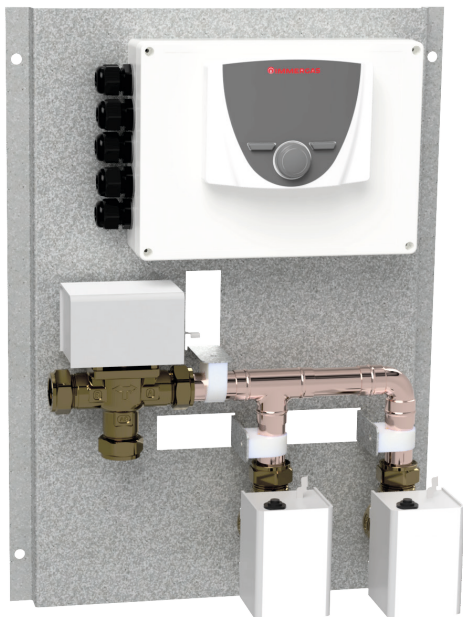


Pre-plumbed Audax Distributer

For use with Immergas Audax Heat Pumps

Installation, Usage and Maintenance Instructions



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1. GENERAL INFORMATION

Thank you for selecting a Pre-Plumbed Audax Distributer. This product is the result of extensive research and experience in heating system design.



This manual is an integral part of the product and should be retained. Please read it carefully, as it provides important information regarding the installation and maintenance of the product. This manual should be viewed as supplementary to the Immergas Audax Heat Pump instructions, which must be read thoroughly. This product is typically used with an unvented water heater. Also refer to the water heater manufacturer's instructions.

1.1 INTRODUCTION

The Pre-Plumbed Audax Distributer is specially designed for use with Immergas Audax heat pumps. It contains a pre-plumbed manifold configured for one domestic hot water zone and two heating zones. It also contains the Audax controller and interface board, output to power an immersion heater, and domestic hot water sensor. It simplifies the provision of central heating and production of hot water when using an Immergas Audax heat pump.

1.2 TERMINOLOGY

- **Audax Distributer** will be used throughout to refer to the Pre-Plumbed Audax Distributer.

1.3 WARNINGS

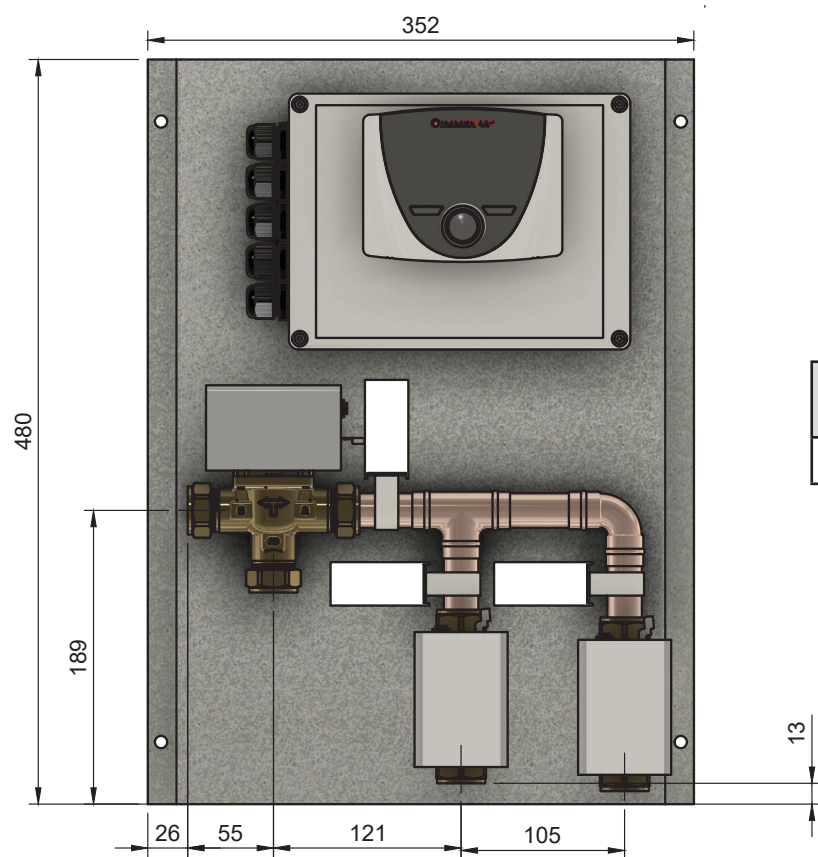


Read all the following warnings carefully. They contain important information about the safe installation and operation of the Audax Distributer.

Users of the appliance	This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
Read these instructions thoroughly	Carefully read the instructions contained in the manual as they provide important information regarding safe installation and maintenance. The installation and maintenance must be performed in accordance with current standards and according to the manufacturer's instructions.
Authorized personnel only	The product should only be installed and maintained by a person qualified in the design and installation of heating systems. Failure to properly install or maintain the Audax Distributer may lead to injury, death or property damage. In the case of failure or malfunction of the appliance, do not attempt to repair it yourself. Please contact RVR Energy Technology by email at info@rvr.ie . Repairs must only be carried out by qualified technicians. Failure to comply with these requirements can compromise the safety of the device.
High temperatures and Pressure	Failure to fit essential safety devices will invalidate the warranty and may cause a dangerous installation. All water heaters must be fitted with temperature control to ensure that the domestic water is not heated to excessive temperatures. A blending (mixing) valve must be fitted to all installations to ensure water does not exceed 50°C at the point of use. Appropriate safety devices should be installed on the CH circuit according to local regulations.
Hot surfaces	The Audax Distributer has hot surfaces, which could cause burns to skin. Take care when in proximity to the unit or connected pipework and do not touch connected or mounted pipework with bare hands.
Risk of leaks	This product should not be installed in a location where water leakage is likely to cause damage. If it is installed in such a location (for example an attic or higher floor of a building), a 'tanked', waterproof chamber should be created underneath to ensure that any potential leaks from the product and associated fittings or pipes are contained and drained away safely.
Transport or handling damage	Before installation, check the Audax Distributer for any damage which could have been caused during transport or handling.
Electrical Supply	The Audax Distributer requires a 230VAC 50hz supply to operate. There is a risk of electric shock if the unit is worked on without disconnecting the incoming supply. Disconnect the electrical supply prior to starting any work on or opening any cover on the Audax Distributer.
In case of emergency	In an emergency, such as fire, leaks or other hazardous circumstances, isolate the power supply to the Audax Distributer if it is safe to do so. If possible, turn off any isolation valves connected to the Audax Distributer. Turn off the heating and close all taps. Following this, seek expert assistance.

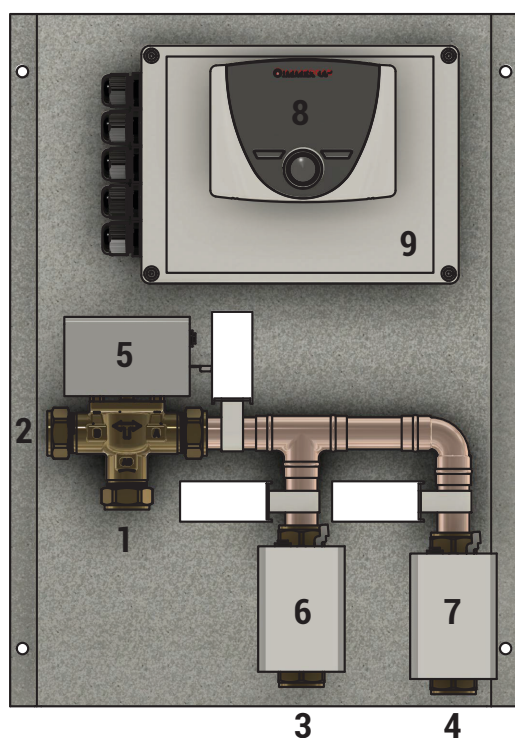
2. TECHNICAL INFORMATION

2.1 DIMENSIONS



Height mm	Width mm	Depth mm	Weight kg
480	352	135	10

2.2 CONNECTIONS AND COMPONENTS



1	Audax Flow In
2	DHW Cylinder Flow
3	Zone 1 Flow
4	Zone 2 Flow
5	Three way valve
6	Zone 1 Valve
7	Zone 2 Valve
8	Audax Remote Controller
9	Audax Interface Board

Connections
22mm

3. INSTALLATION



Carefully read and observe all instructions in the following sections. Failure to follow these instructions may invalidate the warranty and / or lead to an unsafe situation.

3.1 RECOMMENDED HANDLING PROCEDURE

Keep the Audax Distributer in its original packaging until time of installation to prevent damage. Do not store it outdoors or in any damp location. Take care when lifting or moving the Audax Distributer. Ensure that all local manual handling regulations are followed to avoid the risk of injury.

Store the Audax Distributer in a horizontal orientation, resting flat on its base. Never lay the Audax Distributer upside down. Take care not to damage the manifold or any attached valves, devices, wiring or electronics when moving the Audax Distributer.

3.2 LOCATION AND POSITIONING

The Audax Distributer must be installed in a dry location, indoors. It is not suitable for outdoor use. The Audax Distributer must be installed in a vertical orientation.

Check the load bearing capacity of the wall to ensure that it can support the weight of the Audax Distributer when filled. Ensure that in the case of a stud wall, it is securely fixed to the studs.

Enough space must be left at the bottom and sides of the unit for pipe connections and access to the safety controls and valves. Refer to sections 2.1 and 2.2 to determine a suitable position for the unit. Allow sufficient clearance for access and service.

Refer to sections 3.3 and 3.4 to determine which valves and accessories are required. Plumb the valves as shown in the relevant diagrams.

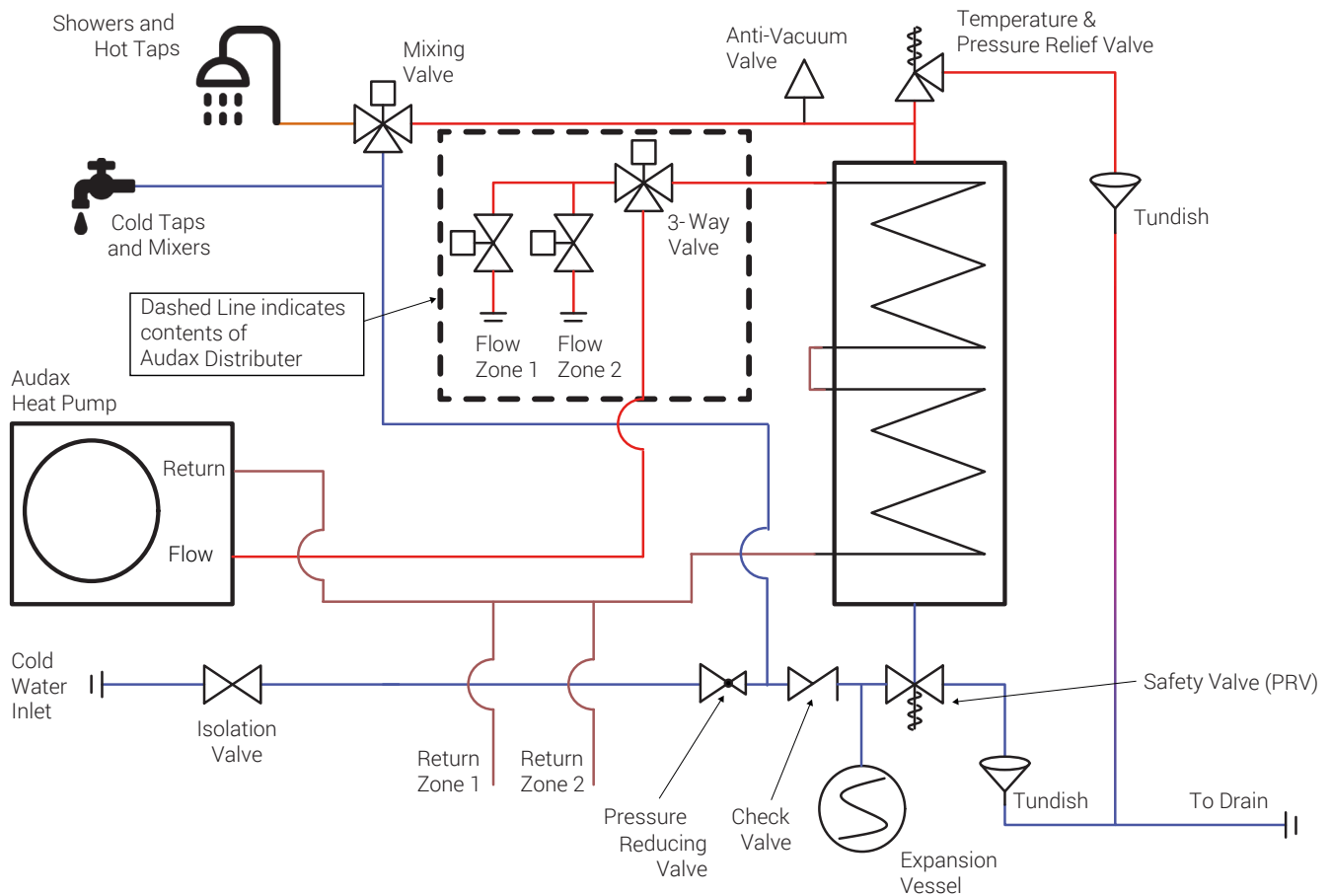
DO NOT install the Audax Distributer where the unit may freeze.

DO NOT mount the Audax Distributer horizontally.



The Audax Distributer must not be installed in a location where water leakage is likely to cause damage. If it is necessary to install the Audax Distributer in such a location (e.g. an attic or higher floor of a building), a 'tanked', waterproof chamber fitted with a drain should be created to ensure that any potential leaks from the product and associated fittings or pipes are contained and drained away safely.

3.3 HYDRAULIC SCHEMATIC



3.4 UNVENTED INSTALLATIONS - RECOMMENDATIONS



The Audax Distributer is generally used with an unvented hot water cylinder. Follow the instructions of the water heater manufacturer carefully. The following is a list of precautions that are generally recommended in such an installation. Failure to follow these basic safety recommendations may create a dangerous installation. This may lead to property damage, injury or loss of life.

Thermostatic control – Energy Cut Out Device	Any immersion heater installed must contain a high limit thermostat. The thermostat should be set to a minimum of 60°C for legionella control. This must not be removed or bypassed.
Mixing Valve	A mixing valve must be installed. A thermostatic mixing valve limits the temperature of the delivered water by mixing it with cold water as required. The delivered water temperature should not exceed 50°C.
Pressure Relief valve	This is the most important safety device. All unvented water heaters must be fitted with a Pressure Relief Valve (Expansion valve). This should be set to relieve pressure at at 6 bars. Refer to the water heater manufacturer's instructions for more information.
Pressure Reducing Valve	The cold water supply pressure to the water heater should not exceed 3.5 bar. Refer to the water heater manufacturer's instructions for more information.
Expansion vessel	Expansion must be accommodated using an Expansion Vessel. The Expansion vessel must be sized to accommodate the maximum expansion of the system and should be suitable for use with potable water. The size of the expansion vessel is proportional to the volume of the DHW system. The size of the vessel should be carefully calculated. A rule of thumb for systems with a cold water supply pressure of 3.5 bars and a maximum heating temperature of 60°C is that the volume of the expansion vessel should be at least 10% of the total DHW system volume.
Backflow Prevention	A non return valve must be installed to prevent backflow to the cold water supply.
Anti Vacuum Valve	An Anti Vacuum Valve may be installed to ensure that the water heater is vented if exposed to an internal negative pressure.
Temperature and Pressure Relief valve (T&P valve)	It is recommended to install a T&P valve. This ensures that the temperature of the stored water cannot exceed 100°C by venting the water heater under these conditions.

3.5 DISCHARGE PIPES FROM SAFETY VALVES - UNVENTED INSTALLATIONS

3.5.1 TUNDISH INSTALLATION

The discharge pipes must be routed to a tundish.

The pipe diameter must be selected from the table below. For D1 (Valve to tundish), at least 15mm piping must be used. For D2 (downstream of the tundish), include the resistance created by each elbow or bend when calculating the length, and select an appropriate pipe size according to table 3 below.

The tundish must be positioned vertically, within 500 mm of the unit, clearly visible to the user and away from electrical devices.

Legend	Purpose	Minimum pipe size	Resistance created by each elbow or bend
D1	Valve to tundish	15mm	
D2	Tundish to drain	Up to 9m: 22mm	0.8m
		Up to 18m: 28mm	1.0m
		Up to 27m: 35mm	1.4m

Table 3 - Discharge Pipe Sizing

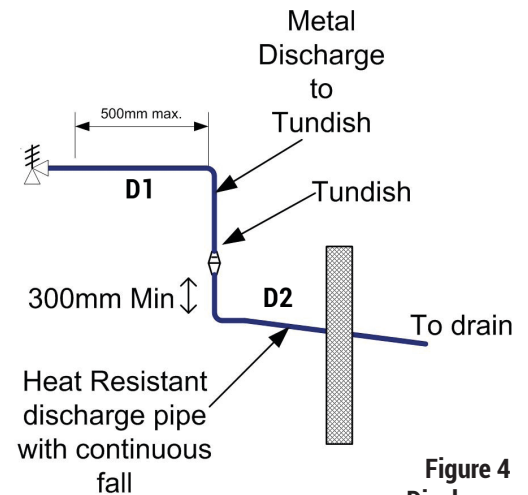
The discharge pipework from the tundish:

- Must fall continuously through its length.
- Must be of a heat resistant material, e.g. metal.
- Must not be fitted with any valves or taps.
- Must discharge to a safe visible position, e.g. onto the surface of an external wall or into a gully.
- Must have a minimum of 300 mm straight pipework directly from the tundish.

Note: Where children may play or otherwise come into contact with discharges, a wire cage or similar guard must be positioned to prevent contact whilst maintaining visibility.

Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any tundish installation can be traced easily.

If a single common discharge pipe is used then it should be at least one pipe size larger than the largest individual discharge pipe to be connected. If the system is installed where discharges from safety devices may not be apparent, i.e. in dwellings occupied by blind, infirm or disabled people, consideration should be given to the installation of an electronically operated device to warn when discharge takes place.



**Figure 4
Discharge
Pipe Routing**

3.5.2 HIGH LEVEL TERMINATION OF DISCHARGE

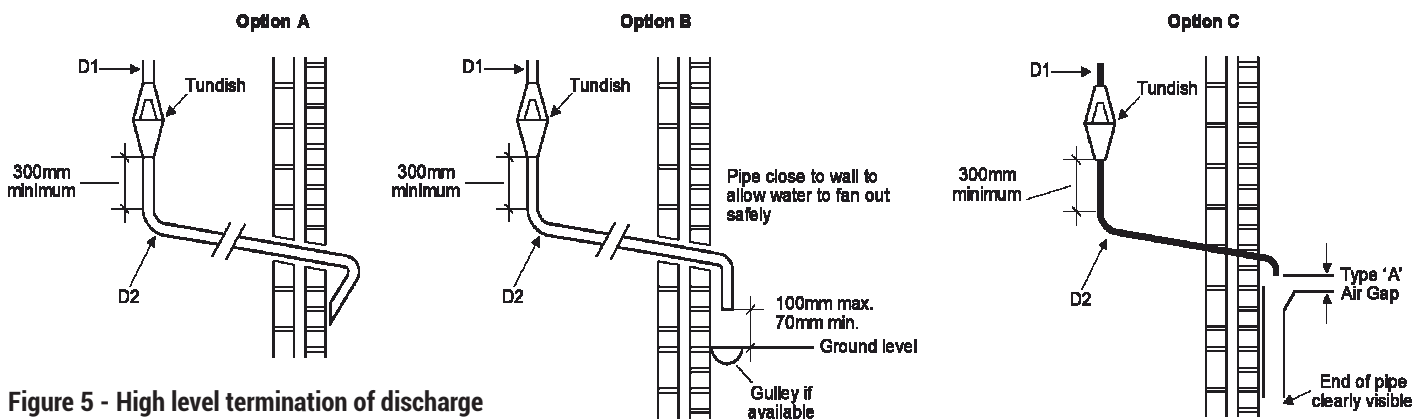


Figure 5 - High level termination of discharge

At high level, discharge onto a roof is acceptable providing the roof is capable of withstanding high temperatures and there is a distance of 3 m from any plastic guttering systems that would collect such discharge.

Note: The discharge may consist of scalding water and steam. Asphalt, roofing felt and non-metallic material may be damaged by such discharges.

4. ELECTRICAL INSTALLATION

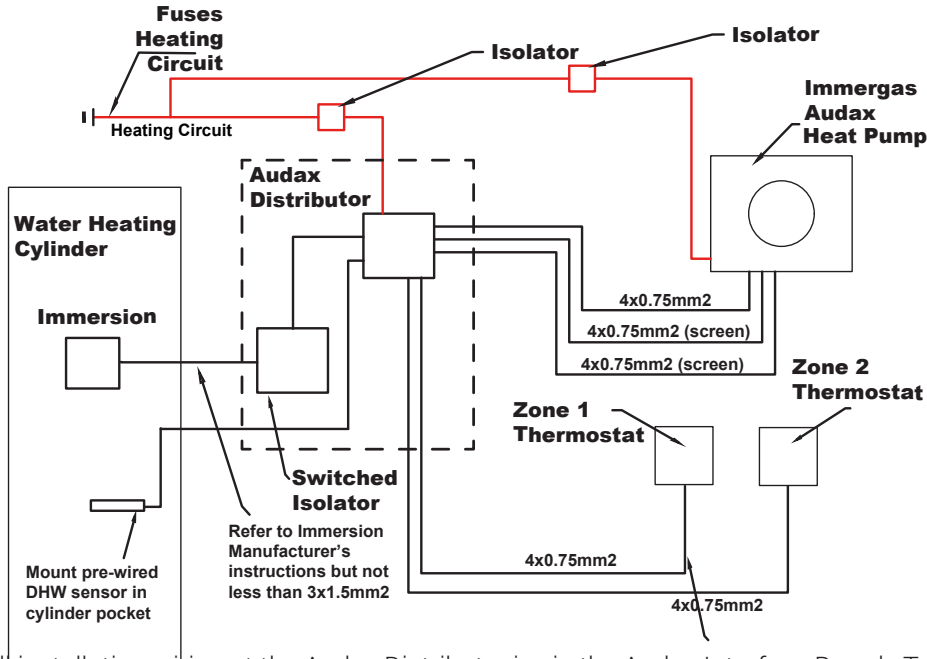


All wiring must comply with I.E.E. and all local, national and EU requirements. **THIS APPLIANCE MUST BE EARTHED.**

The Audax Distributer requires a 230VAC 50hz supply to operate. There is a risk of electric shock if the unit is worked on without disconnecting the incoming supply. **Disconnect the electrical supply prior to starting any work on or opening any cover on the Audax Distributer.**

4.1 SYSTEM WIRING

The Audax Distributer is designed for use with Immergas Audax Air to Water heat pumps. An outline schematic of the system wiring is shown below.



Audax	Min C.S.	Max C.S.
6	3x2.5mm ²	3x4.0mm ²
8	3x2.5mm ²	3x4.0mm ²
12	3x4.0mm ²	3x4.0mm ²
16 Mono	3x4.0mm ²	3x4.0mm ²
16 3P	5x2.5mm ²	5x4.0mm ²

Above: Quick reference for Audax power supply cable sizing. H07RNF cable with max 80m length is recommended. Read the Audax instructions carefully before installation.

All installation wiring at the Audax Distributer is via the Audax Interface Board. To access this, carefully remove the cover of the electrical box on the front of the Audax Distributer. **Disconnect the electrical supply prior to removing this cover.**

The Audax Distributer requires a 230V 50Hz single phase supply with neutral and earth. Connect this to the L N and E terminals on the Audax Distributer's Audax Interface Board. This must be a permanent supply via a dedicated isolator.

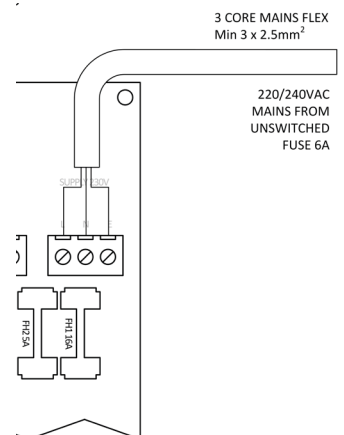
The Audax Distributer's Audax Control Board has two fuses. FH1 - Immersion Circuit - 16A. FH2 - Other Circuits - 5A.

The cable used to supply power to the Audax Distributer must be three core with a minimum cross sectional area of 2.5mm². If the supply cord is damaged in any way, it must be replaced in order to avoid a hazard.

The method of connection to the electricity supply must facilitate complete isolation and should be made via a fused isolator having a contact separation of at least 3mm in all poles and supplying the Audax Distributer only. The fused isolator should also protect the cable supplying the unit.

A fuse/MCB of 6A should protect the circuit to which the Audax Distributer is connected. The installation of a ground fault interrupter / RCCD-protector is strongly recommended.

The Audax Distributer contains an immersion output which is pre-connected to an isolator switch. This should be connected to an immersion to provide legionella control.



Do not use an immersion heater of more than 2kW capacity.

4.2 DHW SENSOR

The Audax domestic hot water sensor comes pre-connected to the Audax Distributer. Mount this in a pocket on the hot water cylinder according to the cylinder manufacturer's instructions. **It is recommended to mount the sensor approx 1/3 of the way up from bottom of the cylinder (2/3s down from top).** This will give a good volume of stored hot water.

4.3 AUDAX CONTROL WIRING

The Audax Distributer is pre-wired and configured for use with two heating zones in addition to the provision of hot water. On the Audax Distributer, the following is pre-wired: Audax Remote Controller, Zone valves - Zone 1 and 2, Three way valve, DHW Sensor, Immersion output via an included switched isolator.

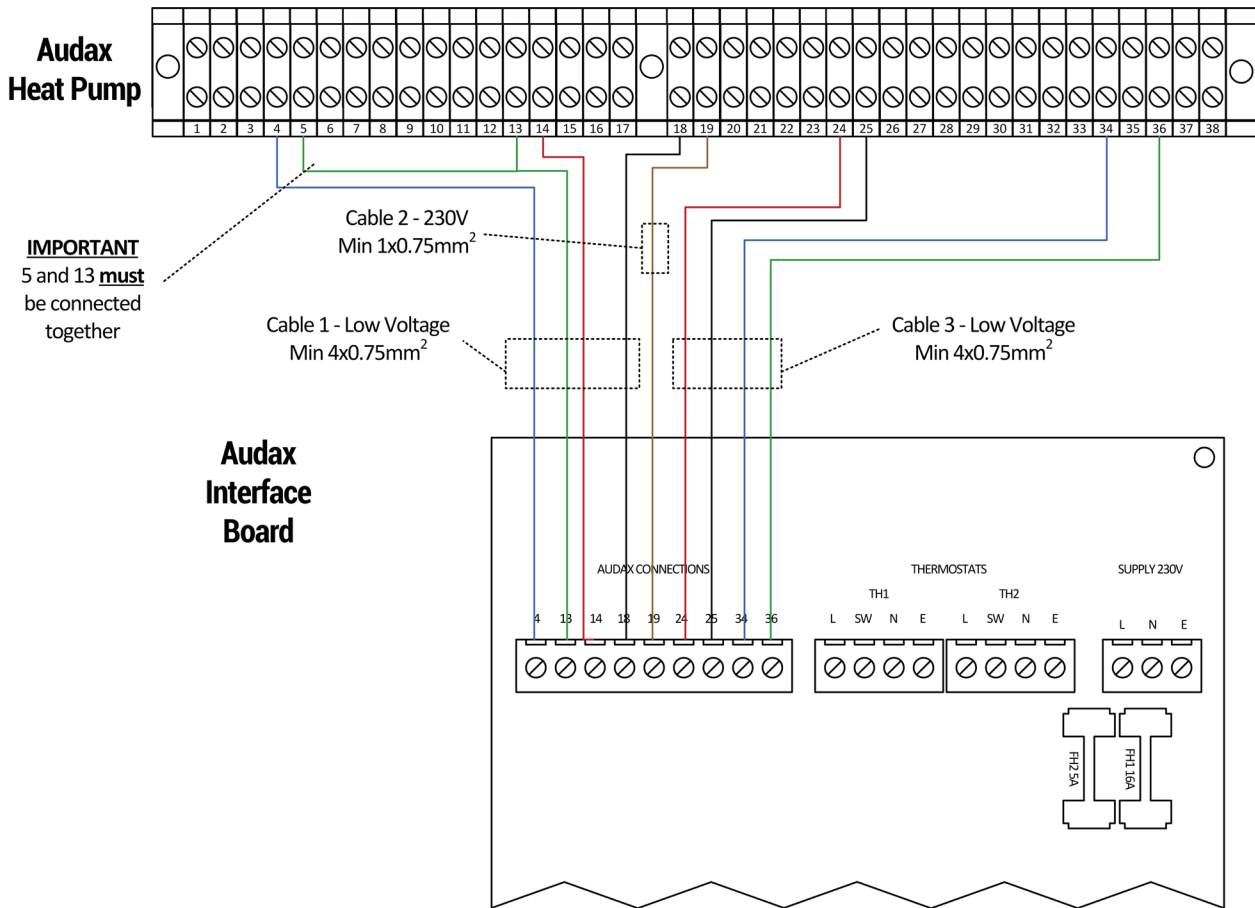
Connect the Audax interface board on the Audax Distributer to the Audax using three no cables:

- 2 no 4x0.75mm² minimum (screened)
- 1 no 1x0.75mm² minimum

Connect these cables as shown in the diagram below.



Important - It is necessary to connect terminals no. 5 and no. 13 on the Audax together. If these are not connected, the heat pump will run in cooling mode.



		Core	Audax Control Board Terminal	Audax Terminal
Cable 1 (Low Voltage) Screened	Min 4x0.75mm ²	1	4	4
		2	13	13
		3	14	14
		4	18	18
Cable 2 (230V)	Min 1x0.75mm ²	1	19	19
Cable 3 (Low Voltage) Screened	Min 4x0.75mm ²	1	24	24
		2	25	25
		3	34	34
		4	36	36

4.4 THERMOSTAT WIRING

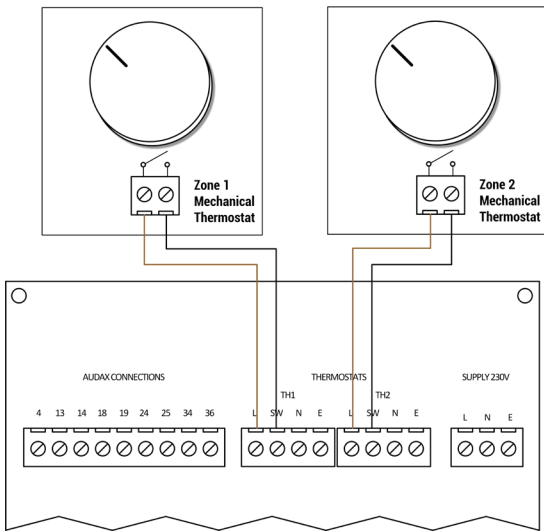
The Audax interface board has two connectors marked TH1 and TH2 which may be used to control the Audax using a thermostat, chronostat, programmer or switch.

Each of these terminals has four pins, three of which provide L, N, E, and a switched input. Applying 230V to the switched input will activate the zone valve and turn on the audax.

Here follows three example wiring diagrams. **Read and refer to the specific manufacturer's instructions for the type of thermostat, chronostat, programmer, switch or other device used, prior to installation.**

4.4.1 CONTROL USING 230V MECHANICAL THERMOSTATS

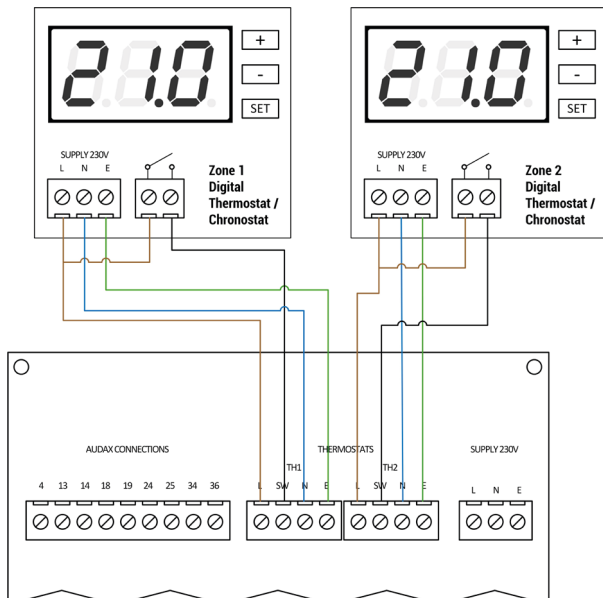
A mechanical thermostat may be used to switch 230V from the L pin of the TH1 or TH2 terminal to the SW pin.



Terminal	Pin	Use
TH1	L	To switch - Mechanical Thermostat for Zone 1
TH1	N	Not used
TH1	E	Not used
TH1	SW	From switch - Mechanical Thermostat for Zone 1
TH2	L	To switch - Mechanical Thermostat for Zone 2
TH2	N	Not used
TH2	E	Not used
TH2	SW	From switch - Mechanical Thermostat for Zone 2

4.4.2 CONTROL USING 230V DIGITAL OR DIGITAL PROGRAMMABLE THERMOSTATS

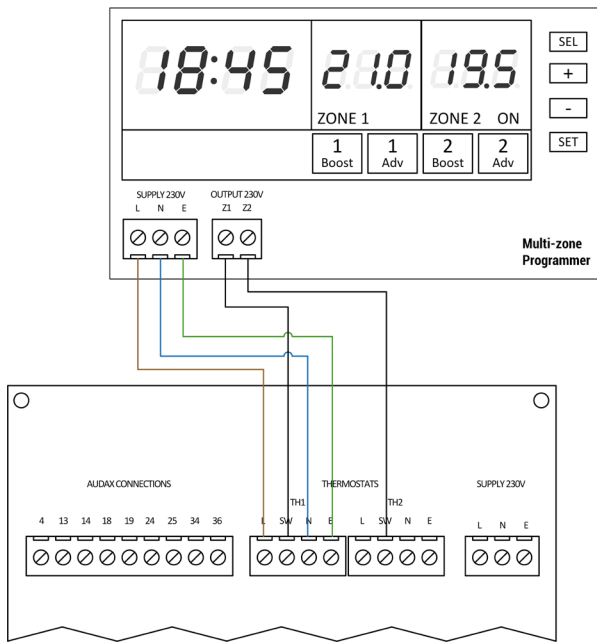
Where the external device requires 230V to operate, provide Live Neutral and Earth from either TH1 or TH2. The live should be looped through the switched contact back to the SW pin on the TH1 or TH2 terminal.



Terminal	Pin	Use
TH1	L	Power supply to Zone 1 Thermostat. Loop onto thermostat switch input.
TH1	N	Power supply to Zone 1 Thermostat.
TH1	E	Power supply to Zone 1 Thermostat.
TH1	SW	From switch - Mechanical Thermostat for Zone 1
TH2	L	Power supply to Zone 2 Thermostat. Loop onto thermostat switch input.
TH2	N	Power supply to Zone 2 Thermostat.
TH2	E	Power supply to Zone 2 Thermostat.
TH2	SW	From switch - Mechanical Thermostat for Zone 2

4.4.3 CONTROL USING 230V PROGRAMMERS

Provide Live Neutral and Earth power supply from either TH1 or TH2. The 230V output for each zone should be applied to the SW pin on the TH1 or TH2 terminal.



Terminal	Pin	Use
TH1	L	Power supply to programmer
TH1	N	Power supply to programmer
TH1	E	Power supply to programmer
TH1	SW	From zone 1 output on programmer
TH2	L	Not used
TH2	N	Not used
TH2	E	Not used
TH2	SW	From zone 2 output on programmer

5. ANTI-LEGIONELLA TIMER

The Audax Distributer contains an anti-legionella timer which can automatically boost the hot water cylinder temperature periodically using an immersion heater (sold separately) in order to prevent the growth of legionella bacteria.

Once power is applied to the Audax Distributer, it will wait a pre-defined time and then activate the immersion heater output for a specific duration. The timer comes pre-set from the factory to provide 8 hours of legionella control every 10 days. The high limit thermostat in the immersion heater must be set to prevent excessive temperatures from being reached in the water heating cylinder when the timer is active.

The factory settings may be altered, however in all cases observe the following:

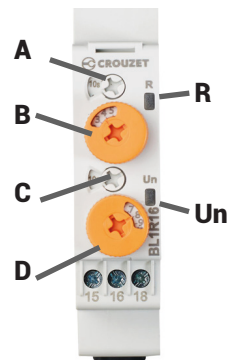
- The setting of the high limit thermostat setting on the Immersion should not be reduced below 60C.
- Take care when setting the high limit thermostat above 60°C.
- A thermostatic mixing valve **MUST** be installed and should be tested to ensure excessive temperatures do not reach the taps and showers.
- Do not reduce the heating period of the anti-legionella timer below 8 hours. The duration of this timer is based on a cylinder of 200 litres in volume with an immersion of 1.5kW. Timer duration should be increased pro-rata for larger cylinder volumes or smaller immersions.

To set the interval, rotate the small grey screw C. The time shown in the indicator window will rotate between 10s, 1m, 10m, 1h, 10h, 1d and 10d. Select the next higher period than the interval you require. For example, for 7 days, choose 10d.

To Fine-tune the interval, turn the orange screw D which indicates 10ths. In the example above, it should point to 7, which is 7/10ths of 10d. To select 2 days, it should be turned to 2. To select 10 days, it should be turned to 10.

To set the active duration, rotate the small grey screw A. Select the next higher period than the duration you require. For example, for 2 hours, choose 10h.

To Fine-tune the duration, turn the orange screw D which indicates 10ths. In the example above, it should point to 4, which is 4/10ths of 10h. To select 8 hours, it should be turned to 8. To select 10 hours, it should be turned to 10.



LED Un will flash while the timer is waiting. LED R will turn on when the timer activates the immersion output.

6. COMMISSIONING



It is important to follow the steps outlined below during commissioning of the Audax distributor. This refers to operation of the Audax distributor itself. **Read the Audax Instructions carefully for information on commissioning the heat pump and central heating circuit. Read the manufacturer's instructions for the hot water heater used and for any immersion and external controls installed.**

Do not switch on the electrical supply or Audax Heat Pump until the heating and hot water systems have been filled with water and checked for leaks.

Check that all installation, electrical and discharge pipe requirements have been met. Check that all water and electrical connections are tight and properly connected.

- Follow the manufacturer's instructions for commissioning the water heater. Mount the supplied DHW sensor on the water heater as per section 4.2.
- Test the operation of all safety devices
- Fill the DHW and central heating systems. Follow the Immergas Audax Instructions, "Installation of the Unit" section.

See section 7 of these instructions for suggested Audax settings which are compatible with the Audax distributor in a typical installation.

Switch on the electrical supply to the Audax distributor and Audax heat pump. Verify that the Audax is running and that water and heat emitters are heated and that the thermostatic controls work correctly.

Turn on the Zone 1 thermostat input TH1 on the Audax Interface Board. Verify that the three way valve moves position and that the zone valve opens. Turn off TH1 and ensure that the zone valve closes and the three way valve returns to the hot water position. Repeat for TH2.

6.1 ANNUAL MAINTENANCE

A visual check should be carried out of the Audax distributor manually. Ensure that there are no leaks and that it is functioning normally. Annual maintenance of the Immergas Audax Heat Pump and water heater should be carried out as per the Immergas Audax and water heater manufacturer's instructions respectively.

7. AUDAX - SUGGESTED SETTINGS

The following is a quick reference for settings to use when commissioning the Audax heat pump.

These suggested settings will configure the Audax to use external timeclocks, Weather Compensation, and enable DHW with a set point of 50°C. These settings will ensure compatibility with the Audax Distributer.

Menu Tree				Set to
Menu	Lingua			Eng
Menu	Service	Definition of Zone	Room Control Switch	T.A.
Menu	Service	Definition of Zone	Mode Control	External
Menu	Service	Defining Plant	External Probe	PdC
Menu	Service	Defining Plant	Enabling DHW	Yes
Menu	Service	Thermoreg. Parameters	Modulation with room probe	No
Menu	Service	Thermoreg. Heat		Adjust weather compensation curve if required.
Menu	Set point DHW			Set Comfort to 50°C.
Menu	Time and Program	Date and Time		Set Date & Time
Menu	Time and Program	Time Slots	1	Create on period from 00:00 to 24:00
Menu	Time and Program	DHW Program	Monday - Sunday	Use time slot 1

8. TROUBLESHOOTING

Fault	Possible Causes	Remedial Measures
No Heat	Thermostats not on	Are thermostats on? Is there a heat demand?
	No power to equipment	Check that there is a power supply to the Audax and Audax distributor
	Audax fault	Check operation of Audax. Is it in heating mode? Are there any faults present? Are the settings correct (see section 7)?
	Valve(s) not working	Check three way and zone valves can be operated manually. If so, check they are receiving power. Replace valve head(s) if necessary.
	3 Way valve in incorrect position	Check valve head is in correct orientation (not reversed)
	DHW Sensor loose	Check sensor is securely mounted in hot water cylinder. If sensor is not mounted or loose, heat pump may remain in DHW mode.
No hot water	3 Way valve in incorrect position	Check valve head is in correct orientation (not reversed)
	Audax fault	Check operation of Audax. Is it in hot water mode? Are there any faults present? Is hot water mode turned on in Audax settings?
Excessive hot water temperature	Immersion thermostat setting	Check immersion thermostat is set to 60C.
Legionella control not working (temperature never reaches 60°C)	Thermostat fault	Check immersion high limit thermostat operation, replace if necessary
	Anti-Legionella Timer incorrectly set	Check settings and operation of anti-legionella timer. Replace if necessary.

9. DECLARATION OF CONFORMITY



Kenmare, Co. Kerry, V93 F386, Ireland

+353 64 6641344

info@rvr.ie

www.rvr.ie

EU DECLARATION OF CONFORMITY

We, RVR Energy Technology Ltd of Gortamullen, Kenmare, Co. Kerry, Ireland declare under our sole responsibility that the product(s):

Pre-plumbed Audax Distributer

to which this declaration relates are in conformity with the following directives and harmonised standards:

Machinery Directive 2006/42/EC
EN 60335

Pressure Equipment Directive 2014/68/EU
Article 4, Paragraph 3 , SEP

RoHS Directive 2011/65/EU:
EN 50581:2012, EN 62321:2009

Date: 10/12/2019

Signed:

A handwritten signature in black ink, appearing to be 'Michael Hayes', written over a horizontal line.

Michael Hayes

Position: Managing Director

Contact us:



RVR Energy Technology Limited

Kenmare
Co. Kerry
V93 F386
Ireland

Sales direct line: +353 (0)64 6689522 **Email:** sales@rvr.ie