unit can be re-started by disconnecting power to it and then re-connecting power to it.

9.5 AQUAFAN Electrical Ratings

Rated voltage 220-240 volts
Rated frequency 50 Hz
Rated power input 50 watts at 230 volts

9.5 ELECTROFAN Electrical Ratings

Rated voltage 220-240 volts
Rated frequency 50 Hz
Rated power input 1250 watts at 230 volts

10. Test Certificates

Testing Laboratory: York EMC Services Ltd

EMC Test Standards:

EN 55014-1:2006+A1:2009

EN 55016-2-3:2006

EN 55014-1:2006

EN 61000-3-2:2006+A1:2009+A2:2009

EN 61000-3-3:2008

LVD Test Standards: Report No: 10779TR1

EN 60335-1:2002 + A1:2004 + A2:2006 + A11:2004 + A12:2006 + A13:2008 + A14: 2010

EN 60355-2-30: 2009

Db (Sound emission) Test Standard: Report No: B998TR1 & B999TR1.

Standard: 2352012 Rev 1