

PROTECT YOUR WARRANTY

This unit must be installed by a registered, licensed installer as required by Government regulations.





5.1kW Reverse Cycle Inverter Split System Air Conditioner

INSTALLATION MANUAL

Model Number AK-T51R32



Contents

- 03 Installation Safety Instructions
- 08 Product Overview
- 11 Selecting the Installation Place
- 13 Installation
- 21 Information for the Installer
- 26 Other Useful Information

Installation Safety Instructions

PROTECT YOUR WARRANTY

Do not try to install the Air Conditioner on your own; doing so will expose you to danger and void the warranty.

These instructions for installation of the Reverse Cycle Inverter Air Conditioner are for use by an appropriately qualified, licensed installer. The appliance must be installed in accordance with national wiring regulations.

For the installer: installation safety precautions

- Read this guide completely before installing and using the appliance.
- Install the appliance in accordance with national wiring regulations and all applicable regulations.
- During installation of the indoor and outdoor units, do not allow children access to the working area.
- Do NOT install the unit:
 - In environments where the air could contain gas, oil or sulphur.
 - Near sources of heat.
 - At a distance of less than 50cm from flammable substances (e.g. alcohol or other flammable liquids or gases) and pressurised containers (e.g. spray cans).
- If the appliance is used in areas without the possibility of ventilation, precautions must be taken to prevent any leaks of refrigerant gas from remaining in the environment and creating a fire danger.
- Make sure that the base of the outdoor unit is firmly fixed.
- Before accessing the terminals, all the power circuits must be disconnected from the power supply.
- Ensure that the mains voltage corresponds to that stamped on the rating plate. Keep the switch or power plug clean.
- Check and ensure that the socket is suitable for the plug.
- The appliance must be fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.
- The ratings of the fuse installed in the built-in control unit are T 5A / 250V.
- The indoor unit must be protected with a fuse of suitable capacity for the max. input current or with another overload protection device.
- The packaging materials are recyclable and should be disposed of responsibly for recycling. This air conditioner contains a flammable refrigerant, which must be removed before disposal. Contact your municipal authorities for any codes or regulations concerning the disposal of such materials.

Important safety precautions concerning refrigerant R32



WARNING: Combustible & Dangerous

This symbol alerts you to take care as the appliance contains a flammable refrigerant: R32 (difluoromethane). Take extra care when installing the unit and when carrying out maintenance.

The refrigerant used in this air conditioner, R32, is an odourless hydrocarbon gas with a high level of environmental compatibility, with significantly lower global warming potential (GWP) and a zero ozone depleting potential (ODP). While R32 is flammable and can explode under certain conditions, there will be no risk of burning and explosion if the air conditioner is installed correctly by a professional installer following all instructions and safety advice in this installation manual.



user manual



Read the installation manual

- Do not expose the appliance to high heat, sparks and open flames. Do not pierce or burn the appliance.
- The appliance shall be stored in a room without continuously operating sources, such as open flames, an operating ignition gas appliance or an operating electric heater.
- This air conditioner has been fully charged with refrigerant at the factory. Should a recharge of refrigerant become necessary, it may only be recharged by a professional installer.
- Maintenance must only be carried out by properly qualified, authorised personnel. If the appliance requires maintenance or service, please contact our after sales support centre. The maintenance technician must do a safety inspection before carrying out any maintenance work. They must strictly comply with all instructions in this installation manual and all relevant provisions of gas-related local laws and regulations.
- It is necessary to operate the machine under a controlled procedure in order to ensure that any risk arising from the combustible gas or vapour during the operation is reduced to a minimum.
- The room in which this air conditioner is installed must be larger than 15m² in size. (This air conditioner is suitable for cooling/heating a room of 30–35m².) Please refer to tables 1 and 2, opposite, for the total weight of the filled refrigerant and the room area requirements.

Maximum charge and minimum floor area

$$m_1 = (4m^3) \times LFL$$

$$m_2 = (26m^3) \times LFL$$

$$m_3 = (130m^3) \times LFL$$

Where LFL is the lower flammable limit in kg/m3, the LFL for R32 is 0.306 kg/m3.

For appliances with a charge amount $m_1 < M \le m_2$:

- The maximum charge in a room shall be in accordance with the following: $m_{\text{max}} = 2.25 \times (LFL)^{(5/4)} \times h_0 \times (A)^{1/2}$
- The required minimum floor area A_{min} to install an appliance with refrigerant charge M (kg) shall be in accordance with the following:
 A_{min} = (MI (2.5 x (LFL)^(5/4) x h₀))²

Where:

- $m_{\rm max}$ is the allowable maximum charge in a room, in kg;
- *M* is the refrigerant charge amount in the appliance, in kg;
- A_{min} is the required minimum room area, in m²;
- A is the room area, in m2;
- LFL is the lower flammable limit, in kg/m³;
- h_0 is the installation height of the appliance, in metres, for calculating $m_{\rm max}$ or $A_{\rm min}$, 1.8m for wall-mounted.

Table 1: Maximum charge (kg): R32

LFL	h (m)	Floor area (m²)						
(kg/m³)	h ₀ (m)	4	7	10	15	20	30	50
0.306	0.6	0.68	0.9	1.08	1.32	1.53	1.87	2.41
	1	1.14	1.51	1.8	2.2	2.54	3.12	4.02
	1.8	2.05	2.71	3.24	3.97	4.58	5.61	7.254
	2.2	2.5	3.31	3.96	4.85	5.6	6.86	8.85

Table 2: Minimum room area (m²): R32

LFL (leg /m3)	h ₀ (m)	Charge amount (M) (kg) Minimum room area (m²)						
(kg/m³)		1.224kg	1.836kg	2.448kg	3.672kg	4.896kg	6.12kg	7.956kg
	0.6		29	51	116	206	321	543
0.306	1		10	19	42	74	116	196
	1.8		3	6	13	23	36	60
	2.2		2	4	9	15	24	40

5

Site and operation safety















- No open flames: The sites for installing and maintaining an air conditioner using refrigerant R32 should be free from open fires or welding, smoking, drying ovens or any other heat source higher than 548°C, which easily produces open fire.
- Ventilation necessary: The installation site should be in a well-ventilated condition.
- . Mind static electricity.
- Protective clothing and anti-static gloves must be worn.
- Do not use a mobile phone.

Site accessibility

- Choose a site convenient for installation and maintenance. The air inlets and outlets of both indoor and outdoor units should not be surrounded by obstacles or close to any hear source or combustible and/or explosive environment.
- The indoor unit inlet and outlets should be even.
- Avoid areas where there are other electrical products. power switch plugs and sockets, kitchen cabinets, beds, sofas or other valuable items directly underneath the indoor unit.

Refrigerant leak

- If the indoor unit suffers a refrigerant leak during the installation, it is necessary to immediately turn off the valve of the outdoor unit.
- Ensure that all installation personnel leave the room until at least 15 minutes after the refrigerant leak has been fixed.
- If the product is damaged, it must be taken back to the maintenance station. Do not attempt to weld the refrigerant pipe or conduct other operations on the user's site.

Special tools required

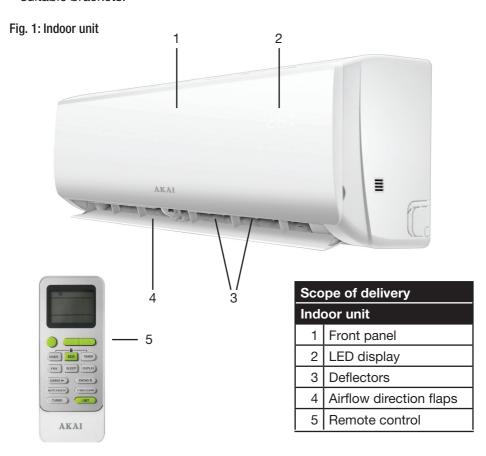
Tool	Requirements for use		
Mini vacuum pump	It should be an explosion-proof vacuum pump that can ensure certain precision and its vacuum degree should be lower than 10Pa.		
Filling device	It should be a special explosion-proof filling device, have certain precision and its filling deviation should be less than 5g.		
Leak detector	It should be calibrated regularly, and its annual leak rate should not exceed 10g.		
Concentration detector	A) The maintenance site should be equipped with a fixed-type combustible refrigerant concentration detector and connected to a safeguard alarm system; its error must not be more than 5%. B) The installation site should be equipped with a portable combustible refrigerant concentration detector which can realise two-level audible and visual alarm; its error must be not more than 10%. C) The concentration detectors should be calibrated regularly. D) It is necessary to check and confirm the functions before using the concentration detectors.		
Pressure gauge	The pressure gauges should be calibrated regularly (a pressure gauge used for R410A can be used for refrigerant R32).		
Fire extinguisher	It is necessary to carry fire extinguisher(s) when installing and maintaining an air conditioner. On the maintenance site, there should be two or more kinds of dry powder, carbon dioxide and foam fire extinguishers. Such fire extinguishers should be placed at stipulated positions, with eye-catching labels and in handy places.		

After installation, the service technician must:

- Check that air cannot enter the refrigerant system
- Check for refrigerant leaks when moving the air conditioner
- Carry out a test cycle under controlled conditions after installing the unit and record the operating data.

Product Overview

- This Reverse Cycle Inverter Air Conditioner is made up of an indoor and outdoor unit (Fig. 1 & 2), which are connected through properly insulated copper pipes (not supplied) and an electrical connecting cable.
- The indoor unit is installed on a wall of the room to be air conditioned (it must not be installed in a laundry or similar room with high humidity levels).
- The outdoor unit is installed outdoors on the ground, or on a wall on suitable brackets.



Product Overview (Cont.)

Fig. 2: Outdoor unit



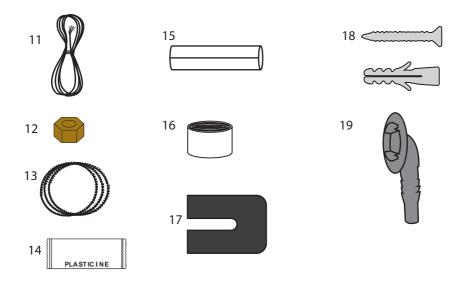
Outo	Outdoor unit			
6	Outdoor unit rating label			
7	Terminal block cover			
8	Air outlet grille			
9	Gas valve			
10	Liquid valve			

NOTE:

Due to continued product improvement, images and illustrations in this manual may vary slightly from the product purchased. All images in this manual are for reference purposes only. Parts are not necessarily pictured to scale.

Product Overview (Cont.)

Fig. 3: Installation hardware (not to scale)



Installation hardware				
11	Power cable			
12	Copper nuts (x4)			
13	Drainage pipe			
14	Sealing colloid			
15	Pipe insulation (open tube)			
16	Binding tape			
17	Rubber mats for outdoor unit (x4)			
18	Screws & plugs (x8)			
19	Drainage mouth			

Other inclusions (not pictured)
Remote control holder (for wall-mounting)
AAA Batteries (x2)
Instruction manual
Installation manual
Warranty certificate

Selecting the Installation Place

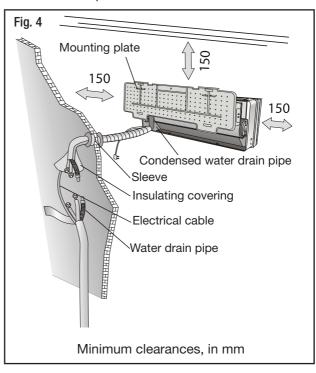
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Indoor unit

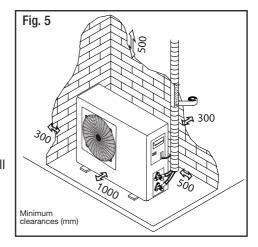
- This Inverter Split System Air Conditioner is suitable for cooling or heating a room of max. 35 square metres in size.
- Install the indoor unit level on a strong wall that is not subject to vibrations.
- The inlet and outlet ports should not be obstructed, the air should be able to blow all over the room.
- Do not install the unit near a source of heat, steam or flammable gas.
- Install the unit near an electric socket or private circuit.
- Do not install the unit where it will be exposed to direct sunlight.
- Do not install the unit in a laundry room.
- Install the unit where connection between indoor and outdoor unit is as easy as possible.
- Install the unit where it is easy to drain any condensation water.
- Observe the minimum clearances around the unit as stated (Fig. 4).
- Check the machine operation regularly and leave the necessary spaces, as shown in Fig. 4.
- Install the indoor unit where the filter is easily accessible.



Selecting the Installation Place (Cont.)

Outdoor unit

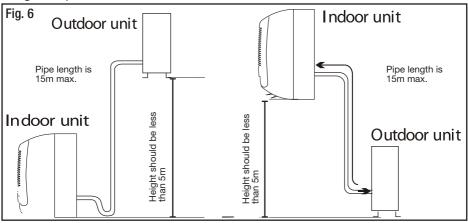
- . Do not install the unit:
 - Near sources of heat, steam or flammable gas.
 - Where it is exposed to high winds or excessive dust.
 - Where people often pass.
- Avoid installing the unit where it will be exposed to direct sunlight (otherwise use a protection that will not interfere with the airflow).
- Select a place where the air discharge and operating sound level will not disturb neighbours.



- Leave the minimum clearances around the unit for free air circulation (Fig. 5).
- Install the outdoor unit in a safe and solid place.
- If the outdoor unit is subject to vibration, place rubber gaskets on the feet of the unit.

Installation diagram (Fig. 6)

Only persons and/or companies qualified and experienced in the installation, service and repair of refrigerant products should be permitted to do so. The purchaser must ensure that the person and/or company who is to install, service or repair this air conditioner has qualifications and experience in refrigerant products.



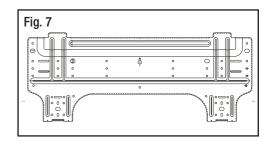
Installation

Installation of the indoor unit

- Before starting installation, decide on the position of the indoor and outdoor units, taking into account the minimum space required around the units.
- Install the indoor unit in the room to be air conditioned, avoid installation in corridors or communal areas.

Installing the mounting plate

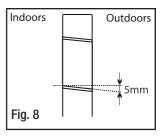
- Use a spirit level to put the mounting plate in a perfectly level position vertically and horizontally.
- Drill 32mm deep holes in the wall to fix the plate. Use a drill bit to fit the 6mm plugs supplied.
- Insert the plastic anchors into the hole.
- Fix the mounting plate by using the provided tapping screws (Fig. 7).
- Check that the mounting plate is correctly fixed.



Drilling a hole in the wall for the piping

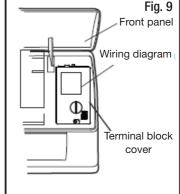
- Decide where to drill the hole in the wall for the piping, if necessary, according to the position of the mounting plate.
- Install a flexible flange through the hole in the wall to keep the latter intact and clean.

NOTE: The hole must slope downwards towards the exterior (Fig. 8). Keep the drain pipe down towards the direction of the wall hole, otherwise leakage may occur.



Electrical connections for the indoor unit

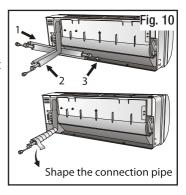
- Lift the front panel.
- Take off the cover, as indicated (Fig. 9), by removing a screw or breaking the hooks.
- For the electrical connections, see the circuit diagram on the right part of the unit under the front panel.
- Connect the cable wires to the screw terminals by following the numbering.
 Use wire of a size suitable to the electric power input (see the unit rating plate) and according to all current national safety code requirements.



- The cable connecting the outdoor and indoor units must be suitable for outdoor use.
- An efficient earth connection must be ensured.
- The appliance must be fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.
- If the power cable is damaged, contact our after sales support centre for advice on replacement.

Refrigerant piping connection

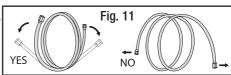
- The piping can be run in the three directions, as indicated by the numbers 1 to 3 in Fig. 10.
 When the piping is run in directions 1 or 3, cut a notch along the groove on the side of the indoor unit with a cutter.
- Run the piping in the direction of the wall hole and bind the copper pipes, the drain pipe and the power cables together with tape at the bottom.



View from rear

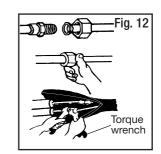
Connecting the pipes

- Do not remove the cap from the pipe until connecting it, to avoid dampness or dirt from entering.
- If the pipe is bent or pulled too often, it will become stiff. Do not bend it more than three times at one point.
- When extending rolled pipe, straighten the pipe by unwinding it gently, as illustrated (Fig. 11).



Connections to the indoor unit

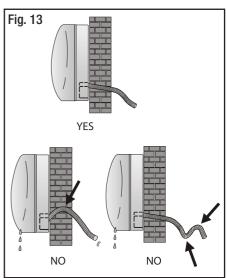
- Remove the indoor unit pipe cap and check that there is no debris inside.
- Insert the nut and create a flange at the extreme end of the connection pipe.
- Tighten the connections by using two wrenches working in opposite directions (Fig. 12).
- For R32 refrigerant, mechanical connectors should be outdoors.



Water drainage from the indoor unit

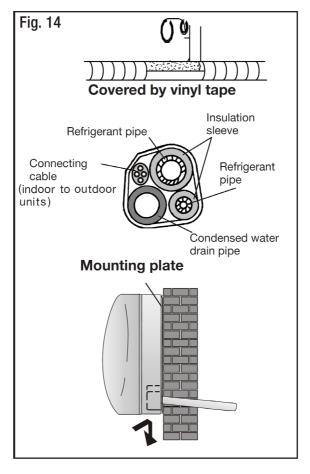
The condensed water drainage from the indoor unit is fundamental for the success of the installation.

- Place the drain hose below the piping, taking care not to create siphons.
- The drain hose must slant downwards to aid drainage (Fig. 13).
- Do not bend the drain hose or leave it protruding or twisted and do not put the end of it in water. If an extension is connected to the drain hose, ensure that it is lagged when it passes into the indoor unit.
- If the piping is installed to the right, the pipes, power cable and drain hose must be lagged and secured onto the rear of the unit with a pipe connection.
 - 1) Insert the pipe connection into the relative slot.
 - 2) Press to join the pipe connection to the base.



After having connected the pipe according to the instructions, install the connection cables, then the drain pipe (Fig. 14). After connection, lag the pipe, cables and drain pipe with the insulating material.

- Arrange the pipes, cables and drain hose well.
- Lag the pipe joints with insulating material, securing it with vinyl tape.
- Run the bound pipe, cables and drain pipe through the wall hole and mount the indoor unit onto the upper part of the mounting plate securely.
- Press and push the lower part of the indoor unit tightly against the mounting plate.



Installation of the outdoor unit

- The outdoor unit should be installed on a solid wall, or on the ground, and fastened securely.
- Before connecting pipes and cables, decide on the best position on the wall, leaving enough space for easy maintenance.
- Fasten the support to the wall using screw anchors that are particularly suited to the type of wall.
- Use the largest size wall anchors that will suit the size and weight of the
 unit, keeping in mind that the mounting will need to support the weight and
 vibration of the unit for many years to come, without loosening.
- The unit must be installed following all relevant local regulations.

Water drainage from the outdoor unit

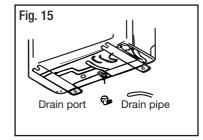
Condensed water and ice formed in the outdoor unit while in heating mode

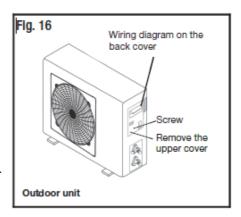
can be drained away through a drain pipe.

- Fasten the drain port in the 25mm hole placed in the part of the unit, as illustrated (Fig. 15).
- Connect the drain port and the drain pipe.
- Make sure that water is drained into a suitable place.

Electrical connections

- Take off the cover.
- Connect the cable wires to the terminal board using the same numbering as in the indoor unit.
- For the electrical connections, see the wiring diagram on the back of the cover (Fig. 16).
- Fasten the cables with a cable clamp.
- An efficient earth connection must be ensured.
- Replace the cover.





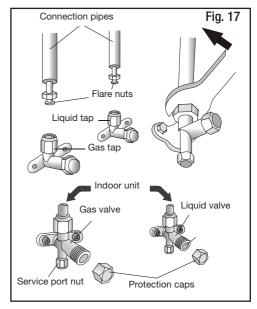
Connecting the pipes

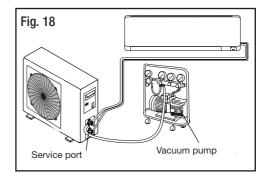
Screw the flare nuts to the outdoor unit coupling with the same tightening procedures described for the indoor unit. To avoid leakage, pay attention to the following points:

- Tighten the flare nuts using two wrenches, taking care not to damage the pipes (Fig. 17).
- If the tightening torque is not sufficient, there will probably be some leakage. With excessive tightening torque there may also be some leakage, as the flange could be damaged.
- The best way to tighten the connections is using a fixed wrench and a torque wrench, as illustrated in Fig. 12 on page 15.

Bleeding

Air and humidity left inside the refrigerant circuit can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit by using a vacuum pump (Fig. 18). Detailed instructions follow on the next page.





Refrigerant pressure inspection

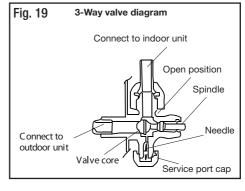
The low pressure range of refrigerant R32 is 0.8–1.2MPa and the high pressure range is 3.2–3.7MPa. This means that the refrigerating system or refrigerant of an air conditioner is abnormal if the low or high pressure ranges of the detected compressor exceed the normal ranges.

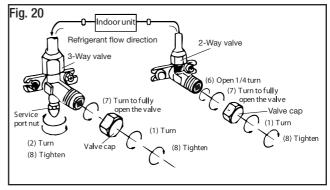
Proceed as illustrated in Fig. 19 and Fig. 20 below:

- Unscrew and remove the caps from the 2-way and 3-way valves.
- Unscrew and remove the cap from the service port.
- Connect the vacuum pump hose to the service port.

 Operate the vacuum pump for 10 - 15 minutes until an absolute vacuum of 10mm Hg has been reached.

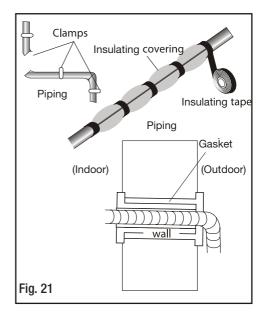
- With the vacuum pump still in operation, close the low-pressure knob on the vacuum pump coupling. Stop the vacuum pump.
- Open the 2-way valve by ¼ turn and then close it after 10 seconds.
 Check all the joints for leaks using liquid soap or an electronic leak device.
- Turn the body of the 2-way and 3-way valves. Disconnect the vacuum pump hose.
- Replace and tighten all the caps on the valves.





Final stage

- Wind insulating covering around the joints of the indoor unit and fix it with insulating tape (Fig. 21).
- Fix the exceeding part of the signal cable to the piping or to the outdoor unit.
- Fix the piping to the wall (after having coated it with insulating tape) using clamps, or insert them into plastic slots.
- Seal the hole in the wall through which the piping is passed so that no air or water can enter.



Indoor unit test

- Does the ON/OFF switch work properly?
- Do the HEATING, COOLING and FAN modes operate normally?
- Do the TIMER-ON and TIMER-OFF functions operate properly?
- Does each indicator light work properly?
- Do the flaps for air flow direction operate normally?
- Is the condensed water drained regularly?

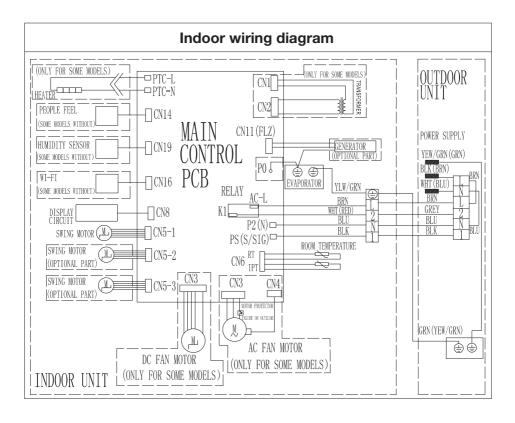
Outdoor unit test

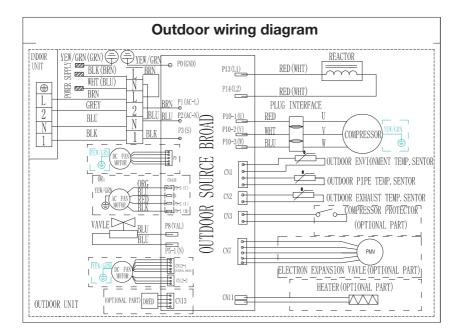
- Is there any abnormal noise or vibration during operation?
- Could the noise, airflow or condensed water drainage disturb the neighbours?
- Is there any coolant leakage?

NOTE: The electronic controller allows the compressor to start only three minutes after voltage has reached the system.

Information for the Installer

Wiring diagrams





Cable wire specifications

Model / Capacit	5.1kW	
	N (min.)	1.5mm² AWG16
Power Supply Cable Sectional Area	L (min.)	1.5mm² AWG16
	E (min.)	1.5mm² AWG16
	N (min.)	1.5mm²
Connection	L (min.)	1.5mm²
Supply Cable Sectional Area	1	1.5mm ²
Sectional Area	2	1.5mm ²
	⊕ (min.)	1.5mm²

Pipe details

Inverter Air Conditioner Capacity	5.1kW
Liquid pipe diameter	6mm (1/4")
Gas pipe diameter	12mm (1/2")
Length of pipe with standard charge	5m
Type of refrigerant	R32
Max. distance between indoor and outdoor unit	15m
Additional gas charge	25g/m
Max. difference between level	5m

Tightening torque for protection caps and flange connection

Pipe Diameter	Tightening Torque (N x m)	Corresponding Stress (using a 20cm wrench)	Part	Tightening Torque (N x m)
6mm (1/4")	15 - 20	Wrist strength	Service port nut	7 - 9
9.52mm (3/8")	31 - 35	Arm strength	Protection caps	25 - 30
12mm (1/2")	35 - 45	Arm strength		
15.88mm (5/8")	75 - 80	Arm strength		

Technical specifications

Model Number	AK-T51R32	
Canaditu	Cooling	5100W
Capacity	Heating	5100W
Current	Cooling	5.3A
Current	Heating	5.2A
Dated Comment (AC/NIZC 60225)	Cooling	10.3A
Rated Current (AS/NZS 60335)	Heating	10.2A
Dawar lanut	Cooling	1190W
Power Input	Heating	1180W
Batad Barrey James (AC/NIZC CO205)	Cooling	2300W
Rated Power Input (AS/NZS 60335)	Heating	2250W
Room size suitability		30–35m ²
Rated Voltage and Frequency		220-240V ~, 50Hz
Ingress Protection	Outdoor Unit	IPX4
Max. Pressure	Discharge	3.7MPa
Max. Pressure	Suction	1.2MPa
Noise (SPL)	Indoor Unit	49dB(A)
Noise (SFL)	Outdoor Unit	59dB(A)
Refrigerant Type	Туре	R32
heingerant Type	Quantity	1110g
Indoor Airflow Volume	Cooling	900m³/h
Indoor Airnow volume	Heating	930m³/h
Not Weight	Indoor Unit	17kg
Net Weight	Outdoor Unit	40kg
Dimensions (mm)	Indoor Unit	1186 x 340 x 258
Dimensions (mm)	Outdoor Unit	927 x 380 x 699

The external static pressure of the air conditioner is 0Pa for all models.

Other Useful Information

Compliance

This product has been fully tested and meets all requirements as set out by standards AS/NZS 60335.1 and AS/NZS 60335.2.40 and also AS/NZS 3823.1.1 and AS/NZS 3823.2.



The RCM Mark (Regulatory Compliance Mark) indicates that the product complies with the relevant guidelines of the ACMA as well as corresponding government requirements for the safety of electrical devices.

Responsible disposal

- The packaging materials are recyclable. Please dispose them responsibly for recycling.
- This air conditioner contains a flammable refrigerant, which must be removed before disposal. Contact your municipal authorities for any codes or regulations concerning the disposal of such materials.
- At the end of its working life, do not throw this appliance out with your household rubbish. Electrical and electronic products contain substances that can have a detrimental effect on the environment and human health if disposed of inappropriately. Observe any local regulations regarding the disposal of electrical consumer goods and dispose of it appropriately for recycling and recovery of the refrigerant. Contact your local authorities for advice on recycling facilities in your area.

Other Useful Information (Cont.)

Licensed installer details

Please fill in the details below:

Please ask your licensed installer/electrician to fill in the details below (or in the INSTRUCTION manual) so you have them on record should you need to contact the installer in the future.

Proof of professional installation is also required for warranty claims.

Name of licensed installer:

Licence number:

Date of installation:

Signature / Date:



Warranty returns

Should you for any reason need to return this product for a warranty claim, make sure to include all accessories with the product.

Product does not work?

If you encounter problems with this product, or if it fails to perform to your expectations, make sure to contact our After Sales Support Centre on 1300 886 649.

For an electronic copy of this manual, please contact our after sales support centre.

Instruction Manual Revision Index

Version No	Issue Date	Description
V1.0	02 September 2019	Original release