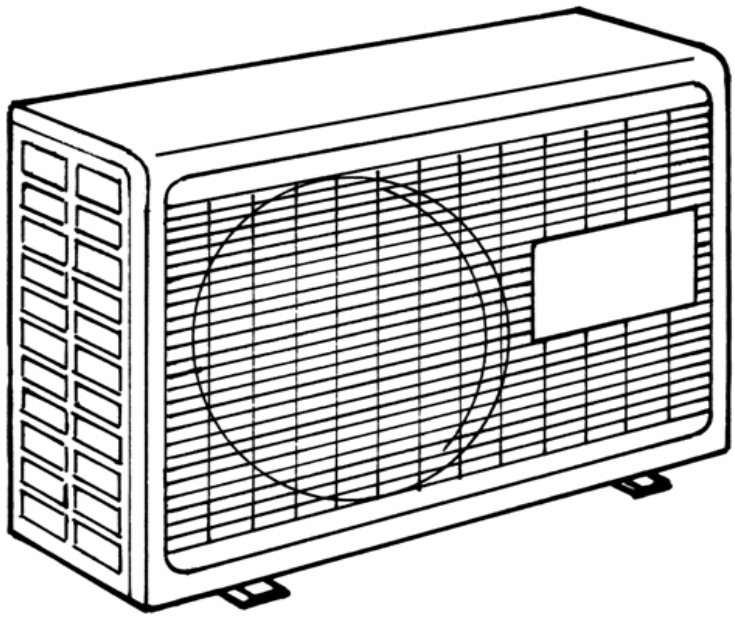
TECHNICAL DATA
& SERVICE MANUAL

UNE AVANCE DANS L'AIR DU TEMPS

OUTDOOR UNIT: GR9FI30R5IAA
SPLIT SYSTEM AIR CONDITIONER

Model No.	Product Code No.
GR9FI30R5IAA	387107105



0.8180.626.00 09/2012

IMPORTANT!
Please read before installation

This air conditioning system meets strict safety and operating standards.
For the installer or service person, it is important to install or service the system so that it operates safely and efficiently.

For safe installation and trouble-free operation, you must:
- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.
- The unit must be supplied with a dedicated electrical line.

WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If necessary, get help
These instructions are all you need for most installation sites and maintenance conditions.
If you require help for a special problem, contact our sale/service outlet or your certified dealer for additional instructions.

In case of improper installation
The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

- During installation, connect before the refrigerant system and then the wiring one; proceed in the reverse orden when removing the units.

WARNING **When wiring**

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIANS SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked, to ensure the grounding.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring.
  Improper connections and inadequate grounding can cause **accidental injury and death**.
- **Ground the unit** following local electrical codes.
- The Yellow/Green wire cannot be used for any connection different from the ground connection.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- Do not use multi-core cable when wiring the power supply and control lines. Use separate cables for each type of line.

When transporting
Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminium fins on the air conditioner can cut your fingers.

When installing...
... In a ceiling or wall
Make sure the ceiling/wall is strong enough to hold the unit-weight. It may be necessary to build a strong wooden or metal frame to provide added support.

... In a room
Properly insulate any tubing run inside a room to prevent "sweating", which can cause dripping and water damage to walls and floors.

... In moist or uneven locations
Use a raised concrete base to provide a solid level foundation for the outdoor unit.
This prevents damage and abnormal vibrations.

... In area with strong winds
Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

... In a snowy area (for heat pump-type systems)
Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When connecting refrigerant tubing
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them; screw by hand and then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE:
Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion, the refrigerant tubing for your particular model is specified as narrow tube for liquid, wide tube for gas.

When servicing
- Turn the power OFF at the main power board before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after the work, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ventilate the room during the installation or testng the refrigeration system; make sure that, after the installation, no gas leaks are present, because this could produce toxic gas and dangerous if in contact with flames or heat-sources.

Table of Contents

1. OPERATING RANGE

GR9FI30R5IAA			
	Temperature	**Indoor Air Intake Temp.**	**Outdoor Air Intake Temp.**
Cooling	Maximum	32°C D.B. / 23°C W.B.	43°C D.B.
	Minimum	10°C D.B. / 6°C W.B.	-15°C D.B.
Heating	Maximum	27°C D.B.	24°C D.B. / 18°C W.B.
	Minimum	5°C D.B.	-15°C D.B.

2. SPECIFICATIONS

2-1 Unit Specifications

GR9FI30R5IAA

Power source	220 - 240V ~ 50Hz

Voltage rating	230V

Performance *	**GR9FI30R5IAA**			
	mta8fia0r5i/k2fafia0r5i/kpa8fia0r5i/ca8fia0r5i/sda8fia0r5i		Cooling	Heating
	Capacity	kW	2,65	2,75
		BTU/h	9037	9378
	Air circulation (High)	m³/h	470	
	Moisture removal (High)	Liters/h	0,6	-

Electrical Rating		Cooling	Heating
Available voltage range	V	198 ~ 264	
Running amperes	A	3,10	2,7
Power input	W	670	570
Power factor	%	94	92
C.O.P.	W/W	3,96	4,82
Compressor locked rotor amperes	A	-	-

Features			
Fan speed			variable (200÷800 continuous)
Compressor			Rotary (Hermetic) DC inverter
Refrigerant / Amount charged at shipment		g	R410A / 810
Refrigerant control			Elect. Expans. Valve
Power noise level	Hi	dB-A	64
Refrigerant tubing connections			Flare type
Max. allowable tubing length at shipment		m	7,5
Refrigerant	Narrow tube	mm(in.)	6,35 (1/4)
tube diameter	Wide tube	mm(in.)	9,52 (3/8)

Dimensions & Weight			
Unit dimensions	Height	mm	540
	Width	mm	700
	Depth	mm	265
Package dimensions	Height	mm	568
	Width	mm	815
	Depth	mm	343
Weight	Net	kg	35,0
	Shipping	kg	38,0
Shipping volume		m^3	0,16

DATA SUBJECT TO CHANGE WITHOUT NOTICE

Remarks:

Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.
Outdoor air temperature 35°C D.B. / 24°C W.B.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

* For other INDOOR UNITS' MODELS, please refer to catalogue

2-2 Major Component Specifications

Outdoor Unit: **GR9FI30R5IAA**

Compressor				
Type				Rotary (Hermetic) DC inverter
Compressor model				5RS102XBE01
Nominal input (compressor rating condition)			W	875
Compressor oil…Amount			cc.	FV50S …… 320
Coil resistance (Ambient temp. 20°C)			Ω	N.A.
Overload relay				software protection
Safety devices	Type			-
	Operating Temp.	Open	°C	-
		Close	°C	-

Fan & Fan Motor				
Type				Propeller
Q'ty ……. Dia.				1…. Ø 370
Fan motor model…Q'ty				ZW465B58
No. Of poles…rpm				8 ... variable (200 ÷ 850)
Nominal output			W	20
Coil resistance (Ambient temp. 25 °C)			Ω	BRN-BLK: 206 YEL-BLK: 206 BRN-YEL: 206
Safety devices	Type			-
	Operating temp.	Open	°C	-
		Close	°C	-

Heat Exch. Coil		
Coil		Aluminium plate fin / Copper tube
Rows		2
Fin pitch	mm	1,4
Face area	m^2	0,34

External Finish	Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE

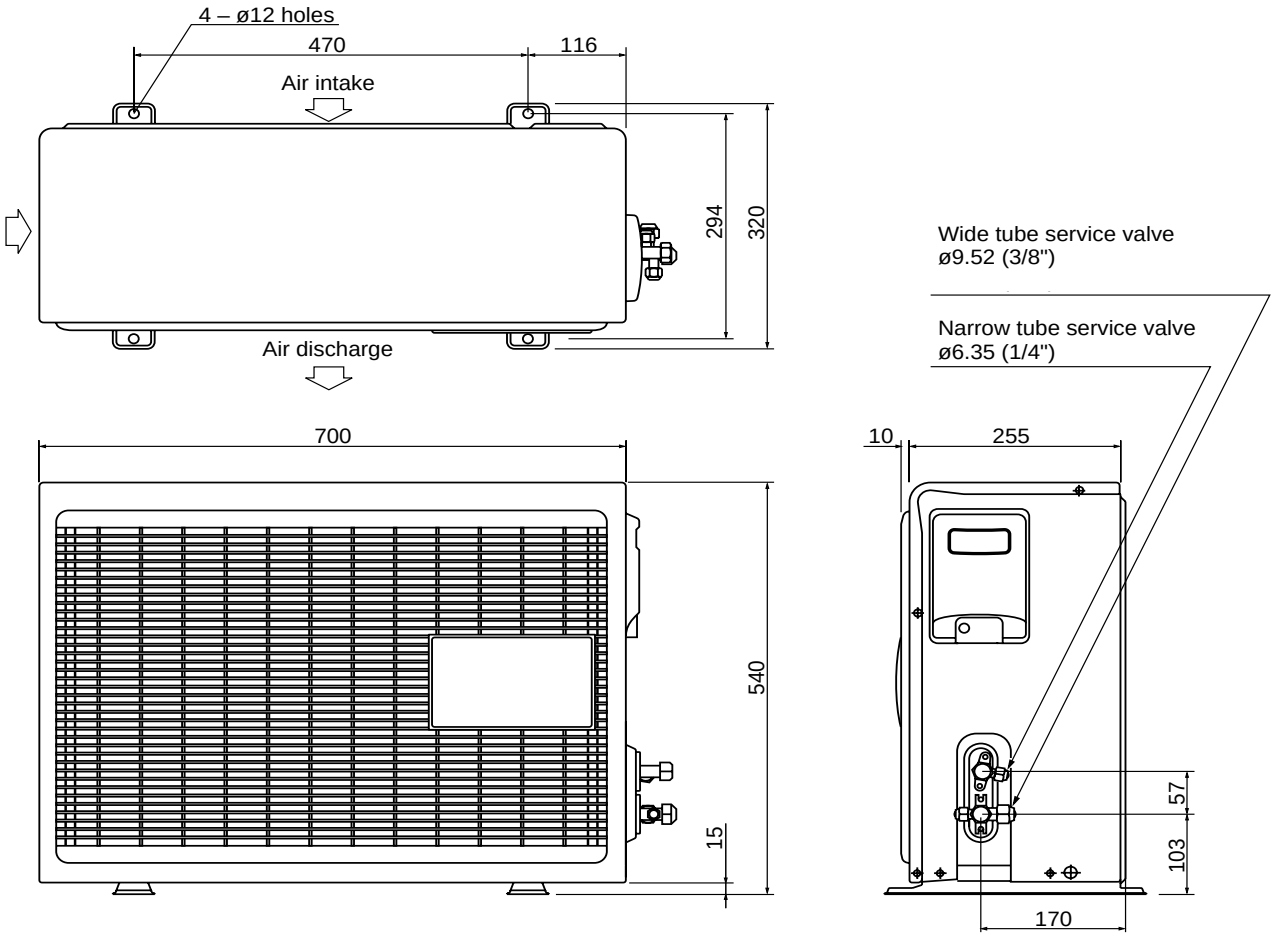
2-3 Other Component Specifications

GR9FI30R5IAA

4-way Valve (20S)		**SQ-136 (Coil) SHF-4H-23U (Valve)**
Coil rating		AC 220/240 V, 50 Hz, 6W
Coil resistance	Ω (at 20°C)	1440 ± 7%
Electr. Expansion Valve		**ZCAM-MD12EX(Coil) ZCAM-BD15EX (Valve)**
Coil rating		DC 12V
Coil resistance/phase	Ω (at 20°C)	46 ± 4%
Defrost Valve		**FQ-235-RK (Coil) FDF6A-049-RK (Valve)**
Coil rating		AC 220/240 V, 50 Hz
Coil resistance	Ω (at 20°C)	1273 ± 10%
Thermistor (Coil sensor)		**NTC-THERMISTOR**
Resistance	kΩ	10 at 25 °C
Thermistor (compressor discharge sensor)		**NTC-THERMISTOR**
Resistance	kΩ	10 at 25 °C
Thermistor (inlet air sensor)		**NTC-THERMISTOR**
Resistance	kΩ	10 at 25 °C
Crank case heater		**30W RESISTANCE**
Resistance	Ω (at 20°C)	1760 ± 10%
Base heater		**75W RESISTANCE**
Resistance	Ω (at 20°C)	700 ± 10%

3. DIMENSIONAL DATA

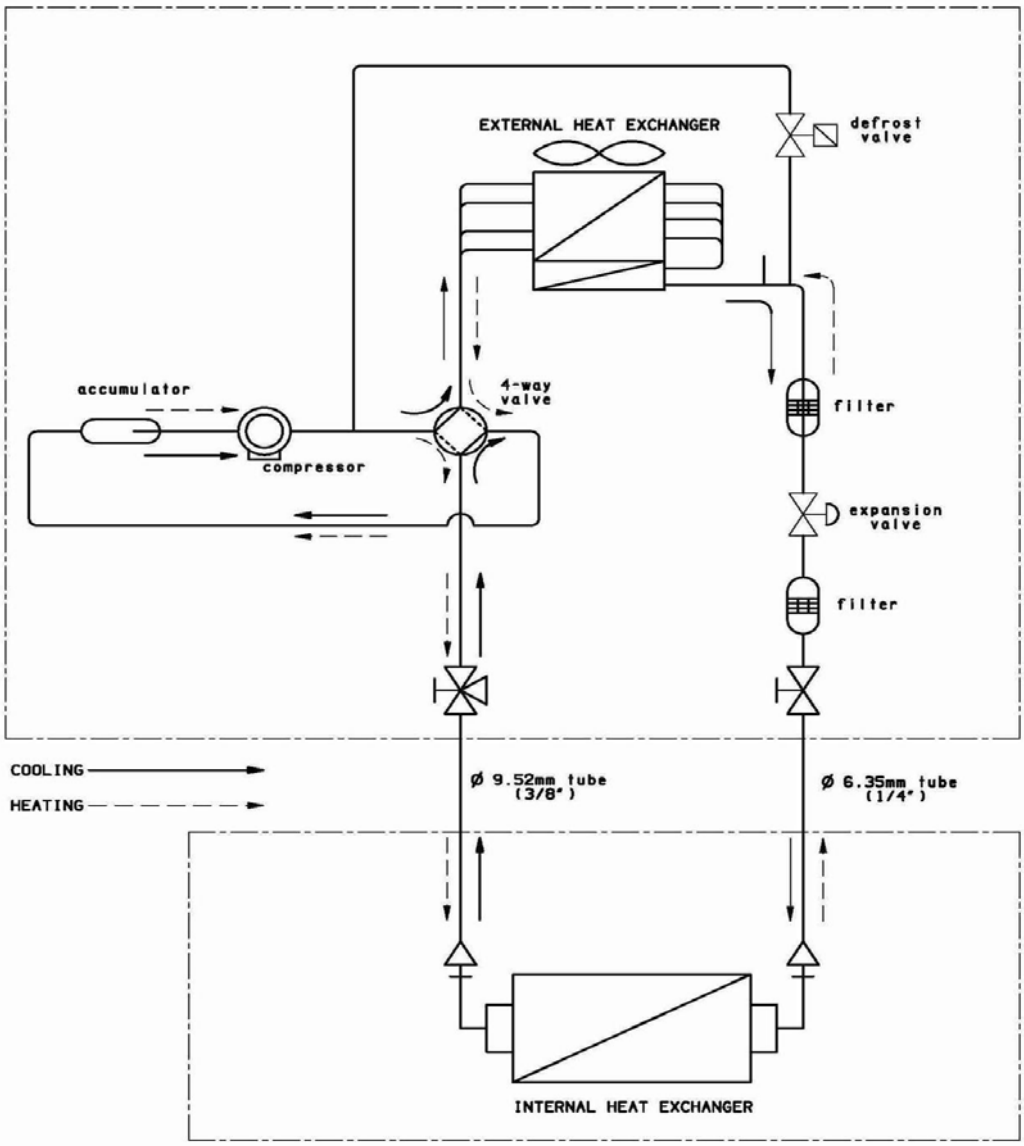
GR9FI30R5IAA



Unit : mm

4. REFRIGERANT FLOW DIAGRAM

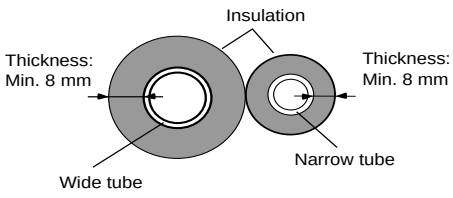
Indoor Unit: **mta8fia0r5i/k2fafia0r5i/kpa8fia0r5i/ca8fia0r5i/sda8fia0r5i** Outdoor Unit: **GR9FI30R5IAA**



Insulation of Refrigerant Tubing

IMPORTANT

Because capillary tubing is used in the outdoor unit, both the wide and narrow tubes of this air conditioner become cold. To prevent heat loss and wet floors due to dripping of condensation, **both tubes must be well insulated** with a proper insulation material. The thickness of the insulation should be a min. 8 mm.



CAUTION

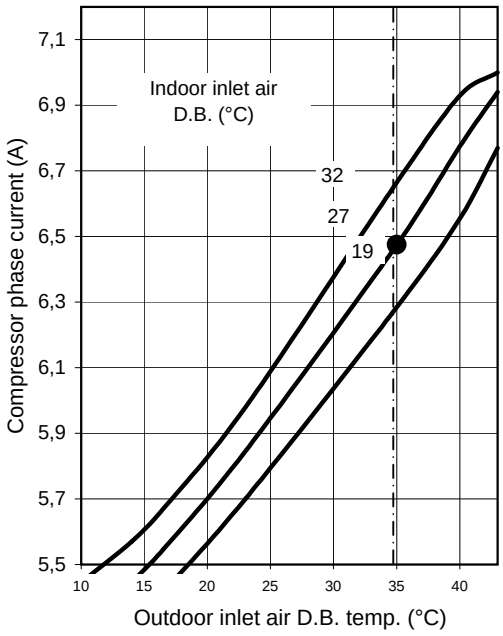
After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

5. PERFORMANCE DATA

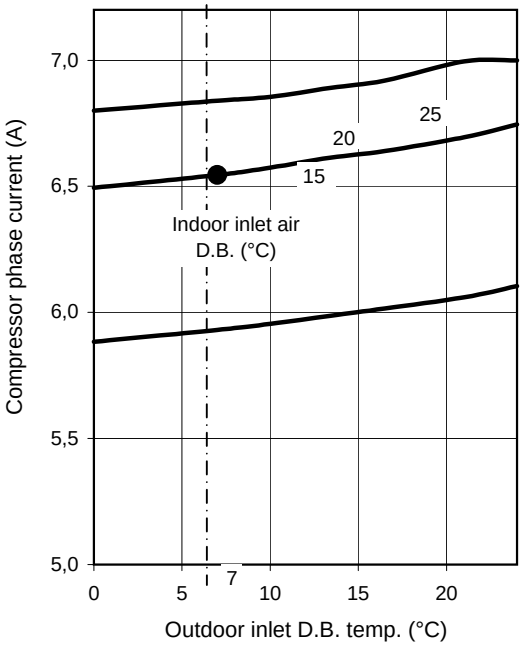
5-1 Performance charts

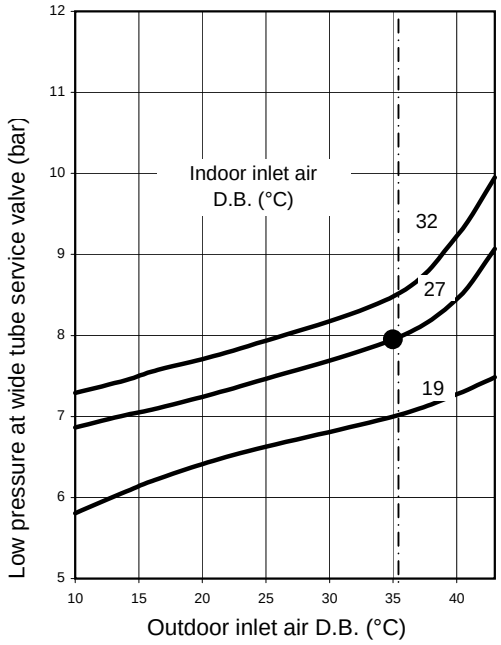
GR9FI30R5IAA

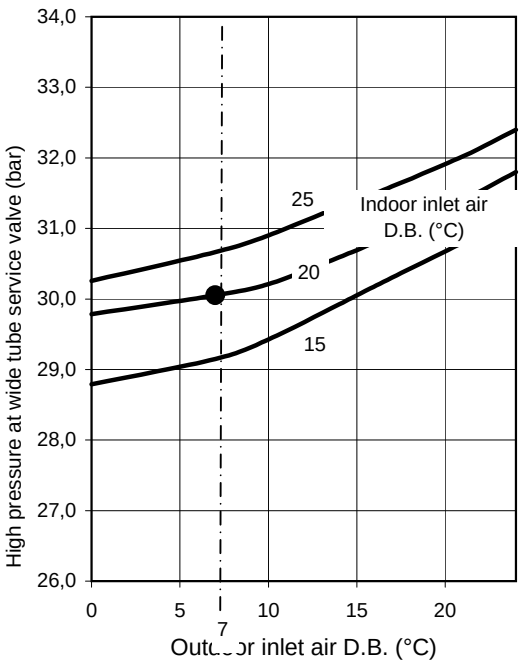
■ Cooling Characteristics



■ Heating Characteristics







Current measured on a fase of compressor.
Overload prevention operates to protect the air conditioner when outdoor ambient temperature reaches extremely high value in heating mode

● Points of Rating condition

Data referred to mta8fia0r5i/k2fafia0r5i/kpa8fia0r5i/ca8fia0r5i/sda8fia0r5i running in capacity test mode.

6. ELECTRICAL DATA

6-1 Electrical characteristics

OUTDOOR UNIT: **GR9FI30R5IAA**

COOLING

			Indoor Unit	Outdoor unit	Complete Unit
			Fan Motor	Fan Motor + compressor	
performance at			230V 1-Phase 50 Hz		
Rating conditions	Running Amps.	A	0,13	2,97	3,1
	Power input	Kw	0,031	0,639	0,670

Rating Conditions: Indoor Air Temperature 27°C D.B. / 19°C W.B.
Outdoor Air Temperature 35°C D.B.

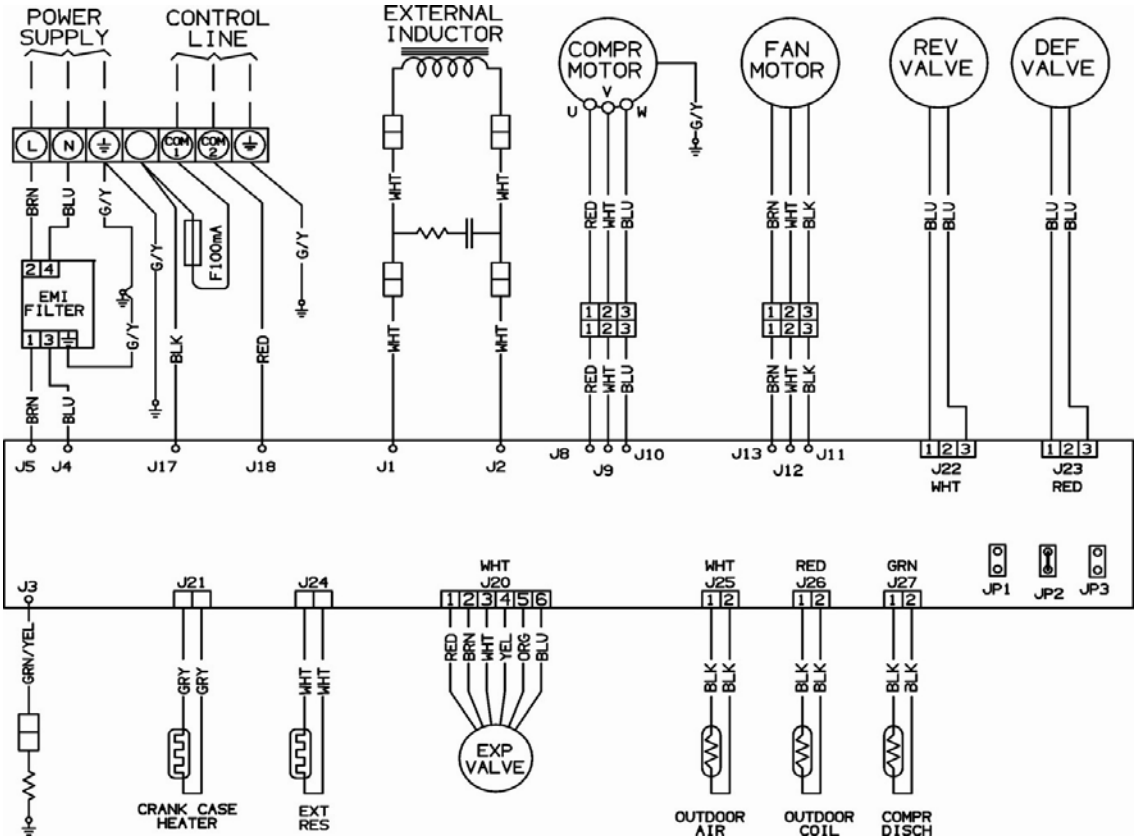
HEATING

			Indoor Unit	Outdoor unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
performance at			230V 1-Phase 50 Hz			
Rating conditions	Running Amps.	A	0,13	2,57		2,7
	Power input	Kw	0,031	0,539		0,570

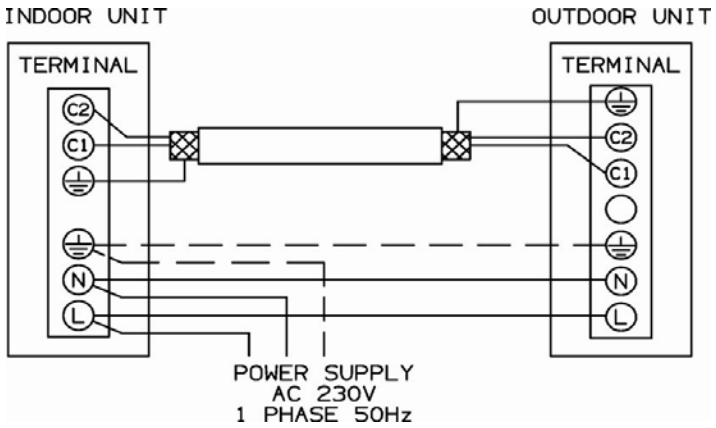
Rating Conditions: Indoor Air Temperature 20°C D.B.
Outdoor Air Temperature 7°C D.B. / 6°C W.B.

NOTE: Data referred to indoor unit mta8fia0r5i/k2fafia0r5i/kpa8fia0r5i/ca8fia0r5i/sda8f model.
For other indoor unit models there could be some differences.

6-2 Electric Wiring Diagram



6-3 System Wiring Diagram



7. FUNCTION

7-1 Diagnostic

With this feature is possible to have a visual signal that a trouble is occurring.
This mode is always active and the signalling is made through the display board LEDS .
In case of no troubles the LEDS status follows its normal function.
The detected troubles are showed to the user/technician using the 3 or 5 leds of the indoor unit receiver and the 5 leds on the outdoor pcb. For each fault there are different effects upon the operation of the A/C:

NOTES

- The troubles are showed according to a priority list that is in case of more than one trouble present, is always showed, at first, the one with the highest priority (3⇨ 2⇨ 1 etc).
- Sensor damaged means a situation where sensor is short-circuited or opened.
- In case of damaged sensors, the system (CM, FMO, FMI etc), if in OFF state, does not start.

INDICATION ON OUTDOOR UNIT

✕ ....LED OFF ☼ ....LED BLINKING

RANK	DIAGNOSIS CONTENTS	DL3	DL4	DL5	DL6	DL7	EFFECTS
10	-CDT PROBE DAMAGED OR NOT CONNECTED	✕	☼	✕	✕	✕	system does not operate as soon as fault is cleared, the system automatically re-start after 3 min. during this time, the signalling is showed
9	-OAT PROBE DAMAGED OR NOT CONNECTED	✕	✕	☼	✕	✕	
8	-OCT PROBE DAMAGED OR NOT CONNECTED	✕	✕	✕	☼	✕	
7	-COMPRESSOR OVERCURRENT	✕	✕	✕	✕	☼	
6	-COMPRESSOR OVERTEMPERATURE	☼	☼	✕	✕	✕	
5	-FAN OVERCURRENT	✕	☼	☼	✕	✕	
4	-FAN OVERTEMPERATURE	✕	✕	☼	☼	✕	
3	-FAULT ON INDOOR UNIT	✕	✕	✕	☼	☼	
2	-COMUNICATION ERROR	☼	☼	☼	✕	✕	
1	-PFC FAULT	✕	☼	☼	☼	✕	

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